Success Factors for Indigenous Wildlife-based Enterprise in Northern Australia

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B. Business, B. Arts (Hons)

A thesis submitted in fulfilment of the degree of Doctor of Philosophy

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Candidate Declaration

I hereby declare that the work herein, now submitted as a thesis for the degree of Doctor of Philosophy of the Charles Darwin University, is the result of my own investigations, and all references to ideas and work of other researchers have been specifically acknowledged. I hereby certify that the work embodied in this thesis has not already been accepted in substance for any degree, and is not being currently submitted in candidature for any other degree.

The following papers have been published based on the research findings of Chapters Four and Five. In the case of the first two publications (Austin and Corey 2012; Austin and Garnett 2011), the research was designed, data gathered and data analysed by the PhD candidate. Further, the candidate contributed approximately 80% of the writing of the manuscripts. Though the structure and content have been slightly altered to suit the requirement of the journals (i.e. altered headings, formatting and abbreviated introductions/conclusions), these publications are essentially based on Chapters 4 and 5 of this thesis.

The other publication listed (Collier et al. 2011) is not based on a chapter in this thesis, but uses data gathered whilst researching for Chapter 4 of the thesis. It is a collaborative publication between social scientists, ecologists and modellers. The PhD candidate gathered the social data, analysed the social data and contributed to approximately 40% of the authorship of this publication.
All papers are attached as appendices for references and as evidence of the relevance and impact of this research.


Beau Austin

January, 2014
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<td>ABARE</td>
<td>Australian Bureau of Agricultural and Resource Economics</td>
</tr>
<tr>
<td>ABIC</td>
<td>Australian Buffalo Industry Council</td>
</tr>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>AIATSIS</td>
<td>Australian Institute of Aboriginal and Torres Strait Islander Studies</td>
</tr>
<tr>
<td>ALRA</td>
<td><em>Aboriginal Land Rights Act (NT) 1976</em></td>
</tr>
<tr>
<td>BAC</td>
<td>Bawinanga Aboriginal Corporation</td>
</tr>
<tr>
<td>BRS</td>
<td>Bureau of Rural Sciences</td>
</tr>
<tr>
<td>BTEC</td>
<td>Brucellosis and Tuberculosis Eradication Campaign</td>
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<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
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<td>CBE</td>
<td>Community-based Enterprises</td>
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<td>CDEP</td>
<td>Community Development Employment Projects</td>
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<tr>
<td>CITES</td>
<td>Convention on International Trade in Endangered Species of Wild Fauna and Flora</td>
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<tr>
<td>CSU</td>
<td>Conservation through sustainable use</td>
</tr>
<tr>
<td>DAFWA</td>
<td>Department of Agriculture and Food Western Australia</td>
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<tr>
<td>DEC</td>
<td>Department of Environment and Conservation Western Australia</td>
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<tr>
<td>DFID</td>
<td>the United Kingdom Department for International Development</td>
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<tr>
<td>DLF</td>
<td>Desert Livelihood Framework</td>
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<tr>
<td>DWE</td>
<td>Djelk Wildlife Enterprises</td>
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<tr>
<td>EPBC Act</td>
<td><em>Environment Protection and Biodiversity Conservation Act 1999</em></td>
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<tr>
<td>FaHCSIA</td>
<td>Department of Families, Housing, Community Services and Indigenous Affairs</td>
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<td>Acronym</td>
<td>Description</td>
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<tr>
<td>FRDC</td>
<td>Fisheries Research and Development Corporation</td>
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<td>GGBC</td>
<td>Gulin Gulin Buffalo Company</td>
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<tr>
<td>GPS</td>
<td>Global Positioning System</td>
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<tr>
<td>HRSCATSIA</td>
<td>House of Representatives Standing Committee on Aboriginal and Torres Strait Islander Affairs</td>
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<tr>
<td>HWP</td>
<td>Heritage Working Party on the Horses of the Guy Fawkes River National Park</td>
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<tr>
<td>IBR</td>
<td>Indigenous Business Review</td>
</tr>
<tr>
<td>ILC</td>
<td>Indigenous Land Corporation</td>
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<tr>
<td>IWBE</td>
<td>Indigenous Wildlife-based Enterprise</td>
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<tr>
<td>LUA</td>
<td>Land Use Agreement</td>
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<tr>
<td>MSY</td>
<td>Maximum Sustainable Yield</td>
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<td>NGO</td>
<td>Non-Government Organisation</td>
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<td>NLC</td>
<td>Northern Land Council</td>
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<tr>
<td>NOTPA</td>
<td>New Opportunities for Tropical Pastoralism and Agriculture</td>
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<td>NRETAS</td>
<td>Department of Natural Resources, Environment, the Arts and Sport</td>
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<tr>
<td>NRM</td>
<td>Natural Resource Management</td>
</tr>
<tr>
<td>NT</td>
<td>Northern Territory</td>
</tr>
<tr>
<td>NTG</td>
<td>Northern Territory Government</td>
</tr>
<tr>
<td>NTFP</td>
<td>Non-Timber Forest Product</td>
</tr>
<tr>
<td>PWCNT</td>
<td>Parks and Wildlife Commission of the Northern Territory</td>
</tr>
<tr>
<td>PWSNT</td>
<td>Parks and Wildlife Service of the Northern Territory</td>
</tr>
<tr>
<td>RIRDC</td>
<td>Rural Industries Research and Development Corporation</td>
</tr>
<tr>
<td>SCRGSP</td>
<td>Steering Committee for the Review of Government Service Provision</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>SECITA</td>
<td>Senate Environment, Communications, Information Technology and the Arts</td>
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<tr>
<td>SL</td>
<td>Sustainable Livelihoods</td>
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<td>SLA</td>
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<td>SLF</td>
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<td>SRRATC</td>
<td>Senate Standing Committees on Rural and Regional Affairs and Transport Committee</td>
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<td>SWE</td>
<td>Sustainable Wildlife Enterprise</td>
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<td>TO</td>
<td>Traditional Owner</td>
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<td>TPWC Act</td>
<td>Territory Parks and Wildlife Conservation Act</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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<td>WA</td>
<td>Western Australia</td>
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<td>WBE</td>
<td>Wildlife-based Enterprise</td>
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<td>WMI</td>
<td>Wildlife Management International</td>
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Abstract

Access to land and resources has not, in itself, been sufficient for improving the wellbeing of Indigenous people living in remote northern Australia. Though exceedingly valuable in other ways, much of the Indigenous estate has limited potential for market-based economic development. However, many Indigenous Australians have become increasingly interested in using natural resources commercially for livelihoods development.

This thesis investigates the key factors of success for one such market-based opportunity: Indigenous wildlife-based enterprise. Commercial uses of wildlife have the potential to harness assets available to Aboriginal people living in remote northern Australia for the enhancement of their livelihoods. Indeed, many Indigenous Australians are already using wildlife commercially to supplement their livelihoods, to expand natural resource management capacity and to enhance their ability to perform cultural obligations on country.

To investigate factors of success, a set of three case studies of successful Indigenous wildlife-based enterprises were constructed using a grounded theory approach. Research was conducted during nine field trips to three sites: Broome/Dampier Peninsula (WA); Bulman (NT) and Maningrida (NT). These field trips took place between November 2008 and January 2011. A total of 55 days was spent in the field conducting observations and recording interviews with 32 research
participants. These qualitative data were analysed using standard coding techniques.

Seven key factors were identified as underpinning the success of the enterprises investigated. They were: the resource base; minimal anti-use sentiment; demonstrable sustainability; markets; access; social capital; and supportive organisations and formal institutions.

These case studies provide examples of natural resource-based enterprises that have allowed Indigenous people to engage in market-based economic activity in remote northern Australia. The findings of this thesis will be of interest to Indigenous people and communities, development practitioners, policy-makers and natural resource managers working in the fields of Indigenous livelihood development and the sustainable use of wildlife.
Chapter One: Introduction

Introduction

1.1. Introduction

Indigenous wildlife-based enterprises are important as they harness some of the assets available to Aboriginal people living in remote and regional areas of northern Australia to create sustainable livelihoods. Though not employed widely, Indigenous Australians have become increasingly interested in using natural resources for development. The goal of this thesis is to investigate the definitions and drivers of success among Indigenous wildlife-based enterprises in northern Australia. It is intended that the outcomes of this investigation will be used by Indigenous entrepreneurs (individuals and communities), development professionals, natural resource managers and policy-makers to enhance Indigenous peoples’ capacity to engage in wildlife-based enterprise and, in so doing, pursue improvements in wellbeing through an appropriate and sustainable livelihood strategy.

The ‘Indigenous estate’, the area of Indigenous-owned land held under a variety of tenure arrangements in Australia (Altman et al. 2007), totals some 7,692,024 km², nearly all of which is located in very remote Australia (98.6%) (Altman et al. 2007). It is estimated that there are 120,000 Indigenous people (26% of the total
Dillon and Westbury (2007) point out that many country towns across Australia are undergoing a process of “indigenisation.” This is due both to the growth in the Indigenous population and the out-migration of non-Indigenous people from remote and rural towns (Taylor 2006). At the same time some remote Indigenous communities, such as Wadeye and Maningrida in the Northern Territory for example, are expanding into large towns. The population of Wadeye is predicted to double to 4,000 by 2023. Its fertility rate is triple the national average and 1,500 of its current population are under 25. Wadeye is one of 14 such towns within the north of Australia that are predicted to have similar rates of growth (Dillon and Westbury 2007). Much of this population growth is occurring within the Indigenous estate.

With their demographic and land ownership majorities in the remote regions, and resulting institutional dominance (Taylor 2006; Altman et al. 2007), Indigenous Australians are key stakeholders in northern Australia. However, Indigenous Australians are generally considered worse-off in socio-economic terms than non-Indigenous Australians. For example, Indigenous Australians have lower life expectancy, poorer health, poorer literacy and numeracy, higher unemployment, experience higher poverty, and poorer wellbeing than non-Aboriginal Australians (FaHCSIA 2009; SCRGSP 2009). One contributing factor to this disadvantage is a lack of economic participation and low incomes. In terms of Indigenous disadvantage in
economic and enterprise development, some key statistics are revealing: Indigenous Australians are half as likely to finish high school as non-Indigenous Australians and only one-fifth of 20-24 year olds continue on to university; employment rates for Indigenous Australians in remote and regional areas are around 52 and 51 per cent respectively, compared to 75 per cent for non-Indigenous Australians; Indigenous Australians have an average weekly income of $278 per week, compared to $473 per week for non-Indigenous Australians; Indigenous Australians are one-third as likely to be self-employed as non-Indigenous Australians; and just over one-third (36%) of Indigenous Australians are home owners, compared to 71% of non-Indigenous Australians (FaHCSIA 2010).

At a glance, the situation appears worse for Indigenous people living in remote and regional areas of Australia than for those living elsewhere. Incomes in remote and rural Indigenous communities are much lower than those of Indigenous people living in urban settings. For example, in the NT in 2001, the average annual income for employed Indigenous people in urban centres was $27,990, as compared to $10,180 for those Indigenous employees in rural parts of the NT (Dillon and Westbury 2007). Further, the percentage receiving income from welfare in urban areas was around 51% (significant enough in itself), but jumped to 62% in some remote communities (Dillon and Westbury 2007). Whilst this ratio is probably mirrored in the comparison of non-Indigenous rural dwellers and non-Indigenous urban dwellers, the fact remains that, *ceteris paribus*, Indigenous people living in remote and rural regions will continue to rely heavily on government subsidy of their livelihoods.
However, as Taylor (2006) points out, the comparison of urban and remote Indigenous communities is of questionable validity in that livelihoods of Indigenous people are measured inaccurately. The effects of isolation and lack of services available for those in remote areas are sometimes conflated, with customary ways of life, and the benefits thereof, not being captured in official statistics. Thus, while the economic status of Indigenous Australians living in remote areas is lower than that of their urban counterparts in conventional terms, this lower economic status is at least partially offset by the engagement of people in customary practices such as the harvesting and hunting of wildlife for personal consumption (Altman 1987; 2003; 2005a; Gray et al. 2005; Hunt et al. 2009). For example, it has been demonstrated recently that Indigenous people who are involved in the traditional land management practices and who live on ‘outstations’, enjoy significantly better health than those living relatively sedentary lives in communities (Burgess et al. 2005; Burgess et al. 2009; Garnett et al. 2009).

This being said, whilst population growth in remote communities will not automatically lead to greater poverty, the gross number of individuals living in remote locations who are dependent on welfare or other government subsidies will increase unless sources of income for people living in remote communities are diversified. This is problematic due to the pressure it places on governments to justify the increased expenditure of tax-payers’ dollars on ensuring the survival of communities that appear to be economically unviable (Hughes and Warin 2005). As discussed above, this perception of a lack of viability is not necessarily
representative of reality and is probably more symbolic of a political economy that defines which sections of society are productive (Altman 2007). If room can be made for alternative livelihoods thinking in Indigenous Australian development, then academics, commentators and policy-makers may arrive at different conclusions.

As posited by Altman (2001a; 2001b 2005a; 2005b; 2007), it is constructive to view remote Indigenous economies as hybrid economies. Standard views of the economy suggest that it consists of two sectors: the public sector (government) and the private sector (the market). Alternatively, the hybrid economy incorporates a third sector, called the customary sector, which in remote Indigenous economies includes activities such as hunting, gathering and fishing for customary use as well as bartering and voluntary activity (Altman 2001a; Altman 2001b; 2005b; 2007). The size of this sector in specific geographic locations throughout the Indigenous estate is quite variable and is largely determined by local history. However, in research conducted in central Arnhem Land, Altman (1987) was able to measure the size and contribution of this sector to local livelihoods. Altman (1987) demonstrated that for the clan group with whom he conducted the research, almost two-thirds of their livelihoods were supported by activity in the customary sector. The size of this contribution has since diminished, largely replaced by the public sector in the form of welfare, but hunting, gathering and fishing still contributes significantly to local livelihoods and wellbeing (Altman 2005a). Though this is merely one case study, it seems that the conclusions are able to be scaled up
to explain the economies and livelihoods of Indigenous Australians, both in and out of the Indigenous estate (Gray et al. 2005).

All economies can be considered ‘hybrid’ economies. Indigenous Australia is a special case in terms of economic structure only in that the proportion of activity in the customary sector is significant. The livelihoods of these people are made more resilient, indeed in many cases made viable, by contributions from customary (and non-customary) hunting and gathering (Davies et al. 2008; Stafford Smith et al. 2008; Hunt et al. 2009). However, as acknowledged by Altman (2006), the market sector remains an important component of the economic development equation for the Indigenous estate. The basis of hybridity is the amalgamation of two or more things to create something that is somehow different from any of the original things. In this case, it is not clear that a conception of hybridity is achieved by Altman in that all economies are hybrid. In some ways this is merely a digression in that Altman does not suggest that the market sector does not exist, nor that it is not important to Indigenous livelihoods. Rather, under the hybrid economy thesis it is implied that development options for remote-dwelling Indigenous people should have a focus on supporting the customary sector, due to its dominance in the composition of local economies.

Nevertheless, in contemporary Australia, there have been many calls for growth in the market-based components of Indigenous livelihoods. One of the most vociferous advocates of developing “real” economies for Indigenous people in remote areas has been Noel Pearson (Pearson 2011). His views have been offered
similar support from other advocates (e.g. Dodson 2007; Yunupingu 2008; Mundine 2010; Bergman 2011;). Further, Ah Mat (2003) claims that investing in market sector development in Indigenous Australia is not only an economic imperative, but a matter of moral import. Likewise, the Australian Government identifies increased economic participation in the private sector as a source of improved wellbeing for Indigenous Australians (SCRGSP 2009; FaHCSIA 2010).

Ownership of land, in itself, has not proved to be sufficient in encouraging and achieving improved wellbeing for Indigenous Australians (Altman 2007; Sutton 2009; Langton 2010). Due to the economically marginal nature of much of the Indigenous estate (particularly the sparsely populated and biophysically unique tropical savanna) there is limited potential for economic development (Young 1988; Altman et al. 2007; Woinarski et al. 2007), which has to date been restricted to a handful of industries: mining (Altman and Martin 2009; Langton 2010), tourism (Tremblay and Wegner 2008), arts and crafts (SECITA 2007) and, recently, payment for environmental services (Luckert et al. 2007). The benefits of this economic development have not always been locally obvious (Langton 2010). Further, most of the land that makes up the Indigenous estate is communally-owned and cannot be sold to generate financial capital.

In recent times there has been a renewed push for Australia to relocate much of its agricultural and pastoral endeavour to the north of the country (NALWT 2009). Due largely to the effects of climate change and reduced growth potential in the south, many of Australia’s governments and agricultural bodies are looking towards the
supposedly resource rich north (Garnett et al. 2008). One of the primary reasons for this is to locate more water for crops and livestock, both to supplement water supplies to the south and to offer more arable land for future use (Garnett et al. 2008). With this proposed expansion (or transposition) of Australia’s agricultural production comes potential pressures on the environment through reduced biodiversity, the importation of weeds and pests, soil erosion, increased pressure on water resources and other presently unforeseeable dangers. True to historical trends, this ‘northern gaze’ has become somewhat more focused and palpable in recent times. Further, Garnett et al. (2008) suggest that, as resource availability declines in southern Australia and other parts of the globe, the market price of natural resources will increase. This will mean that exploitation of northern Australia’s natural resources will become increasingly feasible, as the increased cost of production will be offset by increased market prices. The focus on economic development primarily through extractive industries remains the dominant development paradigm in the north, but has more recently been softened by the increasing awareness of the environmental constraints of the north and the need to incorporate Indigenous interests more effectively in the development agenda (Garnett et al. 2008; NALWT 2009).

As major landholders in northern Australia, it could be assumed that Indigenous people would benefit considerably from this addition of agricultural production to the suite of industries on the northern part of the Indigenous estate. However, history has shown that large-scale agricultural enterprise in the Australian tropical savanna has realised only marginal returns, with the general trend being towards
failure (Woinarski et al. 2007). This general struggle and failure has largely been caused by the challenges of the monsoonal flood and drought (Woinarski et al. 2007; NALWT 2009), the generally poor soils (Orians and Milewski 2007; Woinarski et al. 2007) and a lack of substantial local markets (Young 1988; Altman 2006).

Recognising that northern Australia has limited potential for agriculture does not necessarily mean that the landscape is desolate and barren, and that people attempting to create sustainable livelihoods on the Indigenous estate in the north are destined to fail. Rather, there is increasing recognition that development of the north needs to be aligned with the strengths, weaknesses, threats and opportunities that actually exist (Altman 2007; Garnett et al. 2008; NALWT 2009).

One such opportunity is sustainable use of wildlife. Due to their ability to survive, and indeed thrive, in the environmental conditions of the north, the use of native plants and animals for commercial purposes represents an alternative land use to mainstream agricultural production that does not require substantial land modification. In addition, though separately, utilisation of feral animals living in otherwise relatively untransformed landscapes can be seen as restorative rather than destructive, and therefore beneficial for natural resource management and biodiversity conservation. Being the main landholder in northern Australia, Indigenous people are well positioned to take advantage of the opportunities offered by wildlife-based enterprise. Further, FaHCSIA (2010) outlines five competitive advantages that are enjoyed by Indigenous people. They are:
1. land holdings (including Indigenous-owned land, land held by the Indigenous Land Corporation (ILC) and native title rights) and associated resources (including access for minerals, water and high biodiversity value);

2. strong social networks and community identity;

3. traditional and cultural knowledge;

4. cultural tourism, natural resource management and arts industries; and

5. proximity to regional opportunities (e.g. mining).

In this thesis I show that wildlife-based enterprise presents a tool for Aboriginal people to capitalise on each of these competitive advantages and, as such, is a potentially important component of creating sustainable livelihoods for some residents of the Indigenous estate.

1.2. Thesis Structure

The thesis is structured around three broad sections that follow the logical sequence of introduction/methods, results and discussion. A chapter break-down of these sections is provided below.

The first section is comprised of three chapters. Chapter One provides an introduction to the concepts of Wildlife-based Enterprise (WBE) and Indigenous Wildlife-based Enterprise (IWBE) and briefly outlines their histories in Australia. Chapter Two introduces the reader to the Sustainable Livelihoods (SL) Framework, which has been employed as an analytical device throughout the thesis and the methods used for this investigation.
The second section of the thesis presents the results of the research in the form of three case studies. Chapter Three describes the Indigenous led, presently nascent, ‘industry’ surrounding the commercial use of *Terminalia ferdinandiana* fruit in north-western Australia. Chapter Four examines an Indigenous owned and operated mustering company that exports live buffalo to South-East Asia from southern Arnhem Land. The third and final case study, Chapter Five, concerns the crocodile egg collecting activity of an Indigenous wildlife-based enterprise in remote north Arnhem Land. Each of these chapters provides detailed descriptions of the sustainable livelihood assets employed in the IWBEs, identifies the vulnerability context within which they operate, summarises research participants’ opinions of their relative success, and provides a discussion of the underlying factors that have contributed to this success. The order of the results chapters represents nothing more than the chronology of the field work undertaken for this research.

The third section, which comprises four chapters, discusses the research findings and identifies implications for the various stakeholders in IWBE. Chapter Six synthesises and discusses the findings presented in each of the case studies described in Section Two. Chapter Seven is concerned with defining success from the perspective of enterprise employees and interpreting the implications of this definition for IWBEs as tools for livelihood development and/or biodiversity conservation. Chapter Eight considers the implications of the research findings for potential proponents of IWBE, government, and non-government organisations, as
well as the contribution it makes to the understanding of Indigenous entrepreneurship and natural resource management in Australia. The thesis closes with a chapter that discusses the limitations of this work, recommendations, future research opportunities in the field, and a final summary of the findings and implications of the thesis.

1.3. What is a Wildlife-Based Enterprise?

Wilson (2009, p.1) offers the following definition of Sustainable Wildlife Enterprise:
A Sustainable Wildlife Enterprise (SWE) is a commercial business based on the sustainable use of native plants, animals and/or landscapes which evolved in Australia’s unique environment.

This definition has been developed for the Rural Industries Research and Development Corporation’s (RIRDC) Rangelands and Wildlife Programme, which:

...seeks to trial new ways of managing native species to provide profitable and sustainable income generating options for landholders (Wilson, p.1).

From these quotes one can see that sustainability, or sustainable use, is at the core of SWE. Article 2 of the Convention on Biological Diversity (CBD) (1993) defines sustainable use as follows:

Sustainable use means the use of the components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations, p.4.

It is acknowledged that there are divergent conceptions of sustainable use (Hutton and Leader-Williams 2003), but the CBD definition is considered most appropriate here for its simplicity and clarity.

In Wilson’s (2009) definition, it is assumed that the reference to “native plants, animals and/or landscapes which evolved in Australia’s unique environment” is made as it is conceived that this enhances the ecological sustainability of SWEs. In this definition, native plants and animals are a preferred primary product due to their reduced impact/positive effect on sustainability (Wilson and Edwards 2008).
However, this position is challenged in this thesis as it is proposed that the commercial use of wild non-native species can also contribute to sustainable primary production in Australia.

Invasive species alter the environments they colonise (Bradshaw et al. 2007). The highly successful invasive species often have impact because they put local ecosystems under novel pressures for which they have not been previously selected through their evolutionary history. For the purposes of maintaining biological diversity within a place that has been colonised successfully by non-native species, sustainable use can involve the use of targeted species (e.g. water buffalo), to protect or restore “components of biological diversity” in the ecosystem. In this sense, the commercial use of invasive species can reduce their populations and alleviate pressures on ecosystems. This could be defined as remedial commercial use, which in itself can contribute to the on-going protection of biodiversity to enhance “its potential to meet the needs and aspirations of present and future generations”. In terms of defining this use as sustainable or not, the issue becomes centred on population dynamics of invasive species. Harvest at or beyond the species’ maximum sustainable yield (MSY) can reduce or maintain populations at a targeted and/or acceptable level. If populations of invasive species can then be maintained at a level that “does not lead to the long-term decline of biological diversity” this could be considered sustainable. It can be observed that there exists a tension between economic viability of WBEs based on invasive species and the protection and maintenance of biological diversity. This will be discussed further with reference to the case study of swamp buffalo mustering (Chapter Five). For
now, based on the argument provided, it is proposed that Wilson’s (2009) definition of SWEs could helpfully be expanded to accommodate the sustainable use of invasive species in Australia.

As such, to avoid confusion with the term SWE, Wildlife-based Enterprise (WBE) will be used throughout this thesis. Using a simplified version of Wilson’s (2009) definition of SWEs, WBEs are described as:

_A commercial enterprise based on the sustainable use of wildlife._

This includes the sustainable use of native and non-native plants and animals for commercial purposes. It should also be noted that the word ‘enterprise’ has been substituted for the term ‘business’ for reasons that will be discussed with regards to Indigenous enterprise. However, within this definition there are some key terms, such as ‘wildlife’ and ‘commercial use,’ that need to be unpacked.

Wildlife has been described by the SRRATC (1998) as: “animals and plants that live in the wild”. However, they acknowledge, and go some way towards clarifying, the grey area that exists around wildlife that has been collected and kept in captivity, or individuals of species that once were wild, but have since been domesticated and bred in captivity. Though a clear-cut definition was not reached, a line was drawn by a submission from the aviculture industry that suggested “...that second or later generation native birds, bred in captivity, should no longer be defined as ‘wildlife’ but instead should be defined as 'livestock’” (SRRATC 1998). Though the SRRATC does not seem to adopt this definition whole-heartedly, suggesting room for debate, it is this boundary that is applied in this thesis. It should also be noted that,
though the SRRATC report focused on native wildlife, such a distinction is not made in this thesis, as the commercial use of introduced and/or invasive species are relevant to this discussion.

The SRRATC (1998, p.7) offered this definition for commercial use of wildlife:

- The collection, harvesting, processing and preparation for sale of native fauna and flora and of products derived from these. Commercial uses may be consumptive, or non-consumptive, including eco-tourism and tourism.

However, this thesis is focused solely on commercial use via consumptive means. That is:

- An activity by which human beings derive benefit from a population or ecosystem by permanently removing organisms or their products from the population or ecosystem concerned (SRRATC 1998, p.8).

This research field can be viewed quite separately from other forms of wildlife use due to the way flora and fauna are consumed. It should however, also be acknowledged that wildlife do perform other non-consumptive commercial services, such as pollination (SRRATC 1998), that are not part of this study.

1.4. Wildlife-Based Enterprise in Australia

As will be discussed further (Chapter Eight), Australians are generally protective of wildlife, particularly native species. However, there have been some successful
industries developed in Australia that are based on the exploitation of wildlife. For example:

- Surrounded by coastline, many Australians access the fisheries resources for livelihoods. In 2007-2008 Australian fisheries production was approximately AU$2.2 billion (ABARE and FRDC 2009). Though experiencing a decade-long decline in production value of approximately 4% per annum, with greater declines in wild harvested seafood being offset by growth in the aquaculture sector, wild caught seafood production (AU$1.3 billion) remains significant (ABARE and FRDC 2009; Wilson et al. 2010).

- Sandalwood oil has been used throughout the world for perfume, incense (especially for religious ceremonies) and medicinal purposes for thousands of years (Clarke 2006). Australian sandalwood (*Santalum spicatum*) oil is supplied to domestic and international markets as a substitute source of sandalwood oil (as opposed to *Santalum album*). In 2006 there were approximately 12,000kg of sandalwood oil sold to buyers in Australia and overseas. Prices received varied between AU$350 and AU$700 per kilogram, depending on quality (Clarke 2006).

- The tea tree (*Melaleuca alternifolia*) has been used commercially since the 1920s (Carson et al. 2005). The oil of the tea tree has anti-bacterial, anti-microbial, anti-fungal, anti-viral, anti-protozoal, anti-inflammatory, insecticidal and other properties (Carson et al. 2005). Following a boom in the 1970s, there are now tea tree plantations in New South Wales, Queensland and Western Australia (Carson et al. 2005) which have an estimated farm-gate value of AU$21 million (Baker et al. 2010).
The Australian crocodile industry began in Queensland in the 1950s (Goulding et al. 2007). Since then, both saltwater crocodiles (*Crocodylus porosus*) and freshwater crocodiles (*Crocodylus johnstoni*) have been used for leather and meat consumption, both within Australia and internationally. In 2002, the total stock of crocodiles in farms was estimated to be 68,148 animals (Goulding et al. 2007), with the 2003 annual export market size estimated to be US$775 million per annum (MacNamara et al. 2003).

The macadamia nut (*Macadamia tetraphylla* and *Macadamia integrifolia*) is a native Australian plant species that has been used commercially in Australia since the 1960s. Large-scale commercial production of macadamias first occurred in Hawaii during the 1920s, with Australian growers subsequently realising the opportunity the nut presented (Garnett 2009). Today, Australia supplies almost half of global macadamia production, which is worth approximately AU$150 million at the farm gate (Stephenson 2005).

Though the focal point of an often passionate debate about the use of wild animals for commerce in Australia, the kangaroo industry employs over 4000 people and is worth AU$270 million per annum (Kelly 2009). Though many Australians are not comfortable with consuming kangaroo, those who do are consistent in their consumption (Ampt and Owen 2008). Calls have been made for landholders to replace livestock with kangaroos due to the environmental benefits it may offer (Wilson and Edwards 2008; Cooney et al. 2009).
• Shore-based whaling was conducted in Australian waters from the late 18\textsuperscript{th} century up until 1978 (Wilson and McNamara 1981; Suter 1982). Indeed, up until the 1830s, the largest Australian export was in fact not wool, but whale products (MacIntyre 2004). The most heavily targeted whale species were southern right whales (\textit{Eubalaena australis}), sperm whales (\textit{Physeter catodon}) and humpback whales (\textit{Megaptera novaeangliae}). The Australian whaling industry ceased in the 1970s due to unsustainable practices and the availability of substitute products (Wilson and McNamara 1981).

Numerous wildlife species have been identified as having significant commercial potential in Australia (Ramsay 1994; ACIL Economics 1997; SRRATC 1998; Whitehead 2003b; Griffiths et al. 2005; Gorman et al. 2006; Whitehead et al. 2006; Gorman et al. 2008; Cooney et al. 2009; Cunningham et al. 2009a; Cooney et al. 2010; Fordham et al. 2010a). The SRRATC (1998) revealed that there has been an historical focus on the commercial use of native flora, as opposed to the use of animals, through propagation, seedling cultivation, collection of plant parts for floral and home decoration, collection of plants for bush foods, and the use of plant extracts. There is currently a great deal of investment in research and development of industries based on native plants. Some of the species currently being considered for greater development include:

• Davidson’s plums (\textit{Davidsonia pruriens})
• desert limes (\textit{Eremocitrus glauca})
• finger limes (\textit{Citrus australasica})
• Kakadu plums (\textit{Terminalia ferdinandiana})
lemon myrtle (*Backhousia citriodora*)
- quandongs (*Santalum acuminatum*)
- muntries (*Kunzea pomifera*)
- ribberries (*Syzygium luehmannii*)
- bush tomatoes (*Solanum centrale* amongst other *Solanum spp.*)
- morinda (*Morinda citrifolia*)
- lemon aspen (*Acronychia acidula*)
- wattle seed (*Acacia spp.*)
- cycads (*Cycadaceae*)
- boabs (*Adansonia gregorii*)

Further to this, there has been commercialisation of animal species such as crocodiles, koalas, buffalo and possums; reptiles have been used for the pet trade; spiders and reptiles for the extraction of venom; birds and some mammals have also been sold in the pet trade; there has been some commercial utilisation of insect species and marine invertebrates such as jellyfish, coral, shells and pearls (SRRATC 1998). Investment in the development of industries that use wild fauna (including feral species) has occurred (SRRATC 1998; Davies et al. 1999; Gorman et al. 2008; Cooney et al. 2009; Wilson 2009; Cooney et al. 2010), with some of the targeted species including:

- emus (*Dromaius novaehollandiae*)
- camels (*Camelus dromedarius*)
- freshwater turtles (*Chelodina rugosa*)
- pigs (*Sus scrofa*)
• buffalo (*Bubalus bubalis*)
• saltwater crocodiles (*Crocodylus porosus*)
• kangaroos (*Macropus spp.*)
• red claw (*Cherax quadricarinatus*)
• magpie geese (*Anseranas semipalmata*)
• horses (*Equus ferus caballus*)

1.5. What is an Indigenous Wildlife-Based Enterprise?

Given the definition of WBE provided above, an Indigenous Wildlife Enterprise (IWBE) can be defined as:

_A commercial enterprise owned and/or operated by Indigenous people that is based on the sustainable use of wildlife._

The key terms in this definition, ‘Indigenous people’ and ‘commercial enterprise,’ are discussed further below.

It is estimated that there are between 300 million and 500 million Indigenous people in the world (Peredo et al. 2004). For a people to be defined as Indigenous they generally must:

• Descend from populations inhabiting a region prior to later inhabitants;
• Experience geographical, political, and/or economic domination by later inhabitants or immigrants; and
• Maintain some distinctive social-cultural norms and institutions (Peredo et al. 2004).
In addition to these core elements, based on the World Bank’s (2001) definition of Indigenous peoples, Peredo et al. (2004) adds that many Indigenous peoples may have the following attributes:

- Attachment to ancestral lands and their resources
- Modern subsistence economic arrangements
- Distinctive languages
- ‘Collective’ or community-based orientation
- Sense of historical mistreatment by the dominant culture
- A general desire to control their own economic resources and participate in the general economy ‘on their own terms’ (World Bank 2001; Peredo et al. 2004).

These definitions are neatly and accurately summarised by the widely accepted definition of Indigenous peoples given by the United Nations Working Group on Indigenous Populations, which states:

Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop, and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems (UNPFII 2004, p.2).
In the Australian context, an Indigenous Australian can be defined as anyone who self-identifies as an Aboriginal or Torres Strait Islander and is accepted as such by their community (*Commonwealth v Tasmania (1983) 46 ALR 625*). In 2006 there were approximately 455,000 Indigenous Australians living in Australia, accounting for around 2.3% of the total Australian population (ABS 2007). The language groups of the regions in which this research was conducted are listed within each of the case study chapters.

In their summary of the literature on Indigenous entrepreneurship, Hindle and Moroz (2010, p.16) give the following definition for ‘Indigenous entrepreneurship’:

> Indigenous entrepreneurship is activity focused on new venture creation or the pursuit of economic opportunity or both, for the purpose of diminishing Indigenous disadvantage through culturally viable and community acceptable wealth creation.

In this definition we can see that the phenomenon of Indigenous entrepreneurship is socially embedded. That is, the social and cultural context within which entrepreneurship is taking place has an effect on the practice of entrepreneurship (Granovetter 1985; 2005). As a result, given their unique culture, Indigenous entrepreneurs behave in distinctly different ways from non-Indigenous entrepreneurs. This occurs at both the individual and community levels.

Indigenous entrepreneurs are profit-seeking in their behaviour, but the types of profits pursued are diverse. Some Indigenous entrepreneurs may focus on the standard accumulation of financial profit (Foley 2008; Hindle and Moroz 2010).
However, many Indigenous entrepreneurs establish enterprises to accumulate social, cultural and/or environmental ‘profit’. This is determined by their social and/or cultural context and the immediate needs of the entrepreneur and their kin (Peredo et al. 2004; Foley 2008; Nikolakis 2008; Kayseas 2009; Hindle and Moroz 2010; Dana and Hipango Jr 2011; Giovannini 2012). Returning to Hindle and Moroz’s (2010) definition, this diversity of goals is expressed by stating that “Indigenous entrepreneurship is activity focused on new venture creation or the pursuit of economic opportunity or both...”. In other words, enterprise is used as a tool by Indigenous people to achieve self-identified goals.

As described by Hindle and Moroz (2010), any enterprise activity undertaken by Indigenous people is given close scrutiny by both their family and their community. Due to the strong role of kinship in the lives of Indigenous people, there is significant pressure placed on Indigenous entrepreneurs to ensure their activities are culturally appropriate, as defined by members of the cultural group within which the entrepreneur is embedded. As such, the range of options available to a prospective Indigenous entrepreneur is limited by his or her social and cultural context. Further, and by definition, entrepreneurial activity by Indigenous people can only emerge organically from, and remain within, the local milieu if it remains culturally viable and is deemed acceptable by the community.

Some investigation of success factors for Indigenous Australian entrepreneurs and enterprise operators has been undertaken (Herron 1998; Arthur 1999; Hunter 1999; Desmond and Rowland 2000; Foley 2003, 2006; IBR 2003; Hindle and
Lansdowne 2005; Hindle et al. 2005; Russell-Mundine 2007; HRSCATSIA 2008; Nikolakis 2008)(see Table 1.1.). However, analysis of those factors that influence the success of Indigenous-owned wildlife-based enterprises is nascent (Fordham et al. 2010a; 2010b).

Table 1.1. Success factors identified in literature on Indigenous Australian enterprise development.

<table>
<thead>
<tr>
<th>Success Factor</th>
<th>Relevant literature cited</th>
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</thead>
<tbody>
<tr>
<td>Desire sense of achievement/provide for family</td>
<td>IBR 2003; Foley 2006</td>
</tr>
<tr>
<td>Separation of social/cultural and commercial</td>
<td>Herron 1998; Foley 2003; IBR 2003;</td>
</tr>
<tr>
<td>considerations</td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td>IBR 2003; Hindle and Lansdowne 2005; Nikolakis 2008</td>
</tr>
<tr>
<td>Links to private sector</td>
<td>IBR 2003;</td>
</tr>
<tr>
<td>Priority for financial profits</td>
<td>Herron 1998; IBR 2003;</td>
</tr>
<tr>
<td>Integration of culture and business</td>
<td>Arthur 1999; Hindle and Lansdowne 2005; Nikolakis 2008</td>
</tr>
<tr>
<td>Separation of politics and business</td>
<td>Hindle et al. 2005; Nikolakis 2008</td>
</tr>
<tr>
<td>Education/vocational skills training</td>
<td>Hunter 1999; Foley 2006; HRSCATSIA 2008; Nikolakis 2008</td>
</tr>
<tr>
<td>Access to financial capital</td>
<td>Hunter 1999; Foley 2006; Russell-Mundine 2007; HRSCATSIA 2008</td>
</tr>
<tr>
<td>Positive attitude and sense of responsibility</td>
<td>Foley 2006; HRSCATSIA 2008</td>
</tr>
<tr>
<td>Social capital</td>
<td>Foley 2006; HRSCATSIA 2008</td>
</tr>
<tr>
<td>Opportunity recognition</td>
<td>Foley 2006; HRSCATSIA 2008</td>
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</tbody>
</table>

It is important here to point out some similarities between emerging theory regarding Indigenous entrepreneurship and social entrepreneurship (Peredo and Chrisman 2006; Peredo and McLean 2006; Short et al. 2009; Giovannini 2012).

The concept of ‘social entrepreneurship’ applies the notion of entrepreneurial intervention, drawn from the world of business economics, to attempts at addressing social problems. Social entrepreneurs... are people who act ‘entrepreneurially’ in pursuit of social value (Peredo 2006, p.412).
The classification of entrepreneurs as social entrepreneurs is largely dependent on their goals, motivations and activities (Giovannini 2012). As such, it is possible to see that Indigenous entrepreneurs may or may not be engaged in social entrepreneurship.

Similarly, due to their nature, many Indigenous enterprises embody the fundamentals of Community-based Enterprises (CBE). Peredo and Chrisman (2006, p.310) define CBEs as:

...a community acting corporately as both entrepreneur and enterprise in pursuit of the common good. CBE is therefore the result of a process in which the community acts entrepreneurially to create and operate a new enterprise embedded in its existing social structure. Furthermore, CBEs are managed and governed to pursue the economic and social goals of a community in a manner that is meant to yield sustainable individual and group benefits over the short and long term.

Whilst many Indigenous enterprises do exhibit many of these traits, there are certainly others that do not. The structure that is adopted is largely defined by the goals identified by the entrepreneurs, be they individuals, groups, families or communities, and a range of possibilities is available to entrepreneurs given the local context.

As a result, while IWBEs may pursue profit financial, social, cultural or environmental benefit through enterprise activity, enterprise must operate within boundaries defined by the community. IWBEs are socially embedded; that is, they
are influenced by the social and cultural structures surrounding them. As a result, the factors that contribute to the successful operation of an IWBE can be unique and diverse. The motivating factors driving the enterprises featured in this research are discussed within each of the case studies as the goals pursued are fundamentally important to defining whether the enterprise has been successful.

1.6. Indigenous Wildlife-Based Enterprise in Australia

Under Australian law, Aboriginal people have rights to harvest wildlife for subsistence use (Bomford and Caughley 1996; Davies et al. 1999). As a consequence, most Aboriginal people, particularly those living in remote areas, are not significantly impeded from continuing their traditional subsistence practices. In terms of consumptive commercial use of wildlife, Indigenous Australians are generally not offered any special dispensation\(^1\) and, as such, are required to abide by all laws and regulations (Venn 2007; Cooney and Edwards 2009).

The historical participation of Indigenous people in the commercial use of wildlife is an area of research that remains under-investigated. More recently, however, as they have become more empowered and sought to secure greater self-determination through the establishment of independent sources of livelihood, Indigenous Australians have trialled, and realised some success, in developing IWBEs within non-Indigenous legal constraints. For example:

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\(^1\) This remains to be tested before the courts in Australia. In August 2013 a High Court decision granted a group of Traditional Owners in the Torres Strait the rights to use a fish stock for commercial purposes (Lauder 2013). The implications of this finding will be determined in subsequent cases.
• The short-tailed shearwater (*Puffinus tenuirostris*), more commonly known as the muttonbird, has been harvested from the islands of Bass Strait from as early as 1803 (Ramsay 1994; Skira 1996). Since then, the harvest of muttonbirds has at times exceeded one million birds, though by 1994 the industry had declined to around 450,000 birds per annum. Even then, this represented approximately one quarter of the sustainable yield total of Bass Strait muttonbird stocks (Ramsay 1994). Aboriginal people from the Bass Strait region have a history closely linked to the muttonbirding industry and the annual harvest continued to hold high importance for these people, both socially and economically, at least until the late 20\textsuperscript{th} century (Ramsay 1994; Skira 1996).

• The Indigenous art industry in Australia has grown to be worth AU$400-500 million per annum to the Australian economy (SECITA 2007). Many Indigenous artists use wild-harvested parts of plants and animals to produce their art. For example, artists use the timber of native trees in their production of sculptures (Griffiths et al. 2003; Koenig et al. 2007) and musical instruments (Forner 2006; Werner et al. 2008).

• The wild harvest of bush tomatoes (*Solanum centrale*) in the central desert has seen some enterprise development for central Australian Indigenous communities (Bryceson 2008; Cleary 2009; Ryder et al. 2009; Walsh and Douglas 2011; Holcombe et al. 2011).

• Though plantations are becoming the predominant source of Australian Sandalwood (*S. spicatum*) (Tonts and Selwood 2003), Indigenous people remain involved in the harvest of wild native sandalwood (Cunningham et al.
This industry is worth AU$12 million per annum (Cunningham et al. 2009a), though Indigenous people share only a small stake in the industry.

A further three IWBE success stories will be discussed as case studies in this thesis (see Chapters Three, Four and Five).


The majority of authors have tended to approach the topic from a conservation or natural resource management perspective and have thus focused on the sustainable use of wild species by Indigenous Australians (Bomford and Caughley 1996; Caughley and Adams 1996; Choquenot 1996; Webb et al. 1996; Vardon et al. 1997; Davies et al. 1999; Griffiths et al. 2003; Griffiths et al. 2005; Fordham et al. 2006; Fordham et al. 2007; Koenig et al. 2007; Tisdell and Nantha 2005; Fordham et al. 2008; Grayson et al. 2010; Wilson et al. 2010). Other authors have moved beyond the biological feasibility/sustainability of harvests and examined the potential for IWBE as an option for sustainable development on the Indigenous estate (Wilson et al. 1992; Altman et al. 1997; Altman 2003; Altman and Whitehead 2003; Whitehead 2003b; Gorman et al. 2006; Gorman and Whitehead 2006;
Whitehead et al. 2006; Altman et al. 2007; Gorman et al. 2008; Garnett 2009; Collier et al. 2011). Davies et al. (2008) and Stafford-Smith et al. (2008) have both used the Sustainable Livelihoods Framework to understand the livelihoods of Indigenous Australian desert-dwellers, with some focus on the contribution of bushfoods to viability, resilience and livelihoods. Further, there has been considerable research conducted into the supply-chain, value-chain and net-value chains of the central Australian bush tomato industry (Cleary 2008; Cleary 2009; Cleary et al. 2009; Cleary 2012). Skira (1996) and Vardon et al. (1997) suggest that IWBE can be a useful tool for maintaining Indigenous culture and identity. Altman et al. (1995), Davies (1999; 2001) and Garnett et al. (2010) have analysed the role of legal ownership of wildlife (specifically under native title) and the prospects for IWBE in Australia. Other research on the regulatory and policy contexts within which IWBEs operate, and the limitations or challenges faced, has been discussed by SRRATC (1998), Simpson and Chudleigh (2007), Cooney and Edwards (2009) and Cunningham et al. (2009a; 2009b). Altman and Cochrane (2005) have provided a case study of an innovative approach to providing institutional support for IWBE. Recent research has emerged in the non-peer-reviewed literature that discusses factors of success for IWBE (Fordham et al. 2010a). The findings presented in this thesis contribute to this literature by identifying key factors of success for IWBEs in northern Australia.

Wildlife-based enterprise offers the unique potential for some Indigenous Australians to realise economic and social development through environmentally sustainable and culturally appropriate means (Whitehead 2003; Altman and
Indigenous communities have become increasingly interested in using native wildlife commercially (Davies et al. 1999; Gorman et al. 2008) as it offers specific benefit for Indigenous people. It capitalises on their existing strengths and assets in the form of traditional knowledge, culture and land.

Wildlife-based enterprise occupies a unique position in terms of the interactions between Indigenous and non-Indigenous Australia. It is located neatly at the interface between traditional Indigenous knowledge and western capitalist endeavour. For this reason, wildlife-based enterprise is a particularly useful lens through which to view interaction and transaction across cultures.

1.7. Defining the Research Question

The original focus of this research project involved the investigation and analysis of the ways in which legislation, regulation and policy, at the three jurisdictional levels of Territory, Federal and International, impede the development of Indigenous wildlife-based enterprise in the Northern Territory, Australia. Having conducted a broad review of relevant literature on the topic, it became apparent that, whilst legislation, regulation and policy do impede development in certain situations, they are not the sole, or even the principal, impediments. Indeed, (as was later observed) at times relevant legislation can be an asset for IWBEs.
This realisation prompted a review of the goals and direction of the project. Ultimately, the ‘meta-aim’ of the project is to investigate the ways in which sustainable use of wildlife can be implemented in northern Australia, particularly with regards to one of the region’s largest stakeholders – Indigenous land owners. Given this motivation, and the limited on-the-ground implementation of such enterprise, it seemed logical that the research could most profitably investigate the question:

*What are the success factors for Indigenous wildlife-based enterprise?*

However, this question is too broad. The original thesis topic was focused on the Northern Territory. However, investigation of the potential to analyse extant Indigenous wildlife-based enterprises in the Northern Territory revealed few readily researchable case studies. The case study selection and design will be discussed further, however, as to optimise the quality of cases investigated it was necessary that the scope be slightly widened to include northern Western Australia. As such, the research question became:

*What are the success factors for Indigenous wildlife-based enterprises in northern Australia?*
2.1. IWBE as a Propitious Niche

Throughout Australia’s post-colonial history there has been a persistent trend to view northern Australia as underdeveloped and full of potential (Davidson 1965; Woinarski et al. 2007; NALWT 2009). This vision is largely based on the relative abundance of land and water resources and intact ecosystems in tropical Australia, combined with low population densities, proximity to Asian markets and a need to occupy Australia’s northern coastline (Woinarski et al. 2007; NALWT 2009). Mining, pastoralism and large-scale agriculture have been the most commonly promoted tools for unleashing this potential.

Though the narrative of the under-developed north persists, there is considerable evidence to suggest that the potential to grow northern economies on the back of the three major traditional industries mentioned above is in fact quite limited (NALWT 2009). As such, alternative industries based on the sustainable use of land and water resources have emerged. Some of these industries include land and sea management (Altman et al. 2007, Morrison 2007; Sithole et al. 2008), wildlife-based enterprises (Austin and Corey 2012; Zander et al. 2013), tourism (Fuller et al. 2005; Tremblay and Wegner 2008) and arts and craft (Koenig et al. 2007). Each of these industries takes advantage of the relatively abundant natural resources and intact ecosystems of northern Australia.
Indigenous people have pioneered these new industries in the north. This is not to suggest that Indigenous Australians are relatively more (or less) conscious of sustainability issues than non-Indigenous Australians (Howitt 2001; Wood and Garnett 2009; Petheram et al. 2010; Wills-Johnson 2010), but that these industries are more closely aligned with the aspirations of many of the residents of the northern Indigenous estate (Smyth and Whitehead 2012; Whitehead 2012).

| Table 2.1. Formal institutional support for Indigenous Wildlife-based Enterprises. |
| Institution | Relevant Policy |
| | Closing the Gap |
| | Stronger Futures in the Northern Territory |
| Northern Territory Government | Strategy for Conservation through the Sustainable Use of Wildlife in the Northern Territory 1997 |
| | NT Integrated Natural Resource Management Plan 2005 |
| Aboriginal Peak Organisation NT | Creating and Supporting Sustainable Livelihoods |
| Western Australian Government | Aboriginal Economic Participation Strategy 2012-2016 |

As such, it is possible to see that Indigenous wildlife-based enterprises occupy a propitious niche. That is, they take advantage of abundant natural resources and relatively intact ecosystems, in an environmentally sustainable manner, to meet the needs of emerging markets, whilst having the good fortune to be aligned with the aspirations of the owners and managers of a significant proportion of these resources – i.e. residents of the northern Indigenous estate (Smyth and Whitehead 2012; Whitehead 2012).
Further, these IWBEs occupy a propitious niche in terms of livelihood development and natural resource management policy across multiple scales (see Table 2.1). It has also been argued both by academics and policymakers that IWBEs can produce conservation benefits (see Chapter 9). Others have argued that legislative and policy frameworks in Australia pose significant barriers to the development of IWBEs in the north Australian context (Whitehead 2000; Cooney and Edwards 2009). Overall, however, it is argued that IWBEs appear to occupy a propitious niche in northern Australia. They are aligned with the livelihood aspirations of many Indigenous people living on the Indigenous estate and are, to some extent, supported by policy and legislation at regional, national and international scales. Given this propitiousness, this thesis is based on the assertion that the success factors for IWBEs in northern Australia warrant further investigation. The remainder of this chapter explains the research paradigm, approach, and methods adopted to conduct this inquiry, and will assist the reader in interpreting the significance and applicability of the results.

2.2. Research Paradigm

Social researchers acknowledge that they approach their investigations and analyses with a set of assumptions about their subject matter. Individual ideologies have considerable influence on the way knowledge and/or theory is created – i.e. the way observations are made, measurements are taken, data interpreted, theory created, etc. (Young 1971). It is also acknowledged that the ‘subject’ being ‘researched’ is similarly ideological and subjective. This inherent subjectivity in the
knowledge creation process influences the way in which reality is presented. As described by Sulkunen (2008), social science studies describe reality in three different ways:

1. They report knowledge about social realities – known as the ‘representational dimension’ of knowledge.

2. The style of reasoning itself provides insight into social reality – known as the ‘epistemic dimension’ of knowledge.

3. They report facts about society that are special, or specific, due to the relationships of the researcher and the object of their study – known as the ‘sociology of knowledge dimension’.

To position this thesis in terms of metaphysics and, subsequently, methodology, I begin with a discussion of the concept of research paradigms, before describing the ontological, epistemological and methodological positions adopted for this investigation.

A research paradigm refers to the way in which a researcher understands and explains how they know what they know. Guba and Lincoln (1994, p.107) give the following definition for a paradigm:

A paradigm may be viewed as a set of basic beliefs (or metaphysics) that deals with ultimates or first principles. It represents a worldview that defines, for its holder, the nature of the “world”, the individual's place in it, and the range of possible relationships to that world and its parts, as, for example, cosmologies and theologies do. The beliefs are basic in the sense that they must be accepted simply on faith (however well argued); there is no way to establish their ultimate truthfulness.
In terms of metaphysics, four fundamental research paradigms have emerged from the ‘paradigm wars’ (Gage 1989) and occupied the debate (and consequent practice): positivism; post-positivism; critical theory; and constructivism (Guba and Lincoln 1994). In an effort to locate this thesis paradigmatically, I will here discuss the two dominant paradigms – positivism and constructivism.

Associated with the ‘hard’ sciences, positivism (also known as the “received view” due to its historical hegemony (Guba and Lincoln 1994, p.106)) is focused on the controlled verification of hypotheses. It adopts an ontology of realism whereby apprehended reality is assumed to exist (Guba and Lincoln 1994) and an epistemology which suggests that independent researchers have the capacity to observe and understand absolute truths by adopting objective positions. The methodologies used in the positivist tradition are experimental whereby hypotheses are tested in controlled environments in which confounding influences are minimised. Data produced are almost always quantitative and, if replicable, are presented as true. In the West, positivism has historically been seen as more rigorous and valid than other paradigms given the historical bias towards reductionism and quantitative methods. Positivism was first promoted in the social sciences as early as the 19th Century, with John Stuart Mill urging “social scientists to emulate their older, ‘harder’ cousins, promising that if his advice were followed, rapid maturation of these fields... would follow” (Guba and Lincoln 1994, p.106).

More recently, however, the supremacy of positivism has been questioned due to a range of criticisms, such as: it strips contextual variables from research; it excludes
meaning and purpose; there is a disjunction between theory and the local context; general data are inapplicable to individual cases; the discovery dimension is excluded from inquiry; facts are theory-laden and value-laden; there exists an under-determination of theory; and there is a lack of recognition of the interactive nature of the inquirer-inquired relationship (Guba and Lincoln 1994). With this, room has been opened for alternative paradigms to emerge, especially in social research.

Metaphysically at least, constructivism is the antithesis of positivism. It adopts an ontology which is relativist, seeing reality as the accumulation of intangible mental constructs that are socially and experientially based. Constructivists shy away from making claims about absolute truth, instead choosing to describe constructs of reality as more or less sophisticated and entirely alterable. Constructivist epistemology involves the interactive creation of findings through an inductive research process, and is usually concerned with the gathering of qualitative data. The methodology employed by constructivists is most often that of hermeneutic techniques, which dialectically compare, contrast and synthesise information to create new knowledge. Where positivists discover knowledge of reality, constructivists construct knowledge of reality.

Between the two end-points of positivism and constructivism lie numerous alternate research paradigms (See Table 2.2). As mentioned, Guba and Lincoln (1994) grouped them under the four headings of positivism, post-positivism, critical theory et al. and constructivism. Under each of these broad headings exists
numerous nuanced paradigms that have emerged via the dialectical process of comparing and contrasting alternatives, noting criticisms, and designing more complex approaches to research ontology, epistemology and methodology where appropriate and/or required.

**Table 2.2. Metaphysics of alternative inquiry paradigms**

<table>
<thead>
<tr>
<th>Item</th>
<th>Positivism</th>
<th>Post-positivism</th>
<th>Critical Theory et al.</th>
<th>Constructivism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ontology</strong></td>
<td>Naïve realism – ‘real’ reality but apprehendable</td>
<td>Critical realism – ‘real’ reality but only imperfectly and probabilistically apprehendable</td>
<td>Historical realism – virtual reality shaped by social, political, cultural, economic, ethnic, and gender values; crystallised over time</td>
<td>Relativism – local and specific constructed realities</td>
</tr>
<tr>
<td><strong>Epistemology</strong></td>
<td>Dualist/objectivist; findings true</td>
<td>Modified dualist/objectivist; critical tradition/community; findings probably true</td>
<td>Transactional/subjectivist; value-mediated findings</td>
<td>Transactional/subjectivist; created findings</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>Experimental/manipulative; verification of hypotheses; chiefly quantitative methods</td>
<td>Modified experimental/manipulative; critical multiplicity; falsification of hypotheses; may include qualitative methods</td>
<td>Dialogic/dialectical</td>
<td>Hermeneutical/dialectical</td>
</tr>
</tbody>
</table>

Adapted from Guba and Lincoln 1994, p.109.

Whether any of these individual paradigms is more effective than any other at informing the investigative process is open for debate and will largely be dependent on both the personal views of individual researchers and the context in which they are being applied. Hacking (1990) points out that, though the ‘reality’ described in social research depends significantly on the reasoning used to investigate and describe it, the validity of these constructions is not necessarily any more or less accurate. That is, they are not arbitrary conceptions of reality but are merely
different versions of the same phenomenon. Consequently, as Sulkunen (2008) describes:

Research instruments in sociology are no more than in other sciences independent of concepts and problematics from which they emerge, and they in turn structure the questions and theoretical concepts that they can be used to deal with. Instead of a choice of methods it is more appropriate to talk about ‘styles of reasoning’..., p.68.

For example:

...an explanation or prediction formulated in probabilistic quantitative terms already implies a great deal about the world in its concepts which, in turn, are integrated with a statistical methodology. The same reality represented in another vocabulary and through a biographical or ethnographic methodology would look different but still be no less true (Sulkunen 2008, p.68).

This thesis has been conducted under the constructivist paradigm. A justification for this is provided below.

Investigating the success factors for Indigenous wildlife-based enterprises requires an understanding of the way the world is (Dana and Dana 2005). Though it is acknowledged, as mentioned previously, that the apprehension of reality will always be imperfect and significantly a reflection of the individual apprehender’s worldview (Burrell and Morgan 1979), this does not mean that the research endeavour is useless. Rather, it requires that the subjectivity inherent in the research is exposed to the reader, who can then interpret the research accordingly. A constructivist paradigm assists in this in that it involves an inductive examination of the nature of the thing in situ (in this case, Indigenous wildlife-based enterprise
in northern Australia) (Dana and Dana 2005). It does not require that the subject of
the investigation is removed from its context, but incorporates the context into the
analysis and the emergent theory. In this sense, though significantly limited,
constructivism allows the researcher to attempt to present findings from an *emic*,
or insider, perspective. The limits of this ‘insider-ness’, and therefore this research,
will be discussed further in Section 2.9.2. Given that a major goal of this applied
research is to better understand the ways in which Indigenous wildlife-based
enterprises have been able to realise success, any findings or recommendations
that are made from these investigations must be contextualised and realistic.
Consequently, to pursue a positivist, or post-positivist, research agenda would
create research outcomes of limited value that are only accurate and ‘true’ in a
controlled experimental domain that is alienated from the reality of the thing.

With this in mind, the most appropriate course of action in approaching the
question ‘*what are the success factors for Indigenous wildlife-based enterprise?*’ is
to adopt a constructivist paradigm. As such, I will now outline in detail the
theoretical approach, the methods chosen to gather data, the methods used to
analyse data, as well as the limitations of this research.

### 2.3. Case Studies

Given the research question and applied nature of the topic being explored, the
methodology of case study analysis provides a suitable investigative tool. A case
study is an empirical investigation of a ‘bounded phenomenon’ whose purpose is
“deep understanding of instances of phenomena” (Mabry 2008, p.214). In this
thesis, the bounded phenomenon is ‘Indigenous wildlife-based enterprise’, and the particular aspect of this phenomenon of concern is ‘factors of success’. The worth of such an investigation has been outlined previously; however, the process of selecting specific cases for investigation and the justification for doing this is yet to be discussed. Further, the capacity for generating insight and theory concerning success factors for Indigenous wildlife-based enterprise from a case study analysis requires explanation.

As the research aims to produce generalisations (albeit limited and considerably qualified) about the factors contributing to success of Indigenous wildlife-base enterprises, it was considered important that more than one case study was produced. The richness of case studies, however, limits the number of examples that can be studied due to the time and resource inputs required for each investigation. This is exacerbated when operating in remote and rural Australia, where travel times to field sites are considerable and costs significant. Further, working across cultures (particularly in the Indigenous Australian context), requires time and effort to be invested in developing rapport and, ideally, trust between the researcher and participants. Given these limitations, it was decided that three case studies were sufficient to provide meaningful comparisons, whilst remaining achievable within the time and resources of the project.

Possibly due to reasons such as the relative novelty of Indigenous wildlife-based enterprise and the adversities faced (IBR 2003; FaHCSIA 2009), there are few examples of successful Indigenous enterprises using native wildlife in northern
Australia. The researcher used contacts with professionals working in the facilitation and/or research of wildlife enterprise development and wildlife management to identify potential case studies. Initial investigations of the cases were made and enquiries into the willingness of those involved with the enterprises to participate in the research assessed. There were only three case studies identified as meeting the requirements, that is:

- Indigenous owned and/or operated;
- Based in northern Australia;
- Uses wildlife for commercial purposes;
- Uses wildlife consumptively; and
- Has been harvesting produce for more than five years.

With each case study, a period of negotiation, consent and planning took place before embarking on the field work component of the research. This was conducted either over the phone or via email with key members of the enterprise, which was followed up by the signing of official consent forms.

The case studies selected for investigation were the *Terminalia ferdinandiana*\(^2\) industry; the Gulin Gulin Buffalo Company; and Djelk Wildlife Enterprises. Indigenous people are the primary stakeholders in each case, and all are focused on using wildlife commercially. However, there are significant differences between cases (See Table 2.3). Further to the differences listed in Table 2.3, the people (and places) involved in the case studies have had unique life experiences and are

\(^2\) Given the range of local names used for the species, and the lack of consensus about the commercial name among industry participants, the scientific name is adopted here. One of the names used commercially, Kakadu Plum, was coined without the permission of either the Traditional Owners of the Kakadu region or those on whose land the plum grows elsewhere.
significantly the product of diverse and divergent histories. The nature of these histories has been partially incorporated into the individual case studies.

These differences are crucial to case study-based knowledge and theory creation in that:

Contexts, circumstances, and their effects on each case may provide a fuller picture of the larger phenomenon as different cases feature different aspects of interest (Mabry 2008, p.217).

As such, the general results of the analysis are triangulated to some extent by the comparison of individual case studies, which aims to enhance the validity, reliability and applicability of the research.

**Table 2.3. Points of difference for selected case studies**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Terminalia ferdinandiana Industry</th>
<th>Gulin Gulin Buffalo Company (Buffalo mustering)</th>
<th>Djelk Wildlife Enterprise (Crocodile egg harvest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Terminalia ferdinandiana</td>
<td>Bulabus bulabas (Asian swamp buffalo)</td>
<td>Crocodylus porosus (Saltwater crocodile)</td>
</tr>
<tr>
<td>Commodity type</td>
<td>Fruit</td>
<td>Live animal</td>
<td>Live animal</td>
</tr>
<tr>
<td>Habitat Type</td>
<td>Predominantly sandy coastal soils</td>
<td>Tropical savanna grasslands; floodplains</td>
<td>Estuaries; rivers; swamps; billabongs</td>
</tr>
<tr>
<td>Native/invasive</td>
<td>Native</td>
<td>Invasive</td>
<td>Native</td>
</tr>
<tr>
<td>Market/s</td>
<td>Nutraceuticals; cosmetics; perfume; food and beverages</td>
<td>Live export (meat) – South-East Asia</td>
<td>Crocodile farms</td>
</tr>
<tr>
<td>Scale</td>
<td>Industry (multiple entrepreneurs)</td>
<td>Enterprise</td>
<td>Enterprise</td>
</tr>
<tr>
<td>Geography</td>
<td>West Kimberley; Darwin</td>
<td>South-Central Arnhem Land</td>
<td>North-Central Arnhem Land</td>
</tr>
<tr>
<td>Languages</td>
<td>Yawuru; Jukin; Ngumbarl; Jabirr Jabirr; Nyul Nyul; Bardi; Larrakia</td>
<td>Rembarrnga; Ngalkbon; Nalakan; Kriol</td>
<td>Burrara; Nakara; Njebanna; Kunbarlang; Gunnartpa; Gurrgoni; Kuninjku; Kune; Dalabon; Rembarrnga</td>
</tr>
</tbody>
</table>

44
The case studies are supported by a common theoretical framework, which has allowed for comparison of both their nature and the factors that have contributed to their success across geographic, social, cultural, economic, and environmental contexts. The Sustainable Livelihoods Framework has been employed to provide this structure.

**2.4. The Sustainable Livelihoods Framework**

The Sustainable Livelihoods Framework is a tool devised to design, implement, analyse and evaluate approaches to sustainable development and livelihood security. Originally formulated to support practitioners in the field of international development, it has since taken on many guises. A brief discussion of its history and function is here presented. A rationale for its use in investigating IWBE is provided in section 2.6.

**2.4.1. What is a livelihood?**

The simplest definition for the word ‘livelihood’ is: the way in which one makes a living. It is the strategies, behaviours and practices people use to maintain life (Delbridge et al. 1997). However, in the interests of reducing ambiguity, the following definition from Ellis (2000, p.10) is employed throughout the thesis:

A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by (an) individual or household.
This definition acknowledges the influence of institutions on peoples’ ability to access assets and use particular strategies in pursuit of livelihoods. This aspect of livelihoods is especially important when discussing Indigenous peoples’ use of natural resources for livelihoods given the complexity and political sensitivity of the issue in northern Australia (Whitehead 2012).

As will be discussed with reference to the sustainable livelihoods approach, the reference to ‘making a living’ in the definition of a livelihood is intentionally vague. This is because ‘making a living’ does not simply equate to earning a cash income, as might be assumed in a western capitalist economic sense. Rather, it accommodates the myriad ways in which people may secure and enhance livelihoods through growth in their assets (financial and otherwise) and access to alternative livelihood options. This is pertinent to the subject of this thesis in that the ways in which Indigenous and non-Indigenous Australians perceive ‘making a living’ are likely to be different (sometimes dramatically so) (Dana 1995; McRae-Williams and Gerritsen 2010). Dana’s (1995) examination of entrepreneurial opportunity recognition among Indigenous peoples in Alaska demonstrates the reality that a sustainable livelihood is defined significantly by the social and cultural context in which it exists. The Sustainable Livelihoods approach is flexible enough to accommodate such differences and is a useful tool to pursue Dana’s (1995) call to support Indigenous entrepreneurs to appropriately achieve their livelihoods aspirations.
2.4.2. History of ‘Sustainable Livelihoods’

The idea of sustainable livelihoods (SL) emerged from a shift in thinking from income-based, top-down approaches to poverty alleviation, towards a focus on alleviating poverty from the perspective of the poor by increasing access to resources, reducing vulnerability and enhancing empowerment (Allison and Ellis 2001; Farrington 2001; Carney 2003). This shift began in the 1970s and played out in the international development arena throughout the 1980s and early 1990s. The first use of the term ‘sustainable livelihoods’ has been attributed to the World Commission on Environment and Development in 1987 in their publication *Food 2000* (Brocklesby and Fisher 2003; Cahn 2006). By the end of the 1990s, SL had become a key tool used by organisations such as the United Nations Development Programme (UNDP), the Food and Agriculture Organization, the International Fund for Agricultural Development, the World Food Programme, the United Kingdom Department for International Development (DFID), Development Alternatives in India, CARE International and Oxfam (Brocklesby and Fisher 2003). It is widely acknowledged that SL thinking began in the 1980s with the work of Robert Chambers (Chambers 1987; Chambers and Conway 1992; Bebbington 1999; DFID 2000). Chambers’ work emphasised the need to capture the “often transient, mobile, dispersed, and diverse” nature of local realities, and combine it with recognition of “local conditions, priorities, and beliefs in approaches to development” (Davies et al. 2008).
2.4.3. The Sustainable Livelihoods Framework

Most SL projects have at their core an adapted version of the DFID (2000) Sustainable Livelihoods Framework (Fig. 2.1). The Sustainable Livelihoods approach has four main components.

Firstly, people’s livelihoods are vulnerable to risk due to shocks, trends over time and seasonal change. This is depicted in the SL Framework as the vulnerability context.

Secondly, within this vulnerability context, people create livelihoods by leveraging available assets, which can broadly be described as “...people, their capabilities and their means of living, including food, income and assets” (Chambers and Conway 1992, p.1). Assets can be described more specifically by classifying them into five ‘asset categories’:

1. *Natural capital*

   In the SL Framework, natural capital refers to the stocks and flows of natural resources that support activities that contribute to livelihoods (DFID 2000).
This can include the natural resources used directly for livelihood activity (e.g. wildlife) or intangible public assets (e.g. nutrient cycling). Whether people derive their livelihoods directly from the use of natural resources (e.g. farming, fishing, etc.) or not, sufficient stocks of natural resources are required to support the livelihoods of every individual. In terms of livelihood development, the capacity to access natural resources is also important.

2. **Physical capital**

There are two kinds of physical capital: infrastructure and producer goods (DFID 2000). Infrastructure refers to the changes to the physical environment that are made to support livelihood development (e.g. buildings, communications technology). Producer goods are tools and equipment that people use in their livelihood activities (e.g. vehicles, computers, etc.).

3. **Financial capital**

Financial capital is the financial resources accessed by people to create livelihoods (DFID 2000). Financial capital has numerous forms, which can include savings, credit, cash, or regular in-flows of money (e.g. remittances, pensions, royalties, etc.) and can be used to access other types of asset or as a source of livelihood generation itself.

4. **Human capital**

Human capital refers to the skills, knowledge and health embodied by people that contributes to their ability to engage in livelihood activities through labour (DFID 2000). Lack of education, experience and poor quality health are cited widely as impediments to development. Human capital is a
key ingredient in the creation of sustainable livelihoods, but only has value when combined with other capital assets.

5. Social capital

Social capital is complex and used by different people to mean different things (DFID 2000). The definition used here is that of Woolcock and Narayan (2000, p.226): “...social capital refers to the norms and networks that enable people to act collectively”. This definition incorporates both bonding and bridging social capital. Bonding social capital refers to the relationships and behaviours that are generated and shared amongst a relatively homogenous group of individuals (Narayan 1999; Putnam 2000). Broadening the horizon, bridging social capital refers to the social linkages created between groups (Narayan 1999; Putnam 2000).

These assets are depicted as an ‘asset pentagon’ in the SL Framework, which is used to build an overall picture of the relative abundance or scarcity of the various assets.

The third component of the SL Framework is the livelihood strategies created by leveraging available assets. These strategies describe the way people make decisions and choices regarding use of their available assets to achieve desired or necessary outcomes. Put simply, livelihood strategies are the ways in which people choose to make a living.

The fourth part of the SL Framework describes the policies, institutions and processes that act upon people’s livelihoods and the vulnerability context in which
they live. It is here that interventions are made by governments, NGOs and other stakeholders in an effort to improve livelihoods. For example, these interventions may aim to increase people’s access to a particular asset through legislative or policy reform, or government may choose to subsidise an agricultural industry in times of drought, thus minimising the effects of a shock in the vulnerability context.

2.4.4. Sustainable Livelihoods and Sustainability

The concept of sustainability has been important in the SL discourse. The definition used in the SL literature for sustainability refers to the ability of livelihoods to be resilient to shocks and stresses, and to maintain resources, assets and capabilities so as to provide secure livelihoods over the long-term (Chambers and Conway 1992). This reference to sustainability and resilience acknowledges the need to include environmental concerns are represented in the framework. After all, a livelihood that is based on the destruction of part of one’s asset-base (i.e. natural capital) can be sustained only over the short-term. However, SL goes further by incorporating concepts of social and economic sustainability into its definition. As Cahn (2006) describes, sustainability in this sense refers to the ability of people to access and use social, economic and environmental resources (tangible and intangible) over the long term:

Livelihoods are considered to be sustainable when they are resilient to external shocks and stresses, are not dependant on external help (unless the help is economically and institutionally sustainable), maintain or enhance the long term productivity of natural resources, capabilities, and other assets, do not undermine the livelihoods of, or compromise the livelihood options open to others (Cahn 2006, p.38).
2.4.5. A Flexible Tool, With Many Applications

DFID is not the only major international aid organisation to have deployed SL thinking and frameworks. Cahn (2006) provides an overview and comparison of the various frameworks in existence wherein she identifies the Institute for Development Studies (IDS), CARE, Oxfam, and the United Nations Development Programme (UNDP) as also having their own versions of the framework. As mentioned, though these frameworks make amendments and additions, they are essentially modelled on the original framework designed by DFID (2000). Cahn (2006) notes that it is indeed remarkable how similar the various versions of SL frameworks are in that their core elements are essentially the same.

DFID (2000) highlights the fact that SL is not a “silver bullet” intended to operate entirely independently of other approaches to development. This is strongly supported by Farrington (2001), Hinshelwood (2003), Carney (2003) and Cahn (2006). Rather, SL should be seen as a tool to complement other approaches, and to bring a healthy dose of pro-poor realism to development activities. Davies et al. (2008) suggest that it is actually vital to complement SL with another approach or tool for analysis or for implementation, emphasising that local power relations, asset ownership/use contestations, and unique value-sets and cultural settings will always demand the use of multiple tools in an effort to best understand, grasp and work on matters of development. To remedy this, this research is grounded in the local contexts of the research participants and gives voices to their opinions, beliefs and analyses (see section 2.8).
Carney (2003) notes that, as with any tool, the rigid application of the SL Framework will yield mediocre results. The SL Framework should not be seen as a simple template to be applied, but should be modified and adapted to suit specific contexts and tailored to maximise outcomes for the unique communities it aims to serve. This need to adapt has been accounted for within the SL Framework itself in that it is intentionally broad and (by itself) relatively generalised.

2.4.6. The Use of Sustainable Livelihoods for Indigenous Livelihood Research in Australia

Though SL has been used sparingly in Australia, the framework has been applied in the analysis of livelihoods for Indigenous people in the central desert (Moran et al. 2007; Davies et al. 2008; Davies and Maru 2010; Davies et al. 2010; LaFlamme 2010). SL was introduced to the remote Australian Indigenous context by Fisher (2002) who argued that support agencies paid insufficient attention to the aspirations of remote communities and did not significantly take into account sustainability issues within these communities. As such, SL could provide some perspective and improve understanding of the desires and ambitions of these communities.

Stafford-Smith et al. (2008) used SL thinking in the remote Indigenous development debate. They used the five capital assets model to analyse sustainable livelihoods, with an added focus on non-market values and incentives that tend to be important.
for remote communities. This research suggested that top-down solutions to livelihoods problems in central Australia will be largely ineffectual as they cannot fully grasp the livelihood reality of individual community members. Stafford-Smith et al. (2008) were able to identify that central desert communities, in comparison to other contexts in which SL has been applied, are:

- smaller and more homogenous with respect to underlying livelihoods
- have a greater homogeneity of aspirations for services
- place more emphasis on social capital and cultural services as a source of livelihood
- and rely heavily on inter-community exchange.

Moran et al. (2007) used SL to assess (and re-define) the viability of a remote Aboriginal settlement and to identify potential livelihood options. However, Moran et al. (2007) suggested that the usefulness of the SL Framework in Australia was limited in its ability to institute an assets-based approach to development and that other aspects of the framework were more relevant to the developing world context.

Davies et al. (2008) provides an overview of three separate case studies that were investigated and analysed using the SL Framework in different locations and at different scales in desert Aboriginal settlements. Davies et al. (2008) suggest that SL is useful in the Australian context as it employs a broad definition of wealth. Bureaucracies in Australia have traditionally focused on wealth being composed of assets from the financial or material categories. This tends to understate the assets
available to communities and undermines claims of viability (Davies et al. 2008). The findings from this research resonate quite closely with the case studies examined in this thesis, particularly with regards to the bush food livelihood strategy case.

LaFlamme (2010) provides a bioregional adaptation of the SL Framework to suit the desert Indigenous Australian context. Known as the Desert Livelihood Framework (DLF), it has been designed as a planning tool for desert Indigenous people to identify the context-specific elements that must be present to allow livelihoods to emerge. Further, the DLF identifies six practices that are key to ensuring sustainability in the desert:

- Knowing your land
- Living within limits
- Communicating meaning
- Practising holistically
- Relating equitably
- Caring for biodiversity (LaFlamme 2010, p.26).

Davies and Maru (2010) used the SL Framework to investigate the circumstances, aspirations and wellbeing of both Aboriginal and non-Aboriginal people in the Anmatjere region of the Northern Territory. They demonstrate that the livelihoods approach can be used to identify the opportunities available to, and constraints on, people to pursue improved wellbeing and sustainability in the region. Davies and Maru (2010) make a related observation; a recent trend has emerged in Australia
that sees the concept of ‘livelihoods’ as distinctly Aboriginal. However, the SL approach is not uniquely applicable to Indigenous people, but can provide a useful guide to sustainable human development for all Australians (Davies and Maru 2010).

### 2.5. Justification for the Use of the Sustainable Livelihoods Framework as a Conceptual Framework

Given the intent of this thesis (i.e. to better understand IWBEs in an effort to further inform policy and development programmes, and share factors for success among prospective Indigenous entrepreneurs) the SL framework seemed a sensible tool to structure and analyse successful IWBEs in northern Australia. This section will describe the ways in which the SL framework supports the goal of the thesis, as well as discuss some of the issues (theoretical and technical) in its application.

The SL Framework has been used in practice in three ways: as a goal; as a set of principles; and as an analytical tool (Cahn 2006; Toner and Franks 2006). As a goal, the SL Framework is concerned with realising a movement away from poverty, or towards wellbeing, and sustainability. In this sense “a ‘sustainable livelihood’ can be used to refer to an ideal state to be achieved through development intervention” (Cahn 2006). This application has been most common in the international development field and was the original application intended for the framework.
As a set of principles, the SL Framework guides practitioners in their design and implementation of development projects. These principles include: a focus on the poor; participation; partnership; holism; policy and institutional linkages; building on strengths; flexibility; accountability and responsiveness; and sustainability (Cahn 2006; Toner and Franks 2006). The SL Framework achieves this through:

- shifting the focus from outputs to people;
- demanding exploration of poor people’s own priorities;
- forcing the questioning of assumptions and consideration of the broader context, particularly macro–micro links; and
- demanding and facilitating cross-sectoral analysis (DFID 2000).

As an analytical tool, the SL Framework informs both theory and practice, and assists in developing conceptual frameworks that consequently allow diverse stakeholders to discuss and analyse specific examples from common points of reference (Cahn 2006). This can assist in identifying linkages, constraints, opportunities, ways to improve policy, institutions, processes, and ways to reduce vulnerability (Cahn 2006). It links the macro- and micro-, thus allowing for better informed and more holistic policy processes in an effort to provide an ‘enabling’ environment for local livelihood development. It can also be used to review and evaluate projects upon completion, so as to assess the contribution of the project and to better inform the design and implementation of future projects. Finally, as an analytical tool, the SL Framework can enhance the ability of researchers to ‘map’ important livelihood factors, to structure research projects and help choose methodologies (Cahn 2006).
For this research project, the SL Framework is used as an analytical tool in that it provides a framework upon which to build the case studies. While this research is somewhat novel in using the SL Framework to investigate enterprise success factors, Cahn (2006) utilised a similar approach to investigate the relationship between culture and enterprise in Samoa. The case studies for Cahn’s research involved fine mat weaving and coconut oil production micro-enterprises. Though employed slightly differently from this research in that the methodologies used were those of phenomenology and hermeneutics, the purpose of using the SL Framework was similar and was successful in providing useable results.

SL has at its core an aim to be holistic and people-centred in its approach to development. DFID (2000) describes SL as “broad and encompassing”, with six specific aims:

- improved access to high-quality education, information, technologies and training and better nutrition and health;
- a more supportive and cohesive social environment;
- more secure access to, and better management of, natural resources;
- better access to basic and facilitating infrastructure;
- more secure access to financial resources; and
- a policy and institutional environment that supports multiple livelihood strategies and promotes equitable access to competitive markets for all (DFID 2000).
SL has been designed to have a focus on building upon the inherent strengths of communities, as opposed to identifying and remedying needs (Bebbington 1999; DFID 2000). It begins with the assumption that poor people also have assets, are decision-makers, and are able to access local informal institutions and processes (Bebbington 1999; Farrington 2001). This does not mean that weaknesses or needs are ignored, but that the strengths of each individual or group of individuals within a community are recognised and built upon. These strengths can be derived from such sources as social networks, physical resources, infrastructure, or many other factors (DFID 2000). SL also widens the scope of development projects by placing more emphasis on social capital development and facilitation of “asset-seeking behaviour” (DFID 2000).

This focus on the inherent strengths of communities does not limit SL to the examination of factors internal to communities. SL also takes into account the various factors outside the control of communities that influence their ability to engage in development (e.g. legislation, policy, local rules, cultural norms, climate change, market fluctuations, etc.) (Davies et al. 2008). SL achieves this by taking a systems perspective – that is, by providing a framework to analyse and understand the dynamic nature of people’s livelihoods and the factors that influence them.

**2.5.1. People-centred Approach**

The use of the SL framework ensured that the research was focused on the perspectives of local people. As discussed in Chapter One, the starting point of this
research is that some Indigenous people in northern Australia have chosen IWBEs as a livelihood strategy and, to varying degrees, have been successful. It is these aspirations that are at the centre of this investigation. The earliest use of SL thinking in Australia was indeed primarily concerned with situating the aspirations of local people at the core of livelihood development and practice in Indigenous Australia (Fisher 2002).

It is important that the factors that have contributed to the relative success of some Indigenous IWBE proponents are identified and understood to inform Indigenous entrepreneurs, policy makers and development practitioners. It is proposed that the best way to achieve this is by consulting those involved in the production of this success and understanding the local context in which this phenomenon exists.

The SL framework is a good tool for structuring such an investigation as it is “inherently responsive to people’s own interpretation of and priorities for their livelihoods” (Carney 1998, p.4). Given the design of this research as bottom-up, inductive and applied in nature, the SL framework was particularly useful in providing structure, yet allowing space for, local perspectives.

Further, as will be discussed in Chapter 7, a subjective definition of success was used that meant Indigenous informants were able to identify the ways in which they measured their success/failure. The SL approach allows room for this to happen and indeed is enhanced by this conception of success.
2.5.2. It is a positive approach

As mentioned, this thesis intentionally adopts a bias towards analysing factors of success among a sample of successful enterprises. The reason for this is two-fold: 1. significant attention has been paid to enterprise failure among Indigenous Australians and has provided little practical advice; 2. IWBEs are seen as occupying a propitious niche that acknowledges and activates local capital and capabilities to realise livelihood income. As such, there is significant congruence between the goal of the agenda of this research and the goal of the SL approach:

The (SL) approach is positive in that it identifies what people have and how these assets can be used or enhanced rather than focusing on impediments or constraints in terms of what people do not have or their needs (Cahn 2006, p.37).

Therefore, as a framework for analysis, SL enhances the ability of this research to support Indigenous people pursuing livelihood incomes through IWBEs by acknowledging their assets and capabilities, understanding the context in which they are being used, and positioning this within the broader institutional and socio-cultural context. The SL approach has been designed to assist in these types of analyses without stifling local perspectives or creating top-down and bureaucratic policies and practices for development.

2.5.3. Recognises the complexity of remote Indigenous context

The SL framework has been designed in a way that not only acknowledges the complexity of remote Indigenous Australian contexts, but actually incorporates this complexity into its analysis. For example, the role of the customary sector of the
Indigenous (hybrid) economy (Altman 2001a; 2005b; 2007; 2010) is accommodated by the SL framework which understands traditional hunting, fishing and gathering to be other strategies deployed secure livelihoods. Likewise, welfare and work for the dole programmes (like CDEP) are seen as providing valuable livelihood incomes to individuals that both compete with and/or complement other local livelihood strategies. By adopting the perspective of the people concerned, SL is able to describe and analyse local livelihoods within the complex social, cultural, environmental and institutional contexts in which they exist, without overlaying etic norms and values. Further, it also acknowledges potential vulnerabilities (such as a change in welfare funding, or market prices) that could have adverse effects on peoples’ livelihoods. In this sense, unlike other frameworks, SL allows space for complexity and makes few assumptions about local peoples’ realities.

Another important point linked to complexity is that, although Indigenous people are likely to pursue livelihoods in a different way to non-Indigenous people (Dana 1995; Anderson et al. 2004; Foley 2006; 2008; Banerjee and Tedmanson 2010; Davies and Maru 2010; McRae-Williams and Gerritsen 2010; Peredo and McLean 2010; Holcombe et al. 2011; Bargh 2012; Giovannini 2012; Pengelly and Davidson-Hunt 2012), the SL framework does not see Indigenous livelihoods as a ‘special case’. This has been the tendency of other approaches to understanding Indigenous livelihoods (e.g. the hybrid economy (2005b; 2007), which has the effect of segregating policies and practices concerning Indigenous Australians. In contrast, SL suggests that, due to their generally different social, cultural, environmental and institutional contexts, Indigenous Australians living in remote parts of the
Indigenous estate are more likely to choose livelihood strategies that differ to non-Indigenous Australians. This means that the decisions Indigenous people make about livelihoods, and the consequent actions these decisions lead to, are seen as ‘rational’ decisions from the perspectives of the proponent. Using the SL approach has the great advantages of ensuring that local perspectives are recognised, that context is considered, that difference is seen as legitimate, and that the local can be linked to the macro in a contextual and institutional sense.

2.5.4. Not just agriculture.

SL can also be seen as an approach to Indigenous development in remote parts of Australia that is not confined to historically dominant ways of thinking about rural development that place emphasis on agriculture (Cahn 2006). It acknowledges that Indigenous people think about, and do, livelihood activities in a different way to non-Indigenous Australians (Altman 1987; 2005b; 2010; McRae-Williams and Gerritsen 2010). This is not to suggest that all Indigenous people in northern Australia see agricultural and pastoral development as inappropriate (Cowlishaw 1999; Whitehead 2012). Rather, adopting an SL approach allows for the emergence and co-existence of alternative livelihood opportunities like IWBEs and embraces the diversity of livelihood aspirations that Indigenous people are likely to have. Therefore, specific to the use of the framework as an analytical tool in this thesis, SL does not judge the worth of IWBE from a culturally and historically biased position that would inevitably undervalue the assets available to Indigenous people.
interested in this form of entrepreneurship. Rather, it allows for in situ description and analysis of IWBEs in terms of their function, potential and worth.

2.5.5. IWBEs as means, not ends

The SL framework acknowledges that IWBEs are simply one way of achieving a livelihood, among many others theoretically available to Indigenous Australians living on the Indigenous estate. This acknowledges that IWBEs are simply one livelihood option available among several.

Further, as will be discussed in greater depth in Chapter 7 with regards to conceptions of success, the goal of any enterprise is to improve the livelihoods and wellbeing of the proponents and their families, especially in the case of Indigenous peoples (Giovannini 2012). The definition of a livelihood as a way of making a living has been discussed previously, but the concept of wellbeing has not and here requires discussion. Wellbeing inclusively describes all of the aspects of human life, including the satisfaction of material needs, enjoyment of freedom, health, security and social capital, which contribute directly or indirectly to physical, social, psychological and spiritual satisfaction (Alkire 2002; Greiner et al. 2005a; 2005b). In early versions of the SL Framework, wellbeing was included amongst the many livelihood outcomes one could achieve (DFID 2000). However, it is in fact wellbeing that is the umbrella that captures livelihood outcomes created through livelihood activities, plus the other myriad achievements of human endeavour.
Consequently, under SL thinking, individual livelihood activities are not seen as ends in themselves. They are understood to be means to ends and, as such, are woven into the social and cultural institutions of the place in which they operate and are ultimately intended to lead to enhanced wellbeing for individuals, families and communities.

2.5.6. Usefulness as an analytical tool

In summary, the SL framework is useful as an analytical tool for numerous reasons. Firstly, as it is a way of thinking and analytical structure that shifts the mind of the researcher (and practitioner) into the complex reality of Indigenous people living in remote northern Australia by: forcing attention to be paid to the social, cultural, environmental, financial and human assets of a place; how they are mobilised in pursuit of livelihoods; the ways in which those assets/strategies are vulnerable; and how institutions interact with local people and their livelihoods (Scoones 1998; Farrington et al. 1999; DFID 1999; Cahn 2006). Further, as will be discussed later in the chapter with regards to ethics in research, SL provides a set of principles to follow that are pro-poor, holistic and flexible enough to accommodate local peoples’ values.

Second, using the SL framework allows for common points of reference for discussion and analysis of case studies or livelihoods. This comparison can be between different case studies (for example, to compare and contrast strengths and weaknesses) or between multiple stakeholders discussing a single case. If those
involved in the analysis understand SL, then a common language and perspective can be used in discussions and planning for interventions.

Third, related closely to the previous point, the SL framework is sufficiently general to allow for integration across research disciplines. This is certainly an important strength of SL with specific regards to analysing IWBEs, which requires knowledge and expertise from diverse fields such as natural resource management, entrepreneurship, economics, geography, sociology, anthropology and politics. The SL framework is able to provide a suitable tool to allow expertise from each of these fields to be fed into the analysis of IWBEs in a synthesising (as opposed to diffusing) manner.

Fourth, an SL analysis allows the opportunity to identify and discuss livelihood constraints and opportunities, and subsequent ways to improve policy, institutions and processes in terms of livelihood development. It also offers researchers and IWBE practitioners alike an opportunity to think about, identify and mitigate points of vulnerability. Through such an analysis a set of enabling actions can be identified as options for people to enhance and secure their livelihood activities both locally and institutionally (Carney 1998).

Finally, the SL framework serves a pragmatic purpose in that it provides structure to research projects and, through this, guides the researcher in the selection of appropriate research methods (Brock 2000). Further, as discussed later in this
chapter, SL can assist in analysing data, particularly by outlining key words and phrases for coding qualitative data (Perez Izadi and Cahn 2006).

2.6. A Grounded Approach

Given the multidisciplinary nature and complexity of the research topic, as well as the small amount of academic research on Indigenous wildlife-based enterprise, a grounded theory approach, in concert with case study analysis, was deemed most appropriate for identifying the success factors for Indigenous wildlife-based enterprise. Beginning with Glaser and Strauss (1967), grounded theory has been modified and adapted to suit a diverse range of research agendas and topics (Charmaz 2006). There is no general consensus on what grounded theory is exactly, other than that it describes a specific type of strategy for conducting research and analysing data. As Charmaz (2006, p.2) explains:

> Stated simply, grounded theory methods consist of systematic, yet flexible guidelines for collecting and analysing qualitative data to construct theories ‘grounded’ in the data themselves. The guidelines offer a set of general principles and heuristic devices rather than formulaic rules... Thus, data form the foundation of our theory and our analysis of the data generates the concepts we construct.

Grounded theory studies do not begin with a hypothesis to be tested, but seek to generate theory inductively. To achieve this, researchers are required to enter the field on numerous occasions to gather data. Each field trip is then analysed and interpreted using available literature. This analysis then informs the researcher’s actions in subsequent field trips. This process takes place until the researcher begins to realise diminished returns from research effort (Robson 2002).
As mentioned previously, this research was undertaken within the constructivist paradigm. Though not explicitly defined in the early writings of Glaser and Strauss, the initial trend was for grounded theorists to be positivistic in their approach (Mills et al. 2006). More recently, primarily through the work of Kathy Charmaz (though also including Stratton 1997; Norton 1999; Madill et al. 2000; Jones 2002), research practitioners have made a strong case for what has been called ‘constructivist grounded theory’ (Charmaz 2006). This refers to the application of grounded theory in a manner that does not require the adoption of a positivist ontology. Charmaz (2006, p.9) argues that this is possible as the guidelines for practice set out in grounded theory are essentially neutral:

Grounded theory guidelines describe the steps of the research process and provide a path through it. Researchers can adopt and adapt them to conduct diverse studies. How researchers use these guidelines is not neutral; nor are the assumptions they bring to their research and enact during the process.

As a considerable amount of explanation of the approach, both ontologic and epistemic, has been provided already, the way in which the grounded theory guidelines were applied to the research project will be discussed, as will the limitations of this application. An overview of the field work conducted and the methods used to gather and analyse data will be provided within this discussion as they have been heavily influenced and guided by grounded theory.

The philosophical position of the SL framework is directly in line with a constructivist exploration of the success factors for IWBE. The SL framework has
been built into this research project from its inception and was used in design of the instrument guiding the semi-structured interviews. The thematic coding of interviews, field notes and other literature partially used the various attributes of the framework, and the results chapters (and more subtly the thesis itself) have been written around a structure derived from the SL framework. Though the predetermined identification of SL categories for coding of the data to inform case studies is not purely inductive, the nature and specific use of the framework is such that it does not significantly influence the inductive and grounded process.

2.7. Research Methods

For this research, 9 field trips were made, totalling 55 days in the field, and involving 32 research participants. Research participants were employees of the enterprises (mostly current, but some former), government employees tasked with promoting or supporting Indigenous wildlife-based enterprises, Indigenous Rangers, business-people from relevant industries, and other key stakeholders where appropriate.³

The field work was conducted during times when research participants were active – i.e. when wildlife harvests were underway, or stakeholders were engaged in workshops or meetings about their activities, or were engaged in related land management activities. This had many benefits, such as enhancing the capacity of the researcher to conduct participant observation through working alongside

³ The specific details of the methods used for individual case studies will be discussed in each of the results chapters.
people, socialising with them around work, and demonstrating a genuine interest in what they did.

The methods employed to gather data were semi-structured interviews, participant observation and literature review. As there are numerous ways to carry out each of these methods, I will describe the way I implemented them. I will also discuss the triangulation techniques built into the research and the role that member-checking has played.

2.7.1. Participant Observation

Due to factors such as cultural barriers and the fact that many of the behaviours or activities may not have been considered or fully understood by all or some of the research participants (Indigenous and non-Indigenous alike), participatory observation was used to construct knowledge about the nature of the enterprises/industry (Morse and Richards 2002). Here the term ‘observation’ is used to describe the process by which phenomena are noted for scientific purposes (Angrosino 2007). The type of observation conducted in this research varied slightly between cases along the observer-participant continuum, but was predominantly of the observer-as-participant kind (See: Gold 1958 and Angrosino 2007 for a description of observational typologies). That is to say, the majority of the researcher’s interaction with research participants was in the role of observer and, one must assume, was treated as such in the first instance. Whilst it may be true that the researcher was at times a participant in the working lives of the research participants, and inasmuch undoubtedly had an influence on participant responses
as well as their own observations, this participation was limited due to factors such as possible length of field work, the cross-cultural nature of the research, and the limited familiarity between both parties. However, as will be discussed in more depth within each of the case studies, at times the researcher did indeed move towards the participant-as-observer role. This occurred where tasks associated with the informants’ work, such as putting up fences, driving vehicles, harvesting crocodile eggs, field dressing ‘bullocky’, or engaging in workshops were performed, whilst maintaining a keen observational eye with regards to research questions. Further, as will be discussed in each of the case studies, various relationships were formed with the participant groups in terms of membership and interactions. For the most part, the researcher was a peripheral member of the group. However, on occasion this line was crossed, usually intentionally as a strategy to build rapport, whereby the researcher would allow himself to periodically become an active member of the group. This involved removing all thought and purpose with regards to research activity and merely offering labour to the enterprise.

This variation in the nature of observations typifies the fact that there are myriad ways in which to purposively watch and listen to research participants (Morse and Richards 2002). It is necessarily part of the ongoing process of negotiating permission from research participants, developing rapport, as well as ensuring that observations and emergent research issues do not stray too far from the overarching field of research and, in-so-doing, become superfluous to achieving the research aims.
Similarly, related to the need to match method with context and purpose, there is no universally accepted approach or technique for recording observational field notes (Angrosino 2007). The method chosen here for constructing field notes was that of free-form narrative, whereby observations were made and written-up on a daily basis. This technique seems to fit the traditional conception of field note production whereby short periods of observation are followed by recording and reflection (Morse and Richards 2002).

Bias will inevitably creep into researchers’ observations. Though early approaches to observational research suggested that the observer aim for objectivity, it is generally accepted that to attempt this is largely futile in that, to one degree or another, the researcher will interact with and influence the research participants (Angrosino 2007). It is generally understood by contemporary researchers that the covert research tactic of not informing research subjects that they are being observed is highly unethical and undesirable (Angrosino 2007). As such, participants’ awareness of the presence of the researcher almost certainly caused them to modify their behaviour to some extent. Equally, the ideological predisposition of the researcher in combination with their requisite focus on the research question being pursued will narrow the data recorded and the research value and relevance assigned to the observations. As Minichiello (1995, p.98) explains:

...the researcher’s definition of the situation is open to the vagaries of the informant’s interpretation and presentation of reality... they are deprived of the
ethnographic context which would give a richer understanding of the informant’s perspective.

However, in comparison to interviewing, observation can be seen to mitigate some bias by embracing a certain naturalness through minimising interference with the activities of the participants (Angrosino 2007). Though there was an overarching research question to be answered, the process by which answers to this question were reached was largely responsive to the data gathered during field work. This flexibility minimises bias in that the observer is not narrowly focused on answering a single, predetermined and fixed research question, but is open to the eventualities of the research process (Angrosino 2007).

A benefit of using observation in research is that the ‘subject’ is being ‘researched’ in somewhat natural conditions. This contrasts with the self-contained experiments conducted in laboratory or clinical conditions, whereby the subject is largely alienated from reality. Field observations allow for research on life as it is lived in the natural setting (Angrosino 2007).

2.7.2. Interviews

Though some activities of the participant groups can be observed in situ, developing case studies requires consideration of both context and history which cannot be captured through direct observation. Though this context can be partially pieced together through the literature, there will remain significant gaps.
Interviews provide access to this information through directed and purposeful discussion.

For this research, semi-structured interview techniques were used. This type of interviewing is used to access and explore issues that cannot be observed by the researcher, as well as giving voice to the research participants. A questionnaire was developed to provide some structure for the interviews. It was based on the Sustainable Livelihoods Framework and was designed to elicit information to be used to construct case studies and to provide insight into success factors. However, this questionnaire was only used in a loose manner to focus the interviews on the appropriate topics. It was modified to suit specific research participants in terms of relevance and their access to information.

Good rapport between researcher and the subject group is vitally important for effective interviewing (Minichiello 1995). To develop this rapport, the researcher visited field sites a number of times; the first trips being merely to establish relationships and to build trust and confidence. These ‘scouting’ trips were followed up by more focused field trips, which involved individual and group interviews with participants. Most participants requested group interviews (i.e. two or more participants). This is a particularly useful aspect of working with semi-structured/unstructured interviews as compared to structured interviews/surveys, in that it allows for a more intimate, ethnographically contextualised and realistic representation of situations, people and/or settings, with the participants eliciting
information from each other or in response to each other’s responses to questions, as well as responding directly to the interviewer (Minichiello 1995).

2.7.3. Literature Review

The field-based research has been supported by a comprehensive review of relevant literature, both for the thesis as a whole and each of the cases individually. With regards to developing case studies, the review of pertinent literature was intentionally delayed until after the initial field visit had been made. This allowed for minimal influence from the body of literature concerning the case and relatively fresh and uniformed initial contact with the case. After gaining some insight into the nature of the case, relevant literature was identified and investigated both to ground the case study and to provide otherwise unobtainable depth and insight into the case. Subsequent field trips were enhanced by this literature review, which narrowed the focus towards identifying success factors for the enterprises.

2.7.4. Triangulation

To ensure rigour, there were a number of methods used to triangulate the interviews and observations. Firstly, using both interviews and observations to gather field data allowed findings to be compared and healthy scepticism generated where necessary. Secondly, a broad range of stakeholders was consulted in each of the case studies, with the goal of incorporating diverse viewpoints, opinions and beliefs on the research topic. Thirdly, as mentioned previously, the case studies themselves were diverse, thus offering a range of models from which to identify possible success factors for wildlife-based enterprise generally. Finally,
the case studies went through a process of participant validation, whereby members of the participant groups were encouraged to provide feedback on research results.

2.7.5. Analysis

Interview transcripts and field notes were transcribed and transposed into a digital word processing format and analysed using simple coding techniques. As Charmaz (2006, p.43) describes:

Coding means naming segments of data with a label that simultaneously categorises, summarises, and accounts for each piece of data. Coding is the first step in moving beyond concrete statements in the data to making analytic interpretations. We aim to make an interpretative rendering that begins with coding and illuminates studied life.

Topics of interest were coded manually within the transcribed and transposed texts, from which a number of identifiable themes emerged.

Though in pure grounded theory studies there is no pre-determination of the topics which should be coded, part of the analysis for this research involved data coding using the categories assigned by the various components of the Sustainable Livelihoods Framework. Interviews and field notes were examined for references to asset categories and vulnerability context primarily, with other components of the framework noted where significant. This coding occurred as the first treatment of the texts and was designed to create information to be used in the construction of the case studies. As will be discussed, when used as an analytical tool, the SL Framework is not significantly prescriptive, but is useful as a structure for
organising the case studies in a manner that provides a holistic overview. It is thus argued that, though not purely inductive, the use of SL asset categories as coding categories for this part of the analysis does not significantly deviate from the grounded theory approach. This first treatment was used merely to facilitate a descriptive device (i.e. case studies) rather than to create theory, and provides structure and common units of analysis for the representational dimension of the research.

Following the first SL coding exercise, documents were analysed a second time to explore the factors of success for each enterprise. This second level of coding was conducted in line with standard grounded theory coding techniques (Charmaz 2006), whereby the codes and themes emerged entirely from the data. Codes were grouped into themes that became the success factors identified in each of the individual case studies.

A third level of analysis took place which involved grouping of the various success factors identified in each of the case studies into clusters of shared theoretical bases and/or contexts. These clusters were then examined theoretically to produce new concepts about the phenomenon of Indigenous wildlife-based enterprise and to contribute to the theoretical underpinnings of their success.

The analytical outputs of this research then can be seen at a number of levels. Firstly, case studies have been completed that describe in detail examples of successful Indigenous wildlife-based enterprises. Secondly, emerging largely from
the interview transcripts and field notes, factors of success were identified for each of the case studies. Finally, these success factors were clustered into naturally occurring themes and analysed with regards to their shared theoretical bases. From this final analysis, I was able to develop new knowledge to help explain and contribute to the understanding of the factors of success for Indigenous wildlife-based enterprise in northern Australia.

The results of this thesis should not be seen as a precise representation of the views of all Indigenous Australians in regards to IWBEs. As with any cultural/racial group, diverse views will exist on IWBEs (and any other topic). As such, and given the applied orientation of this thesis, priority has been given to those Indigenous people who have demonstrated interest in IWBEs through their practice and are therefore most likely to be knowledgeable on the topic. Indeed, Indigenous research participants in all three case studies investigated suggested that, though most are aware of their existence, very few people in their community know exactly what it is they do. This is because their work mostly takes place in the bush and, as such, remains largely invisible to other local people. Therefore, as with non-Indigenous Australians, there is little to be gained from asking the opinion of people with little knowledge of IWBEs. The assumption that the entire ‘community’ needs to be consulted on every activity that takes place within the local space is based on the conception of Indigenous people as a homogenous group. Rather, as is common in entrepreneurial studies (e.g. Dana and Hipango Jr 2011), this study is designed to explore the phenomenon of IWBE from the perspective of Indigenous
entrepreneurs, and those associated with Indigenous entrepreneurship, using wild plants and animals commercially and consumptively, in northern Australia.

2.8. Research Ethics

2.8.1. The Mechanics of Ethics Approval

Prior to conducting fieldwork, I gained approval from the School for Environmental Research (now Research Institute for the Environment and Livelihoods), the Office of Research and Innovation, and the Human Research Ethics Committee at Charles Darwin University.

Ethics approval for the project involved a rigorous assessment of the project by the Human Research Ethics Committee. Submissions to the Committee are made using the National Ethics Application Form (www.neaf.gov.au). Ethics approval was obtained from this Committee prior to commencing any fieldwork. Additionally, on completion of the fieldwork phase of the project, the Human Research Ethics Committee signed-off on the project, thus acknowledging that the research conducted had occurred in an appropriate manner.

A written project proposal was assessed by the Office of Research and Innovation. The proposal was endorsed as being sufficiently well designed, with adequate resourcing, appropriate timelines, and acceptably low risk to all participants.
An oral presentation was given to senior staff from the School for Environmental Research. Again, the proposal was endorsed as being sufficiently well designed, with adequate resourcing, appropriate timelines, and acceptably low risk to all participants.

2.8.2. The Researcher, the Research and the Researched

Obtaining formal approvals however, is not necessarily indicative of the actual ethics embodied in research. Indeed, an ethics application or project proposal may be a poor representation of reality ‘in the field’. Research in cross-cultural settings carries with it considerable risk that disempowered and/or disadvantaged groups may be exploited or damaged due to historical, political, social and cultural agendas that are enacted through the research itself (Smith 1999; Freimuth et al. 2001; Howitt and Stevens 2005; Birman 2005; Smith 2005; Barata et al. 2006; Louis 2007). As such, in an effort to provide the reader with sufficient information to judge the quality of this work in terms of ethics, I will here attempt to position myself in relation to the research project, research participants and fieldwork conducted.

To do so I recount the personal journey that led to me arriving in northern Australia to conduct research for this thesis. As mentioned earlier, I am not Indigenous. My ancestors are primarily of English, German and Italian descent and belong to the Australian historical types of ‘migrant’ and ‘colonist’. Like many Australian families who have occupied parts of the continent for several generations, I also have some Indigenous familial heritage; my great-great-grandmother was a Torres Strait
Islander. However, this connection to people and place had very little influence on my family’s identity. I know no family members who have ever been to Torres Strait; we remain firmly European, working class and culturally Christian. From this background, I have no authority to represent an Indigenous Australian view. This background has been fundamental to shaping my research approach and practice.

However, growing up in coastal New South Wales meant that from a young age I enjoyed friendships with the local Koori community – Worimi people from Tobwabba Mission - most of which were formed through a common love of the ocean, fishing and surfing. One of these friendships with ‘someone’s cousin’ became something more intimate and was to last for more than half a decade. Before this my interest in Indigenous affairs in Australia had been peripheral; an acknowledgement of a wrong to be righted, but without a real and personal interest in contributing to debates or solutions. However, the belonging engendered by acceptance into family led to an investment of the self, and possible future selves, in the decolonisation project. With little reluctance, but plenty of naivety and cultural baggage, I was brought into one of the many realities that intermingle and combine to form contemporary Indigenous Australia.

Learning from my experience with Koori people, as well as spending time with people in the South Pacific, I realised that there was a desire among many Indigenous people to establish sustainable micro- and small-scale-enterprises that were owned locally and focused on the use of local human and natural capital assets. Of course, this is not the language in which we spoke. Rather, proposals
were presented as aspirational stories about developing modest tourism, fishing and bush tucker enterprises that required low financial investment and risk.

Having these thoughts in my mind, I was attracted to a PhD scholarship at Charles Darwin University to investigate the legal and policy impediments to the establishment and growth of Indigenous wildlife-based enterprises. As mentioned previously, this was not necessarily the direction the research ultimately followed, but it was the hook that grabbed my attention. A simple narrative recounting the process of transition from community development worker and bureaucrat in New South Wales to PhD researcher in northern Australia is of course an oversimplification. This process has been, and remains, one of learning and development, trial and error, and continual reflection on one’s own being, knowing and doing. Nonetheless, it is possible to see that (as with all researchers) I brought with me a personal and political agenda. To me this research project was about contributing to better understanding, and perhaps promoting, IWBEs, and in-so-doing contributing to reparative justice for some Indigenous Australians through re-establishment and renewed support for sustainable livelihoods on country.

However, an ethical dilemma arises when a researcher’s identity and worldview is different (sometimes vastly) to the people with whom they work. Especially when set the task of understanding and, through the act of research, supporting intercultural phenomena like IWBEs. Since colonisation began in Australia, Indigenous knowledge, culture and experience has been captured, reproduced and analysed by mostly non-Indigenous people in rarefied dominant cultural spaces
This has had the effect of silencing Indigenous voices and facilitating continued colonial oppression through the reinforcement of the dominant culture’s apparent legitimacy and superiority (Smith 1999; Howitt and Stevens 2005; Shaw et al. 2006; Louis 2007; Prior 2007). This colonising type of research continues to have a direct negative impact on the wellbeing of Indigenous peoples (Smith 1999; Louis 2007; Prior 2007; Sherwood 2010; Cuerrier et al. 2012).

As such, one of the most urgent agendas, and potentially powerful tools, for ‘closing the gap’ and improving the lot of Indigenous Australians is that of decolonising research (Sithole 2012). An immediately effective method for decolonising research is building the capacity of Indigenous people to do research. Not just research in the conventional Western Scientific sense, but research that embraces Indigenous ontologies, epistemologies, methods/methodologies and language (Smith 1999; Louis 2007; Howitt and Stevens 2005; Smith 2005; Sithole 2012). I have been fortunate enough to be associated with the Aboriginal Research Practitioners Network (ARPNet) over the past two years, and have seen firsthand the power of decolonising research practice (Sithole 2012).

To the best of my ability I aim to give Indigenous IWBE practitioners a voice through this thesis. There is risk in this approach in that, though the intent may be different, the process of capturing and analysing can itself become neo-colonial (Bishop in Denzin 2010). Kowal (2008) describes the Orientalist logic whereby a dominant, powerful agent labels the exotic Other as different; automatically stereotyping
them for the purpose of strengthening and defining their own self-image. This can easily be recognised by those working in intercultural spaces as either the denigration of a primitive race, or the romanticisation of a noble savage. Therefore, it is not enough to simply say that one aspires to give voice to Indigenous people through their research. Rather, the task is to present the voices of the IWBE practitioners with whom I have worked simply as individuals who come from a particular place at a particular time and have certain things to say (Denzin 2010). To this end, middle and higher order theory has only been introduced into the analysis of the data when it has emerged from the analysis itself. Through this, it is proposed, the thoughts and opinions of the people behind these IWBEs can be communicated without being removed too far from the time, place and socio-cultural context from which they emerged. They are not judged based on the values that inform them, nor the values that have informed my own interest in IWBEs. Rather, they are accepted simply as the sum of the subjective experience of each of the individuals that contributed to this work.

Of course, the potential ‘insider-ness’ of this research is limited in that it is being conducted from the perspective of a non-Indigenous researcher. The external, non-Indigenous researcher can only apprehend the reality of Indigenous people from an outsider’s perspective, with limited depth and accuracy in terms of reproducing Indigenous realities. The goal of this thesis is therefore not to discover a fundamental truth about a secret recipe for success of IWBEs in northern Australia. Nor is it to compare Indigenous enterprises with non-Indigenous enterprises for purposes of a critical appraisal. Rather, it is to record the experience and knowledge
of IWBE practitioners and, through this, construct meaning about the key factors that have contributed to their success. This in turn can assist in developing pragmatic, applied and contextualised information that can be used by Indigenous people, practitioners and policy-makers to better target investments in IWBE development (where appropriate and desired). In this sense, this thesis aims to challenge status quo practice and policy by outlining an alternative approach that is based on the experience of the IWBE case studies investigated.

It remains important that non-Indigenous people continue to conduct research in partnership with local Indigenous people. The decolonisation project itself requires an understanding of the dominant culture, its limitations and opportunities, and how contemporary Australians can accommodate and appreciate this cultural difference. Further, there is often value created by the application of an outsider’s perspective to a given topic in that it potentially opens up new lines of inquiry or fresh approaches to problems. For example, my aforementioned experience and training in community development, business, politics and government means that I have brought with me a set of dominant culture-based skills that may be useful in both understanding the current IWBE practice and policy, as well as contributing to envisioning a way forward for these industries.

I have positioned this research to investigate a certain co-existence on country (Howitt 2012). IWBE is an example of the western concept of commercial use of wildlife being employed by Indigenous people, albeit in culturally embedded ways. Further, IWBEs work in partnership with dominant culture embedded
buyers/suppliers, researchers and governments to produce their profits. It is an example of contemporary co-existence on country (at least in a cultural and political, if not physical, sense). It is designed to be a contribution to Howitt’s (2012, p.819) call to imagine new ways of “…being together-on-country”. This in turn may have implications for the way in which policy- and decision-makers support and invest in IWBE development in northern Australia as it would force a paradigm shift towards what Howitt (2012, p.823) has described as “being-together-sustainably-on-country”. As Howitt (2012) then goes on to state, this would then have the effect of challenging and replacing Australian colonial narratives of erasure, dispossession and absence with genuine Indigenous self-determination, improved livelihoods on country, and enhanced wellbeing.

Though it is acknowledged that this research is not deeply decolonising in nature (in the sense described by Smith 1999 and Louis 2007), through its attempt to view the phenomenon of IWBEs in northern Australia from an endogenous perspective it forces members of the dominant culture to question what they know about Indigenous livelihoods and enterprise success. It encourages policy makers and development practitioners to reconsider their approaches to supporting IWBEs and outlines a way forward for other researchers in terms of investigating sustainable Indigenous livelihood development from the inside out. This research seeks to “evolve discourse” on Indigenous peoples’ use of wildlife for commercial purposes in northern Australia (Prior 2007, p.165). I have attempted to present each of the case studies in a way that remains true to the context in which they exist and in-so-doing remain congruent with the lives of the people with whom I worked.
At the core of doing cross-cultural research is the fundamental ethical dilemma: how do I ensure that I do no harm? This research has certainly attempted to minimise any harm done. It aims to provide a conduit through which Indigenous voices can be heard and can challenge orthodox approaches to Indigenous livelihood development in northern Australia. This research hopes to give voice to Indigenous people living in remote and regional northern Australia who have been using wildlife resources commercially and consumptively as a livelihood strategy. It attempts to tell their stories of success, explain their self-defined conceptions of success, and identify the factors that contribute most significantly to achieving this success. Through the design of the research, and the way the fieldwork has been conducted, I have attempted to remain as impartial as possible within the constraints of my background. The research was conducted in short bursts to allow gradual familiarisation with local contexts whilst concurrently exploring theory and knowledge of the peoples and places I was working with. However, given the constructivist paradigm in which I felt I needed to work, I readily acknowledge that my influence is inevitable. Rather than seeing this as a problem, I see it as an opportunity to contribute to the future success of IWBEs and to the greater project of Indigenous and non-Indigenous Australians co-existence on country.

Therefore, it is difficult for me to judge the acceptability of this research in terms of ethics; I am too close to the project. It is work that I have conducted based on the key principles of respect, inclusion and a notion of justice. I have attempted to
honour the research participants by representing their stories as accurately as possible. If I have failed in this, it is not through a lack of endeavour and goodwill.
Chapter Three: Harvesting Bush Plums

3.1. Introduction

In the late 1980s, the television series the *Bush Tucker Man* enjoyed widespread popularity in Australia. Guided by retired army officer Major Les Hiddens (AKA the Bush Tucker Man), the series took the viewer on a journey through northern Australia in search of edible native food. The show was as much a four-wheel drive adventure tourism documentary as an exploration of native foods, with breathtakingly beautiful savanna landscapes forming the backdrop for Hiddens’ often informative and instructional monologues.

The *Bush Tucker Man* series had a strong flavour of survivalism. It asked the viewer to imagine being lost in the Australian outback. What would you eat? Where could you find water? How could you survive? This survivalist bent was probably due to the fact that the series was essentially the by-product of research into bush survival carried out by Hiddens whilst working for the Australian Armed Forces Food Science Establishment (Woods 1995; Instone 2005). A key part of the military research, and subsequently the television series itself, was focused on the identification of a series of nutritionally valuable plant species. One of the species identified as having significant nutritional benefit was *Terminalia ferdinandiana* (Woods 1995). Known variously as bush plum, Kakadu plum, billy-goat plum and gubinge (Cunningham et al. 2009a), *Tf* is a semi-deciduous tree (~8m) that produces small, yellow green fruits annually from January to June (depending on location) (Woods 1995). The
species is endemic to the tropical savannas of north Western Australia (WA) and the Northern Territory (NT) (Woods 1995; Cunningham et al. 2009a).

Aboriginal people from northern Australia have traditionally used *Tf* in medicines and have eaten fresh-picked fruit in large quantities for thousands of years (Woods 1995; Gorman et al. 2006; Gorman and Whitehead 2006). The gum of this species is also used in the production of spears, woomeras and paints to be used on bark (Woods 1995). Many Aboriginal people still engage in seasonal harvest of *Tf* fruit, both in urban and remote settings, for personal/familial consumption. Local Indigenous names used for *Tf* include *damiyumba, mapurdumun, mi mirrarl, mijirr, mamanbu, murrnga, elu, kerewey, madorr and gubinge*. Though recognising the bush tucker knowledge and practices of Indigenous Australians, the Bush Tucker Man was essentially a neo-colonial exercise that was symptomatic of a wider social movement to bring the Australian bush and, to a lesser extent, Indigenous people into the contemporary Australian identity. As described by Instone (2005, pp.136-137):

> In many ways the Bush Tucker Man is white Australia’s surrogate for entry into Aboriginal lands and secrets. With his unlimited mobility and bush tucker knowledge he (re)claims the land as ‘ours’. In the *Bush Tucker Man* series, the land and its plant resources are pictured as open, available and awaiting our arrival and use. The Aborigines who live there are portrayed as welcoming Hiddens, apparently friendly, generous natives who are happy to give up their knowledge and ask nothing in return. Like Daniel Boon and Crocodile Dundee before him, the Bush Tucker Man represents the white man who knows ‘native’ lands and knowledge better than the Aborigines themselves. In the case of the Bush Tucker
Man, he achieves superiority by adding science and military precision to knowledge garnered from Aboriginal peoples, his principle source of information, Hiddens identifies the scientific names of plants and can enumerate their nutritional status, reinforcing the sense that ‘our’ knowledge is more extensive and accurate, fuelling a belief that this bestows a greater degree of control and evolutionary fit for white people in Australia.

Nonetheless in the last few decades, Tf has gained attention due to its commercial potential (Gorman et al. 2006; Whitehead et al. 2006; BRS 2008; Cunningham et al. 2009a), primarily because the fruit has one of the highest concentrations of naturally occurring vitamin C and is endowed with high levels of antioxidants that have anti-carcinogenic properties (Stoner and Mukhtar 1995; Ohno et al. 1999; BRS 2008; Cunningham et al. 2009a). To date, the majority of Tf fruit harvested has been sold into the nutraceutical market (a peak of ~11 tons in 2007) (Cunningham et al. 2009a). This market has presently stalled; small-scale production of food-related products has continued and entrepreneurs are investigating alternatives such as skin treatments and cosmetics, jams and condiments, ingredients in cereals and related products, and ingredients in perfumes and fragrances (Cunningham et al. 2009a). Some beverages, such as alcohol and fruit juice, have also added Tf to their products, both for flavour and for purported health benefits (Woods 1995; Sibosado pers. comm.).

Indigenous people have been involved in the Tf industry since its inception. This has partly been through the goodwill of buyers of Tf fruit, but is also due to the comparative advantage enjoyed by Indigenous people who have knowledge of
stands of Tf occurring on the Indigenous estate (See section 4.6.8.). At the same time, as with many Indigenous peoples throughout the world, Indigenous Australians are still suffering the effects of colonisation. As noted, Indigenous Australians have lower life expectancy, poorer health, poorer literacy and numeracy, higher unemployment, experience higher poverty, and poorer wellbeing than non-Aboriginal Australians (FaHCSIA 2009; SCRGSP 2009). Though small in size and emerging in nature, the Tf industry has the potential to contribute to Indigenous social and economic development in northern Australia.

Much has been made of non-timber forest products (NTFPs) over the past decades, mainly with respect to their potential to achieve environmentally sustainable development goals through livelihood diversification (Sills et al. 2011). Shackleton and Pandey (2014, p.1) define NTFPs as:

...a range of wild and semi-domesticated biological resources harvested by local households and communities from around homesteads, fields, grazing lands and relatively intact vegetation, such as grasslands, woodlands and forests.

Though traded as major commodities prior to World War II, NTFPs then became “invisible” in policy debate from then until the early 1990s (Sills et al. 2011, pp.24-25). However, during the period bracketed by the 1987 Brundtland Report and the 1992 UN Conference on Conservation and Development a significant amount of research and development investment was focused on NTFPs with the primary goal of alleviating poverty in the developing world. Since this rediscovery, the track record of NTFPs has been mixed. The early enthusiasm and optimism for NTFPs throughout the 1990s was soon met with scepticism. The two key criticisms of the
NTFP agenda were: that it simultaneously risks the wellbeing of local people and forests by linking them to globalised markets and by taking attention away from strongly protectionist approaches to managing forests; and that there was little data to support the claims of NTFP proponents in terms of sustainability and conservation outcomes, with significant doubts being expressed based on historical evidence of overexploitation (Sills et al. 2011). By the turn of the century, these doubts had crystallised into pessimism (Belcher and Schrekenberg 2007; Sills et al. 2011). However, emerging from this pessimism is a more nuanced understanding of the potential of NTFPs in terms of development and conservation, as well as better comprehension of the types of contexts in which NTFPs are more likely to succeed. It is now understood that, globally, NTFPs are most successful where they are woven into local culture, there are substantial local markets for forest goods and there is diversity in commodities produced from forests (Sills et al. 2011).

As will be discussed further, wild harvest of plants for commercial purposes has been limited in post-colonial Australia. However, Indigenous Australians are seeking to capitalise on their knowledge of, and access to, NTFPs to explore new livelihood opportunities. Similar contemporary enterprises based on the traditional use of plants are being explored by Indigenous peoples across the globe in an effort to enhance the wellbeing of their families and communities (Dana and Hipango Jr. 2011).
In this chapter, I present the *Tf* industry as a case study of Indigenous wildlife-based entrepreneurship and consider the key factors that have contributed to its development and success.

### 3.2. Methods

Research on Indigenous production of *Tf* was conducted in both Western Australian and the Northern Territory at sites where the harvest and sale of wild *Tf* fruit and products is comparatively advanced. Results were obtained using a combination of semi-structured interviews, field observations and workshop participation. Interviews were conducted with Indigenous bush harvesters (seven), buyers of *Tf* (two) and government service providers to the industry (five). Field visits were conducted around Broome, the Dampier Peninsula and Darwin to observe harvesting sites and operational facilities. The author also participated in two industry workshops: the *Terminalia ferdinandiana Industry Workshop* (12-13 November 2008), which identified key issues for the industry and proposed a way forward, was attended by 24 participants from the *Tf* industry; and *The ARC TK IP Project Indigenous Economic Development Workshop* (27-28 August 2009), which was broader in scope, bringing together a wide array of interested parties (69 people) from industry, federal and state government, Indigenous community organisations, academia and the local community, to discuss traditional knowledge and intellectual property issues around bush foods and Indigenous economic development. The research did not consider non-Indigenous suppliers to the industry. The methods employed are described in Chapter Three.
3.3. Sustainable Livelihoods Assets

The supply chain for Tf consists of producers, buyers, and retailers. Almost all Indigenous participants in the Tf industry occupied the producers’ category, although a few small Indigenous businesses operating in the Tf industry had realised full vertical integration. For example the Larrakia Minbeni Women Rangers from Darwin harvested fruit locally, processed the raw fruit into jams, cordials and other condiments, and sold their product direct to the public, under their own branding and packaging. There were a handful of other small operators who had realized such integration, but most operated on a very small scale and only sold produce in local markets.

Producers engaged in the annual Tf harvest from the regional hubs of Darwin and Broome, as well as more remote settlements in the NT and WA. In WA in particular, producers could largely be categorized into what I term ‘stalwarts’ and ‘opportunists’. A small number of people were passionate about Tf and had long been centrally involved in endeavours to establish and develop the industry (i.e. are industry stalwarts). They produced the bulk of the annual harvest through their own labour and resources, and performed a facilitation and coordination service for more opportunistic harvesters. Having picked and received fruit, industry stalwarts ensured that it was appropriately sorted, stored and transported to Broome for sale to buyers. The number of stalwarts operating in the industry in WA was around six to eight at any given time.
One stalwart suggested that in some seasons they have been supplied with fruit by up to 200 people, primarily family and friends. Many people who harvested Tf did so in an *ad hoc* fashion (sometimes only spending a day or a weekend picking fruit). This opportunity emerges when people become aware that the Tf harvest is active and that they can receive cash income (usually from a stalwart) for any fruit harvested. This demand was communicated to opportunistic harvesters (opportunists) most often by word of mouth, either through kinship networks or affiliated institutions.

In the NT the harvest was mostly performed by Indigenous rangers. Indigenous rangers perform several natural resource management, quarantine and customs related functions, particularly in remote northern Australia (Altman and Whitehead 2003; Cochrane 2005; Morrison 2007; Christie 2008). Rangers were well positioned to take advantage of Tf market opportunities as they were well equipped and have relatively easy access to natural stands of fruit.

More recently, independent Indigenous pickers have begun to emerge in remote communities in the NT (Gorman pers. comm.). However, Indigenous stalwarts could not be readily identified in the NT as harvesters have relied more heavily on institutional support in this region.

### 3.3.1. Natural Capital

All Tf fruit was harvested from the wild. All of the producers interviewed had access to some of these natural stands, with the species being widespread in coastal
regions in both harvest areas (Woods 1995). Single Tf trees produce an average of 24 kg of fruit per annum, with some individual trees capable of producing up to 40 kg/annum (Woods 1995). Research at this stage indicates that wild harvest of Tf is unlikely to be detrimental to the survival of the species, but may need to be monitored to ensure that localized over-harvesting of high density sites is not conducted (Whitehead et al. 2006; Cunningham et al. 2009a).

3.3.2. Human Capital

Indigenous people involved in the harvest of Tf accessed varying degrees and types of traditional knowledge about the tree and its fruiting characteristics. Traditional knowledge about Tf fruit can be as simple as identifying the tree and knowing its fruit is edible, or as complex as understanding how to nurture individual trees to maximize fruiting results. The former type of knowledge was held by most Indigenous people involved in this research, whilst the latter was held by relatively few.

Stalwarts were helped in managing relationships by the possession of culture-based knowledge. For example, stalwarts understood that, due to traditional cultural practices and other culture-based particulars, opportunistic harvesters prefer to receive cash at the time of fruit delivery. Interviews with key stakeholders made it clear that flexibility in payment of cash to opportunistic harvesters at the time of transaction was vital to ensuring enthusiasm is maintained. In effect, this smoothed the trade between parties and ensured ‘cultural fit’. Cultural knowledge was also important for negotiating access to land, particularly for commercial harvest.
Comprehension of such protocol was automatic for a member of the cultural group, but could be difficult for non-Aboriginal harvesters.

Stalwarts also possessed business acumen (or knew how to access it) and applied it both within and outside Indigenous communities. Rarely had this knowledge been obtained through formal education. Some stalwarts who lacked this knowledge used their relationships to “outsource” business-specific tasks (such as bookkeeping, etc.) to family, friends or others.

All harvesters interviewed agreed that good health and a relatively high level of fitness are pre-requisites for participating in the Tf harvest. Picking fruit requires a great deal of walking, stretching, climbing and carrying of heavy containers in hot and humid conditions. Other harvest-related work, such as sorting and packing of fruit, requires much less physical strength or stamina.

Publicly funded service providers, both government and non-government organisations, have acted as catalysts in the emergence of the Tf industry. They have invested in projects to educate and support Indigenous entrepreneurs in their efforts. In WA, the Department of Agriculture and Food (DAFWA) conducted much of this work through a four year project called *New Opportunities for Tropical Pastoralism and Agriculture* (NOTPA). NOTPA was able to identify key issues for the industry; conduct workshops; provide educational materials to Tf harvesters; increase stakeholder collaboration and capacity; develop tools to assess economic viability of Tf activities; and establish networks (DAFWA 2009). NOTPA was
encouraged and empowered to do this work by the presence of high level political support within the WA Government. A similar project has been conducted in the NT by the Northern Land Council (NLC) which employs a Wildlife-based Enterprise Development Facilitator to increase Indigenous people’s capacity to harvest wildlife. This support has been directed towards the Tf industry amongst others (e.g. crocodile egg harvest, ‘sugar-bag’ domestication and various reptiles). It has involved both hands-on practical guidance and administrative support, such as consultation and negotiation of Land Use Agreements, for example. These publicly funded services have enhanced wild harvest capacity, extended Indigenous harvester networks and, through their facilitation roles, smoothed the operations of the industry as a whole.

3.3.3. Physical Capital

At a minimum, pickers used a four-wheel drive vehicle, ladders and containers to perform the harvest. Supply depots were located in remote Indigenous communities and required infrastructure such as freezers to store harvested fruit. This is important in maintaining the chemical properties of the fruit, which begin to break down shortly after harvest. Groups engaged in value-adding activities required specialised equipment (for example, a commercial kitchen and packaging equipment).

At a broader level, harvesters used public roads that are trafficable in the wet season when the fruit ripens. As most access roads are rough and unsealed and
natural stands can be remote, fuel, maintenance and repair costs were often major
items in a Tf harvester’s budget.

3.3.4. Financial Capital
Tf commercialization has been a useful tool to realize new income for local
Indigenous economies. The market price received for fruit, approximately A$22/kg
remained steady during the course of the research (Whitehead et al. 2006). Coradji
Pty. Ltd. bought eight tons of Tf fruit in 2006, 11 tons in 2007, and five tons in 2008
from the Broome and One-Arm Point regions of WA (Cunningham et al. 2009a).
Based on the prevailing market price of fruit (i.e. ~A$19.50/kg), this represented a
return to the pickers in the Dampier Peninsula region of A$468,000 over three years
(excluding costs). Considering that the Tf picking season lasts for between one and
two months, this was a significant inflow of cash into local economies over a
relatively short period.

Accurate harvest statistics were not available for the NT. Harvest data obtained
from the Northern Territory Government’s Department of Natural Resources,
Environment, the Arts and Sport (NRETAS) may not have reflected reality, and were
certainly unlikely to have reflected Indigenous harvest. For example, in 2007,
NRETAS issued five permits to harvest Tf fruit with a total requested harvest of 12
tons: only six tons of harvested fruit were reported. In 2008 there was an increase
in prospective harvest (six permits issued for 99 tons) but the reported harvest was
only three tons. Either permits were being applied for by harvesters with inflated

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harvest tonnages, or *Tf* harvesters were severely under-reporting actual harvests (Cunningham et al. 2009a).

Indigenous *Tf* harvesters’ income was substantially supplemented by income from government-funded employment programmes. Funding attached to these employment support programmes was also used to assist harvesters to purchase equipment to undertake their work. Further, some manufacturers had realised sufficient profit to pay premium rates for harvested fruit. This had provided greater incentive to harvest fruit and enhanced viability of fruit picking as a livelihood option.

### 3.3.5. Social Capital

In WA, kinship networks and other close relationships connected many of the casual pickers to stalwarts. Similarly, networks within ranger groups and, to a lesser extent kin, underpinned the harvest in the NT. Due to their size, these local networks were often well-known and respected, and were usually established before the emergence of the *Tf* industry both formally and informally. People were able to communicate via these established channels and were aware of protocols around interaction and behaviour. They ensured that flows of information and other forms of support and assistance were disseminated throughout the industry.

*Tf* industry stalwarts acted as hubs in these networks, which also included government agencies, research/education/training organizations, corporate interests, natural resource management agencies, and community/economic
development organizations. Relationships between stalwarts and buyers were particularly important as the buyers were also part of larger networks involving manufacturers and the wider market.

Indigenous Tf harvesters had also been the beneficiaries of substantial good will. For example, investment in infrastructure such as freezers at fruit storage depots had been made based upon goodwill. That is, buyers of Tf realised the difficulties faced by Indigenous entrepreneurs in accessing such infrastructure, especially since finance was difficult to obtain (Altman 2002), and were willing to adopt some of this burden.

3.4. Vulnerability Context

Six main issues emerged from interviews and workshops that will affect the continuity and expansion of the Tf industry: fruit availability; livelihood sustainability; localized overharvesting; the regulatory framework; market variability; and competition.

3.4.1. Fruit Availability

The geographic location and the ecological setting of naturally occurring Tf stands mean that the fruit is prone to damage from bushfires and cyclones. Hot fires in the dry season can have a significant impact on Tf fruit production and can sometimes kill trees. Cyclones occur during the Tf fruiting season and can strip trees bare of fruit over large areas. Cyclones also close roads through flooding and disrupt market access. Thus, whilst the densities and fruiting capacity of Tf trees are similar
across their range, there is considerable variation in the amount of fruit produced in specific regions from year to year. However, when viewing this vulnerability at the industry scale, this natural variation is mitigated by the presence of trees in two geographically discrete regions – the northern coast of the NT and in the West Kimberley, WA. Harvest and supply coordination across the two regions could buffer difficulties in any one region. At the individual producer scale however, the vulnerability is somewhat more difficult to avoid. The risk of heavy losses due to seasonality is high for individual Tf harvesters, who like other producers relying on wild harvest, will need to be sufficiently adaptable and capable of absorbing random and potentially significant losses. To do this, they will need to accrue capital reserves to cover these losses (though the feasibility of this is low due to the marginality of the industry) and/or diversify their livelihood activities to ensure some income is still received.

Further, the availability of fruit has been influenced by the presence of government income support. While large numbers of pickers produced small amounts of fruit to supplement government payments, few pickers individually collected large amounts of fruit. Only if large amounts of fruit are regularly and reliably collected by large numbers of pickers is supply likely to approach demand when demand is high.

3.4.2. Livelihood Continuity

As mentioned previously, the picking season for Tf lasts for only one to two months each year. Though some harvesters can be fully employed by the Tf industry for
these few months, the net return and volumes of fruit purchased have both been currently too low to sustain livelihoods for an entire year. As such, *Tf* harvesters (including stalwarts) have needed to supplement their incomes with other livelihood activities. In addition to relying on government income support, entrepreneurs have been attempting to find new ways to solve income continuity problems such as payments for environmental services, tourism and other wildlife-based enterprises.

### 3.4.3. Localised Overharvesting

While there are currently enough *Tf* trees in the wild to support sustainable harvest, there is a risk of localized overharvest (Whitehead et al. 2006). Commercial wild-harvesting is more cost-effective and less time consuming if fruit is harvested from sites close to supply depots and concentrated on as few trees as possible. Further, if the industry grows and competition results in slimmer profit margins for producers, there will be extra incentive for entrepreneurs to localize their harvest. As a consequence, close monitoring or development of codes of conduct and possibly greater enforcement of licensing will need to be in place to minimize propensity to over-harvest.

Following localised overharvesting (excessive fruit collection in specific locations and destructive harvesting methods, such as using chainsaws to destroy trees to gain easier access to fruit) in Broome (Mason 2003; BRS 2008), a sustainable harvesting education programme was designed and delivered by the Department of Agriculture and Food WA (DAFWA). The programme was not only designed to
educate harvesters about sustainable practices, but also trained people to identify suitable places to collect fruit, to complete necessary paperwork, and to pick high quality fruit. The testimony of DAFWA staff suggests that this exercise appears to have been successful in empowering local bush harvesters to implement sustainable harvest and quality control regimes. Further, there have been no reports to the contrary from local harvesters, suggesting that most people have adopted less destructive practices.

Preliminary trials for cultivating *Tf* using mainstream horticultural methods are also underway in some remote Indigenous communities. These trials do not currently contribute to the annual harvest, but may do so in the future. This method of fruit production will reduce harvest effort in terms of travel and access to stands of fruit, but may involve the adoption of extra responsibility and burden in terms of crop management and maintenance.

Enrichment planting (see Montagnini et al. 1997; Michon et al. 2007) is also being trialled at the Balu Buru research facility outside Broome with the intent of increasing yields by planting additional trees in and amongst extant native vegetation. The research has the goal of identifying an environmentally sustainable method of increasing yields without negative impacts on the natural ecosystems.

### 3.4.4. Regulatory Framework

The wider institutional environment in which the industry is located potentially has a substantial effect on its operation. Not all harvesters have secure land tenure,
though some have special permission to reside and engage in commerce on
designated lands. The bulk of the Tf harvest is conducted on Aboriginal Lands Trust,
Crown Land and Aboriginal Land Rights Act (NT) land. As this use of native flora is
for commercial purposes as opposed to traditional subsistence use, there is no
allowance made under Australian law for Indigenous harvesters (even if they are
traditional land owners) who are still required to obtain permission to harvest
(though royalty payments are often waived) (Cooney and Edwards 2009).

Consequently, in WA, under the Wildlife Conservation Act (1950), Tf pickers are
required to obtain a Commercial Purposes Licence, a Commercial Producer’s licence
or a Nurseryman’s Licence from the Department of Environment and Conservation
(DEC), WA. The Commercial Purposes Licence is required by people who intend to
harvest fruit from Crown Land and requires authorization from relevant
government agencies. People harvesting native flora on Crown Land are also
required to submit regular reports on type and quantity of flora taken. Other
licence holders must either be landowners, or be acting with the authorization of
landowners, and must provide proposed harvest quantities to DEC. They must also
identify whether material is to be taken from natural or artificial stands (DEC 2006).

In the NT, permission to use wildlife for commercial purposes must be sought under
the Territory Parks and Wildlife Conservation Act (2005). As such, Tf harvesters are
required to obtain a permit from NRETAS before collecting fruit. In addition to
obtaining a permit, the picker must also pay a royalty to the NT Government of
A$1.30 per kilogram (NRETAS 2010). Aboriginal collectors who are engaged in
harvest on freehold or Aboriginal land are not required to pay royalties for subsistence use. However, they are supposed to pay royalties when harvest has taken place for commercial purposes (Cunningham et al. 2009a). In addition, Aboriginal landowners are allowed to give permission for others to pick *Tf* on their property, which is usually accompanied by a royalty payment made to the landowners (Cunningham et al. 2009a).

### 3.4.5. Markets

As has been the case with other wild harvested products, the *Tf* industry has already been affected by market fluctuations. Currently the nutraceutical market, for which most plums have been purchased in recent years, is no longer buying stock. Until new markets are secured *Tf* will only be purchased for the small market in Australian-made cosmetics, soaps and condiments. This susceptibility is pronounced due to the high market prices that are necessary to cover the relatively high costs of production. It is unlikely that producers could continue their *Tf* harvesting at prices lower than those received at the time of this research (i.e. A$19.60/kg) as their margins are so slim. Further, at the time of this research, the tonnages being harvested from the Dampier Peninsula were close to reaching a critical mass whereby some certainty was enjoyed by both buyer and supplier. This would have been important in terms of being able to sign contracts of significant size and over multiple years, which in turn would have allowed industry participants to invest in their respective activities with reasonable probability of positive returns on investment. Dropping below this threshold will see a return to small contracts, or indeed only local supply of fruit through cottage industries, will be possible.
Subsequently, fewer people would be harvesting less fruit and receiving less income, thus making the industry vulnerable to failure.

### 3.4.6. Competition and Biopiracy

There is a risk that other entrepreneurs may take advantage of any new commercial opportunities before Indigenous entrepreneurs have had the chance to establish themselves in markets (Cunningham et al. 2009a). Already efforts have been made by international interests to establish plantations of *Tf* overseas (Cunningham et al. 2009a). Further, there is no protection for Indigenous participants against non-Indigenous competition at either national or international levels under existing intellectual property law, constitutional provisions or international trade regulations (Garnett 2010; Robinson 2010a; 2010b; Srinivas 2012). Biopiracy debates have been raging globally for over two decades, with the World Trade Organisation, the World Intellectual Property Organisation and the Convention on Biological Diversity being the major participants. However, as yet, none of these parties have been able to reach consensus on the way forward that will protect Indigenous people against biopiracy (Dwyer 2008; Srinivas 2012). Attempts have been made to require patent applicants to disclose the source of the biological materials they are hoping to patent (Werra 2009; Robinson 2010a; Srinivas 2012). These attempts have thus far been only partially successful, given the weak protection afforded by national and international patenting systems due primarily to loopholes present in intellectual property regulatory systems (Werra 2009; Robinson 2010a; Liang 2011; Srinivas 2012). Robinson (2010b) suggests that Australia should place stronger value on regulation that requires disclosure of origin...
requirements and the protection of Indigenous peoples’ traditional knowledge as it is not properly represented in Native Title law, nor intellectual property law. Robinson (2010b) (and others e.g. Liang 2011) recommends the negotiation and implementation of bio-cultural community protocols to provide such protection and to ensure that benefit-sharing is easily facilitated. While much has been made of the biopiracy threat that looms over Indigenous Australians (Palombi 2009; Robinson 2010b), as Venn (2007) suggests in a similar context, issues such as a lack of reliable market, irregularity of supply, physical infrastructure deficit and human capital gaps are considered far greater and more manageable threats worthy of attention for the Tf industry than essentially theoretical dilemmas. However, as identified by Pengelly and Davidson-Hunt (2012), there is a growing consensus that Indigenous peoples must first give consent to corporations and research organisations interested in bioprospecting and ethnobotany and make agreements on benefit sharing. Collaborative and ethical approaches to the establishment of institutions that shape this field are most likely to produce positive outcomes for both local Indigenous peoples and outsiders. Such a focus on consent and process would certainly restrict, perhaps eliminate, the risk of biopiracy on the Indigenous estate.

3.5. Defining Success

A key question regarding the Tf industry is to what extent it can be considered successful? Recent research in the NT has discussed the difficulties associated with defining Indigenous enterprise success:
...enterprise development in the region is both an objective and a process to meet a range of socio-economic goals. Given the level of diversity of people and landscape across this region, there are different objectives from which success in enterprise is evaluated (Nikolakis 2008, p.108).

Thus the success of industries must be discussed on a case-by-case basis, in collaboration with research participants and with reference to social context (Whitehead et al. 2006).

In purely financial terms, many entrepreneurs involved in harvest of Tf reported a lack of financial profit – some asserting they ran the business at a loss. However, as has been found elsewhere (Nikolakis 2008), this did not necessarily mean that harvesters saw themselves and the industry as failures. Rather, for all of the Indigenous entrepreneurs interviewed, financial profit was not the primary motivation and, as such, was not the most important indicator of their enterprise success.

Nikolakis (2008) states that this diversity of motivations and perceptions of success is typical of Indigenous entrepreneurs in northern Australia. This is supported by Indigenous entrepreneurship literature in general (Hindle and Moroz 2010) and IWBEs in the international context more specifically (e.g. Dana and Hipango Jr. 2011).

Nikolakis (2008, p.109) identified three common features of success among Indigenous entrepreneurs in the NT:
• Protection and maintenance of cultural sites and the environment
• Benefits for community from employment
• Shifting away from welfare dependence.

For Tf harvesters, these were all factors considered in assessing their own success, as well as providing significant motivation for their initial involvement in the business.

Indigenous entrepreneurs who were motivated by a desire to look after ‘country’ through traditional land practices saw themselves as successful because they had observed that the health of their country had improved.

Every time you see that something has improved, it just gives you that inspiration to keep going. For us, really, the key thing is that we wanted to save that area... We’re centred in that. That’s what gave us the energy, the inspiration, everything. Basically, if we are not doing that, it’s not even worth it for us. The ecological side of things is what keeps us there. And the rest of it is pretty hard... (P29)

Although empirical evidence is lacking, these pickers claim to be employing traditional land care practices with great effect in terms of increased biodiversity, reduced number of invasive weeds and reduced occurrence of large, hot fires on managed land. For these harvesters, their ability to engage in land management was significantly enhanced by the supplementation of their incomes from the Tf harvest.

Other informants had a much stronger focus on using Tf harvesting as a tool to keep culture alive through their land management practices and traditional
harvesting. This involves both getting people back onto country and “out-competing” western cultural influences. As one informant described it, “business has never been the ‘blackfella’ way, but it is now a matter of survival” (P31).

Yet another informant saw engagement with *Tf* harvest as a way to deliver training to the younger generation, to teach them skills needed to survive and to provide a stepping stone to “bigger things” (P31). Further, it was a tool that allowed participants to visit places and experience things that would not be part of their everyday routine, thus providing inspiration for their futures.

Informants talked about the satisfaction and enjoyment gained from going to collect *Tf* fruit in large groups (usually family). One informant in WA discussed the excitement of venturing out together with extended family members to harvest *Tf* fruit around Christmas holidays – “it is great because we can take the young ones out and teach them about the bush and their culture” P30. Indeed, this may represent a synthesis of traditional Indigenous culture and non-indigenous western traditions and suggests a strengthening of local traditions.

This success, however, does not mean that these entrepreneurs are satisfied. Rather, as put by one Indigenous *Tf* harvester, Indigenous engagement with enterprise is “Like a baby – just starting” (P33). Nikolakis (2008) has described that, in this sense, enterprise development is seen by Indigenous Australians as a path along which they are travelling to a number of ends. These ends include: increased
employment; an expanded industry and economy; skills development; healthy
country; strong culture; and independence from government.

By analysing the success of the Tf industry using the factors of success identified as
significant by Indigenous informants, it is possible to see that, as a process, the Tf
industry in northern Australia is successful. It has been successful in:

- enhancing Indigenous people’s capacity to pursue livelihoods of their choice;
- facilitating the return of people to country and the re-establishment of natural
  resource management based on local/traditional knowledge;
- protecting, rejuvenating and transmitting culture through family trips to
country;
- and delivering training and experience in small enterprise development and
  market participation.

3.6. Factors Contributing to Success

There were nine key factors identified by informants as having contributed
substantially to the success of the Indigenous Tf industry in northern Australia.

3.6.1. The Resource Base

Tf grows in abundance across north-western Australia and is a high yielding,
resilient savanna tree with a regular, predictable and reasonably reliable fruiting
season. These biological traits, in combination with the valuable chemical
properties of the fruit, create the capacity to supply sufficient produce through
sustainable wild harvest (at least biologically) and commercial value (i.e. demand).
3.6.2. Indigenous Access

Conversion of the fruit to a product with commercial utility only occurs through human labour. As such, it is important that Indigenous people have had access to fruit. This comes in the form of permits to take wildlife and the existence of remote communities who, in combination with those operating from regional hubs, combine to form the basis of the industry. Although complex laws could have been administered in a manner detrimental to local initiative, this has not been the case.

3.6.3. Traditional Ecological Knowledge

It was common knowledge amongst the Indigenous participants and their kin that *Tf* fruit is edible, has considerable health benefits, and has been a traditional food for their people. This has provided an incentive and the capacity for local Indigenous people to engage with the industry. Until the point that cultivation becomes the primary mode of production, the industry will continue to rely on this traditional knowledge for its survival. In sparsely populated northern Australia, bush harvest would not be a viable option either economically or logistically were it not for the presence of Aboriginal people and the knowledge that they possess. In fact, traditional ecological knowledge provided the basis for approval of an extract of the fruit as a nutraceutical by the Therapeutic Goods Administration, and thus allowed development of a market for the industry (Cunningham et al. 2009b).
3.6.4. Market Commitment

The progress of the Tf industry thus far, and the significant role of Indigenous entrepreneurs in its development, has been enhanced by the existence of a patient and reliable market. The use of Tf fruit as a component of vitamin C nutraceuticals can be seen as the entry of a new product into an old market (Cunningham et al. 2009a). This comes with a considerable degree of benefit in terms of tapping into pre-existing demand and the ability to create supply chains to reputable buyers. Further, traders of Tf have been able to realize a level of profit that has allowed them to invest in the production chain and to exercise patience with uneven supply and variability in quality of fruit.

Though major contracts have now ended and new markets have not yet been secured, there is general optimism amongst the industry about future demand for Tf fruit. Securing long-term partnerships with businesses of considerable size and distribution will continue to be essential to the long-term success of the Tf industry (Meis-Mason et al. 2007).

However, if Indigenous interests in the industry are also to be secured, producers of Tf must act quickly in developing harvesting capacity, establishing pathways for supply to new markets and securing market share. Indigenous people may be able to protect this market share by taking advantage of fair trade and other branding mechanisms (for example) (Meis-Mason et al. 2007; Cunningham et al. 2009b), but this protection will become increasingly difficult to maintain if there is competition from new, well-resourced competitors seeking to realize financial profit from Tf.
3.6.5. Public Investment

Publicly funded agencies such as employment assistance agencies and Indigenous ranger groups have underpinned the industry since it began. Public funding has been accessed by Indigenous *Tf* harvesters through employment support schemes to provide a steady and significant stream of income to complement harvest-related activity during and outside the fruiting season when other income sources are limited. This funding also made a contribution to the development of the physical capital base.

Other public investment has come in the form of wild-harvest specific training and *Tf* focused research effort. This research has been conducted by a number of institutions, including local technical colleges, universities and government research institutes. Though this research and training investment has come at significant cost, it has been important in realizing on-the-ground success for the industry.

3.6.6. Local Networks

*Tf* industry stalwarts have been in a position to capitalize on kin reciprocity by incorporating it into their enterprise activities. This has produced a win-win situation whereby stalwarts could vigorously pursue their entrepreneurial pursuits inclusively with their kin. Through this process, stalwarts have been converting the potential burden of reciprocity (Schwab 1995) into an asset. This is not to present a romantic view of the situation as there can, and have, been issues around rights-to-use and picking protocols (Mason 2003). However, this cooperative behaviour has
increased harvest capacity whilst creating value for the group. This in turn has enhanced the capacity of the industry to supply markets as it has allowed a geographically and demographically broad range of people to be involved in harvests.

3.6.7. Trust

The relationships that stalwarts have actively and consciously cultivated and exploited are significantly built upon trust. Trust is important in economic transactions (Arrow 1972), particularly when these transactions may take place on an *ad hoc* basis with multiple agents. As such, in the case of *Tf* harvesters, relationships of trust between stalwarts and opportunists have been a prerequisite. Stalwarts and opportunists have taken advantage of trust that has been developed and embodied in various extra-commercial bonds. Government service providers who have worked closely with Indigenous *Tf* harvesters (amongst others) cited perseverance, reliability and consistency as keys to establishing and maintaining these relationships (K. Courtenay pers. comm.).

3.6.8. Goodwill

As mentioned, Indigenous interests in the *Tf* industry have been somewhat protected by conscientious business partners, service providers and other stakeholders who have shared the belief that Indigenous benefit from the industry should be maximized. This goodwill was not entirely benevolent or altruistic. The capacity to wild harvest lies with indigenous people, at least until the industry has matured to a point where investment in cultivation is viable. Further, attachment to
indigeneity is a powerful branding and marketing tool (Whitehead et al. 2006). In this sense, involvement (or even association) of Indigenous Australians with the production of many Tf-based goods has created value for the industry, in particular the supply chain participants engaged in value-adding activities.

3.6.9. Indigenous Entrepreneurship and Shared Goals

Finally, though difficult to quantify, the Tf industry has benefited considerably from the commitment of a core of passionate and driven people. The key Indigenous people have been the stalwarts, who realize little net financial gain from their Tf-related endeavours, but have believed in the social, cultural and environmental merit of the industry. There have also been key government personnel and private buyers who have promoted the industry and provided critical administrative and economic support. A small number of researchers and teachers have also invested substantial time and intellectual effort into identifying solutions to industry constraints. All have been driven by a wish to see that the industry’s potential is realised.

3.7. Conclusion

The Tf industry has a solid base in all five sustainable livelihood capitals: the natural capital is relatively abundant, secure and sustainable; physical capital is minimal and not limiting; human capacity among those involved in the industry is comparatively advanced, involves considerable traditional knowledge and is steadily increasing; there are strong social networks supporting smooth flow of product from tree to market, and ensuring that money flows smoothly from market
to harvester; and financial capital is reasonable, though heavily supported by
government and industry. However, Indigenous participation and dominance in the
industry remains vulnerable to variations in fruit supply, livelihood continuity,
localized overharvesting, changes in the regulatory framework, market volatility
and increased competition.

Though the recent hiatus in demand represents a hurdle, the Indigenous *Tf* industry
has already realized significant success. It has been driven by Indigenous people;
has increased local employment; expanded the economy; invested in skills
development; improved the health of the landscape; supported local cultural
practices; and expanded independence from government. Further, this industry
retains significant latent potential that several Indigenous entrepreneurs are
persistently attempting to unlock.

Nine factors underpin this industry’s success: the resource base; Indigenous access
to that resource; Indigenous Traditional Ecological Knowledge of and connection to
the resource; market commitment; public investment; local networks; capitalized
trust; the enjoyment of goodwill; and the shared passion, ambition and aspirations
of individuals at all levels of the industry. As mentioned previously, Sills et al. (2011)
outline that NTFPs are more likely to be successful when they are part of the local
culture, are supplied to local markets in which they are a part of a diverse suite of
NTFP commodities. The case of *Tf* in northern Australia supports the argument that
embeddedness in local culture is an important factor, however little *Tf* is supplied
to non-subsistence local markets and there are few (if any) other NTFPs supplied to
markets by the people involved in this research. This discrepancy can be explained by the fact that most of the NTFP literature discusses the experience of forest producers in the developing world, where livelihoods are tenuous and forests are relied upon heavily for wellbeing. In the Australian context the livelihoods of the poor are substantially supported by access to welfare, which means people are less reliant on produce from local markets and livelihoods are not contingent on NTFP enterprise success.

Indigenous entrepreneurship is emerging as a discrete field of research (Hindle and Moroz 2009). This is being driven by observations that Indigenous entrepreneurs have different ambitions and modus operandi to other entrepreneurs. As described here, the Tf industry and its proponents employ a definition of business success that incorporates social, cultural and environmental gains in addition to financial profit. These Indigenous entrepreneurs are developing unique business models, which are thus far proving to be efficacious. As a consequence, in the interests of achieving economic development in the Indigenous community context, it is proposed that governments could benefit from the implementation of equally innovative approaches to Indigenous economic policy that encourage and support Indigenous entrepreneurship. Understanding the mix of resources used by successful Indigenous entrepreneurs, and acknowledging that the livelihoods outcomes they are attempting to realize through such enterprise are diverse, is vital to providing appropriate and suitably nuanced incubation conditions for Indigenous economic development.
As mentioned in the introduction to this chapter, the market opportunity available to Tf producers was in some part the result of the military research programme that publicised the nutritional values of the fruit. A market demand, primarily for Vitamin C, emerged from the knowledge of Tf fruits health benefits. The Bush Tucker Man (and presumably the military research) did not make mention of the knowledge of local Indigenous people in any more depth than that it was a traditional food (Instone 2005). Subsequent research, including field work conducted for this thesis, has identified that Indigenous people have long had significant knowledge about Tf both as a snack food, a health food and a food of cultural significance. As such, the goodwill being shown to Indigenous producers of Tf by the market, and the Australian public in general, could perhaps be seen as reparative justice. It is as yet a meagre and unsatisfactory repayment for the use of traditional knowledge without direct consent. However, if Indigenous people can be positioned as key beneficiaries of the emerging Tf market, future profits may go some way to supporting Indigenous peoples’ aspirations to secure market-based livelihoods on country.
Chapter Four: Mustering Swamp Buffalo

4.1. Introduction

One species of wildlife currently exploited commercially by Indigenous people in northern Australia is the swamp buffalo (*Bubalus bubalis*). Buffalo were introduced to Australia in the 1820s (Letts 1982; Tulloch 1969). Herds were established mostly in military settlements across the Top End in the subsequent decades. The animals were imported from Timor and Indonesia and were intended to work as beasts of burden and to supply protein and dairy products to the early colonies. However, most of these settlements and their pastoral enterprises failed, with the buffalo herds set free to roam the Top End (Tulloch 1969). These herds rapidly spread across the northern part of the NT, successfully colonising most of the monsoonal Top End of the NT. It is estimated that by 1964 buffalo populations had grown to 120,000 animals (Van Holst 1964). By 1985 this figure had increased to 340,000 (Bayliss and Yeomans 1989).

However, during the 1980s and early 1990s millions of dollars were invested in a buffalo culling programme. The Brucellosis and Tuberculosis Eradication Campaign (BTEC) was commenced based on fears that the feral buffalo populations of the NT could act as vectors of disease and, consequently, posed a risk to the north Australian cattle industry (Boulton and Freeland 1991). The result was a dramatic decrease of the number of buffalo in the Top End, with shoot to waste programmes being effective at eliminating buffalo from large areas of the landscape.
Following BTEC however, there has been little investment in systematically managing the populations of feral buffalo in the Top End. The present wild population of buffalo in the NT is estimated to be 150,000 and increasing (Bradshaw et al. 2007). It is a significant rebound that provides testimony to how well suited buffalo are to the monsoonal tropics of northern Australia.

Though primarily used elsewhere as draught stock, Australian buffalo have been used commercially for more than a century for leather goods, meat supply (both for human consumption and for pet feed), live-export, and tourism (Albrecht et al. 2009). Some of these markets have declined (e.g. pet feed and domestic human consumption) or ceased (e.g. leather goods) but safari hunting is still popular, and the market for live buffalo in South-East Asia has been steady (Gorman et al. 2008). Along with crocodiles (see the next chapter) buffalo have become one of the iconic species associated with the Top End of the NT. They remind Australians of a romanticised settler past and conjure images of a wild, dangerous frontier in the north (Albrecht et al. 2009).

However, because they are exotic, buffalo have a major impact on the function of native Australian ecosystems, especially when at high densities (Bradshaw et al. 2007). They are responsible for saltwater intrusion into sensitive wetlands, the destruction of vegetation through trampling and over-grazing, alteration of plant community structure, soil compaction and deterioration, increased water turbidity, erosion and the spread of invasive weeds. They are also potential vectors of
disease, can pose a threat to human safety, as well as damaging Indigenous cultural and spiritual sites (Yibarbuk et al. 2001; Bradshaw et al. 2007; Petty et al. 2007; Albrecht et al. 2009). Consequently, and as discussed by Albrecht et al. (2009), the buffalo lies on a fault line between the often divergent interests of a variety of stakeholders. Some see buffalo as a natural resource to be valued, exploited and admired; others see them as an unwelcome alien invader whose presence is harmful to ecosystems.

This chapter describes the asset-base of an Indigenous-owned buffalo mustering company operating from a remote location in Arnhem Land (NT), the vulnerability of the industry and the factors underpinning the success for this Indigenous wildlife-based enterprise. Indigenous people in Arnhem Land adapted to hunting buffalo relatively quickly (Altman 1982; Robinson et al. 2005) and assigned cultural values to them through Dreaming stories and ceremonies (Robinson et al. 2005; Albrecht 2009). They also were used by early buffalo musterers as labour and soon became expert hunters on horseback and with shotguns (Albrecht et al. 2009). Though focused more on cattle, Indigenous stockmen and ringers also managed herds of buffalo on pastoral properties owned and managed by non-Indigenous colonists (Cowlishaw 1999). In many ways contemporary buffalo mustering in the Arnhem Land region is built on this historical relationship that Indigenous people developed with the buffalo (Altman 1982; Robinson et al. 2005; Albrecht et al. 2009). This case study illuminates the complex relationships that people have with buffalo, the problem of assessing success, and the difficult policy decisions that will
need to be made in the future in terms of the management of the Top End’s wild buffalo populations.

4.2. Methods

Research was conducted in partnership with the Indigenous-owned Gulin Gulin Buffalo Company (GGBC), which is the largest Australian supplier of buffalo to the international live-export market. Data for this research was gathered whilst participating in mustering operations near the Indigenous township of Bulman in southern Arnhem Land in August 2008 and September 2009. The people of Bulman are mostly members of the Rembarrnga, Ngalkbon and Nalakan language groups (Cowlishaw 1999), and have a strong connection to traditional culture. Typical of many small, remote Indigenous townships in Arnhem Land, the Bulman economy is dominated by the public sector, with GGBC being the largest private interest. The legacy of local Indigenous peoples’ involvement in the early pastoral industry in the region is readily evident in Bulman, with local people readily recalling their parents and their own pasts as stockmen and ringers in the region (Cowlishaw 1999).

Semi-structured, in-depth interviews and participant observations were conducted with seven employees of GGBC. These interviews were used as a framework to guide discussions (Minichiello 1995, Liamputtong 2009) and were sufficiently flexible to allow exploration of unforeseen lines of inquiry (Minichiello 1995). This also assisted in managing issues around cultural appropriateness without undermining the integrity and flow of the interview. Most interviews were
conducted in a group setting at the request of the research participants and were conducted in English.

For triangulation of these interviews, a focus-group discussion was held with eight members of the Mimal Rangers. The Rangers are responsible for the majority of natural resource management activity that takes place in this region of southern Arnhem Land and thus have an interest in buffalo management and the operations of GGBC. They are also members of Traditional Owner families who receive royalty income from GGBC musters.

Participant observations took place while working in musters and socialising with employees around camp. This observation was predominantly of the observer-as-participant kind and was recorded daily (Angrosino 2007). The compilation and analysis of data within the Sustainable Livelihoods Framework is described in Chapters Two and Three.

4.3. Sustainable Livelihood Assets

GGBC is a private company owned and operated by the Traditional Owners of the Bulman region, which was established by an enterprising Traditional Owner in 1985. The primary income earning activities of the company involve the harvest of swamp buffalo from local clan estates, which are then exported live to various markets in South-East Asia. It is a for-profit enterprise that seeks to maximise the income of Traditional Owners from mustering activities.
Though having much in common with Peredo and Chrisman’s (2006) definition of a Community-Based Enterprise (CBE), GGBC cannot be definitively classified as such. Whilst owned and operated by and for the community, the influence of the non-Indigenous manager of the company dilutes the governance of the local community. The community does have considerable control over the enterprise at board level, and most employees are local people, but it cannot be fully claimed that GGBC is “owned, managed, and governed by the people rather than by... some smaller group of individuals on behalf of the people” (Peredo and Chrisman 2006).

As described by GGBC’s Indigenous mustering coordinator:

This is sort of separate to what they actually do in the community. It’s based out of the community, but it’s for the community... It’s their company and it is creating work for them, not for outsiders to come to (P17).

As such, GGBC could be seen as a “borderline” (Peredo and Chrisman 2006) CBE. With stronger local governance, GGBC could certainly become a fully-fledged CBE.

4.3.1. Natural Capital

The average maximum carrying capacity for buffalo in the NT is 8 animals per square kilometre (Bayliss and Yeomans 1989). This gives an estimated maximum population of 83,000 buffalo for the GGBC mustering area (approximately 10,000km$^2$). The GGBC, however, has estimated that there are only 30,000 buffalo in the Bulman region (NLC 2002). The likely true figure is probably somewhere between the two extremes; the quality of the unimproved native grasslands,
growing on poor soils, certainly reduces the maximum carrying capacity for the region.

Since 1997, the average annual GGBC muster size has been approximately 1500 buffalo but musters have generally increased in size reaching a peak of 2980 in 2006. A maximum sustainable yield for this population is estimated as 3400 animals per annum (Collier et al. 2011), which suggests that, given sufficient market demand, mustering could be expand by a further 15% without significant impact on the buffalo population. Unlike the commercial harvest of large ungulates by Indigenous people elsewhere (Meis-Mason et al. 2008), overexploitation of buffalo stocks seems unlikely.

Given the almost complete absence of fences throughout Arnhem Land, the only impediments to buffalo migration are natural barriers e.g. cliffs. Decreased populations in one area will thus be replaced by in-migration from neighbouring herds. The Traditional Owner clan estates are large in size, which has allowed the buffalo company to harvest rotationally within estate boundaries. This meant that excessive harvest pressure has not been placed on populations in or between estates. However, there has been variation in the number of buffalo harvested annually from each estate, which has been caused primarily by variation in the natural resource-base that buffalo consume. No effort has been made to monitor this migration. Branding has not been used due to the costs and logistics of locating and mustering the buffalo.
The natural capital value of invasive buffalo is contested. Though they are a natural resource which is exploited in pursuit of livelihoods, natural capital stocks and flows such as water quality, soil stability and biodiversity can be improved by their absence, the benefits that might derive from an increased effort and removal rate (at least below half of the carrying capacity) through mustering are unclear (Corbett 1995; Werner 2005; Petty et al. 2007; Albrecht et al. 2009; Collier et al. 2011).

4.3.2. Physical Capital

GGBC owned, maintained and operated a fleet of vehicles that performed a variety of functions. Modified four-wheel-drive vehicles were used in coordination with contracted mustering helicopters to perform the muster. Former military trucks had been adapted to cart buffalo out of rough terrain to the company’s stockyard in Bulman. A grader, mobile diesel generator and other four-wheel-drive vehicles were used by the company in support of the mustering fleet. Additional physical capital accumulated by the company included a homestead/office, a fully equipped workshop, mobile mustering corrals, camping equipment, a stockyard located in Bulman and a presently unused mobile abattoir. All vehicles and equipment, aside from the helicopters, were owned, maintained and operated by the company.

GGBC relied on a well-maintained publicly-funded road to transport livestock over approximately 600km to the port in Darwin. However, this road and other bush tracks, became impassable in the wet season due to flooding. This placed a time limit on GGBC musters. Only when the ground was dry enough could the company
build bush tracks to their mustering sites, which they did using their own equipment.

4.3.3. Financial Capital

GGBC was established in 1992 using a AU$20,000 bank loan. Aside from this initial borrowing, loans had not been used by the company. Other capital investments were made from public funding, such as AU$100,000 grant from the Australian Government’s Bureau of Rural Resources for a new cattle crush at the Bulman stockyard, and a dollar-for-dollar partnership with the Indigenous Land Corporation to build the company’s office and homestead.

In its twenty year history, GGBC had consistently generated an annual profit. From 1997 to 2008 GGBC produced an average income of AU$727,847/annum for the company. In this same period, wage payments averaged AU$49,212/annum, with a peak in 2008 of AU$85,430/annum. GGBC had contributed a total of at least AU$1.28 million of royalties to the local economy. Over the 11 years of royalty payment data made available by the company, the average annual payment to Traditional Owners had been AU$116,289 per annum. This had been growing steadily with the 2008 royalty payment totalling AU$231,485. GGBC was completely debt free, owned all company assets and had over AU$500,000 of cash reserves. Collier et al. (2011) provided a more detailed analysis of the benefits (financial and non-financial) accrued by the community from the presence of the buffalo company.
Profits from musters were equally split between the payment of royalties to Traditional Owners and investment in the company. A record of the number of buffalo harvested from each of the Traditional Owners’ lands has been kept. At the end of the season the company calculated the amount of profit received per buffalo. This information was then passed to the Northern Land Council (NLC) which, in its capacity as a representative organisation for Traditional Owners in the northern NT, acted as the facilitator of royalty payment processing. As described by a GGBC employee:

> When the buffalo company finish, the Land Council has a big meeting about them royalties... We gotta actually tell the Land Council mob where we been mustering, which country... (P13).

The profit per buffalo has been halved, according to the agreed fifty/fifty split, and multiplied by the number of individual animals extracted from each of the Traditional Owner’s land. The NLC then calculated and executed the royalty payments to each of the Traditional Owners. This process ensured that royalties are paid in a transparent fashion and that all parties involved were made accountable to Traditional Owners. As will be discussed further with regards to social capital, it should also be noted that some of the profits accrued by the company were donated to the community.

### 4.3.4. Human Capital

GGBC employed a minimum of eight employees during the mustering season, with a demonstrated capacity to expand to fifteen if needed. The GGBC workforce
consisted of a few workers who had been with the company for twelve to thirteen seasons and other younger employees for whom, in any year, it may be their first season. Though some of the employees had extensive experience in pastoral operations across northern Australia, there were very few pre-requisite skills or experience required due to the on-the-job nature of the training. The majority of employees had experienced an apprenticeship, whereby less experienced employees were given tasks which require less technical skills and roles with less responsibility. As their competence in these tasks improved, they were progressively given new roles to perform in the muster. For example, new employees were introduced to the work by being responsible for closing the gate once the animals had been mustered. It is a crucial role in the muster, but takes little skill or knowledge. Importantly though, it allowed the ‘apprentice’ buffalo musterer to observe their fellow employees and to learn the trade in relative safety. They were then positioned well to take on new roles with more responsibility, such as driving mustering vehicles.

GGBC had a strong preference for hiring from the local labour market. This was due to the local knowledge and relationships that these employees possessed or knew how to access. For example, as put by the company’s Indigenous mustering coordinator, employing local people was valuable in that:

...you know whose country you are on and you are not going over the borders. And the TOs [Traditional Owners] know whose is which land and whether you are allowed to muster there or not. And with their culture... if they got ceremony on there, we know not to go there... It’s their country, their land you know. Instead of going through a big billabong, you gotta know a way around it (P17).
Also, hiring locals was an ethical statement as buffalo were seen as the communal property of the local Traditional Owners. As stated by a local GGBC employee:

You really need local people and young people out here. To know the country...

Otherwise white man might come in and take this country. A couple of fellas might come out here, white men you know, and start doing what they like (P14).

Mustering positions could nearly always be filled by local people but skills required for more specialist positions, such as mustering coordination, mechanic and cook, were often not present in the local labour market. The non-Indigenous coordinator of GGBC also stated that management positions/roles had not been opened to local people due to a knowledge and skill deficit, although most employees had good comprehension of the overall operations of the company and an understanding of the supply chain to foreign markets.

Employability in mustering work required sound physical health. Employees were required to engage in heavy labour during construction of mustering yards and other operational roles. Also, this work took place in the heat and humidity of the tropical savanna. However, employees cited the healthy meals, limited snacking, exercise, steady routine and plentiful sleep that are part of the mustering lifestyle as contributing to their health and wellbeing. This was expressed in the following from the Indigenous mustering coordinator:

[They have] good meals you know... And they cleaning and they washing their clothes and things like that. Its good you know. Like when they in the communities and town there, they in and out of the fridge every five minutes. That’s if there is something to eat. If not, they’re eating from pay-day to pay-day mate. Like one household in town, they might have two bedrooms; probably have about 15
people living there! And it’s good that they not actually sitting down bored in the
house doing nothing you know (P17).

4.3.5. Social Capital

GGBC had strong relationships with the local Bulman community. More
experienced staff were especially important for their social networks. GGBC used
these networks to source labour, amongst other resources, to support mustering.
As described by a senior employee:

At the start of the season he [the Manager] always come up and get them blokes
who know how to do [the mustering]. Start setting up the yards... go out and do
the grading. Get all the trucks fixed. Then we go and pick some workers. Whoever
has been there for years and years, they’re the first. Then we get a couple of
blokes if we short of men, get a couple of other workers see (P13).

The majority of GGBC’s social capital was based on the connection of the company
to the Traditional Owners in the community. To an extent, the financial success of
the company encouraged the accumulation of social capital, whilst financial failure
would have inevitably lead to an erosion of relationships. The representation of
Traditional Owner groups on the company board of directors helped to smooth
these relationships, as well as ensuring transparency and accountability in the
company’s operations. The experience and network of contacts in the NT pastoral
industry possessed by the coordinator of GGBC were vital for the flow of
information to and from the company, and in negotiating business deals. Other
valuable social capital networks included the relationships which have been
developed with the local community leaders, the NLC and government
departments.
4.4. Vulnerability Context

There were five main vulnerabilities facing GGBC. Four external threats were market vulnerability, conservation policy, disease and animal welfare issues. The live export market in south-east Asia, while growing, is vulnerable to competition from India, particularly if the value of the Australian dollar is high (Cruz 2007). Secondly, conservation agencies have been increasing awareness of Traditional Owners of the extent of environmental change caused by buffalo and that there is potential for environmental management payments to be made to reduce buffalo numbers (Luckert et al. 2007). Such payments could outcompete royalty payments from GGBC, but currently no plans to do so exist. Third, any disease outbreak in buffalo, particularly a disease like foot-and-mouth that can infect cattle, would be likely to see national interests override local ones and for massive culling and closure of borders to occur, as has happened in the past (Robinson and Whitehead 2003). Finally, as was seen in 2010, there is a strong animal welfare lobby in Australia that has concerns about the treatment of Australian livestock in slaughterhouses overseas. In a rather dramatic example of the impact of animal welfare legislation and policy, the Australian Government banned all live exports to Indonesia as result of footage showing the mistreatment of cattle in an Indonesia slaughterhouse (Jones 2011; Blanchett and Zeller 2012; Tiplady et al. 2013). Though the ban was lifted, and agreements recently signed with the Indonesian stakeholders that will see significant investment in this trade.
(Vidot 2013), legislative and policy reactions to animal welfare issues in the live export sector remains a significant vulnerability for GGBC (Gleeson et al. 2012).

The principal internal vulnerability was management succession (Orozco-Quintero and Davidson-Hunt 2010). The company had been managed by the same person, a non-Indigenous pastoralist, since its inception. The skills and networks of this individual had contributed greatly to the company’s success and persistence. Procedures had been put in place to pass on some of this knowledge, though the requisite management skills were not yet present in the local community and there is likely to be an ongoing need for management to operate outside clan-aligned kinship responsibilities.

4.5. Factors of Success

Success of Indigenous-owned business can be defined in many ways and is rarely only concerned with economic profit (Nikolakis 2008; Kayseas 2009). In this case, however, the business has been successful on multiple scales, including financially, socially and culturally. Seven features of the business were identified as making important contributions to that success.

4.5.1. Buffalo

Buffalo are perfectly suited to monsoonal northern Australia. They can keep body condition through prolonged dry seasons by eating plants that are unpalatable to cattle (Lapitan et al. 2008). Further, buffalo fertility in this environment exceeds
that of cattle: female buffalo reach sexual maturity as early as two years old and reliably calve annually; female buffalo as old as seventeen years of age have been observed with calves (C. McMahon pers. comm.). The consequence is a buffalo population that is capable of growth, is resilient, and, importantly for GGBC and unlike large ungulate harvests elsewhere (Meis-Mason et al. 2008), is capable of withstanding considerable harvesting pressure.

4.5.2. Minimal Anti-Use Sentiment

Generally, Australians are not in favour of the commercial use of wildlife (Whitehead 2003a), and feral species such as horses, goats and camels have lobby groups advocating their protection in the wild (Singer 1997). However, buffalo are not only viewed by many Australians as a pest and a threat to native flora and fauna but they also resemble cattle for which there is an established industry. As a result there is no significant anti-use sentiment.

4.5.3. Market

Though there has been a recent contraction of demand for live buffalo in Asian markets (ABIC 2010), there is a general trend towards increased protein consumption in new consumer societies, such as Indonesia, Malaysia and the Philippines (McAlpine et al. 2008) where there is a strong tradition of eating buffalo meat. Though much of this increased demand for protein is currently being met by the supply of beef (cattle), there is potential for the increased supply of buffalo.
Linking in with these international markets is key to on-going success (Meis-Mason et al. 2007).

Though exported live buffalo do not receive as high a price at market as do cattle, GGBC were still able to make significant profits because they did not carry the same production costs as do domesticated stock (such as fencing, bores and feed). The feral buffalo of Arnhem Land have been readily accepted into the buffalo meat market, with the high quality of wild buffalo in Australia meaning that the international market has not discriminated between domesticated and wild caught Australian buffalo.

### 4.5.4. Consistent Culturally-Aware Management

Although a need for a succession strategy for current management can be seen as a vulnerability, the consistent engagement of the same coordinator has also been an important factor in its success to date. Not only have the skills and networks of this manager been key links to external markets and bureaucracies, but there has been a separation between GGBC management and local culturally-aligned sharing responsibilities (Schwab 1995; Peredo and Chrisman 2006). Employees could thus relate to management as an external agent not having to be concerned, in addition, with their kinship obligations.
4.5.5. Historical Roots

The Rembarrnga, Ngalkbon and Nalakan people of southern Arnhem Land (amongst others) have, since the 1920s, had a strong history of involvement in the pastoral industry (Cowlishaw 1999). In many ways the GGBC could be seen as a continuation of this tradition. GGBC began as an idea from a Traditional Owner⁴ in 1985 who saw mustering buffalo as a business opportunity and a way to continue the work that many of the employees’ fathers and grandfathers partook in as stockmen and ringers. As with many Indigenous entrepreneurs (Hindle and Moroz 2010), his motivation was not tightly focused on financial profit, but more so on finding a useful way to spend his, and his countrymen’s, time and energy. These historical roots provided context, meaning and motivation for the employees of GGBC, who saw mustering as an enjoyable lifestyle that produced benefit for their community.

This history had also shaped the buffalo management regime. In the early years of the industry in the region buffalo were over-harvested for pet meat businesses and the European market, which both then collapsed. The visioning of the resource as a pastoral enterprise had meant that the harvest rate had been kept within ‘sustainable’ limits.

4.5.6. Cultural Alignment

Retaining many traditions linked to their hunter and gatherer past (Cowlishaw 1999), GGBC employees suggested that part of the success could be attributed to the low maintenance and seasonal nature of the mustering. There had been no

⁴ Name withheld due to cultural considerations.
large investment in fencing or water bores, nor the maintenance requirement attached to such infrastructure. Further, the mustering season could be as short as six months, with some employees choosing to work for only part of the season. Further, many employees expressed their satisfaction in doing work ‘on country’ that was physical, involved team work and the navigation of the natural environment. The seasonal harvest of buffalo, which involved extended periods of camping away from home, provided meaning and enjoyment in what was described as an otherwise mundane existence. GGBC also ensured that mustering was conducted with enough flexibility to incorporate employee absence due to cultural obligations, such as attendance at funerals and other important ceremonies.

4.5.7. Relationships

Social capital was identified by employees as a key factor of success, particularly in the establishment of the company. They stated that it was important that relationships were built early on with local people who had skills, knowledge and experience of pastoral enterprise, and were focused on business success. They suggested that these individuals were not necessarily the first to be involved in the enterprise, but over time they were identified and enduring relationships were built to GGBC’s benefit. Relationships of trust were intentionally invested in, which then ensured that the company had effective advocates in local politics.

The management strategies employed by GGBC assisted in accessing social capital. Employees spoke fondly of their treatment by their managers, citing the high return
rate of employees to successive mustering seasons as evidence of fair and reasonable treatment. Further, employment in the company enhanced the capital base of employees in that they were given access to vehicles, workshop, homestead and office for limited personal use, as well as access to small zero-interest loans (both financial and in-kind). GGBC had also made one-off donations to address community needs that they saw as appropriate, such as an investment in the local school and subsidising school children’s excursions. These agreements concomitantly created further social capital for GGBC by strengthening the bonds between the community and the company.

Having said this, the company had also established effective boundaries that limited the amount of communal reciprocity (Schwab 1995) that could be demanded. Locating the main homestead and mustering camps remotely from the township had created a weak but effective barrier that limited frivolous interjections from the community. Borrowing money and other resources, and providing feedback on the company’s activities, then only occurred when it was a long-term, serious and/or significant problem.

4.6. Conclusion

GGBC has been built on a strong foundation in all five sustainable livelihood capitals: the natural capital has been abundant and can withstand considerable harvest pressure, due largely to high reproductive capacity; the physical capital has been sufficient, with options to expand when necessary; the human capital has
been capable of ensuring mustering competency and has been supported by an appropriate system of on-the-job training; the social capital has been firm, with good relationships between the company, the community and the wider livestock industry; and financial capital has been plentiful, with annual profits providing worthwhile royalties for Traditional Owners. Seven factors have underpinned this enterprise’s success: the productive capacity of the buffalo and the resources it consumes; the minimal amount of anti-use sentiment harboured by the Australian public towards the commercial use of buffalo; the size of the market and its indifference to wild harvested stock; consistent culturally aware management; strong historical roots in the pastoral industry; considerable alignment of the company’s activities to the local culture; and strong relationships with the associated community.

As discussed, there are real and important problems to be solved with regards to the environmental impact buffalo impose on the natural resources of the Indigenous estate. Further, though transmission is unlikely, feral buffalo also pose a risk to the north Australian pastoral industry as a potential vector of disease. Appropriate management regimes will need to be devised and negotiated in consultation with scientists, government and, most importantly, local Indigenous people. This research did not attempt to gauge the damage caused to the natural capital by the presence of buffalo and the operations of GGBC as, from the company’s perspective, buffalo are the key component of their resource base. Indeed, as described by GGBC’s Indigenous mustering coordinator:
...that’s how they make their living. That’s how they make their money to live off you know. If they come and shoot the lot out [i.e. cull the buffalo], they got no jobs to do. Especially this company. It’s good that these blokes have got this job every year. If there is no buffalo, well there is no work (P17).

Further, as mentioned by one of the local employees when asked about the impact of a culling programme:

That would make it difficult for the buffalo company itself. You wouldn’t be able to catch any buffalo around here. People would be sad because it is part of making money for the community (P14).

As such, the impact on local livelihoods needs to be considered in any potential management regime. However, there would be considerable merit in conducting research to obtain insight into the environmental sustainability of this and other enterprises that exploit invasive species commercially. Indeed, it may be possible to devise solutions that see reduced populations of feral animals realised through increased activity of companies like GGBC.

However, GGBC has given the people of Bulman an opportunity to own and operate an enterprise that has relevance to their identity, history and way of life. Practical skills have been learned while working for the company, as opposed to in the classroom, and employment is flexible enough to accommodate cultural obligations and other social practices, whilst still participating in the seasonal wage economy.

These facets of GGBC have been important for the success of a company operating in a remote location where traditional Indigenous culture continues to be alive and strong. Indigenous Australians have now been interested in using wildlife commercially for some time (Gorman et al. 2006; Gorman et al. 2008). This is in
many ways similar to the use of wildlife for commercial purposes that occurs within the commons globally (Berkes and Davidson-Hunt 2010). Our findings support other similar research that identifies high market demand (Lichtenstein 2010), social capital (Peredo and Chrisman 2006), existence of intermediaries with technical skills (McIntosh and Renard 2010), capitalizing on local assets and skills (Peredo and Chrisman 2006; Orozco-Quintero and Davidson-Hunt 2010), rights to harvest the resource commercially (Lichtenstein 2010; McIntosh and Renard 2010; Orozco-Quintero and Davidson-Hunt 2010), informed leadership (Orozco-Quintero and Davidson-Hunt 2010) and accountability to the local community (Orozco-Quintero and Davidson-Hunt 2010) as important for Indigenous wildlife-based enterprise success. For GGBC to increase benefits for the local community, and to become a genuine CBE, it is important that efforts are made to strengthen local governance and to gain more commodity chain value (Chrisman and Peredo 2006; Lichtenstein 2010; McIntosh and Renard 2010).
Chapter Five: Collecting Crocodile Eggs

5.1. Introduction

In this chapter, a case study of an Indigenous enterprise, that harvests and incubates salt-water crocodile (*Crocodylus porosus*) eggs, is presented. The Djelk Wildlife Enterprises operates from the remote township of Maningrida and is an arm of the Djelk Rangers Indigenous land management programme (Cochrane 2005). Both are managed by a parent organisation – the Bawinanga Aboriginal Corporation (BAC). The BAC operates as a resource agency for outstation residents whilst facilitating one of Australia’s largest Community Development Employment Project (CDEP) schemes (for an in-depth discussion of CDEP see Chapter 6). It is also a local representative body with a membership consisting of traditional landowners from across north-central Arnhem Land (Altman and Cochrane 2005; BAC 2011). Like many of BAC’s enterprise activities, Djelk Wildlife Enterprises (Djelk) was established as a social enterprise (Berkes and Davidson-Hunt 2007) to realise increased employment, inject cash into the local economy, build capacity, realise beneficial conservation outcomes and enhance land-management activities for the people of the Maningrida region (BAC 2011). This study presents an overview of the natural, human, physical, financial and social capitals activated and employed by Djelk, and identify the factors that have been key in influencing its crocodile egg-harvesting operations.
Commercial crocodile egg-harvesting first began in the Maningrida region in the 1980s and was primarily conducted by non-indigenous proponents, with commercial interests mostly independent from Indigenous livelihoods. In 1991, the Djelk Rangers were established in recognition of the desires and the capacity of local people to manage their land (Cochrane 2005). The Bawinanga Aboriginal Corporation realised that, if they could capture the local market for crocodile eggs, new jobs could be created, income for the community could be realised, and the profits from harvests could be reinvested in land management activities. A Darwin-based crocodile farm and research facility – Wildlife Management International (WMI) – were amenable to entering into partnership with Djelk and, in 1997, agreed to purchase all hatchlings of saleable quality. This enduring relationship continues in the same fashion today.

International experience suggests that self-governed and community-based natural resource management initiatives rarely achieve optimal performance in terms of sustainability (Ostrom 1990; Rose 2002). Djelk has been involved in commercial crocodile egg-harvesting for more than 15 years and, as such, seems to provide a counter-example to this general principle. Further, as will be discussed, this case study supports literature on community-based use of wildlife for commercial purposes (Peredo and Chrisman 2006; Berkes and Davidson-Hunt 2010; Gruber 2010; Lichtenstein 2010; McIntosh and Renard 2010; Orozco-Quintero and Davidson-Hunt 2010).
Djelk is a case of interest in that, like the Indigenous Australian arts industry (SECITA 2007), it has been able to engage Indigenous people in market-based activity by leveraging the available natural and human assets endogenous to the region. This is particularly significant given the low participation of people in the market economy in Maningrida (Altman 2001; Northern Territory Government 2009b). In addition, against the trend of enterprise development in remote Indigenous Australian communities (IBR 2003; SCRGSP 2009), Djelk’s crocodile egg-harvesting enterprise has enjoyed considerable longevity.

The findings of this case study will be of use to development practitioners, policymakers and academics interested in the commercial use of wildlife for socially, economically, culturally and environmentally sustainable development. Development of IWBE offers people a way to recognise assets, use them to create sustainable livelihoods, and maintain or expand the value of these assets. Without such mechanisms, it is highly likely that the asset-base of the region would deteriorate through ignorance and unintentional neglect, placing further pressure and strain on Indigenous people to demonstrate the viability of their communities and the legitimacy of their culture (Freese 1998). Elucidating the factors of success for wildlife-based enterprises, run by Indigenous people, may assist government and non-government organisations to target services and programmes to support wildlife-based enterprise development and other sustainable development initiatives in northern Australia.
5.2. Methods

Research was undertaken at Maningrida during three separate field trips between June 2010 and January 2011. Semi-structured interviews (Minichiello 1995) were undertaken with 10 former and current BAC employees. To ensure depth in the case study, sampling was targeted at those individuals with a close relationship to Djelk’s crocodile egg-harvesting activities. As noted in Chapter Two and Three, interview questions were directed by the Sustainable Livelihoods (SL) Framework (Chambers 1987; Bebbington 1999; Carney 2003) and were designed to elicit data on the asset-base, institutions, vulnerabilities and factors contributing to the longevity of the enterprise. Interviews were conducted in an informal manner, whereby specific questions were adapted to specific interviewees. To obtain
alternative perspectives and to verify employee interviews, the Managing Director of the company that buys crocodile hatchlings from Djelk, a natural resource-management consultant with knowledge of crocodile egg-harvesting activities and a community-development practitioner, with knowledge of the Maningrida community, were also interviewed. Interviews were given context and depth by field observations (observer-as-participant kind, Angrosino 2007), and were recorded in reflective free-form narrative. Interviews and observations took place whilst harvesting crocodile eggs, culling feral animals and working at the Djelk Ranger station. Further details of data collection and analysis using the Sustainable Livelihoods Framework as an analytical tool are provided in Chapters Two and Three.

5.3. Sustainable Livelihoods Assets

5.3.1. Natural Capital

Having recovered from low populations in the 1970s caused by overharvesting, saltwater crocodiles are now common throughout northern Australia, and in particular the Northern Territory (Fukuda et al. 2011). Crocodiles lay an average of 50 eggs in nests made of mounded vegetation and mud during the north Australian wet season (November - March). Nesting habitats of the saltwater crocodile include the banks of rivers and freshwater swamps (Harvey and Hill 2003). Such habitats are sometimes degraded by unmanaged fire, feral animals (e.g. pigs [Sus scrofa] and water buffalo [Bubalus bubalis]) and noxious weeds (e.g. Mimosa pigra) (Leach et al. 2009; B. Corey, unpublished data). The main cause of loss of nests is wet-
season flooding (Fukuda et al. 2011). Egg harvesting has a negligible impact on population persistence because many nests do not produce hatchling recruits in the wild (Webb et al. 1983; Fukuda et al. 2011). Djelk has historically harvested eggs from the Liverpool, Tomkinson, Cadell and Blyth river systems in north-central Arnhem Land (Fig. 1). Eggs have occasionally been harvested from swamps and creeks adjacent to outstations in collaboration with local landowners.

### Table 5.1. Summary of commercial crocodile-egg harvests by Bawinanga Aboriginal Corporation in the Maningrida region, northern Australia 1997-2011.

<table>
<thead>
<tr>
<th>Season</th>
<th>Eggs harvested</th>
<th>Hatchlings sold</th>
<th>Value (AUS per hatching)</th>
<th>Gross income (AUS)</th>
<th>Royalty paid (AUS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997–1998</td>
<td>876</td>
<td>378</td>
<td>30</td>
<td>11,340</td>
<td>1,890</td>
</tr>
<tr>
<td>1998–1999</td>
<td>1118</td>
<td>500</td>
<td>30</td>
<td>15,000</td>
<td>2,500</td>
</tr>
<tr>
<td>1999–2000</td>
<td>1583</td>
<td>650</td>
<td>30</td>
<td>19,500</td>
<td>5,200</td>
</tr>
<tr>
<td>2000–2001</td>
<td>1566</td>
<td>1124</td>
<td>35</td>
<td>39,340</td>
<td>8,992</td>
</tr>
<tr>
<td>2001–2002</td>
<td>2287</td>
<td>836</td>
<td>37.50</td>
<td>31,350</td>
<td>6,688</td>
</tr>
<tr>
<td>2002–2003</td>
<td>1590</td>
<td>346</td>
<td>37.50</td>
<td>12,975</td>
<td>3,460</td>
</tr>
<tr>
<td>2003–2004</td>
<td>1820</td>
<td>645</td>
<td>37.50</td>
<td>24,188</td>
<td>6,450</td>
</tr>
<tr>
<td>2004–2005</td>
<td>1268</td>
<td>335</td>
<td>40</td>
<td>13,400</td>
<td>3,350</td>
</tr>
<tr>
<td>2005–2006</td>
<td>1168</td>
<td>409</td>
<td>40</td>
<td>16,360</td>
<td>4,090</td>
</tr>
<tr>
<td>2006–2007</td>
<td>1399</td>
<td>563</td>
<td>45</td>
<td>25,335</td>
<td>8,445</td>
</tr>
<tr>
<td>2007–2008</td>
<td>No harvest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008–2009</td>
<td>269</td>
<td>94</td>
<td>60</td>
<td>5,640</td>
<td>2,820</td>
</tr>
<tr>
<td>2009–2010</td>
<td>1729</td>
<td>1061</td>
<td>60</td>
<td>63,660</td>
<td>31,830</td>
</tr>
<tr>
<td>2010–2011</td>
<td>1065</td>
<td>636</td>
<td>45</td>
<td>28,620</td>
<td>11,448</td>
</tr>
<tr>
<td>Total</td>
<td>17,738</td>
<td>7,597</td>
<td></td>
<td>306,708</td>
<td>97,163</td>
</tr>
</tbody>
</table>

The Parks and Wildlife Service of the Northern Territory (PWSNT) issue permits for the harvesting of eggs from the wild (currently 50,000 eggs per annum), 23% of which are allocated to the Arnhem Land region (Leach et al. 2009). Djelk’s permit issued for the 2010-2011 season restricted harvests to 2,700 viable (live) eggs. The average number of eggs harvested per season since egg-collecting began in 1997–1998 is 1,364, and has ranged from just 269, up to 2,287 (Table 6.1). Egg harvesting has occurred in the region since the late 1980s. Whilst the exact size of the egg
resource is unknown, annual population monitoring since 1975 demonstrates the harvest is sustainable (Fukuda et al. 2011).

5.3.2. Physical Capital

Djelk had an office and work space which houses all the physical capital, including an incubator specifically designed for rearing crocodile eggs. A helicopter was used extensively for egg harvesting. All helicopter services were contracted out due to the absence of a pilot in the community. There was little equipment required once at the nest site. A large plastic container was used to convey eggs back to the ranger station and an oar was used to ward off aggressive crocodiles. Harvesters also used CyberTracker software on hand-held computers (Ansell and Koenig 2011) to record harvest data. Except for the helicopter, all equipment was owned and maintained by BAC.

5.3.3. Financial Capital

When Djelk first began harvesting crocodile eggs, there was limited financial investment required. The rangers already occupied a ranger station which had sufficient space to house the activities of the crocodile-egg enterprise. The only significant investment required was to build an incubator (AU$20,000) which was financed by public funding. In 2008 Djelk built its own premises, which was an extension to the existing rangers’ shed, and was financed, in part, by an Australian Government Natural Heritage Trust grant.
The income received from egg harvests has varied considerably over the lifetime of the enterprise. The main reasons for this being that: (1) the market for crocodile hatchlings has fluctuated over the years so that the market price of hatchlings has varied accordingly (Table 6.1); and (2) there has been considerable variation in the number of eggs collected due to: (a) different harvest methods, (b) the work priorities of Djelk, (c) increased competition with egg collectors from outside of Maningrida, (d) restrictions imposed by regulatory bodies and (e) seasonal variation in the number of nests laid and the loss of nests due to flooding. The average annual income of the enterprise since harvesting began in 1997-1998 is AU$23,662 (Table 1).

Djelk has also received substantial financial support from BAC to supplement its income from the crocodile harvest. As a regional development organisation, BAC has received funding from various government initiatives that seek to provide work opportunities for Indigenous Australians. A portion of this funding has been directed to Djelk which was also supplemented by profits generated from wildlife enterprise activities.

The most significant cost for egg collecting was the hire of helicopters (currently AU$700–800 per hour). Another significant cost was the payment of royalties to traditional landowners – payed as a percentage of the total income received from the sale of hatchlings. The average annual total royalty paid to land owners in the Maningrida region was AU$7,500 (Table 1).
5.3.4. Human Capital

Harvesting of crocodile eggs by Djelk was carried out by up to six employees. Aside from the manager of the enterprise, all employees came from the local community. The employees brought a diverse range of skills to the enterprise. For many, their employment as Indigenous rangers (Cochrane 2005) meant that they were already competent in land-management activities, such as control of feral animals, weed management, prescribed burning and data collection.

As is common in Indigenous communities where unemployment is high, in the early history of the crocodile egg-harvesting enterprise, employees were not familiar with work as conceived in the non-Indigenous sense (McRae-Williams and Gerritsen 2010). As a former manager of the egg harvests commented:

> We had to take people from a history of basically no employment, so nobody understood what a work ethic was, what was required to do it... so it was starting from a very low base of understanding (P11).

Employees, however, brought with them a range of other useful knowledge and skills, such as knowledge about the nesting behaviour and habitat of crocodiles, how best to access the egg resource and at which time of year.

> ...we had people with lots of great traditional skills that they used for surviving in their economy. And so the focus was to use those skills that people have, that are already there (P11).

This knowledge and experience had been handed down through the generations of egg harvesters whose collective experience is significant. All training conducted was of an informal nature and was field-based. Junior harvesters learnt from senior members of the group. For example, the most senior staff member involved in the
harvests had been collecting eggs for almost 15 years. He was in turn mentored by the locally famous “professional crocodile hunter”, Jacky Adjerral, who was employed in the earliest field research and egg-collecting activities around Maningrida.

Djelk accessed knowledge and experience of landowners through the crocodile egg-harvesting enterprise. The location of nests, timing of nesting, and the methods for managing nesting habitats, were all considered in the strategic planning and implementation of harvests. The outcome was not only an enhanced capacity to locate and harvest nests, but additional support for traditional land management practices and the traditional ecological knowledge that underpins it. As a senior Djelk employee stated:

[Land owners] know every little nesting site. Land owner will always be there. To look after that country (P4).

This is not to suggest that all landowners had strong traditional ecological knowledge or managed their estates to promote nesting. In fact, knowledge of crocodiles in Maningrida was varied – from traditional knowledge, to a mixture of traditional and more recent knowledge (Wilson et al. 2010), and to people who had no particular interest in land management.

Where gaps in knowledge or skill emerged, experts from the buyers of the hatchlings were used as consultants to assist in overcoming production problems. This expertise was notable; aside from more than 25 years of commercial crocodile egg harvesting experience, the buyer also had a research arm, which was led by a
wildlife management expert who was the Chair of the Crocodile Specialist Group of the International Union for Conservation of Nature. This consultancy capacity was not the result of a formalised relationship but was symbolic of the amicable relationship between the parties. Djelk had also had strong connections to other research groups such as the former Australian Research Council funded Key Centre for Tropical Wildlife Management at Charles Darwin University and the Institute for Applied Ecology at the University of Canberra. As has been occurring elsewhere on the Indigenous estate (Wilson et al. 2010), through these relationships Djelk were able to combine traditional knowledge and western scientific knowledge to support their harvests (Wilson et al. 2010).

Egg harvesting was a strenuous exercise due both to the terrain and climate in which the work took place. Employees were often required to wade through mud and water, to navigate thick vegetation and to travel long distances on foot. This work took place in the heat and humidity of the north Australian wet season. Days were long with employees working up to 12 hours per day. To add to this, working in close proximity with dangerous animals is stressful and requires strength, speed and agility when required to flee or to defend oneself or others.

5.3.5. Social Capital

Royalty payments were seen as a tool for Djelk to accumulate and maintain social capital. These purchased the right to harvest crocodile eggs from local clan estates. Land Use Agreements (LUA, see Table 3) for egg harvesting provided a formalised
and structured way of affirming relationships between Djelk and local landowners.

The LUA negotiation process was well known by senior land owners, who had mostly developed a steady relationship with Djelk. Significantly, this distribution of funds also injected cash into the very small market sector of the Maningrida economy (Altman 2001; Northern Territory Government 2009b).

Table 5.2. Sustainable livelihoods assets used by Djelk Wildlife Enterprises’ crocodile egg-collecting enterprise in Maningrida, Northern Territory, Australia.

<table>
<thead>
<tr>
<th>Capital categories</th>
<th>Capital assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural capital</td>
<td>Abundant saltwater crocodile population</td>
</tr>
<tr>
<td></td>
<td>Plentiful nesting habitat</td>
</tr>
<tr>
<td></td>
<td>Target species is sufficiently resilient to harvest pressures</td>
</tr>
<tr>
<td>Physical capital</td>
<td>Buildings</td>
</tr>
<tr>
<td></td>
<td>Incubator</td>
</tr>
<tr>
<td></td>
<td>CyberTrackers</td>
</tr>
<tr>
<td></td>
<td>Minimal harvesting equipment</td>
</tr>
<tr>
<td>Financial capital</td>
<td>Significant public funding</td>
</tr>
<tr>
<td></td>
<td>Investment from parent company</td>
</tr>
<tr>
<td></td>
<td>Sustained strong market</td>
</tr>
<tr>
<td></td>
<td>Established market chain</td>
</tr>
<tr>
<td>Human capital</td>
<td>Up to six employees</td>
</tr>
<tr>
<td></td>
<td>Investment in capacity development of employees</td>
</tr>
<tr>
<td></td>
<td>Indigenous Ecological Knowledge</td>
</tr>
<tr>
<td></td>
<td>Strong cultural awareness, knowledge and sensitivity</td>
</tr>
<tr>
<td></td>
<td>Complementary skills developed by employees working as Rangers</td>
</tr>
<tr>
<td></td>
<td>Access to local land owner knowledge</td>
</tr>
<tr>
<td></td>
<td>Support and expertise of the buyers and other external agencies</td>
</tr>
<tr>
<td></td>
<td>Strength, speed, agility and endurance of employees</td>
</tr>
<tr>
<td></td>
<td>Interest, skills and institutions for actively managing habitat to keep crocodile</td>
</tr>
<tr>
<td></td>
<td>nests safe from weeds, feral animals and fire</td>
</tr>
<tr>
<td>Social capital</td>
<td>Relationships with land owners strengthened through royalty payments</td>
</tr>
<tr>
<td></td>
<td>Culturally appropriate activities ensure local relationships are maintained</td>
</tr>
<tr>
<td></td>
<td>Strong vertical and horizontal relationships, internal and external to the</td>
</tr>
<tr>
<td></td>
<td>community</td>
</tr>
<tr>
<td></td>
<td>Long-standing relationship with buyer</td>
</tr>
</tbody>
</table>

Importantly, Djelk maintained relationships by respecting and abiding by local cultural protocols. As egg harvesters were members of local clan groups, this knowledge was organically incorporated into the enterprise itself. Due to the close connection of natural and socio-cultural realms in the Indigenous Australian world view, awareness of the cultural landscape and the ability to negotiate it have been crucial to Djelk.
Djelk enjoyed strong relationships with various organisations outside of Maningrida. As mentioned, their relationships with WMI and other research entities were strong, with two-way flows of information regarding the industry and practice of egg collecting and incubation. Further, the enterprise had developed a relationship with the PWSNT that was of a professional and productive nature, which assisted in the processing of permits to harvest crocodile eggs.

5.4. Institutional Context

The industry of crocodile products is surrounded by a complex legislative and policy framework across multiple scales (see Table 3). Within this legislative framework, there is room for farms, like WMI, to engage in the practice of ranching crocodiles in the NT (Leach et al. 2009). The Northern Territory Government has a policy that encourages and supports sustainable use (PWCNT 1997) and the current crocodile management plan (Leach et al. 2009) specifically mentions the economic value created for Indigenous Australians from this use (Leach et al. 2009). In general, the institutional framework is supportive of Djelk’s egg harvesting of crocodiles from the wild and is willing to learn through adaptation and co-management of the resource (Armitage 2007).

Whilst formal institutions are theoretically supportive of Djelk’s crocodile-egg harvests, in practice this support is diminished by a lack of capacity. For example, the regulated supply and high value of live eggs (approx. $AUD30) provides an incentive for poaching. In recent years, efforts have been made by the PWSNT to bolster the monitoring regime by requiring proponents to keep accurate records of
the number and the GPS location of all eggs harvested, and carrying out incubator audits unannounced. Given the scale and remoteness of the north of the Northern Territory, however, PWCNT’s capacity to monitor harvesting activities is limited. In 2008-2009, poachers raided six nests from an area near Maningrida, which potentially cost AU$14,000 in lost income for Djelk (B. Corey unpublished data).

Table 5.3. Legislation and agreements that regulate the harvest and trade of saltwater crocodiles and products derived from saltwater crocodiles.

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Legislation</th>
<th>Relevance to Djelk Crocodile Egg Collecting</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td><em>Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)</em></td>
<td>The Australian population of <em>C. porosus</em> is listed on Appendix II of the <em>Convention on International Trade in Endangered Species of Wild Fauna and Flora</em> (CITES), which allows for international trade of the species (subject to conditions).</td>
</tr>
<tr>
<td>Australia</td>
<td><em>Environment Protection and Biodiversity Conservation (EPBC) Act</em></td>
<td>The Commonwealth of Australia’s <em>Environment Protection and Biodiversity Conservation (EPBC) Act</em> places some protection on the species by limiting the circumstances in which they may be taken from the wild.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td><em>Aboriginal Land Rights (Northern Territory) Act (ALRA) 1976</em></td>
<td>The <em>Aboriginal Land Rights (Northern Territory) Act (ALRA) 1976</em> invests power in Land Councils (for the Top End of the Northern Territory, the Northern Land Council) to ensure that Aboriginal landholders have given informed consent for any commercial activity to take place on their lands. Specifically s.19 of ALRA requires that Land Use Agreements be signed by all stakeholders that clearly detail the activities to take place and the benefits (usually royalties) to be paid to landowners.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td><em>Territory Parks and Wildlife Conservation (TPWC) Act</em></td>
<td>Under the <em>Territory Parks and Wildlife Conservation (TPWC) Act</em> the saltwater crocodile is classified as protected wildlife. Section 66 of the TPWC Act makes it illegal to harvest <em>C. porosus</em> from the wild without securing an appropriate harvest permit from the Director of the Parks and Wildlife Commission or their delegate.</td>
</tr>
</tbody>
</table>
Another example of a lack of institutional capacity affecting the viability of Djelk’s egg harvests is the inefficient processing of LUA applications by the Northern Land Council which has at times lead to delays in the commencement of harvests. This has resulted in lost income due to flooding of nests, weakened relationships with land owners, uncertainty of supply to business partners, and made it difficult to plan strategically.

Djelk has developed and consolidated much bonding social capital (Woolcock and Narayan 2000) due to its longevity, the capacity of the enterprise to pay sufficient royalties over its lifetime, its close connection with the local community and the cultural sensitivity of its operations. Given the strong bonding social capital that exists amongst many Indigenous groups in remote Australia (Maru and Davies 2011), this has been more a process of Djelk establishing itself as a member of the community. Further to the aforementioned stocks and flows of social capital, the level of ownership of the enterprise, both for employees and the community, is high. This may be due to the excitement generated around the harvests, with children frequently visiting the shed to look at the produce, but is also likely influenced by the royalty incomes that will result. Further, given that cultural sensitivity is a core component of Djelk’s strategy and practice, the ability of the organisation to conduct their operations in line with cultural protocols has meant that the general trend has been towards the accumulation of bonding social capital.

As mentioned previously, Djelk’s bridging social capital (Woolcock and Narayan 2000) has been developed primarily through its parent organisation. The presence
of BAC as a cross-cultural intermediary has allowed relationships with business partners (WMI), formal institutional agencies (PWSNT, NLC) and research institutes (CDU, University of Canberra) to be negotiated and strengthened in a manner that is comprehensible and appropriate for all parties. As will be discussed, bridging social capital, especially links to market, has allowed Djelk to effectively expand its asset-base and enhance its operational capacity.

5.5. Vulnerability Context

5.5.1. Climate Change and Invasive Species

Sustainable, and thus enduring, egg harvests are dependent on healthy populations of crocodiles. Climate projections for northern Australia include sea level rise, more extreme rainfall, higher temperatures, more frequent and intense fires, and more intense cyclones within the next 50 years (Green and Preston 2006). This could lead to the loss of nesting habitat for crocodiles (floodplains and wetlands) from saltwater intrusion and higher levels of nest mortality from flooding. Because environmental temperature determines the sex of hatchlings, long-term temperature changes could alter population structure (Webb et al. 1977). More frequent storms and fires may alter nesting habitats, and have negative impacts on food sources and survivorship. Invasive species, such as buffalo and pig, are increasing in densities across northern Australia (Bradshaw et al. 2007). This will lead to an increase in the degradation of the nesting habitat of crocodiles through the alteration of vegetation from feeding and trampling and through damage to waterways by erosion and salt-water intrusion. Whilst these threats are outside the
scope of the current management plan (2009–2014) (Leach et al. 2009), they have the potential to impact upon the egg-harvesting industry in the future.

5.5.2. Changes in Government Policy

Djelk’s crocodile-egg harvesting is vulnerable to changes in government policy in two main areas: the regulation of wildlife harvests for commercial use, and investment in job creation in remote Indigenous communities.

As mentioned, the regulatory framework governing commercial harvest of wildlife, though complex, is currently supportive of Djelk’s crocodile egg-harvesting activities. If political support for such initiatives becomes diminished, however, permits to conduct harvests may become difficult to obtain, or could be banned altogether.

Further, as mentioned previously, Djelk’s viability is considerably contingent on ongoing public financial investment in job-creation initiatives (e.g. CDEP, Working on Country funding). This is not unusual in remote Australia, where economic viability is limited due to the absence or small size of local markets and high costs of production. Given this dependency, Djelk is made considerably vulnerable to changes in government policy affecting financial investment in Indigenous and remote Australia.
5.5.3. Market

Djelk is dependent on demand for eggs/hatchlings from crocodile farms. In turn, these farms are at the mercy of global trends. As such, Indigenous egg collectors have very little influence over the industry and need to remain flexible and capable of adapting to market trends. Given the operating context and consequent high costs of production, Djelk’s crocodile-egg collecting is made vulnerable to potential down-swings in the international market. As will be discussed further, the historical strength of demand for crocodile eggs and hatchlings has been important for Djelk’s operations.

5.6. Key Factors Influencing Longevity of Operations

5.6.1. Market

As with other wildlife enterprises, a key component of Djelk’s operations is that it services a well-established market (Meis-Mason et al. 2007; Cunningham et al. 2009a). The market for crocodile eggs and hatchlings is driven by global demand, which is high due to the superior quality of the skin of *C. porosus* for leather goods (Goulding et al. 2007). This, combined with the strong regulatory protection for the species and the complex and costly nature of saltwater crocodile husbandry for captive breeding, and the fact that crocodile leather cannot be synthetically manufactured, means that there is an on-going high demand for crocodile eggs harvested from the wild. Given that most nesting habitat for crocodiles exists on Indigenous-owned or -managed land, Indigenous people have a comparative advantage in supplying stock to the market (Leach et al. 2009). High demand for
superior quality crocodile leather, sourced from a considerably regulated wild resource, commands high prices at market. Such high prices are crucial for the economic viability of the enterprise as they offset the high costs of production for wild-harvested commodities from remote northern Australia, and elsewhere (Meis-Mason et al. 2007; Lichtenstein 2010). The enduring strength of market demand for high-quality saltwater crocodile leather has contributed significantly to Djelk’s longevity.

5.6.2. Social Capital

Good stocks of social capital have been identified as crucial to community- and natural resource-based enterprises (Davies et al. 1999; Peredo and Chrisman 2006; Davies et al. 2008; Gruber 2010; McIntosh and Renard 2010; Davies et al. 2011). As mentioned, Djelk has accumulated and maintained sufficient social capital (both bonding and bridging) throughout its existence.

Competition for egg concessions in the Maningrida region has increased in recent years leading to conflict during negotiations over access and appropriate royalty payments. Under the 2009-2010 LUA, Djelk was obliged to pay half its income from the sale of crocodile hatchlings to traditional landowners (Table 1). This was considerably larger than the historical average of AU$9 per hatchling. As a result, little profit has been realised from the crocodile egg harvests in recent years. The LUA negotiation process under which the royalty share has been negotiated has affected the social capital of the enterprise, creating tension and potential conflict.
between Djelk and landowners, and amongst members of clan groups themselves. This occurred because land owners were encouraged by the NLC to seek a higher royalty in response to increased competition for egg harvesting rights from non-Indigenous collectors outside of Maningrida. Central to navigating the LUA process, and to obtaining permission to harvest on an on-going basis, is the maintenance of sufficient stocks of social capital. Although payment of royalties does accumulate social capital, this can only happen while the enterprise can pay royalties that are considered sufficient. Competition over concessions to harvest eggs inevitably drives up the royalty price to be paid, thus threatening viability. Once this ceiling is reached, social capital may play a role in securing the cooperation of landowners to continue harvesting from their estates.

The nature of the relationship between Djelk and the buyers of the eggs (WMI) has been important for the enterprise. Though written contracts do not exist, the verbal contract between the parties has allowed Djelk to invest confidently in harvests, knowing that they will have a market to supply. This allows the enterprise to focus its efforts on production and management aspects without having to invest in marketing the product. Further, the in-kind investment in human capital afforded to Djelk by WMI has been exceedingly important for the ongoing success of the operation.
5.6.3. Demonstrably Sustainable Harvest

Saltwater crocodiles have been the subject of intensive scientific and conservation research since the 1970s. This has made it possible to demonstrate that targeting crocodiles for commercial-scale harvest at the egg stage of their life-cycle is sustainable (Fukuda et al. 2011). Given that the emphasis is on the sustainability of any commercial harvest of wildlife, access to scientific evidence to support commercial use underpins Djelk’s operations.

5.6.4. Minimal Anti-Use Sentiment

Unfavourable attitudes towards consumptive use of wildlife have significant potential to influence the success or failure of wildlife-based enterprises (Choquenot et al. 1998; Simpson and Chudleigh 2007; Gorman et al. 2008). However, few Australians (with notable exceptions, see: Northfield and McMahon 2010) object to the commercial use of saltwater crocodile eggs. In contrast to the trophy-hunting of large wild crocodiles (Northfield and McMahon 2010), the meat and leather industry, based on egg collection of Australian saltwater crocodiles, has seen comparatively little pressure from animal rights or conservation activists. This minimal anti-use sentiment creates a political and ethical space in which the industry can operate.

5.6.5. Support of the Parent Organisation

The financial and human resource risk involved in investing in wildlife enterprises has been offset by the financial and managerial strength of BAC. The management
of BAC have been open to entrepreneurial risk-taking in an effort to realise alternative income streams for the community. As such, the risk faced by Djelk in their crocodile egg harvesting activities has been mitigated by BAC’s financial support. Senior management of BAC has not seen the periodic poor performance of the enterprise as a drain on resources but as an investment in the future. For them, it has been a gamble worth taking as it has led to increased employment and growth in the local economy. Further, as mentioned, BAC’s role as a cross-cultural intermediary has freed Djelk to focus on harvesting crocodile eggs. This allows people to learn at their own pace, within their own capabilities, whilst capitalising on the skills and knowledge that they already possess.

5.6.6. Activating and Enhancing Capitals and Capabilities

The BAC chose to invest in crocodile egg harvesting as it capitalises on the local human capabilities and natural resources in the Maningrida region. As put by a former manager, egg harvests involved:

- Things that were achievable. Things that revolved around peoples’ skill sets and cultural values. Enabling them to make money out of their knowledge and their country, without interfering with their knowledge and their country (P10).

These capabilities have been consolidated and complemented with new skills and a safe and slow introduction to working within the non-Indigenous framework of private enterprise. Djelk does not privilege western scientific knowledge over traditional knowledge but rather combines these knowledge systems to enhance the capacities and capabilities of local people (Fordham et al. 2010b).
5.6.7. Locally Relevant Enterprise Activity

The work is certainly challenging for employees in that they are required to learn new skills and to become accustomed to operating in a cross-cultural domain. These challenges could create problems in staff retention and motivation but the nature of the activities undertaken has a strong semblance to Indigenous comprehension of work (McRae-Williams and Gerritsen 2010).

Given that local people have had a long and intimate history of interaction with crocodiles, valuing them for subsistence and cultural purposes, the concept of work embodied in the wild harvest of crocodile eggs is familiar and has a readily understandable logic (Webb et al. 1996). This mutual comprehension of the work involved in commercial harvest of crocodile eggs has since created a space in which Indigenous and non-Indigenous employees of BAC can approach work together. Subsequently, Indigenous employees have been interested in learning western knowledge skills to complement their harvesting activities. As stated by a former Djelk coordinator:

What we found was that because they were crocodiles, and not rabbits or something that people had no traditional value of, they [Djelk employees] were able to pick up these completely non-traditional skills associated with this species and be interested and focused on it. The fact that it was a species that they had traditional knowledge and values about really created a desire to be involved ...there are plenty of examples of non-traditional-type things that are just not picked up that were nowhere near as difficult really (P10).
The seasonality of harvests fits with Indigenous modes of work and understanding of livelihood pursuits. People can engage in work for four months of the year, then move onto something else as the seasons change. The nature of the north Australian wet season means that people are restricted in their movements and the range of activities at the time of the crocodile egg harvest. For those people so inclined, it gives an opportunity to engage in land management activities during the wet season:

For example, when it’s wet, we can’t go out with the truck. So we always stuck in Maningrida. Some of them doing croc eggs. Some of them doing weed spraying (P1).

It also involves activities that are considered by the employees to be enjoyable and otherwise inaccessible. These include the opportunity to spend extended amounts of time on country and to have fun with their colleagues. Employees were unanimous:

It’s good fun, you know... we have all this good fun out here camping (P6).

The job market in Maningrida is limited with most other jobs available being mundane or uninteresting compared to wildlife harvesting. Crocodile harvesting offers an opportunity, and is equally an opportunity borne from people’s desire, to express their human agency in pursuit of livelihoods (de Haan 2000).

5.7. Discussion

Egg harvesting by Djelk is in many ways similar to the use of wildlife for commercial purposes in the commons (Berkes and Davidson-Hunt 2010). The findings of this study support similar research on commercial use of wildlife and community-based natural resource management that identifies high market demand (Lichtenstein
scientically demonstrable sustainability (Gruber 2010), social capital (Peredo and Chrisman 2006; Davies et al. 2008; Gruber 2010; McIntosh and Renard 2010), formal and informal institutional support (Gruber 2010), capitalizing on local assets and skills (Peredo and Chrisman 2006; Gruber 2010; Orozco-Quintero and Davidson-Hunt 2010), rights to harvest the resource commercially (Lichtenstein 2010; McIntosh and Renard 2010; Orozco-Quintero and Davidson-Hunt 2010), and accountability to the local community (Gruber 2010; Orozco-Quintero and Davidson-Hunt 2010) as important for Indigenous wildlife-based enterprise success. Further, contrary to some of the literature (Ostrom 1990; Rose 2002), Djelk Wildlife Enterprises demonstrates that market-driven, community-governed natural resource management can be conducted in a sustainable manner.

This case demonstrates that the natural resources abundant in the remote region of Maningrida can be converted into income and employment through sustainable commercial use. Djelk has identified numerous species that have economic value and would be appropriate for commercial use by the Maningrida community. The model developed for using the local crocodile resource sustainably is assisting in designing harvest regimes to capitalise on other market-based opportunities as they arise. The factors at the core of this model are: minimal anti-use sentiment; demonstrably sustainable harvests; the strength of the market; social capital; institutional support; activating and enhancing capitals and capabilities; and locally relevant enterprise activity (Table 6). Though other factors may be important when using different species or accessing different markets, Djelk will be able to assess
prospective wildlife-based enterprises against these benchmarks before making investment decisions.
Chapter Six: Assets, Vulnerabilities and Institutional Context

6.1 Introduction

This chapter compares and contrasts the sustainable livelihood assets and the vulnerability contexts of the three case studies – the collection of fruit of Tf (Chapter Four), the mustering of feral water buffalo (Bubalis bubalus) (Chapter Five) and the harvesting of eggs of saltwater crocodile (Crocodylus porosus) (Chapter Six). Despite the difference between these activities, the nature of the research and the structure of the case studies allows meaningful cross-case analysis.

6.2 Sustainable Livelihood Assets for Indigenous Wildlife-based Enterprises

6.2.1. Natural Capital

Although the wildlife exploited by each IWBE varied greatly (a tree, a large feral herbivore and a large aquatic predator), there were many similarities in the natural capital supporting each enterprise (Table 6.1). In each case study, the targeted species were locally abundant. This abundance was partly a function of the relative health of the ecosystems on which the targeted species rely. Northern Australia is exceptionally sparsely populated and there has been less human-induced change to ecosystem processes than in most other regions of the world (Woinarski et al. 2007). The result is that many wildlife populations are at or near carrying capacity. However one reason that human populations are low is that the productivity of
ecosystems is low, with the soil being particularly poor. This has meant that more intense harvesting, which might attract more capitalised enterprises to compete with IWBEs, have not proved economic.

Table 6.1. Sustainable Livelihood Asset-bases for IWBE case studies.

<table>
<thead>
<tr>
<th>Natural Capital</th>
<th>T.ferdinandiana</th>
<th>Buffalos</th>
<th>Crocodiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local abundance</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Resilient to commercial scale harvest</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Relatively intact ecosystems</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><strong>Physical Capital</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal and rugged equipment</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Expensive/hazardous tasks outsourced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial Capital</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal start-up investment</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Public investment</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private investment</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Minimal financial profit</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>No investment in improvement of wild stock</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Significant financial investment in social capital</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><strong>Human Capital</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Home-grown”</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Few skills initially</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>On-the-job training</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Peer mentoring</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Extension-like assistance</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>IEK/TK</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Health and fitness a prerequisite</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td><strong>Social Capital</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royalties accrue social capital</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>LUAs mediate bonding capital</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Employees personal networks used</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Community support (i.e. bonding relationships)</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>‘Humbug’ used positively</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Strong connections to buyers and industry</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Strong connection to researchers</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Strong connections to government</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Goodwill</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>
Harvests are built around the biological traits (specifically life cycles) of the species, such that they are able to withstand current commercial scale harvesting over the long-term. Key to ensuring this sustainability is knowledge of the impacts of harvesting and the appropriate life cycle stages at which to target harvest. For all cases there is evidence to support proponents’ claims that levels of harvest were below maximum sustainable yield and could in fact be increased without moving beyond the sustainability threshold (Whitehead et al. 2006; Fukuda et al. 2011; Collier et al. 2011).

The third characteristic of the natural capital that underpins each of the IWBEs is the relatively short harvest seasons. *Tf* fruit is usually available over a period of a few weeks, the crocodile egg harvesting season lasts for three months, and the period when buffalo can be mustered extends over no more than six months, and involves intensive work for much shorter periods.

Last of all, produce is harvested from the wild with minimal or no husbandry. While there is sometimes an effort made to reduce fire damage to *Tf*, this is not consistent and the tree is widespread and abundant in areas where intensive fire management is not undertaken. Similarly, in some places rangers maintain crocodile nesting habitat by excluding fire, though this practice is not widespread. The buffalo receive little to no human inputs to enhance their productivity. Other than localised maintenance of crocodile nesting habitat, IWBEs rely on natural capital and natural ecosystem processes to convert wildlife into harvestable product.
6.2.2. Physical Capital

For two out of the three cases, the equipment used to conduct harvests was minimal. For the Tf pickers this consisted of a container and, sometimes, a ladder. The crocodile egg collectors used only an esky\(^5\) and wooden oars, and occasionally borrowed boats from the rangers. For both of these enterprises, the majority of physical capital required was for post-harvest storage and logistics. In the case of the Tf harvesters this was freezers to prevent fruit spoilage and four-wheel drive vehicles to transport harvesters and their produce long distances in remote, difficult terrain. For the crocodile egg collectors the work demands the use of helicopters, which were contracted and thus represented financial not physical capital. Further, selling hatchlings rather than eggs creates significant added value for the enterprise, but requires an incubator and appropriate storage containers.

Even the buffalo mustering enterprise does not require major investment in capital compared to most agricultural enterprises. Mustering requires four-wheel drive vehicles and mobile stockyards (helicopters are contracted). Following mustering, off-road trucks, a permanent stockyard and contracted semi-trailers are needed to move animals to the port in Darwin. However, the buffalo company uses a minimal amount of simple and rugged equipment to muster the buffalo.

There are two primary reasons why little physical capital is acquired or used. Firstly, purchasing and maintaining physical capital is expensive in remote parts of

\(^5\) A portable box usually used for keeping things cool. Also known as a cooler box or chilly bin.
northern Australia, especially relative to the average income. Secondly, as local labour is generally inexperienced and low skilled, using simple and rugged equipment minimises misuse and damage, thus enabling employees to easily and safely familiarise themselves with and use the equipment and so reduce the costs of repair and maintenance.

6.2.3. Financial Capital

For all of the enterprises there were minimal establishment costs. This suggests minimised investment risk and may reflect the relatively low expected financial returns from IWBEs. Further, research participants suggested that starting off small and building the scale and complexity of operations has been a useful strategy that requires little to no investment and may initially be implemented on a trial basis (depending on a diverse range of factors).

In the buffalo and Tf case studies, public funding was used sparingly, if at all, in direct costs of production. This was a strategy employed by the entrepreneurs to maximise the autonomy they have had over enterprise activity and strategic decision-making. However, Tf harvesters in both WA and the NT have benefited indirectly from publicly funded outreach and facilitation support. The Gulin Gulin Buffalo Company has taken the most private route to enterprise success, which has been afforded to them by the productivity of the wild buffalo stocks and, until the live export ban in 2011 (Ludwig 2011), relatively consistent international markets. Employees are paid wages and are not part of any government-funded employment
scheme while they are working for the company. The only government subsidy was for physical capital improvements in the early part of the enterprise’s life. Some Tf harvesters also operate entirely outside government subsidies, though, for others, the income from the Tf fruit supplements that from other sources (e.g. government welfare payments).

In contrast, Djelk Wildlife Enterprises has used considerable public funding to establish and supplement crocodile egg harvesting activities. This has derived from the business model of the parent organisation (BAC), which administers several publicly funded services for the region (Altman and Cochrane 2005; BAC 2006). The private enterprise activities of Djelk emerged from this funding base as complementary commercial opportunities were identified and subsequently pursued.

For all of the enterprises, operating costs of production are high relative to income (Whitehead et al. 2006), due largely to the cost of fuel. For Djelk Wildlife Enterprises and the Tf harvesters these high costs are compensated for by high prices obtained for their produce. This enterprise generally supplies produce to what can be considered luxury and/or niche markets, thus making their activities viable. While buffalo receive a lower price at market than cattle, they enjoy greater profit margins due to low costs of production. This is the competitive advantage enjoyed by primary producers who harvest stock from the wild: their operations are supported by the natural capital, which has no economic value in the market-place, as opposed to financial capital.
As noted under natural capital, a characteristic of the financial strategy that underpins all the industries is that there is little or no investment in enhancing the productivity of the wild product. Gulin Gulin Buffalo Company differs from cattle properties, and conventional buffalo properties, in needing no fences, no bores, no dams, no food supplements, no disease management and no branding; the animals are not just free range, as on many north Australian pastoral properties, they are wild animals. While some under-weight animals are agisted on a cattle property near Darwin to improve their condition before sale, most mustered animals are ready for immediate export. Similarly the crocodiles are entirely wild and receive no financial investment to enhance egg production. With Tf the industry to date has been based entirely on wild harvest. There are currently attempts to establish the species in horticulture, though this is unlikely to benefit many of the existing enterprises.

A third characteristic of the financial arrangements for each enterprise is that income received is distributed throughout the broader community via royalty and/or kin-based transactions. In each case the enterprises are attempting to maximise profits within severe social constraints, and often no profit has been made at all. For instance, though many Tf ‘opportunists’ only conduct harvests as a supplemental livelihood activity, thus making very small, one-off profits, more serious harvesters suggest that they rarely make a profit. Where harvesters are involved in other commercial activity, they use Tf as supplementary income through
the wet season when other sources of income are constrained due to reduced economic activity.

While the Djelk crocodile egg collecting enterprise did make consistent and sizeable profits from egg harvests until recently, these did not account for various government subsidies. Nevertheless these profits could be used to invest further in the enterprise or employ more people. Recently, however, changes to the royalty payment structure have meant that all profits are being dispersed as royalties to the Traditional Owners of the sites from which eggs were collected.

Gulin Gulin Buffalo Company has always made profits in years when market conditions warranted mustering. Freed of the need to maintain a cash flow to pay labour or service debt, the company’s management and board were able to assess the likelihood of making a profit or loss and thus have been able to avoid financial losses by mustering only in the years when a profit seemed likely. Thus every year of operation has realised often considerable profits for the company. However, as with the crocodiles, a substantial proportion of these profits is dispersed to local traditional land owners in the form of royalties. However, unlike with the crocodiles, it is the profits on which the allocation of royalties is calculated rather than the sale price before expenses have been paid.

More broadly all three IWBEs benefit from government investment in remote communities across Australia. Taxpayer funded infrastructure, particularly roads but also airports, is essential, as is the full panoply of government services that
enable the remote communities to connect to commercial markets. Though this investment contributes to all five of the sustainable livelihood capital asset categories, it is here listed under financial capital as it effectively subsidises the activities of the enterprises. However, this is not to suggest that any of the enterprises benefit more from government investment than any other enterprises operating in the regions.

6.2.4. Human Capital

For all of the cases studied, prospective employees were not required to possess any specific skills or knowledge to be eligible for work. However, although the skill and experience levels of commencing employees was generally low, some individuals brought with them skillsets that contributed to the businesses (such as welding, mechanics, etc.). Only the ‘stalwarts’ in the WA Tf industry were generally experienced at working within the dominant cultural realm and either possessed the basic acumen needed to run a conventional business or were able to access it through their networks.

Many employees of both Djelk Wildlife Enterprises and GGBC had no prior work experience. Thus, the companies have invested in preparing employees for work and provided on-the-job training. All employees were trained through a process of familiarisation whereby new and junior employees initially performed low-skill and low-responsibility tasks. As their familiarity and competence increased, more complex and important roles were made available. The majority of instruction was
given through informal channels by senior employees or managers, and less often by technical experts from outside the organisation. Examples of the latter include Djelk, which has on occasion used the expertise of researchers and business partners to educate and train employees, and extension-type assistance provided to Tf harvesters by the Department of Agriculture and Food (WA), the Northern Land Council and Coradji that focused on fruit quality and regulatory processes. However, the capabilities of the harvesters, especially the stalwarts, were predominately based on accumulated experience and available social capital.

However, the definition of work used above equates work with participation in the capitalist economy through labour in return for financial reward. Industrialised society places this conception of work at the centre of life, which consequently shapes the ideology and worldview of its members (Anthony 1977; McRae-Williams and Gerritsen 2010). As such, work becomes the primary source of meaning, pride, fulfilment and identity for many members of these societies (Furnham 1984; Miller et al. 2002; McRae-Williams and Gerritsen 2010). For members of industrialised, usually Western, societies:

Most people spend almost all of their time working, resting from work, or spending money they earned working. A life that is not fully taken up with work and consuming seems to offer not only boredom but also purposelessness (Beder 2000, p.266).
For Indigenous Australians, however, especially those with limited interaction with capitalist economies, work is defined quite differently. As described by McRae-Williams and Gerritsen (2010, p. 18), for many Indigenous Australians:

Work is primarily managing social relatedness and autonomy. Being unemployed or employed... are not different states but merely different social locales for fortifying relatedness and autonomy.

Labouring in the capitalist economy is not the centre of existence for many Indigenous Australians and, in terms of forging identity, meaning and fulfilment, pales in comparison to kin obligations and morality stemming from these relationships. For many Indigenous people, work involves all activity that contributes to enabling the individual to optimally perform their kinship-based duties and obligations. In the Indigenous Australian worldview, the notion of kin is also extended beyond contemporary family and ancestors to non-human animals, plants and objects, for which people also have a culture-based obligation to care for and protect. Non-Indigenous Australians have often confused this different approach to work with a lack of a work ethic among Aboriginal Australians which manifests as laziness and/or incompetence, and that is either a product of their culture or their history, but nonetheless should be remedied (McRae-Williams and Gerritsen 2010).

All the people involved in the IWBEs that were investigated brought with them knowledge and skills developed from activity in ‘Indigenous work’ (e.g. caring for country, performing kinship obligations, etc.). Across all of the case studies,
harvests were supported by knowledge, skills and experience developed through living and working ‘on country’ and engaging in activities such as subsistence harvesting of wildlife and land management. *T. ferdinandiana* harvesters had knowledge of the species, were able to identify it, knew where it grew, and when fruit was in season. Djelk employees, many of whom have experience in land management, were knowledgeable about crocodile nesting habitat, were experts at identifying viable nests, and were able to navigate the flooded terrain safely. Equally, those employees involved in GGBC musters were familiar with the country and used this to assist in planning for musters to strategically avoid hazards (such as billabongs, rivers or sacred sites), and position equipment to maximise the efficiency of musters. This knowledge and expertise had been accumulated from experience. As identified by other researchers (Fordham et al. 2010b), this Indigenous ecological knowledge, and the accompanying skillsets possessed by employees, are important assets for all of the IWBEs investigated.

Further, all of the enterprises used knowledge of the local cultural landscape to ensure that commercial harvests took place appropriately. In these study sites, particularly in Arnhem Land, Indigenous culture remains strong (Cowlishaw 1999; Altman 2003). With this often comes strict rules around land ownership and culturally acceptable behaviour in specific locations. Due to their membership of the local culture, the harvesters in the case studies were aware of these protocols and processes and able to assess the appropriateness of their activities and/or negotiate compromises. Through this process individuals were able to create a cultural and social space within which they could engage in capitalist endeavour,
thus freeing them temporarily and partially from cultural expectations and obligations that may otherwise prevent or restrict this activity (Taylor 1984; Ward 1998; Cowlishaw 1999; Austin-Broos 2006; McRae-Williams and Gerritsen 2010).

The entrepreneurs and most of the employees in all of the case studies had a good, though imperfect, understanding of their enterprise and its position in the supply chain. Employees of the buffalo company understood the process through which the buffalo arrive at markets in South-East Asia. Djelk employees were aware that hatchlings were sold to a farm in Darwin and used for leather and meat production, but were less familiar with the specific leather products manufactured and the geography of the markets in which they were sold. The stalwarts of the Tf industry were familiar with the supply chain, and their position in it through their direct involvement with the buyers of their product. However, it is unlikely that the opportunistic Tf harvesters were aware of the products the fruit they harvested has been used to create.

Unsurprisingly, there was a consensus amongst interviewees that health and fitness were important for their work. All of the work is physically demanding, takes place outside in a hot and humid climate and, in the case of buffalo mustering and crocodile egg collecting, can be dangerous. Without a certain base level of health and fitness, employees would not be able to participate in harvest activity throughout the season. The buffalo mustering employees also made the point that there is also a positive feedback loop regarding health and wildlife harvesting activities. For them, engaging in the hard work of harvesting, eating well and having
a routine, created improved health and fitness and avoided unhealthy lifestyle activities. This finding is supported by recent research that has demonstrated that Indigenous people engaged in land management and associated subsistence harvest of wildlife are healthier than their counterparts who live in towns and cities (Burgess et al. 2005; Garnett et al. 2009).

6.2.5. Social Capital

For the purposes of this thesis it is the social capital that is directly related to the collective capacity of each of the enterprises to use wildlife commercially that is of direct concern. The sources of social capital for each of the IWBEs will be identified and analysed (with bonding and bridging capital being treated separately, though the division between the two can be blurred).

The most obvious way that the IWBEs established bonding social capital with the communities within which they operated was through the payment of royalties, or in the case of Tf stalwarts, payment of cash to kin. The process of negotiation and implementation of harvesting agreements and operations involved interaction between the IWBE and the relevant stakeholders. Through this interaction, relationships are formed and/or strengthened that contribute to the trust and reciprocity between the two parties.

Both the buffalo and crocodile egg harvesting enterprises have negotiated LUAs with local landowners on a regular basis in order to operate under the Aboriginal
Land Rights Act (Northern Territory) 1976 (ALRA). For both enterprises, as with any enterprise proposing commercial activity on Indigenous-owned land in the Northern Territory, the process is essentially the same: the enterprises are required to provide the Northern Land Council with a detailed business plan that outlines the benefits available to the local community; if deemed by the NLC and the landowners to be an activity that is of interest, then all relevant Traditional Owners are called to a closed meeting to discuss the proposed enterprise activity and to negotiate conditions. Groups of Traditional Owners are then able to decide which proponents will be given permission to conduct harvests on their respective clan estates and under what conditions (including royalty payments)(ALRA). The process is often lengthy and involves consultation with anthropologists, biologists and lawyers (Cooney and Edwards 2009). However, it is designed to ensure that Traditional Owner rights are protected (as per ALRA) and that appropriate protocols are followed. Though it does not capture the relationships that may exist between the enterprise and members of the community below the clan group level and outside the bounds of formal processes, in many ways LUAs are a measure of the bonding social capital of the enterprises with the local community. They capture the general sentiment of the various stakeholders towards the enterprise’s activities by registering their support or opposition, thus affirming relationships between the community and the enterprise. Whilst the ultimate decision about whether to grant a LUA to a proponent involves more than relationships, analysing the trends of the LUAs could offer further insight into Indigenous enterprise activity, the role of social capital in the operation of the enterprises, and conditions for success.
Alternatively, most *Tf* harvesters in WA conduct harvests on their own land or that of kin and there is no statutory requirement to obtain a LUA. As such, harvesters use the already present social capital in the form of kinship networks to coordinate harvests and to gain permission to conduct commercial wild harvests on property other than their own. This exploits (and may reinforce) reciprocal relationships between proponents. In this research it was not possible to identify whether or not there is any monetary or other gift exchanges made to compensate for the harvest of fruit from other people’s properties.

Outside the LUA process, all of the enterprises were tied to the community through their employees/entrepreneurs themselves, who are the most influential agents in this process as they are enmeshed in the fabric of the local community. Aside from non-Indigenous managerial staff, all the people involved in each of the cases came to their work with their own relationships and networks that cumulatively comprise the social capital of the enterprise. These relationships are of course mediated by the employees/entrepreneurs in that they take on a role through their work that is different from that of, for example, the family member, clan member, or friend. However, these non-professional relationships and networks are at times accessed by the IWBEs. The individual social capital enjoyed by the employees and/or entrepreneurs influences the social capital in sum. Individuals with high social capital stocks can contribute positively to the enterprise, whilst others can potentially detract from its overall social acceptance and influence. These individual
relationships can affect the negotiation of LUAs, the conditions placed on the enterprise, and the success of harvests.

Local politics play a large role in shaping the enterprise’s social capital. For example, kin alliances or divisions in the community, which may or may not have any direct association with the activities of the enterprise, have a significant influence on the enterprise. The enterprise is embedded in the local context and the relationships it maintains directly influence the social capital it enjoys. In all of the cases, kinship and other relations were important for negotiating access to resources and realising harvests at a commercially viable scale.

For all the enterprises there was a considerable level of community ‘buy-in’. For the communities of the West Kimberley, Tj is so well-known by Indigenous and non-Indigenous people that there is a new arterial road named after the fruit in the regional centre of Broome. It is commonly recognised in conversation with local members of the general public. The community are excited about its prospects, especially for Indigenous economic development. The GGBC is well-known by the residents of the twin communities of Bulman and Weemol. Indeed, it was claimed by one interviewee that the local people of Bulman have forged their identity around the buffalo to a significant degree. Djelk Wildlife Enterprises’ crocodile egg collecting generates considerable interest from the community. Children and teenagers often visit the Djelk premises to look at the crocodile eggs and hatchlings as they emerge. Further, the community is said to see the work of the Djelk Wildlife
Enterprises and the Djelk Rangers as enhancing community safety through culturally appropriate crocodile management and population control.

Indigenous Australian culture expects high levels of reciprocity amongst kin (Schwab 1995; Macdonald 2000; Mullins 2007). Reciprocity has been seen as a limiting factor in terms of economic development amongst Indigenous Australians. Indeed, reciprocity (or ‘humbug’) was cited by an employee of GGBC as one of the issues that the enterprise had to manage carefully. However, in all the cases, reciprocity was channelled in a positive way to enhance the social capital stocks of the IWBEs. One example of this was the payment of royalties. Paying royalties can be seen as a simple economic transaction whereby one party is paying the other for the use of resources. However, economic transactions are embedded in the local social and cultural contexts in which they take place. Likewise, the incorporation of kin into the supply chain structure by Tf stalwarts is an inclusive approach to managing kin expectations and presenting personal rewards. Presumably, it does not remove the responsibility of individuals in terms of sharing benefits, but by generating social capital by creating economic income for their kin, stalwarts are able to create space to pursue their own individual interests. Similarly, GGBC has attempted to acknowledge its responsibilities to the local community by making donations to the local school and also making the enterprise’s facilities available for employees to use for personal purposes. Djelk is heavily embedded in the Maningrida community through the many operations of its parent organisation BAC (BAC 2006; Altman 2008). BAC’s management board consists of representatives from the local traditional owner groups who contribute to strategic decision-making.
about the activities of the entire organisation. Using these measures (and more), all the enterprises acknowledge the importance of belonging to the community and participating in local cultural practices. Given their status as dominant-culture-based institutions, the IWBEs are not as strictly incorporated into local demand-sharing practices as non-capitalist livelihood activities (Altman 1987), but they do benefit from attempting to participate in these cultural mores as they build social capital that supports their continued operation. Whilst this is technically not ‘sharing’ based on reciprocity, the fundamental premise of sharing the ‘common wealth’ in a culturally appropriate manner holds. Reciprocity amongst Indigenous kin serves as a function to ensure that resources are shared amongst the group by following cultural protocols. In creating partnerships with Traditional Owners to conduct commerce, and subsequently sharing the income from this commerce, IWBEs are redistributing their income in a manner that acknowledges local social and cultural protocols.

All the enterprises had strong relations outside the local community. Djelk have a long history of working with both public and private research institutions concerned with wildlife management. They also have strong links to a Darwin-based crocodile farm. Through their coordinator, GGBBC have broad connections to the Top End pastoral industry. They have also invested in their relationships with overseas buyers by making visits to feedlots in Malaysia. In the case of the Tf fruit harvesters, the stalwarts have relationships with all stakeholders, both internally and externally, and provide a key linkage to government and fruit buyers.
It was observed that both the Djelk Wildlife Enterprises and the Tf producers are the recipients of significant external goodwill. For Djelk, the buyer with whom they have a long-standing commercial relationship is interested in ensuring that Indigenous people receive a fair reward for their involvement in the crocodile industry. As such, this buyer has made a commitment to purchase all viable hatchlings on an annual basis, regardless of demand and at a market rate that is deemed fair. Similarly, the Tf harvesters have been protected somewhat from outright market competition by the buyers who have a preference for purchasing fruit from Indigenous people. The buyers have also invested in infrastructure (such as freezers in remote communities) and training to better enable Indigenous people to supply fruit. Though this behaviour is undeniably driven in part by goodwill, there is also another underlying motivation. For both these industries, the wild produce is found in highest abundance and can be accessed most easily on Indigenous land in northern Australia. As such, in terms of growing and supplying market demand, thus growing the industry as a whole, there is an interest in establishing and maintaining strong relationships with Indigenous people who can access the resources most easily. This is more the case for the fledgling Tf industry than for the other two enterprises, but all of the industries rely on wild harvest for their ongoing success.

6.2.6. Summary

Analysis and comparison of the three case study enterprises indicated that they shared the following features:
• Natural capital was abundant, resilient to harvest and target species were supported by healthy ecosystems.

• Physical capital was minimal and rugged. Expensive and hazardous equipment was contracted.

• Financial investment was minimal and both public and private sources of finance were accessed. Only GGBC has a strong history of financial profitability but, in all cases, there was substantial financial investment in social capital.

• Human capital was ‘home-grown’; employees generally began with few skills and learnt through on-the-job training. Mentoring was important in this process, as was external extension-type assistance. Though often not recognised as workplace skills by the mainstream economy, Indigenous ecological knowledge and traditional knowledge were key assets in all case studies. It was agreed by all informants that health and fitness was a pre-requisite for engaging in wildlife harvesting.

• The payment of royalties helped accrue and sustain social capital. Employees’/entrepreneurs’ personal social capital contributed directly to the social capital of the enterprise/industry. Kinship networks were accessed in some of the cases. All the harvesting activities enjoyed considerable community support, which was, however, open to variation over time. ‘Humbug’ was something to be managed carefully, but could also be channelled positively. All the enterprises had strong connections to the buyers of their produce and, through this, the industry at large. Except for GGBC, the enterprises had strong connections to government and
researchers. Both Djelk and the Tf harvesters were the recipients of goodwill from business partners.

6.3. Vulnerabilities for Indigenous Wildlife-Based Enterprises

The three types of IWBE not only shared asset types, but also vulnerabilities (Table 6.2). Many of these are common to any enterprise operating in remote Australia, but some are peculiar to Indigenous enterprise or those associated with the long-term harvest of wildlife. The level of risk associated with each vulnerability varied between enterprises, with some risks being confined to particular industries (e.g. domestication of Tf, a risk no longer applicable to the other two enterprises since they operated in a commercial environment in which domestication had already occurred). Each vulnerability and risk thus warrants separate discussion.

Table 6.2. Principal vulnerabilities and estimated risk for three Indigenous Wildlife-based Enterprises in northern Australia

<table>
<thead>
<tr>
<th>Vulnerability</th>
<th>Terminalia ferdinandiana</th>
<th>Buffalo</th>
<th>Crocodiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market fragility</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Domestication</td>
<td>Medium</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
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6.3.1 Market

For the case studies in this thesis, the market represents not only a factor of their success but a vulnerability for their continued operation. The markets supplied are
of an international scale and are distant from harvest locations. Due to their position at the origin of the supply chain, Indigenous IWBEs have very little influence or control over the long term trends within these markets. For both the Djelk crocodile egg and Tf harvesters, high costs of production require that high prices are received at market. They have persisted only because their produce is used to manufacture luxury/niche items such as high-end leather goods or nutraceuticals. They are nevertheless at the mercy of global consumer demand and therefore experience little certainty about their long-term future.

GGBC and the Tf harvesters are facing increased competition from other producers seeking to supply the same markets. For GGBC, this comes in the form of competition from buffalo producers in India and Brazil who face lower costs of production, favourable currency exchange rates and, in the case of India, a locational advantage. Alternatively, as mentioned, Tf harvesters have been offered some protection from free market competition through both the social conscience of buyers and the practicalities of producing sufficient tonnages of fruit.

6.3.2. Horticulture and Domestication

With the emergence of horticultural projects aimed at producing Tf in a more efficient manner than wild harvest comes increased opportunities for both Indigenous and non-Indigenous Australians to participate in markets that use Australian wildlife (Cunningham et al. 2009a; 2009b). Due to the general capacity and capability deficits in remote Indigenous communities (at least from a western
economic perspective), if mainstream horticulture methods become the *modus operandi* for Tf production, then it is likely that non-Indigenous producers will outcompete Indigenous producers who vie for the same contracts. The same can be said for the other two case studies: crocodile farms are experimenting with husbandry programmes that would decrease their reliance on wild harvest; and domesticated buffalo are being produced for human consumption. Domestication of these species would transfer competitive advantage for the commercial production of these species to better resourced and more capable business interests who are also closer to markets (whilst these may be Indigenous people, it is likely that they will be non-Indigenous people given the ‘gap’ that exists between the two (FaHCSIA 2010)). Moreover, if these horticulture and domestication initiatives are successful, it is possible that the goodwill afforded to Indigenous industry participants at present may be eroded, further disenfranchising IWBE participants by diminishing their stocks of bridging social capital.

### 6.3.3. Legislation, Policy and Bureaucracy

Venn (2007) and Cooney and Edwards (2009) have outlined the complex legal and policy context within which IWBEs operate. IWBEs are particularly vulnerable to changes in legislation and policy, which can make their activities non-viable or illegal. For example, a change to legislation that prevents any harvest of wildlife for commercial purposes, whether based on threatened biodiversity, public health and safety, or animal welfare grounds, would immediately extinguish any IWBE activity.
For example, the viability of GGBC could be threatened if efforts to protect ecosystems from the impacts of feral buffalo through culling are expanded.

Further, the vulnerability of IWBEs in terms of their exposure to the state is exacerbated by the burden of interacting with bureaucracies. All IWBE activity is regulated to ensure that it abides by the legal and policy requirements of the day (Cooney and Edwards 2009). This requires the keeping of records, reporting on activities, and liaising with relevant government departments and regional representative bodies. Though this burden is not sufficiently inhibitive to prevent IWBE activity (as evidenced by the existence of these case studies), it makes the task considerably more difficult (Cooney and Edwards 2009).

For example, as mentioned, it is compulsory for all commercial enterprises to obtain a LUA when operating on Indigenous-owned land in the NT. This creates a point of vulnerability for IWBEs whose activities are only permitted once the often complex and time consuming process of LUA negotiation and endorsement is finalised. There has been some flexibility incorporated into this by the implementation of trial harvests of particular species (e.g. Tf fruit and bee harvesting in the NT (J. Gorman pers. comm.)). However, LUA negotiation and endorsement is still required post-trial. For Djelk Wildlife Enterprise, this task has been undertaken almost annually, which introduces uncertainty into their operations, thus limiting their capacity to plan and diversify. The slow processing of LUA applications has previously meant that commercial opportunities (crocodile eggs and other commodities) have been missed (I. Munro pers. comm.). Further,
given the seasonally variable and therefore time-critical nature of the harvesting, delays in negotiation of the LUA has sometimes reduced the productivity of harvests because rising monsoonal floodwaters have reached nests, thus drowning the embryos and, consequently, reducing the income of the enterprise and the royalties received by local landholders.

That said, though the legal and policy framework surrounding IWBEs in northern Australia is complex and has the potential to *prevent* Indigenous people from harvesting wildlife commercially; this was not observed in the cases investigated. The process of applying for permits and obtaining LUAs, whilst cumbersome, time consuming and costly, has been navigated successfully by these enterprises, though it sometimes impinges on their profits. This is not to suggest that these processes are perfect, or even fair, but that they are navigable if those involved have the capacity to engage with the legislation and policy. This is a key point that is discussed further with regards to implications of this research.

In terms of policy, legislation and bureaucracy creating vulnerability for IWBE, it should also be noted that the legal and policy framework does create a comparative advantage for Indigenous people. In Australia, wildlife can only be used if it can be shown that the harvest is reasonably sustainable. Being significant landowners in northern Australia, Indigenous people have access to large tracts of relatively intact ecosystems that are generally biodiverse and currently face few pressures for development. The Indigenous estate is comprised of what is often thought of as economically marginal land, although wildlife is generally abundant relative to non-
Indigenous lands. Therefore, in terms of the potential for harvesting wildlife commercially, Indigenous landowners now have a comparative advantage, which has been created both by the process of returning land and the protection of wildlife from unsustainable use. In this sense, international, federal and state/territory legislation and policy creates a comparative advantage for Indigenous landowners in northern Australia. As such, to alter this legal/policy/regulation framework would potentially increase the vulnerability of IWBEs as their ability to participate in these enterprise activities may be hampered by increased access to resources and subsequent intensified competition. However the limitations of access to Indigenous lands may also encourage the development of alternative sources of product from non-Indigenous lands.

6.3.4. Poaching

Given the high economic value of the natural resources used by the IWBEs investigated, it is unsurprising that they are vulnerable to poaching. Northern Australia is a vast landscape that is sparsely populated. This creates considerable difficulties in terms of monitoring and enforcing regulations concerning natural resource use and protecting the private (communal) property of citizens. As mentioned, Djelk Wildlife Enterprises has observed poachers operating within the boundaries of their egg concessions, yet have been essentially powerless to prevent this activity. There was also evidence of poaching of buffalo for safari hunting and (historically at least) for the pet meat trade. In WA there was evidence of people...
harvesting Tf without permission and in some cases using destructive and unsustainable harvest methods (Mason 2003).

For IWBE operators, poaching can have a serious impact on their activities. It reduces the stock of resources available for harvest, thus requiring increased harvest efforts to maintain levels of income and introducing greater uncertainty about the effects of harvesting on local populations. Further, it represents the theft of resources belonging to Traditional Owners. Not only does poaching prevent the use of these assets commercially, but also all of their other uses (e.g. recreational, cultural, aesthetic, spiritual, etc.).

6.3.5. Disease

Though potentially applicable to all of the case studies, disease is a major vulnerability for GGBC. Buffalo are known vectors of diseases, most significantly tuberculosis (Albrecht et al. 2009). As the wild populations of buffalo in the NT are not closely monitored for disease, they present a considerable risk to Australia’s cattle industry (Albrecht et al. 2009). In the 1970s, the Brucellosis and Tuberculosis Eradication Campaign (BTEC) was commenced by the federal and state/territory governments in partnership with the cattle industry (Stoneham and Johnston 1987). The result of this programme was the culling of hundreds of thousands of cattle and buffalo outside the GGBC’s harvest area (which was clear of both diseases) in an attempt to remove brucellosis and/or tuberculosis from the stock. Obviously, if a similar disease control programme was initiated today it could severely impact the
viability of the buffalo company and in all likelihood extinguish mustering completely. Similarly, other wildlife species (native or invasive) that have the potential to act as vectors of disease and cause significant economic harm, would not only be vulnerable to the effects of the disease itself, but would also be impacted by the disease management programmes put in place (such as culling or quarantining). Though there was no evidence of a similar threat in the other case studies, it is a potential risk for any prospective wildlife-based entrepreneurs.

6.3.6 Localised Overharvesting

It is unlikely that any of the three species investigated here will be subject to overharvesting throughout their range. Whitehead et al. (2006) demonstrated that, even if 300 tonnes of Tf fruit were harvested from the NT alone, this would not have a significant impact on the species as it is only a small fraction of total wild fruit production. As the total commercial harvest of fruit during the research period was only 20 tonnes for the Broome region and 15 tonnes for the NT, even combined with the unquantified subsistence harvest of fruit by Indigenous people, there is certainly no risk of overharvest across the species’ range.

However, Whitehead et al. (2006) mention the risks of destructive harvesting methods and localised overharvesting. Localised overharvesting has been experienced around Broome, where people were felling trees with chainsaws, or bull-dozing them with motor vehicles, to gain easy access to fruit, and focusing their harvest effort on known stands of Tf near the town (Mason 2003). These
unsustainable harvesting practices were prevented through concurrent public education campaigns about sustainable practices and bolstered monitoring of harvesting activities.

Similarly, the buffalo population of the Top End is not at risk of overharvesting. Across the Top End, buffalo numbers continue to recover from the brucellosis and tuberculosis eradication campaign and are estimated at 150,000 animals. Collier et al. (2011) demonstrated that GGBC is harvesting buffalo below the maximum sustainable yield for the local population. The subsistence use of buffalo by local Indigenous people has not been measured, but it also seems unlikely to have a significant impact on the population growth of buffalo (Altman 1987). Localised overharvests of buffalo in the Bulman region did occur in the 1980s when there was a number of proponents competing for buffalo in the area. Many of the harvesters were shooting numerous buffalo to supply the pet meat industry. It is estimated that one proponent shot almost 30,000 head of buffalo over a three year period in the Bulman area (M. Rathsmann pers. comm.). The overharvests only ended when both the supply of buffalo meat to the United States market was banned and harvest efforts became inefficient in terms of returns on investment due to the small local populations of buffalo (M. Rathsmann pers. comm.). As such, even for enterprises using a highly successful invasive species such as buffalo, there is significant risk posed by localised overharvesting.

For crocodile egg harvesting, the situation is somewhat different from the other two cases in terms of localised overharvests. It has been demonstrated that
targeting crocodiles for harvest at the egg stage of their life-cycle has almost no impact on the adult population of crocodiles because of the naturally high mortality rate of juveniles (Webb and Smith 1987). However, as is also well documented (Fukuda et al. 2011), hunting of adult crocodiles greatly reduced their populations in the twentieth century. Whilst the commercial use of crocodile eggs poses no threat to the NT crocodile populations, localised overharvesting of juvenile and adult crocodiles could present a risk to enterprises such as Djelk.

Thus localised overharvesting, in one form or another, has been experienced in all three cases. For sustainability of IWBEs, both in an economic and ecological sense, timely regulation and monitoring of harvests is key. As will be discussed further with regards to its impact on the success of IWBEs, international, federal and state/territory legislation, policy and regulation regarding conservation is important in ensuring checks and balances on wildlife harvesting activities are in place and enforced. Whilst the implementation of these checks and balances may in some instances be conservative and cumbersome, its original intent and ultimate goal is vital to minimising the vulnerability of IWBEs to localised overharvesting and the consequent deterioration of their natural resource base.

6.3.7. Increasing Royalty Costs

As discussed in Chapter Six, Djelk Wildlife Enterprises’ profitability and long-term viability has become tenuous due to increased competition for the local Maningrida crocodile egg concession. Facilitated by the NLC, the negotiation of LUAs
concerning the harvest of crocodile eggs in the Maningrida region has seen the entry of new prospective harvesting operations that have increased the competitiveness of the negotiation process by offering alternative, more substantial, royalty arrangements to the local landowners. Djelk has been forced to make counter offers that are seen by landowners as superior to their competitors. From Djelk’s perspective, this has increased the costs of the crocodile egg harvesting enterprise significantly, affecting the viability of the enterprise as the costs of producing a hatchling have outweighed the income received after paying royalties.

From the perspective of landowners, the arrival of competitors has given them greater bargaining power when negotiating LUAs. Under their mandate to protect and maximise the outcomes of commercial activity on Indigenous-owned land for landowners, the NLC facilitates the LUA negotiation process. In the Djelk crocodile egg harvesting case, the interpretation of this mandate seems to have been to support increasing royalty prices, thus increasing the royalty income and apparent wealth of the landowners of the region. The implications of this interpretation will be discussed further in terms of the role it has played in shaping the direction of economic development in the local Maningrida region. The consequences of the resultant tension between local economic development in the form of jobs versus the accumulation of income through royalties will be discussed with regards to the implications of this research. It is important here to simply note that, from the perspective of IWBEs, the increasing royalties demanded by landowners to obtain the right to harvest wildlife creates vulnerability.
Though this situation has not yet arisen for GGBC or the Tf harvesters, there is the same potential. The Tf industry and the entrepreneurs driving it remain nascent. As such, the competition for stocks of fruit is relatively low given the low levels of certainty regarding the industry, the markets it supplies and the profits to be had. Each of these is potentially significant, though at this stage the opportunity cost of investing labour in Tf seems to be judged too great by most potential industry participants.

The vulnerability of GGBC to increasing royalty costs is, however, much more realistic. Due to the high numbers of mustering contractors in the cattle industry in northern Australia, there are potentially many competitors for the buffalo mustering LUA in the Bulman region. If other proponents were to lodge their interest in conducting musters, this increased competition would effectively drive the prices of LUAs upwards. Depending on the efficiency of GGBC as compared to their competitors, the result may simply be a better deal for landowners. However, if GGBC cannot continue to offer the best royalty price to landowners, it is probable they would lose the LUA and subsequently the foundation of their business.

6.3.8. Management Succession

GGBC is confronting the challenge of management succession. GGBC’s operations have been coordinated by the same non-Indigenous pastoralist for approximately 20 years. The institutional knowledge, operational expertise and social capital
accumulated by this individual are considerable. However, the capacity for this person to continue to perform the coordinator role is now diminishing. Identifying a suitable candidate to take over this role has been difficult for several reasons.

Firstly, there has been little interest from individuals in the local community to take on this role. This may be due to perceived inabilities, but is probably due to a general lack of candidates who can concurrently coordinate musters, navigate bureaucracies, and market and sell the buffalo to buyers in South East Asia.

Secondly, it is difficult to attract skilled labour to live and work in remote northern Australia (Carson et al. 2010). The isolation and complexity associated with working in remote Indigenous communities presents a barrier to attracting (Indigenous and non-Indigenous) skilled labour. Further, those willing to move to remote locations are likely to see the remuneration packages offered to mining industry employees as benchmarks. The wages paid by GGBC cannot compete with those of the mining industry.

Finally, senior management positions in many public and private Indigenous organisations experience low levels of accountability due to weak governance (Batty 2005). As described by Batty (2005), the attempt to encourage self-determination in Indigenous communities has lead to a perverse reliance on ‘white advisers’. These senior managers often present themselves as working for their Indigenous masters, though in reality many are more influential on the strategic direction and operation of the organisations than their Indigenous counterparts.
This can be due to weak or poorly equipped boards. The consequence is the creation of a significant autonomy for senior non-Indigenous managers, so long as they can keep the support of their local partners (Batty 2005).

In the case of GGBC, the longevity and prosperity of the enterprise has been significantly enhanced due to the appropriate and skilful management provided by the non-Indigenous coordinator. Building on a history of similar arrangements in Indigenous enterprise development in the region (Cowlishaw 1999), the coordinator position has been able to by and large keep the support of the local community through local mediators. As with many similar Indigenous organisations, the success of the company has also been dependent on the integrity and goodwill of this senior manager. However, now faced with the challenge of succession, there has been a realisation that GGBC’s governance is vulnerable to unscrupulous operators. As such, GGBC has recently made efforts to enhance the governance structure and capacity of the enterprise to bolster the local community’s ability to hold the coordinator position accountable for inappropriate behaviour. But this will take time. Until then, identifying and hiring appropriate managers (be they Indigenous or non-Indigenous) will have a significant effect on GGBC’s future success or failure.

This dependence on senior, non-Indigenous staff was also seen in the case of BAC whose ability to survive and grow its operations to realise tangible outcomes for the people of the greater Maningrida region was aided considerably by steady and capable senior management who, though non-Indigenous, were able to effectively
build networks with the local community (Altman 2008). Similarly, however, when the organisation lost these staff, turbulence was experienced. The negotiation of the difficult transition period is on-going (at the time of writing) and remains a challenge even for an organisation with BAC’s good track record of effective and appropriate governance.

The size and number of the independent Tf industry participants thus far precludes management succession from being an issue. However, given the prevalence of governance-based issues in Indigenous Australia, it seems that, ceteris paribus, this will become a vulnerability if any of the enterprises reaches maturity and operates under the oversight of senior management who are answerable to a board (i.e. a typical corporate structure) with limited experience.

6.3.9. Income Continuity

Observed most starkly in the case of the entrepreneurs involved in Tf harvest, livelihoods built solely on single IWBE activities are marginal at best. The seasonality of targeted wildlife species means that incomes from wildlife harvesting are concentrated into only a few months of the year. This means that IWBE operators are required to conduct a suite of income producing activities throughout the year to ensure livelihood continuity: this resembles subsistence harvest regimes and is a common strategy used by the poor in the developing world to supplement their incomes (Campbell and Luckert 2002; Sayer and Campbell 2004).
Of course, the ‘fallback’ position for Indigenous wildlife-based entrepreneurs is to rely on welfare payments to maintain their livelihoods in the wildlife harvesting off-season. However, reliance on welfare for livelihoods has created social, economic and cultural issues for Indigenous Australians (Pearson 2011). IWBE can contribute to alleviating some of these problems, thus enhancing the independence of participants (Collier et al. 2011).

In most communities there is currently insufficient diversity in seasonally-based employment opportunities to support livelihoods based on wild harvest. However, the need to maintain livelihood continuity on an annual basis may require that IWBE entrepreneurs and employees substitute their wildlife harvesting activities for other forms of employment that are permanent rather than seasonal, though ones that may not be as holistically beneficial to the individuals and their communities (Langton 2010). For example, efforts to reduce unemployment in remote Indigenous communities strongly encourage people to take up permanent work positions on a full time basis under the assumption that it will lead to increased wellbeing for the individual, their family and their community (FaHCSIA 2009). Typical jobs of this type involve working at mines, in administration for councils, as mechanics, as cleaners, as cooks, working on road building and repair, in social services or other roles that resemble work as defined in a Western capitalist sense. Furthermore, ‘mainstream’ employment options are rarely flexible enough to permit lengthy absences to engage in private enterprise, as would be needed for people to participate in short periods of seasonal abundance in fruit, eggs or buffalo. Instead, given the aforementioned centrality of work under this ideological
framework, a framework that is foreign to many Indigenous Australians, regular conventional work assumes that Indigenous people will work under conditions akin to their non-Indigenous colleagues (e.g. start work at nine in the morning, work until five in the afternoon, take Saturday and Sunday off, and enjoy four weeks of annual leave per year).

As mentioned, Indigenous wildlife harvesters are attempting to find new ways to solve income continuity problems such as developing payments for environmental services (Luckert et al. 2007), tourism (Tremblay and Wegner 2008), arts and crafts (SECITA 2007) and other wildlife-based enterprises. These opportunities are seasonally dependent and engagement in them is significantly more flexible than formalised employment in on-going positions that are framed by the dominant culture’s ideological predisposition towards work of a certain kind. Having access to a range of flexible employment opportunities on a seasonal or contractual basis will greatly assist IWBEs in contributing to long-term and sustainable livelihoods for Indigenous Australians in remote areas.

6.3.10. Year-to-Year Variation

As with any wild harvested commodity, the year-to-year variation of resources makes IWBEs vulnerable in unfavourable seasons. Again, this vulnerability is experienced most immediately and drastically by the individuals involved in Tf harvest. As mentioned previously, Tf populations are significantly impacted by natural events like fire and cyclone. Such damage was observed during this research
after a medium-sized cyclone traversed the west Kimberley coast in 2009, when the fruit was approaching maturity and would normally have been picked in the next two to four weeks. However, the cyclonic winds stripped the fruit from almost all the trees, thus making harvests non-viable. At a more localised scale, fire can have a similar effect. The Tf industry as a whole has attempted to hedge this risk by sourcing fruit from both WA and the NT, depending on available stock for the season. However, at the scale of an individual enterprise or entrepreneur, this variation can prevent any harvests from taking place for the entire season.

For GGB, their harvests are not large enough compared to the total buffalo resource to be dramatically impacted by year-to-year variation. If operating at levels that were closer to the maximum sustainable yield (Collier et al. 2011) for the local buffalo population, then year-to-year variation would have a much greater impact on the business. Year-to-year variation, however, does impact the productivity of the musters in that seasons in which breeding success or survival has been low require increased harvesting effort with decreased income. This results in decreased profits and royalty payments. However, due to the general productivity of the resource-base and the historic success of the company, these poor seasons are compensated by years of abundance with easily accessible buffalo stocks.

Similarly for Djelk, the existence of the enterprise is not threatened by poor crocodile nesting seasons. Though year-to-year fluctuations in the number of nests laid in the Maningrida region is unknown, Djelk’s harvest data suggest that they are
significant. However, for Djelk, the financial support afforded to it by its parent organisation ensures that losses incurred due to poor crocodile nesting seasons can be written-off and recovered in better seasons.

6.3.11. Climate Change

Though the effects of climate change vary depending on the predictive model employed, there is evidence to suggest that IWBEs may be made more vulnerable in the future due to the impact of changed climatic conditions on the natural resources used. For example, the gender of crocodile hatchlings is determined by the average temperatures experienced by the embryo during its development. For eggs that are kept at or above 32 degrees Celsius, the majority of hatchlings will be male (and vice-versa) (Webb and Manolis 2009). If average daily maximum temperatures experienced in the Top End of the NT rise above 32 degrees Celsius, this could have dire consequences for saltwater crocodiles in that entire cohorts would be male. This would not become an issue until the reproductively active female populations began to decline (which given the relatively long lives of crocodiles, could be more than a decade). Indeed, there is some uncertainty about the adaptive capacity of crocodiles in terms of their ability to behaviourally manage the temperature of clutches. However, given the dire consequences of the worst scenario, climate change should be seen as a potential source of vulnerability for the egg harvest.
Current models also predict that rainfall will increase in the NT, even though wet seasons are likely to be shorter (Hennessy et al. 2004). This may cause extra flooding, reducing the number of eggs that can be harvested. Further, rising sea levels could see the disappearance of coastal flood plains, a key crocodile nesting habitat (Leach et al. 2009; Fukuda et al. 2011).

For the other case studies, the impact of climate change is even less certain. If the Top End monsoon season becomes wetter and more prolonged, this could have a beneficial effect on buffalo in that they would be able to keep better condition through the dry season due to increased access to nutrient rich plant resources and water. Presumably, this could then improve fecundity and reduce juvenile mortality, increase the range of buffalo and allow for increased carrying capacities within this range (and vice versa).

A prolonged and intensified wet season may reduce the instances of destructive fires and therefore be beneficial for Tf. However, conversely, though equally possible, pronounced wet season rainfall may increase plant growth, thus increasing potential fuel loads for wildfires. Whether this would result in an increase in the intensity of fires, thus having detrimental impacts for stands of Tf, would depend on the fire management regimes maintained across the region (Edwards and Russell-Smith 2009).

There is great uncertainty and complexity in predicting the effects of climate change (Walther 2010). Nonetheless, given their reliance on the productive
capacity of the targeted species and their ecosystems, changes in the make-up and function of ecosystems due to climate change will probably create presently unforeseeable vulnerabilities for IWBEs.

6.3.12 Summary

- The luxury status of the products made from the IWBE’s produce suggests vulnerability in times of economic downturn and/or changes in consumer behaviour. There are few alternative sources of income for enterprises to mitigate their risk.
- Attempts at various forms of horticulture and domestication of Australian wildlife species will diminish the competitive advantage of Indigenous producers, and potentially entirely preclude a significant number of people from IWBE activities.
- IWBEs are highly vulnerable to changes in legislation, policy and/or regulation. This also imposes a significant cost and constricts entrepreneurial activity in the form of trial harvesting of wildlife.
- Poaching can reduce available stocks of natural capital and increase uncertainty about the adaptive management of the resource.
- The IWBEs are vulnerable to the spread of disease in their natural capital stocks, though the likelihood of this occurring in native species is low.
- Though target species as a whole are not likely to be threatened, there is a real risk of localised overharvesting.
- The increasing burden of royalty costs is beginning to threaten the viability of crocodiles – once highly profitable – and has the potential to affect the other two case study enterprises.
• As with other business types operating in remote Indigenous Australia, management succession is problematic.

• Due to the seasonality of harvests, IWBEs only operate for short periods throughout the year. This has implications for the livelihood continuity of IWBE entrepreneurs and employees. Many rely on welfare to support their livelihoods through non-harvest periods or are forced to seek employment in permanent positions, thus alienating a segment of the workforce from employment in IWBE.

• Also linked to seasonality of harvests, natural variation in natural capital stocks makes IWBEs vulnerable to short-term financial losses.

• Though highly uncertain, it is probable that changes in climate will have implications for IWBEs in the long-term.
6.4. Institutional Context

In terms of sustainable livelihoods, the institutional context refers to the institutions, organisations, policies and legislation that influences the livelihoods available to people and the way they pursue them across different scales and geographies (Scoones 1998; DFID 1999; Cahn 2006; Toner and Franks 2006; Davies et al. 2008). The three key ways in which the institutional context shapes livelihoods are:

- Access (to the asset base, to institutions/power and in terms of the range of livelihoods strategies available),
- Terms of exchange (how capital types can be traded with each other), and
- Returns (economic and other profits due to livelihood activities) (DFID 1999).

The following section looks at the evidence produced from each of the case studies in terms of the ways in which institutional context influences the success of IWBEs in northern Australia.

Though there is a dedicated section in Chapter Five to the institutional context for Djelk’s crocodile egg harvesting (See 5.4 Institutional Context), Chapters Three and Four do not include similar sections. This was because in these cases institutions were not registered as significant by research partners. However, as will be discussed, this does not mean that they were not important but that institutions were not necessarily thought of as discrete issues by those people with whom I worked. Indeed, especially for the Tf case study, institutional support was one of
the key success factors. As such, to facilitate discussion on the institutional context of IWBEs in general, I have pulled out the instance of key institutional influence from Chapters Three and Four and added further analysis based both on data received from partners and my own knowledge of the cases.

Further discussion of the way that institutions can support IWBEs to achieve success is offered in Chapter Eight as it has been identified as a key influencing factor for success. This section covers a broader analysis of the institutions that influence the activities of IWBEs for the purposes of providing more in-depth context. This in turn assists understanding of the IWBE phenomenon in northern Australia and, consequently, to recommend changes to the institutional context in which IWBEs take place in an effort to promote conditions that are more likely to lead to success for Indigenous entrepreneurs (see Chapter Nine).

6.4.1. Government regulation of commercial wildlife harvesting

As discussed in 6.3.3., legislation, policy and the resultant bureaucratic workload is a significant vulnerability and a burden for IWBEs. It is not difficult to imagine governments changing legislation and/or policies in ways that are designed to more strongly protect wildlife on the grounds of biodiversity preservation, public health and safety, animal rights, etc. As discussed further in Chapter Eight, such changes are likely to receive significant support from certain sections of the Australian public. Further, the burden of this regulation creates a significant cost for IWBEs in that time and resources need to be dedicated to ensuring compliance with
regulatory requirements. It is thus important to analyse the way in which government regulation impacts the operations of contemporary IWBEs and, subsequently, how changes in the institutional context may contribute to the success of IWBEs.

As discussed in the case study chapters, intermediaries had a very important short term role in navigating regulatory requirements for operation. Indeed, the majority of Indigenous harvesters had little interaction with formal regulatory institutions. As described by Pham et al. (2010), intermediaries play many roles and operate at different levels within market chains that include the poor and those with scarce market information. These intermediaries have considerable power over the success of livelihoods strategies as they mediate access to resources and relationships, and through these significantly influence the strategies and operations of IWBEs.

Given the different legal and policy context in WA as compared to the NT (specifically the absence of ALRA(NT)), Tf harvesters were observed to have the most interaction with regulations. However, though licences are required to conduct commercial harvest of native species, these licences often cover multiple members of a family group. All of the industry stalwarts possessed such licences. It is unknown whether the sometimes 200 strong networks of kin who provided fruit to stalwarts were all covered, indeed it is likely that many were not. However, this research was unable to ascertain the extent of this non-compliance, nor the motivating factors – it could be seen to be an intentional protest against the
regulatory system of the dominant culture, but is more likely to represent simply a
disinterest in completing paperwork and engaging with bureaucracy. Nonetheless,
the stalwarts were supported in their role as brokers by the extension type work of
DAFWA and DEC. DAFWA invested significant resources in Indigenous *Tf* harvesters
over a four year period, part of which involved the enhancement of capacity to
comply with regulatory requirements for commercial harvests of native fruit.
Likewise, DEC was proactive in providing assistance to stalwarts (and others) in
terms of obtaining licences and maintaining records of harvesting practices,
especially after the occurrence of localised overharvesting near Broome (Mason
2003; BRS 2008). Though it was never expressed directly, it was apparent through
the behaviour of these government agents that the task of ensuring *Tf* harvesters
were abiding by regulatory requirements was of interest mostly to the bureaucracy,
not necessarily in the interests of protecting people or the environment. Further,
even the bureaucracy did not appear to insist strongly on compliance and did not
pursue the kin networks assiduously.

Indigenous harvesters involved in the other two case studies had much less
interaction with regulation in terms of wildlife harvesting conduct. Given that they
harvest a feral animal, the regulation of GGBC mustering activities was the least
onerous. The primary consideration was the animal welfare issues related to the
muster of wild beasts, and their processing and transport to ships for export. The
formal regulation of animal welfare is primarily conducted by the market itself – i.e.
the companies responsible for the conveyance of buffalo to SE Asian markets do
not accept animals that are in poor condition, are pregnant, or are of unsuitable
The non-Indigenous and non-local coordinator of GGBC is experienced in negotiating these requirements in that he is also a pastoralist who exports cattle via Darwin harbour to SE Asia. It is this experience that is employed in GGBC with little or no involvement or awareness from local Indigenous employees.

The situation is similar, though more complex, for Djelk Wildlife Enterprises. Djelk are required to obtain permits to harvest saltwater crocodile eggs and report on their activities. The majority of paperwork and interaction with bureaucracies is conducted by the non-Indigenous and non-local coordinator of the enterprise. However, more experienced rangers do conduct some of the monitoring of harvest activities. For example, when collecting eggs from the nests, harvesters use the Cybertracker software of handheld PDAs (Koenig and Ansell 2012) to record location of nests and the number of eggs collected. Once the nests have been transported back to the ranger station for processing, rangers are also responsible for recording the number of viable eggs collected. This data is used by Djelk to ensure compliance with government enforced regulation of the industry. Outside of the monitoring tasks mentioned, Indigenous harvesters have little interaction with the formal regulation of crocodile egg harvests.

For all of the case studies, the majority of interaction with the agencies responsible for enforcing the regulation of wildlife harvesting in both WA and the NT is conducted by the coordinators of enterprises. It is typical for these coordinators to be non-local and non-Indigenous. Their contribution to the enterprise is significant.
in that they perform the role of intercultural brokers and intermediaries (Pham et al. 2010).

There was no evidence of discontent, and very little evidence of protest, in terms of the requirements imposed by government regulation of commercial wildlife harvesting. This is possibly explained by the fact that these activities are predominantly located in the market sphere of the hybrid economy, though more targeted investigations of this issue are required.

In fact, the limits imposed on harvest volume by quotas do not have a significant deleterious effect on the success of IWBEs in northern Australia. For each of the industries investigated in this research, quotas have never been reached and have therefore not restricted the activities of the enterprise. There are two fundamental reasons for this: firstly, as described in research relating to maximum sustainable yields of various wildlife species in northern Australia and unlike elsewhere (Meis Mason et al. 2008), the natural capital’s capacity to supply produce is usually higher than current or projected market demand (Woods 1995; Whitehead et al. 2003b, 2006; Griffiths et al. 2003, 2005; Gorman et al. 2006, 2008; Koenig et al. 2007; Collier et al. 2010; Fukuda et al. 2011). Secondly, and more importantly, the capacity of enterprises (Indigenous and non-Indigenous) to harvest, process and deliver produce to market is less than the maximum sustainable yields of the resource (Bradshaw et al. 2007; Gorman et al. 2006, 2008; Collier et al. 2010; Fukuda et al. 2011). Therefore, while legislation and policy aimed at regulating the commercial harvest of wildlife by Indigenous people is present, it has rarely been
activated in the sense of impinging on the scale of harvests conducted by the enterprises. Thus, IWBEs are effectively unregulated as they do not presently trigger any legislative thresholds.

However, there are two important ways in which regulation does have a negative impact on the operations of IWBEs. Firstly, as discussed in Chapter 5, the regulation of harvesting activities creates significant bureaucratic burden and transaction costs that increase the marginality of IWBEs in an economic sense. Secondly, the entrepreneurial process of discovery and resultant participation in market-based economic activity is severely restricted by the presence of commercial wildlife harvesting regulations. It is difficult for enterprises to respond to novel emerging markets in a timely manner due to the need to obtain permits to harvest specific species. The strong application of the precautionary principle to the harvesting of wildlife in Australia requires that a high level of certainty with regards to the resilience of particular species to commercial scale harvests. There is a temporal disjuncture between the pace at which research can be conducted to establish the sustainability of harvests and the rate which market demand arises, and is satisfied, by entrepreneurs. The result is that government regulation of wildlife harvesting activities restricts the ability of IWBEs to behave entrepreneurially. For example, a former manager in an Aboriginal corporation involved in wildlife-based enterprise described the loss of a business opportunity when a potential partner approached the Aboriginal corporation with a proposal to buy *Morinda citrifolia* fruit from local people.
He [the potential business partner] came to Maningrida and was very sincere about wanting to set up some sort of a partnership using his money and his resources. He had his own research trust and laboratories and everything that was required. And limitless money. He wanted to target some of the things that actually worked. And one of the things that he was interested in was *Morinda citrifolia*. He had some inkling that it had some beneficial properties that could be commercialised. So Bawinanga was naturally pretty enthusiastic about having a partner like that, particularly as his sincerity was tested and found to be sound. So we applied for a s19 agreement through the Northern Land Council to harvest *Morinda citrifolia*. Anyway, the short and the long of it is that the NLC dragged that out for more than 5yrs – 6yrs in fact. And we still didn’t get a s19 agreement to harvest *M. citrifolia*. We ended up with the rights to grow it in a small plantation in a totally unsuitable place where it was doomed to failure. And it did fail. But in the course of those 6yrs, the market opportunity had been lost for it. By then, *M. citrifolia* was coming to Australia from Fiji and Vietnam. When we started it was tremendously valuable. Anyway, the extraordinary opportunity was completely lost and we lost our partner who gave up in despair (P10).

In summary then, it is possible to see that given the abundance of the natural resources being targeted for harvest in northern Australia in combination with the limited capacity of enterprises and individuals to harvest these resources, the government regulation of the harvest of wildlife does not represent a limiting factor for the success of IWBEs. These regulations do however restrict opportunities for innovation, entrepreneurial behaviour and local economic development, and increase costs of production. Both of these impacts force IWBEs to seek greater outside assistance, either in the form of government investment/subsidies and the reliance on research institutes to demonstrate sustainability of harvests. This seems
rather nonsensical and inappropriate given the fact that quotas have never been met and that research suggests maximum sustainable yields are significant when compared to apparent market demand.

It must be noted that, though native title and other land rights legislation in Australia is generally understood to exclude rights to commercial use of wildlife (ALRC 1986; Williams 1993; Warby 1997; Hughes 2005; NIC 2005), this has only recently being tested. Venn (2007, p.132) identifies this interpretation of the law as the “pessimistic view”, which has tended to be the dominant view over the last few decades (Cooney and Edwards 2009). As Venn (2007) suggests, it is possible that this interpretation when tested in court would not be held true and in fact the native title rights of Indigenous Australians may extend to the commercial use of wildlife on their estates. Indeed, in August 2013 the High Court of Australia found that the native title rights of a group of Traditional Owners from the Torres Strait did indeed extend to commercial use (Lauder 2013). It is yet to be seen whether this decision applies to native title owners in other parts of Australia and/or is applicable to terrestrial stocks of wildlife. In 1986 the Australian Law Reform Commission found that preferential rights to resource harvesting be given to native title owners, but that the Native Title Act did not necessarily grant these rights. Rather, this was deemed to be a matter for the relevant State and Territory management authorities. However, as indicated by the decision in favour of commercial fishing rights in the Torres Strait, the socio-political context has changed significantly in the past three decades. It certainly seems plausible that commercial rights may be granted when tested before the High Court. Such a
finding would have significant implications for IWBEs in northern Australia in that it would significantly reduce the regulatory burden they face and, in-so-doing, increase the feasibility and performance of such enterprises.

6.4.2. Wildlife as common pool resources in northern Australia

It has been argued that Indigenous Australian native title rights to land and sea should be extended to included possessory rights over natural resources (Meyers 2000; Pearson 2003). The usual justification for the extension of such rights is on reparative justice grounds, as it would, arguably, facilitate economic and cultural development (Venn 2007). To date, such rights have been restricted from extending to minerals, petroleum and water (Venn 2007; Lauder 2013). However, rights to manage other resources have been granted in some cases, under the condition that they are managed in a manner consistent with traditional law and custom. It is this clause that is particularly problematic in terms of extending commercial use rights to native title holders in that it is usually subject to a particular ‘frozen in time’ interpretation that significantly limits the types of use allowable under the law, usually to the subsistence and cultural use of natural resources that ignores the extent of traditional trade in which Indigenous people were involved before colonisation (Keen 2004; Gammage 2011).

Until recently (see Lauder 2013), there has been a clear distinction between the right of Indigenous Australians to use natural resources for subsistence or traditional use, and the right to use natural resources commercially. Regulation of
the commercial use of wildlife has always been conducted through governments at the State and Territory level (Venn 2007; Cooney and Edwards 2009). Both the Native Title Act and the EPBC Act clearly state that native title holders have special rights to use natural resources, but that these rights are limited to non-commercial use. This is also the case in terms of rights conferred to Indigenous people under the ALRA in the NT. As such, in most cases, Indigenous people are subject to the same regulation of commercial use of wildlife as other Australians (Cooney and Edwards 2009).

However, as mentioned previously, though the Commonwealth, State and Territory legislation that regulates the use of wildlife places significant emphasis on protection and actively discourages commercial use, it does not prevent commercial use where reasonable proof of sustainability can be demonstrated. As such, Indigenous people are able to access the wildlife resources present on their land for commercial use under legislatively defined conditions (Cooney and Edwards 2009).

As such, and given the generally communal nature of Indigenous land rights in Australia, an argument can be made that wildlife on the Indigenous estate is a common pool resource. Common Pool Resources (CPRs) are defined as those resources where it is difficult to exclude users and where the exploitation of one user reduces the availability of the resource to others (Ostrom 1990, 1999, 2000; Moore and Rodger 2010). It is proposed that in the case of wildlife resources in northern Australia, particularly those suitable for sustainable use by IWBEs, the
latter condition is rarely, if ever, met. That is, as mentioned previously and demonstrated in an expanding body of literature (Woods 1995; Whitehead et al. 2003b, 2006; Griffiths et al. 2003, 2005; Gorman et al. 2006, 2008; Koenig et al. 2007; Collier et al. 2010; Fukuda et al. 2011), the majority of species targeted for use by IWBEs occur in relative abundance, over large ranges, and are relatively resilient to commercial harvest. In fact, these attributes have been identified as a key factor of success for IWBEs (see section 8.2.). As such, in terms of the total resource available to all users, the harvest of a particular species by one user is almost certainly not likely to reduce the availability of the resource to all other users. However, when geographic boundaries are introduced around major population centres, it is possible that the harvest conducted by one user will occasionally reduce the availability of the resource other users in the local area. In this sense, at small scales and under certain conditions, wildlife resources in northern Australia could arguably be seen as CPRs. The case for wildlife as CPRs is certainly likely to be much stronger in cases where wildlife resources are more scarce or are likely to face greater harvest pressures (e.g. desert landscapes, urban settings or rare species). Nonetheless, it is here useful to analyse the impact of CPRs on IWBE operations in terms of vulnerability posed by dominant culture regulatory institutions.

Stemming from the now (in)famous publication by Hardin (1968), the assumption that all CPRs were open access and therefore open to tragic overcrowding and resource depletion was popularised by academics, policy-makers and managers. However, as Ostrom (1990; 1999; 2000) and others (e.g. Bromley 1978, 1992; Wade...
1987; Powell 1998) have since reminded the economic and scientific community, CPRs are not always open access and therefore not necessarily prone to the ‘tragedy of the commons’. Rather, the use of CPRs is often controlled through a locally constructed ethics of use (Gibson 2009). This certainly was the case with reference to Indigenous people in pre-colonial Australia and, where traditional culture remains strong and access to Country is possible, it remains the case today (Altman 2004; Keen 2004; Venn 2007; Wills-Johnson 2010; Gammage 2011).

However, with the dominance of post-colonial ‘tragedy of the commons’ thinking, amplified by neoliberal economic ideology, the Australian state has defended its ownership of wildlife resources, whilst more recently a call for Indigenous rights in land and resources to be changed from communal to individual title has gained momentum (Duncan 2003; Hughes and Warin 2005). Both of these arguments are based on dominant culture-based assumptions about human nature and natural resource management, and are flawed.

As mentioned, under its native title legislation the Australian state moves some way towards recognising the rights of Indigenous people to use wildlife in that it allows for the harvest of natural resources in line with traditional practice. However, as discussed previously, these rights generally only extend to subsistence and customary use. Given that native title defers to State and Territory-based legislation aimed at protecting natural resources from overuse, it is assumed that these limitations remain in place to protect against the overharvest of resources due to
commercial self-interest and, ultimately, a tragedy of the commons occurring. However, as Venn (2007) describes, there is very little evidence to suggest that this may be the case. In fact, in remote and other Indigenous communities where local institutions for managing the sustainable use of resources remains strong, it seems more likely that these local institutions are more powerful and more effective at managing the harvesting activities of local people than the authority of the Australian state (Ostrom 1990; Dietz et al. 2003; Venn 2007; Wills-Johnson 2010; Gammage 2011). Further, Holling and Meffe (1996) have described this centralised, government controlled NRM as a ‘command and control’ regime. Such regimes are usually inefficient at achieving the goals they set (i.e. the maintenance of healthy natural resources) due their myopic and top-down approaches to management, which inevitably fail due to limited innovation and adaptation to new and emerging threats. Arguments for centralised control of the use of natural resources, including wildlife, are weak and tend to be based more on maintaining the power of the state than ensuring sustainable use (Holling and Meffe 1996).

Further, the recently popular argument that changing Indigenous rights to land and resources from communal to individual property rights (and consequently the removal of the LUA process under ALRA) would be beneficial for economic development on Indigenous land (Duncan 2003; Hughes 2005; Hughes and Warin 2005) is flawed. There is no evidence to suggest that private property rights (or any other form of property rights) guarantees economic efficiency in resource use, nor avoids tragedies of the commons (Dietz et al. 2003). Rather, the most desirable form of property rights is context specific (Rose 2002; Tietenberg 2002; Andersson
As numerous studies have demonstrated, the local institutions for managing wildlife may in fact be more conducive to efficient and sustainable commercial use than those imposed from outside (Mahendrarajah 1986; Sneath 1998; Ostrom et al. 1999; Dietz et al. 2003; Altman 2004; Andersson 2004; Venn 2007; Wills-Johnson 2010; Gammage 2011). In addition to being poorly supported by evidence, the argument for transitioning to a private property rights regime for native title holders ignores the most obvious barriers to economic development that contribute more significantly to poverty and limit NRM capacity on the Indigenous estate. These barriers, such as cultural distance, low western education and skill levels, poor health, poor housing, a lack of infrastructure, economically marginal land, distance to markets and social dysfunction, are stronger determinants of success or failure in enterprise development than the nature of communal property rights (Altman 2004; Venn 2007), and are certainly worthy of more attention than land tenure issues. There are numerous examples of enterprise success within the context of communal property rights from around Australia and the world, where local social and cultural institutions are harnessed for livelihood development (Altman 2004). It is suggested that the push for Indigenous land tenure to be privatised is more of an ideological position about what type of economic development and what types of enterprises should be pursued, rather than argument based on evidence (Altman 2004). Rather, as Venn (2007, p.140) states:

*Strengthening communal property rights to natural resources, including through improving the fit of simplified bureaucratic models of communal rights with the complex reality of customary property rights systems, is likely to be more...*
beneficial to the long-term well-being of the Wik and other Australian indigenous people than privatisation of property rights (Venn 2007, p.140).

Therefore, there is a strong theoretical argument for decentralising wildlife management in the Indigenous Australian estate to allow local people to use local institutions to control resource use (Altman 2004, 2008). Indeed, as mentioned previously, the risk of overharvest is mediated to an extent in that only local overharvest is possible for most species – certainly for all three cases here and even that is unlikely. Other species that are more susceptible to overharvest across their range present a different case and a valid counter argument (e.g. rare and endangered species). However, where local institutions are strong, these species and their habitats are likely to be protected by local law, custom and institutions. It seems unlikely that they would be overharvested (Wills-Johnson 2010; Gammage 2011).

The evidence from this research in terms of the sustainability of use of wildlife, as mediated by local CPR institutions, makes only a modest contribution to the debate. Though it does raise some doubt in terms of the strength of Indigenous institutions to manage the sustainable use of wildlife. In the case of crocodile egg harvesting around Maningrida, there is strong evidence of cultural practices inhibiting harvesting activities in specific locations, given specific events. Though not necessarily the direct intent of the cultural practice, this practice certainly provides a buffer against overharvesting and/or damage to nesting habitat that is likely to ensure sustainability over the long-run. Whether other local institutions
concerning the management of crocodiles and their habitats exist or not was not explored in this research.

There was some evidence in the case of Tf that local institutions were in fact insufficient in ensuring sustainability of harvest in some locations. Localised overharvesting occurred around Broome township in 2003, with many trees being destroyed by chainsaw or with vehicles (Mason 2003; BRS 2008). It was only after the intervention of the relevant regulatory body in WA, in partnership with TOs, that individuals responsible were prosecuted and a public education campaign launched around sustainable harvesting. However, the strength of local institutions varies considerably over the vast range of Tf. Indigenous influence on the behaviour of people in a semi-urban park is likely to be far weaker than in other locations in the Kimberley where local institutions may exist that have more authority and impose greater sanctions on individuals who go against these rules.

There was no evidence that there have ever been any local social and/or cultural institutions that directly protect buffalo populations around Bulman from being overharvested. This is understandable in that buffalo are a recently introduced species that is usually found in high numbers throughout Arnhem Land. Indeed, Western legislation does not specify ownership if feral buffalo until the moment they are contained within fences or under the control of people mustering them (Garnett et al. 2010). As such, rules ensuring the management of scarce resources are unlikely to have emerged as there is deemed to be simply no need for them.
under either Indigenous or western law (until of course they are sold for cash profit).

In summary, the nature of Indigenous peoples’ contemporary natural resource management institutions in various locations around Australia needs to be better understood to more fully support decentralisation and allow Indigenous Australians to manage the CPRs on their land – including wildlife resources. Also, there is a need to better understand how local Indigenous institutions for livelihood development and NRM can be linked harmoniously to dominant cultural institutions in Australia. As such, and as described in Recommendation 6 (Chapter 9), it is proposed that a way forward for IWBEs in the short- to medium-term is to invest in research and administrative support targeted at alleviating the burden of proof imposed on enterprises. If and when they occur, legislative changes should be modest and supported by testimony from Indigenous Australians about the way in which they manage wildlife populations to strengthen their legitimacy in the eyes of the Australian public.

Note, the argument that Indigenous people have sovereign rights to access and use the resources of their lands for any purpose, including commercial, is a different argument. It is suggested that this argument has more strength than an argument for commercial harvests based on CPR theory. Though not the focus of this thesis, it is proposed that an alternative area of action for Indigenous people interested in developing enterprises that use wildlife resources on their land is to strengthen the political case for access and use of these resources for commercial purposes on the
basis that they have a right to do so. This argument need not rely on demonstrating plausible sustainability of use (though it may be strengthened by it), but can instead argue that prior to dispossession, these resources were owned and managed by Indigenous Australians for any kind of use – including trade (Keen 2004; Gammage 2011). As such, and as part of a genuine process of reconciliation based on justice, these rights should be returned in full to their original owners.

6.4.3. IWBEs, the CDEP and Hybrid/Real Economies

Several authors (e.g. Altman et al. 1997; Davies 1999; Altman and Cochrane 2005; Altman et al. 2006; Altman et al. 2012; Morrison 2007; Buchanan et al. 2009; Cooney and Edwards 2009; Koenig et al. 2011; Walsh and Douglas 2011; Austin and Corey 2012; Biddle and Swee 2012; Curchin 2013) have mentioned the role played by the Australian Government’s Community Development Employment Program (CDEP) in supporting the activities of both subsistence and commercial wildlife harvesters. The CDEP began in 1977 and was designed to provide an appropriate alternative to mainstream unemployment benefits for Indigenous Australians – particularly in remote areas (Altman et al. 2005; Department of Finance and Deregulation 2009; Gray et al. 2011). The primary goal of CDEP was to provide employment, training, enterprise support and/or income support to assist people to transition into employment or, where there were no jobs, to be otherwise engaged in productive labour (Gray et al.2011). Due to changes in the Australian Government’s agenda for Indigenous economic development, the CDEP has been slowly phased out (Hunter and Gray 2012). Between 2007 and 2009 all CDEP projects in non-remote regions were ended. By June 2013 it was planned that all
CDEP projects in remote communities would similarly be phased out and replaced by the Remote Jobs and Communities Program (RJCP) (Hunter and Gray 2012).

In all three case studies examined in this thesis there was strong evidence that the viability for enterprises would be significantly diminished were it not for the CDEP. Djelk was subsidised by CDEP funded labour for 20 years, the buffalo mustering company employed staff who at other times of the year were securing a livelihood either through receiving passive welfare or CDEP employment, and many of the Tf producers received CDEP funding to conduct their wild harvesting enterprises and to secure livelihoods in the non-fruiting season. Further, though not directly the topic of this thesis, it is important to note the role that CDEP also played in maintaining the subsistence wildlife harvesting activities of Indigenous people in remote Australia (Hunter and Gray 2012). As Buchanan (2013) suggests, the likely reason for this was that CDEP employment provided local people with more resources to spend on hunting, fishing and/or gathering bush foods. CDEP increased the harvest of wildlife only in places where incomes were low, store prices high, non-CDEP employment was limited and where harvesting had high social and cultural value (Kwan et al 2006; Bliege Bird and Bird 2008; Buchanan et al. 2009; Buchanan 2013). These factors were present in, and also likely influenced, all of the IWBEs researched for this thesis. As discussed later, traditional hunting/fishing/gathering activities have a strong connection to IWBEs. Indeed, it may be that substantive rationalities informing subsistence harvests provide a foundation for IWBEs, with market participation occurring opportunistically.
The presence and significance of the CDEP in each of the three case studies and wildlife harvesting more generally opens a discussion on the role of public support for Indigenous livelihoods in remote Australia. For this purpose it is necessary to look towards the work of Altman (1982; 1987; 2003; et al. 1995; et al. 1997; and Whitehead 2003; and Cochrane 2005) who has written extensively on Indigenous wildlife harvesting in Australia. The centre-piece of Altman’s work is the hybrid economy (Altman 2001a; 2005a; 2005b; 2007; 2010). With regard to economic development in remote Indigenous communities in Australia, the hybrid economy is the only significant alternative to neoliberal economic policy. Altman’s conceptualisation of remote Indigenous economies includes the standard economic sectors of the state (or public) and the market (or private), but adds a third sector – the customary. The customary sector comprises all the economic activities conducted by remote-dwelling Indigenous people that are culture-based, non-settler state and non-capitalist in nature (Altman 2005). The most significant activities that can be categorised as belonging to the customary are hunting, fishing, gathering bush foods, art and caring for country (Altman 2005).

An important point to make when describing the customary sector of the hybrid economy is that culture-based activities are not necessarily conducted in a traditional way with traditional technologies (Altman 2005; Buchanan 2013). For example, many people now hunt kangaroos with rifles, not spears, and yams can be dug up with crow bars instead of digging sticks.
Most IWBEs can be positioned in the centre of the hybrid economy in the sector that lies between the market, the state and the customary (Altman 2007). They use traditional knowledge, hunting/gathering techniques and often are culture-based; they certainly participate in markets; and in most instances they are supported by government investment, usually in the form of the CDEP. This centre of the hybrid economy is a theoretical ‘sweet spot’ where resources are optimally harnessed for livelihoods in remote Indigenous communities. In this sense, IWBEs can be compared to art centres, which have achieved considerable success in securing livelihood income for many Indigenous Australians (Koenig et al. 2011). Without investment from the state (primarily through wage subsidies [for usually non-Indigenous art centre managers] and other livelihoods supporting welfare programmes) many IWBEs would indeed find it difficult to survive. Though market demand for the products is strong, with high prices received at market due to the niche/luxury status of the products, without state involvement both the Tf harvesters and Djelk would almost certainly fail financially. This is true of IWBEs operating in hybrid economies elsewhere in post-colonial societies (e.g. Meis Mason et al. 2008; 2009).

Hybrid economy theory suggests that the state has a responsibility to maintain and perhaps increase investment in IWBEs as part of an appropriate development approach (Altman 2003; Altman and Whitehead 2003; Altman and Cochrane 2005; Altman et al. 2007). Based on evidence in this thesis, such a position is justifiable – though is not the only alternative.
Indigenous Australians are increasingly seeking to reduce their dependence on the state for livelihood support (NAIEF 2013). The market is a source of further investment in Indigenous livelihoods in remote northern Australia. However, unlike other authors (e.g. Meis Mason et al. 2009) who place positive value on the reduction of livelihoods based on subsistence, the market is seen as complimentary to the cultural economy, not in competition.

There is evidence in each of the case studies that the market possesses and expresses goodwill towards Indigenous partners. Buyers of produce are open to investing in human and physical capital development to subsidise IWBE activities. Of course, as mentioned, the willingness of the market to participate in remote economies is entirely dependent on high market demand for commodities produced from wild harvested plants and animals and optimistic macroeconomic conditions that encourage investment. This is true of market-based economic participation in general – the market coordinates capital investment based on the likelihood of realising financial profit. Traditionally very little capital investment has flowed into remote Indigenous communities in northern Australia, primarily because there has been little likelihood of realising a return. However, it seems likely that for many Indigenous people living in northern Australia there are opportunities (sometimes modest) to further grow the market sector of their local economies. Indigenous people are receiving more income from mainstream development in northern Australia, such as mining and agricultural production (Altman and Martin 2009; Langton 2010). There are also emerging opportunities for Indigenous people to participate in markets through tourism (Russell-Mundine
2007; Tremblay and Wegner 2008; Buultjens and Gale 2013), fee for service work (Gorman and Vemuri 2012), payment for environmental services (Zander and Garnett 2011), conducting research (Sithole 2012), art (Koenig et al. 2011) and of course IWBEs. Much of this enterprise activity has relied in some part on investment from the state. However, this support may not be necessary over the long-run and may decrease given the aspirations of Indigenous people in northern Australia (NAIEF 2013).

Realistically though, and as hybrid economy analyses demonstrate, the context in which IWBEs and other Indigenous enterprises in northern Australia operate imposes constraints on the scale and type of market activity. Firstly, there are obvious limits to market-based economic growth: local markets are small, more significant markets are distant, costs of production are high, transaction costs are high, most assets are communally owned, people generally have poor literacy and numeracy, social dysfunction is common, and corporate governance is often poorly understood and practiced (Altman 2008).

Secondly, there is a perceived risk that increased engagement with the market may have an impact on the nature of Indigenous culture and identity in Australia and may in fact represent a continuation of the colonial project (Foley 2006; Gallagher and Lawrence 2012). The research conducted for this thesis cannot shed any more light on this issue other than to report evidence that IWBEs are socially embedded (see section 9.7 for more detail discussion) and, as such, Indigenous people are not passively adopting western, market-based economic activity. Rather, IWBEs are
conducted in line with local social and cultural conditions and, in this sense, are hybrid enterprises. For example, it is common for Djelk to be prevented from conducting egg harvests in specific locations due to ceremonial closures of areas (e.g. due to the death of a local person). In this sense, and as supported elsewhere (Foley 2006; Gallagher and Lawrence 2012), these enterprises define and are defined by both cultural tradition and the emergence of contemporary Indigenous identities and cultures.

Thirdly, Indigenous people place a high value on maintaining the health of their country (Rose 1992; 1996). Within this, but not separate to culture and other attributes of country, is the health of the environment. However, there are diverse opinions among TOs about what represents a healthy environment. For example, some people see any destructive large-scale development on country as being undesirable. Whereas others are content with allowing mining, pastoralism, agriculture, or invasive biological processes such as feral animals and/or weeds to occur on country. For example, GGBC demonstrates that it is possible to run a financially viable enterprise in a remote Indigenous community in northern Australia with minimal public investment. As discussed however, there is a significant issue in terms of the sustainability of GGBC over the long run in that the profits of the enterprise result significantly from the outsourcing of costs of production to the environment, with considerable environmental damage the result. In the local community of Bulman there seems to be general consensus that buffalo belong in the region, but there are diverse opinions about what are appropriate population densities. This is primarily based on the fact that buffalo are
not only providing livelihood income and are part of local identities, but are also changing the nature of local waterways and culturally significant sites. Peoples’ opinions on the presence and density of buffalo in the Bulman region will undoubtedly change as the values of the community are negotiated over time.

Therefore, the social license that market agents must obtain to conduct business in remote Indigenous contexts in northern Australia generally has more conditions to be met prior to operation as compared to the dominant Australian society. This is not to suggest that market forces freely have their way with non-Indigenous Australian society, culture and the environment. Indeed, significant effort, mostly in the form of legislation and policy, is invested by the dominant society. It is a matter of degree. Nonetheless, there is potential for the market to increase investment in each of the enterprises (or indeed for market prices to simply go up due to decreased supply). At the same time it can be argued that the state has an obligation to continue investing in the human, natural, physical and social capitals that underpin good governance and ensure that local people are sufficiently empowered to make informed decisions about their economic futures. In this sense, the hybrid economy is both right and wrong. Its analysis is accurate – it describes the reality of many people in remote northern Australia. But to this end the antithesis of the ‘real’ economy is equally accurate – it also describes the reality of many people living on the Indigenous estate in northern Australia. Ultimately however, it is proposed that the decision about which sector/s of the economy Indigenous people seek investment and support is a decision to be made by local Indigenous people. Consequently, the goal should be to ensure that local people
are sufficiently informed and empowered prior to making decisions about livelihood development – a role that undoubtedly belongs to the state.

In a pragmatic sense, Indigenous people will continue to adapt to institutional changes as they occur. Whilst the opportunity to take advantage of state investment in livelihoods development exists, they should take advantage of it and, in most cases, continue to advocate for more support. When market opportunities arise, then they too can be pursued. Given hegemony of neoliberalism it is indeed necessary to identify, research and advocate alternatives that are available (Howitt 2012). As Gibson-Graham (2008, p.618) suggests, researchers have a responsibility:

...to make them [hidden and alternative economies] the focus of our research and teaching in order to make them more “real”, more credible, more viable as objects of policy and activism, more present as everyday realities that touch all our lives and dynamically shape our futures.

However, normative prescriptions for how remote Indigenous economies ought to be structured, and subsequently invested in by various stakeholders, represent little other than ideology and politics (Howitt 2012). Ideology and politics are important – for shaping institutions and winning battles – but they are often normative statements made on behalf of local people, which may or may not be representative of local realities. Local people can only make informed decisions about their futures when they are empowered through good governance, education, health and infrastructure. With good governance local Indigenous people can decide the futures of their kin, culture and country, and reduce their dependence on relatively empowered Others to fight ideological battles on their
behalf (Howitt 2012). As Curchin (2013) politely suggests, if hybrid economy theory is used to make statements about how economies ‘ought’ to be structured and supported, and how institutions should interact with local people, then proponents of the theory are engaging in hubris and hypocrisy. The hybrid economy, and its attendant policy implications, should be seen as just one economic development framework and strategy available to remote-dwelling Indigenous people.

The impact that the end of the CDEP has on the viability of each of the enterprises investigated here is dependent on the relationship that emerges between harvesters and the RJCP. Hunter and Gray (2012) suggest that several of the functions of the CDEP will be transferred over to the RJCP. How much of an impact this institutional change will have on Indigenous peoples’ capacity to engage in wildlife harvesting for subsistence and commerce is as yet unknown. Further, the development of alternative livelihoods on country (in addition to wildlife harvesting) could perform a similar function as the CDEP in providing increased resources to enable wildlife harvesting activities.
Chapter Seven: Perspectives of Success

7.1. Introduction

Though it has been shown that appropriate measures of success for Indigenous enterprise development can have a significant influence on both enterprise performance and developmental interventions (Anderson et al. 2004; Henrekson and Roine 2006), there are no generally accepted definitions of success for Indigenous enterprises in Australia (Nikolakis 2008). Assessing performance requires the development and application of metrics of success, which are inevitably based on the subjective worldview of their architects. Consequently, in a cross-cultural setting, metrics of success need to reflect the aspirations and motivations of those involved. Subjectivity and the diversity of ambitions and perspectives on success have not always been acknowledged in Australia, where Indigenous people’s activities have most often been measured and evaluated from the perspective of the dominant culture.

In other post-colonial Indigenous societies in the United States and Canada, enterprise success has been measured using indicators of: employment (Wutunee 2004; Peredo and Chrisman 2006; Smith 2006); autonomy (Smith 2006); and profit (Cornell 2005; Peredo and Chrisman 2006; Trosper et al. 2008). However, as outlined by Peredo and Chrisman (2006), Peredo et al. (2004) and Smith (2006), it is difficult to distil generalised indicators of success due to the unique, divergent and mixed objectives of Indigenous enterprises.
In Australia, the Indigenous Business Review (2003) suggests that levels of employment should not influence the decisions of entrepreneurs as profit maximisation is more important and, therefore, success should be measured on the basis of financial returns. In contrast, Nikolakis (2008) suggests that indicators of success employed by Indigenous residents of the Northern Territory include economic self-sufficiency, overcoming welfare dependence, continued links to land, protection of the environment, preservation and maintenance of sacred sites, and intergenerational benefit. Further, for individual entrepreneurs, providing a future for their family was significant and for community enterprises: full employment, preservation of language, and enhanced control of traditional lands were primary benchmarks for success. Ultimately however, Nikolakis (2008) suggests that the primary measure of success for Indigenous enterprises in the Northern Territory is their ongoing survival and/or profitability. In Indigenous enterprises there is often an irreconcilable tension between profit maximisation and employment, as demonstrated by Arthur (1999), Cornell (2005), Peredo and Chrisman (2006), Nikolakis (2008), and Trosper et al. (2008).

In this chapter, the success of the IWBE case studies is investigated. Voice was given to the IWBE participants who were asked whether they perceived the enterprises as successful or not with interviewees assessing whether their activities had been financially, socially, culturally, environmentally and/or temporally successful. These results are interpreted with respect to the consequences they have for IWBEs as a tool for Indigenous livelihood development and enhanced wellbeing, as well as their potential contribution to natural resource management in northern Australia.
7.2. The Problem with Positivism

To place Indigenous views of enterprise success in context, it is first necessary to discuss the non-Indigenous definitions of success most commonly adopted. Presently and throughout post-colonial history, initiatives undertaken by Indigenous people in Australia have been measured against metrics defined by the dominant culture, which by their very nature embody a Western cultural bias towards positivism (Altman and Sanders 1991; Rowse 2006; Kowal 2008; Pholi et al. 2009). In Western society, success has traditionally been linked closely to the positivist tradition of inquiry (Pholi et al. 2009). As described in Chapter Three, positivism is primarily concerned with the controlled verification of hypotheses, assumes that an apprehendable reality exists, that researchers have the capacity to measure this reality, and in-so-doing present objective truths concerning any given phenomenon. As mentioned previously, some of the criticisms of positivist inquiry are that it strips contextual variables from research, excludes meaning and purpose, separates theory and the local context, applies inapplicable general data to individual cases; excludes the discovery dimension from inquiry; generates ‘facts’ that are theory and value-laden; under-determines theory; and fails to recognise the interactive nature of the inquirer-inquired relationship (Guba and Lincoln 1994). In practice, unchecked positivism has a tendency to place an excessive faith in statistics and assumes that more and better statistics will lead to more and better outcomes (Rowse 2006). It is a cultural artefact that dominates policy application in Australia today. Justifications for the use of positivist approaches to measuring
success (or performance, outputs or achievements) usually involve optimising public investment in schemes to improve the lot of disadvantaged or marginalised people. This includes both public accountability and human rights sentiments, which are both central tenets of liberal democracies.

A pertinent case for discussion is the Commonwealth Government’s ‘Close the Gap’ programme (FaHCSIA 2009), a programme that has direct relevance to the measurement of success in IWBE. Popularly lauded as a new dawn for Indigenous Australians, the Close the Gap agenda suggests that closer scrutiny of aspects of Aboriginal people’s wellbeing will lead to more and better outcomes from government intervention and consequently the health, education, employment, and other wellbeing indicators will move towards parity with those of non-Indigenous Australians (FaHCSIA 2009). A closer inspection of the Close the Gap programme can cast light on the measurement of IWBE success in that it demonstrates the risks associated with positivist assessment of performance.

Embedding their critical analysis in the health focused aspects of Close the Gap, Pholi et al. (2009) expose some of the shortcomings of the approach to improving the lot of Indigenous Australians. Firstly, its focus on tracking indicators of individual health ignores the fact that social and structural aspects are as important in determining health as individual behaviours and characteristics. By doing this, Close the Gap excludes crucial components of health from its analysis. Examples given by Pholi et al. (2009) include that the effects of racism on individual health are not measured and/or addressed, and that the positive influence of culture on
health outcomes is simplified and reduced to an individualistic measure of its presence or absence (Morrissey et al. 2004). The interaction of the individual with nebulous structural and social phenomena, such as racism and culture, are indeed complex and difficult to measure quantitatively. Consequently, Close the Gap ignores the seemingly obvious issue of the relative disempowerment of Indigenous Australians and the effects that this has on their health outcomes (Pholi et al. 2009).

Pholi et al.’s (2009) second criticism is that Close the Gap is not a new approach to Indigenous affairs in Australia, but is merely a continuation of the positivist interventions in the lives of Aboriginal people and is therefore unlikely to influence current trajectories. This is simply the most recent re-branding of an approach that has thus far delivered only mediocre results for Indigenous Australians (Altman and Sanders 1991; Dixon and Sindall 1994; Rowse 2006; Pholi et al. 2009).

The third and final criticism of Close the Gap posited by Pholi et al. (2009) is that, by deploying a positivist approach, the programme automatically problematises and further disempowers Indigenous Australians. By closely identifying Indigenous people with data gathered on predominantly negative aspects of their lives, which is designed primarily to measure relative deficits compared to the non-Indigenous population, Indigenous Australians are themselves reduced to a problem to be solved. This has the effect of further demoralising and disempowering Indigenous people in that it sends the message that they are deficient. This message is
consistently repeated with every new inquiry and status update delivered by the Government and represented in the media.

Though Pholi et al. (2009) are primarily concerned with the relative disadvantage experienced by Indigenous Australians in terms of their health status, it is suggested that these criticisms can be generalised across all aspects of Indigenous developmental benchmarking. To apply a tightly positivist approach to assessing the success of IWBEs runs the risk of: i) ignoring the structural and social aspects of enterprise success; ii) continuing the fallacy that better data will inevitably lead to better performance; and iii) exaggerating the failure of Indigenous enterprises, thus problematising and further disempowering Indigenous entrepreneurs.

Pholi et al.’s (2009) criticism can be profitably extended by Kowal’s (2008) positioning of Closing the Gap as part of a post-colonial logic founded on the conflicting concepts of Orientalism and remedialism. Orientalism is described by Kowal (2008, p.342) as “…the process whereby a powerful agent designates a less powerful agent as essentially different from themselves”. It can be used to describe both denigrating depictions of “non-White peoples” as well as the romanticisation of the “noble savage” (Kowal 2008, p.342). It is the latter conception of Indigenous peoples as somehow superior due to their cultural difference that informs one half of the Australian post-colonial logic.

The other concept that informs Australian post-colonial logic is remedialism. As outlined by Kowal (2008, p.341):
The remedialism that drives postcolonial logic is the belief that the lives of Indigenous people, so badly affected by colonization, can be improved through reasoned intervention. It entails a set of assumptions about “the good life” that presume that functional housing, Western education, employment opportunities, and freedom from addiction and illness are among the most important of life’s goals. The tools of remedialism are... mobilized to detect inequality and monitor efforts to reduce it.

Closing the Gap can be seen as heralding an end to the self-determination era and, as such, a movement away from Orientalism and towards remedialism (Kowal 2008). There are still dissenting voices (e.g. Altman 2010) that defend essentially Orientalist positions on Indigenous affairs. Indeed, it is likely that whilst ever Australia remains a liberal multicultural society, the battle between the two positions will never be resolved. At present the virtual hegemony of the remedialist tool of ‘evidence-based policy’ in policy circles is indubitable. However, as both Kowal (2008) and Pholi et al. (2009) demonstrate, this is by no means a perfect approach to closing the gap and has historically achieved only marginal results for Indigenous Australians.

It is widely surmised that the story of Indigenous enterprise development in Australia, particularly in remote areas, is one of struggle and inevitable failure (IBR 2003; SCRGSP 2007, 2009; Pearson 2011). However, these assessments are largely made against benchmarks of success that are constructed and monitored by non-Indigenous Australians in non-remote locales. Given the subjectivity inherent in
defining success, it is difficult to perceive how appropriate measures of success can be devised across these contextual divides.

It is largely assumed that Indigenous people who want to participate in the market economy should attempt to emulate the approaches to enterprise development and participation of non-Indigenous Australians (IBR 2003; SCRGSP 2007; 2009). However, as evidenced in the Indigenous entrepreneurship and economic development literature (Dana 1995; Altman 2001; Foley 2003, 2006, 2008; Anderson and Giberson 2004; Peredo et al. 2004; Wutunee 2004; Cornell 2005; Peredo and Chrisman 2006; Nikolakis 2008; Trosper et al. 2008; Kayseas 2009; Hindle and Moroz 2010; Bargh 2012; Giovannini 2012; Pengelly and Davidson-Hunt 2012), and this research more specifically, this is certainly not the case for many Indigenous entrepreneurs. They not only operate their businesses differently, but they also desire different dividends for their labour. The consequence is that separate metrics of success need to be identified.

This is not to say that positivist approaches to measuring Indigenous enterprise success are not useful. Indeed, as Pholi et al. (2009) acknowledge, positivist research has considerable value: it is useful for establishing broad benchmarks and monitoring movement towards rights-based goals (Calma 2006); it enhances the ability of agencies to budget and manage service delivery to Indigenous Australians (Anderson and Brady 1995); and it can be used to ensure that government honours its responsibilities to Indigenous Australian citizens (Altman and Hunter 2006). However, it is important to acknowledge the biases and limitations of these
approaches both in terms of their scope and the value of their findings (Morrisey et al. 2004). The assumption that these investigations are objective and scientifically accurate is only ever partially correct.

It is suggested that the goal should not be to win the battle between Orientalism and remedialism, or indeed to transcend the debate by reconciling the two. To achieve this transcendence would require a dialectical progression beyond the liberal democratic ethos. Whilst this is no doubt a worthy task for political philosophers and political architects to embark upon, its reconciliation may take some time. The task in terms of ‘closing the gap’ and improving the lot of Indigenous Australians is better served by ensuring that both Orientalist and remedialist positions are acknowledged and represented in debates on Indigenous affairs. Each has their place in that they are effective at representing partial truths with regards to postcolonial Indigenous development in Australia.

Further, though possibly containing some elements of post-colonial logic, the best approach to minimising the influence of remedialism, Orientalism and positivism in Indigenous affairs is of course to ensure that Indigenous voices are heard and that it is their opinions and insights that are primarily used to divine a path towards progress. Therefore, it is important that the local aspect of the phenomenon being investigated be heard through the voices of local people (Louis 2007) and, further, that researchers and policy-makers are prepared to acknowledge the possibility of legitimate cultural difference in a liberal multicultural society.
7.3. Motivations and Aspirations

In Australia, Indigenous people participate in IWBE for a variety of reasons based largely on their motivations and aspirations. Weber (1978 [1921-22]) described two fundamental rationalities that lead to economic participation: formal rationality and substantive rationality. In a Weberian sense, formal rationality refers to “seeking efficiency”; whereas substantive rationality involves “adherence to an ideological system”, which can include cultural and spiritual traditions or customs (Cleary 2012, p.10).

Cleary (2012) uses a case study of bush tomato harvests by Indigenous people in the central Australian desert to demonstrate the meaning of these two terms in practice. Here, Indigenous people engage in the harvest of bush products as part of a cultural tradition. These people would still engage in customary harvests of bush tomatoes whether there was a market opportunity to sell this harvest or not. In this sense, they employ substantive rationality in their harvesting activity. However, these same wildlife harvesters also behave opportunistically by selling their harvests to traders when market demand arises. They are able to engage in their traditional harvests, with the attendant cultural and spiritual aspects incorporated, and generate cash income. In so doing, these harvesters seek to maximise the efficiency of their harvests and, as such, are acting upon a formal rationality.

Substantive and formal rationalities manifest themselves in multitudinous ways depending on the social and cultural contexts in which the actors exist. Cleary (2012) concludes that both substantive and formal rationalities for economic
participation can co-exist, though they are always by definition in opposition (Weber 1978 [1921-22]). As will be seen in the analysis of success for IWBEs in this research, it is likely that all bush products harvested for commercial purposes by Indigenous Australians share this mix of substantive and formal rationalities. Definitions of success likewise need to assess whether the sometimes contradictory motivations underpinning these rationalities are satisfied.

It is possible to link Weber’s (1978 [1921-22]) theory of rationality for economic participation to the SL Framework by considering private enterprise as a tool (one of many) used by people to develop, maintain and enhance livelihood outcomes. As discussed in Chapter 2, under the SL Framework people engage in livelihood activities, based on previously conceived livelihood strategies, in an effort to achieve livelihood outcomes. Improved livelihood outcomes may include such things as more income, increased wellbeing, reduced vulnerability, improved food security and more sustainable use of the resource-base (DFID 2000). As discussed by Weber (1978 [1921-22]) and demonstrated by Cleary (2012), market-based livelihood strategies employed by people are fundamentally dependent on their rationalities. In turn, their rationalities are informed by their values, beliefs and aspirations in combination with their socio-cultural context.

It is proposed that this analysis can be further extended by using the concept of wellbeing. Human beings ultimately engage in market-based activity as a means to enhance their wellbeing. In Australia, evidence has emerged to suggest that Indigenous Australians measure their wellbeing differently from non-Indigenous
Australians (Greiner et al. 2005a; 2005b; Greiner et al. 2007; Davies et al. 2010; Dockery 2010). Consequently, if market-based activity is merely another tool used to pursue enhanced wellbeing, the simple measurement of financial profitability is not a sufficient yardstick against which to measure Indigenous enterprise success. This has implications for measuring enterprise performance in that the assumed motivation for entering private enterprise (i.e. financial gain and a subsequent accumulation of material wealth) may not apply for Indigenous Australians (Cleary 2011).

7.4. Indigenous Wildlife-based Enterprise Participants’ Self-Appraisal of Success

The entrepreneurs and employees in the IWBE case studies investigated measured their success in five separate ways. In a general sense, these five measures of success can be said to exist across the domains of finance, society, culture, environment and time.

Firstly, some interviewees measured their success in terms of financial results. For GGBC, their positive financial performance was identified as a major pillar of success. Likewise, those involved with Djelk Wildlife Enterprises cited the significant financial income generated by their crocodile egg harvests as evidence of success, even though recent harvesting activities have proven unprofitable due to increased costs associated with royalty payments. For most of the Tf stalwarts, however, their fruit collecting activities only occasionally reached break-even and they were more
likely to experience a financial loss. However, none of the three cases was presented as completely successful or unsuccessful based on its financial performance.

Secondly, the influence that the enterprises had on the local communities in which they operated was considered as being an important component of success by some of the IWBE participants. Some of the social benefits identified by interviewees were increased employment, increased levels of income (often to supplement welfare income), a sense of pride and purpose, the chance to remove oneself from stressful relationships and situations in their community, enjoyment, and improved health created by having a routine of healthy meals, exercise, and no access to drugs or alcohol. Further, as supported by Indigenous entrepreneurs in other parts of the world (e.g. Dana and Hipango Jr. 2011), IWBEs offer a vehicle for intergenerational knowledge transfer. As one research participant involved in Tf harvesting mentioned:

I learned about *gubinge* from the old people. I used to walk this country with them when I was a little boy. Eating bush tucker. I want to pass that on to young people... When they come to my block to pick the fruits they are learning about the bush (P28).

Thirdly, IWBEs facilitated participation in cultural activities as they provided the means for participants to travel to and temporarily reside on ‘country’. This is contentious in that it could be argued that adopting an essentially western method of creating livelihood income (i.e. enterprise in the capitalist economy) impinges on
the traditional culture of Indigenous Australians (Comaroff and Comaroff 2009; Altman 2010). However, the IWBE proponents interviewed believed either that engaging in commercial enterprise did not influence their culture or that the hybridisation of cultures was appropriate for the contemporary Indigenous Australian way of life.

The fourth way that research participants suggested they were successful was that the IWBE enhanced their ability to engage in natural resource management. One of the Tf harvesters suggested that the proceeds from the sale of fruit has allowed him to spend more time caring for his country. He suggested that he has been able to implement a management regime that is similar to that taught to him by his grandfather when living in the area as a child. When he and his family, along with many other families in the region, were removed from their country, the land suffered from a lack of active care (e.g. appropriate fire regimes). Since reinstating traditional land management practices, this harvester testified that the biodiversity of the land had improved dramatically (especially with the return of lizard and bird species that had previously “disappeared” (P28)). A similar, though less personal, story was told by the Djelk Wildlife Enterprise employees who suggested that their harvest of crocodile eggs was important in managing the local crocodile population. They saw their role as important both for “looking after” (P4) the crocodiles and for keeping the community safe. They also mentioned that whilst they were conducting harvests they were ‘manning the frontline’ in the defence of local habitats against invasive plants and animals. Even in the case of buffalo mustering, one of the
interviewees suggested that mustering is a useful tool for managing the stocks so that overgrazing does not take place.

A fifth measure of success was identified by interviewees from GGBC and Djelk Wildlife Enterprises who suggested that the longevity of their wildlife harvesting activities was a sign of success. GGBC have mustered buffalo for 20 years and Djelk have been collecting crocodile eggs for 14 years. Longevity is a strong indicator of success as it incorporates all other possible metrics of success. That is, without the presence of success in key aspects of the enterprise activity, longevity would be impossible.

All five aspects of success for the IWBEs investigated were closely related. For example, without the (albeit limited) financial benefits, it is probable that Tf harvesters would not be able to spend as much time ‘on country’ and would not be able to achieve the cultural and/or environmental ‘profits’ described above. The lines between these five aspects of success are indeed blurred and, therefore, remain comparably as important as each other.

In summary, the Tf harvesters defined their success primarily by their enhanced capacity to engage in land management and other cultural activities. For Gulin Gulin Buffalo Company, its success was overwhelmingly measured by the considerable financial and physical assets accrued and its longevity. However, interviewees also cited some of their contributions to the local community as suggestive of success. Finally, Djelk Wildlife Enterprises considered it had been successful across all five
metrics of success identified in this research. That is, interviewees felt they had contributed financially to the local economy, produced social outcomes (e.g. employment, etc.), enhanced the capacity of employees and their families to engage in cultural activities, and generated positive environmental outcomes (e.g. enhanced land management). In these ways, each of these IWBEs considered themselves to have been successful.

In conclusion, IWBE proponents initially referred to their financial performance as the primary yardstick for success, but then qualified their responses by commenting on their success (or failure) with regards to the social, cultural and/or environmental contributions that their activities made to either themselves and/or their communities. These findings are in line with those of Australian researchers (Foley 2000, 2003; Nikolakis 2008; Hindle and Moroz 2010), and other Indigenous entrepreneurship researchers (Peredo et al. 2004; Anderson et al. 2006; Peredo and Chrisman 2006; Smith 2006; Berkes and Davidson-Hunt 2012; Kayseas 2009; Bargh 2012; Giovannini 2012; Pengelly and Davidson-Hunt 2012). The motivations of the proponents to engage with IWBE influenced the respective weighting assigned to their achievements across the five facets of success described above. All of the interviewees were optimistic about the future of their IWBEs and forecast success across all five metrics.
7.5. Interpreting the Results

7.5.1. IWBE, Livelihoods and Wellbeing

IWBEs have been promoted as a potential tool for Indigenous Australians to participate in the market economy in a culturally and environmentally appropriate way (Altman 2001a, 2001b; Whitehead 2003a, 2003b; Gorman et al. 2006; Gorman et al. 2008). In this sense, it can be seen to fall into the category of investment in enterprise development as a form of welfare-based social justice in reparation for colonisation (Pollard 1988). It is therefore important to understand the above results in terms of their contribution to Indigenous Australian livelihoods and wellbeing in northern Australia.

If the success of IWBEs were only to be measured using financial figures, then the results of the case studies examined here are marginal. Few Tf harvesters have made a profit from their activities and Djelk has realised losses on its crocodile egg harvests in recent years. And, while GGBC has been financially successful, having made a profit every year of operation and consequently accrued considerable cash reserves, this is largely due to its ability to not conduct harvests in years when conditions are unfavourable (which have been relatively few). Without the support of local livelihoods by government through welfare, this selective approach to mustering would have been more difficult, if not impossible. Indeed, this was true for all of the case studies investigated. As such, if the contribution of IWBEs to local livelihoods is measured in isolation and only in financial terms, then they can only
be considered marginally successful at best and do not offer viable livelihood options for Indigenous people in remote northern Australia.

In fact, due to the seasonal nature of wildlife harvesting and the generally low profit margins involved, it is unlikely that any individual or family will ever be able to secure an independent livelihood from the use of a single species continuously over an entire year. But in what have been described as marginally viable communities (Stafford Smith et al. 2008), the contribution of IWBEs to securing autonomous livelihoods for Indigenous Australians is significant. This applies especially if they can be seasonally combined with livelihood incomes from other industries on the Indigenous estate, such as mining, tourism, arts and crafts, payment for environmental services, fee for services, and of course other wildlife-based enterprise activities. Consequently, rather than seeing IWBE as having the potential to provide Indigenous Australians with a livelihood (as opposed to not having a livelihood at all), it is more appropriate to view their effect as contributing to Indigenous people’s wellbeing in a way that is preferable to receiving welfare payments.

However, as with most forms of Indigenous entrepreneurship (Peredo et al. 2004; Schaper 2007; Hindle and Moroz 2010; Giovannini 2012), an IWBE offers a suite of benefits to entrepreneurs. Benefits can be obvious, such as employment and the financial income accrued. However, other benefits are created that may not be so immediately identified as belonging to the profits raised through private enterprise, such as social, cultural and environmental benefits. Revisiting the case studies in
Chapters 4, 5 and 6, it is possible to see that the cumulative benefits accrued (including economic benefits) are indeed significant:

- Individual income
- Royalty payments to Traditional Owners
- Growth in the local economy
- Employment (as a social benefit)
- Pride and purpose
- Removal from stressful and potentially harmful situations
- Pleasure and enjoyment
- Improved diet
- Exercise
- Knowledge and skill development
- The ability to reside on country for longer
- Enhanced capacity to engage in cultural and spiritual activities whilst on country
- Increased ability to engage in land management activities
- Increased autonomy.

It is not an unreasonable assumption to make that all of these benefits contribute positively to the wellbeing of the people directly involved in the IWBEs investigated. To confirm this assumption however, it would be important to conduct further research into the way in which these people perceive wellbeing or ‘the good life’. Nonetheless, if wellbeing is used as the metric by which IWBE success is discerned, then it can be argued that all of the case studies are indeed successful in that they make a generally positive contribution to the wellbeing of those involved.
7.5.2. IWBE and Natural Resource Management in Northern Australia

Many of the world’s poor rely heavily on natural resources to maintain their livelihoods (Campbell and Luckert 2002; Sayer and Campbell 2004). As such, regulation against the consumptive use of wildlife implemented under protectionist conservation regimes has a direct and significant impact on the livelihoods of poor people. Indeed, Guha (1989) argues that the protection of species in conservation zones or the restriction of their use represents a direct transfer of wealth from local people to the state, or arguably to those who are wealthy enough to invest in conservation. There are two ways in which this transfer of wealth occurs. Firstly, preventing wild harvest of plants and animals severely limits, or even prevents, subsistence harvest of wildlife. Secondly, restrictions on wildlife harvesting for commercial purposes may have an impact on local livelihoods in that they limit the potential for market-based trade.

In the Indigenous Australian context the tension between use and protection can be seen in the debate over the Queensland Wild Rivers Act 2005 (Holmes 2011). This Act places limits on natural resource use and landscape transformation around major rivers on the Cape York Peninsula that have been identified as ecologically significant. This has direct implications for development options and livelihood strategies for the local Indigenous landholders (Holmes 2011). Though there is debate about how much effect the legislation actually has on the economic development of the region (DERM 2011), some claim that the Indigenous
landowners of the region have had wealth-generating opportunities taken away from them in the interests of conservation (Iles and Johns 2010). As Indigenous Australians are the most disadvantaged people in Australia, yet are the owners of large tracts of ecologically significant land, there is a strong tension between ensuring justice and equity for Indigenous Australians and protecting the environment.

Given their ability to generate livelihood income from wildlife, thus limiting the impact on species and their habitats, IWBEs can be seen as occupying the contested space between conservation and development interests. As such, at least theoretically, IWBEs may be used as an important tool for conservation, especially on privately held land.

From the discussion of the interviewees’ self-perceptions of success in section 8.3, it is possible to claim that there may be some evidence of IWBEs performing a conservation-oriented role. As noted, some IWBE participants suggested that their activities resulted in some positive outcomes for the local environment. Some Tf harvesters suggested that IWBE facilitated their traditional culture-based natural resource management activities, and this has in turn had positive effects in terms of increased biodiversity. Djelk Wildlife Enterprises employees suggested that they were protecting the habitats of saltwater crocodiles from weed and feral animal infestation as crocodile egg harvesting enhances monitoring capacity. Further, the natural resource management activities of their partner organisation, the Djelk Rangers, are subsidised by the profits from the crocodile egg harvests. Finally, the
buffalo musterers from GGBC suggested that the removal of buffalo from the local environment was beneficial in that it served to minimise the impact of this invasive species on ecosystems. In these ways, participants in the IWBEs believe they are having a positive impact on the natural environment in which they operate.

However, whilst it is certainly plausible that the IWBEs are producing positive conservation outcomes, the actual effects of the natural resource management of both the *Tf* harvesters and Djelk need independent verification. This is not to undervalue the knowledge and testimony of the IWBE interviewees, but is merely a prudent dose of scepticism. The same is true for GGBC’s claims that they are acting as an effective natural resource management tool by decreasing the stock of wild buffalo around Bulman in southern Arnhem Land. With decreased buffalo populations, GGBC would be required to increase the amount of effort invested in their musters to secure the same number of buffalo. This suggests that, excluding subsidisation of their activities under a payment for environmental service arrangement, the long-term tendency would be for the company to encourage the growth of local buffalo populations. Again, these outcomes have not been rigorously tested. As such, based on this evidence, it is not possible to say conclusively that these IWBEs are having a beneficial effect on the environment in terms of conservation.

Regardless of the outcomes of these appraisals, further doubt must be cast on the effectiveness of IWBEs as a tool for conservation in that they do not meaningfully counter the main threats to biodiversity, ecosystem function and species
endangerment in northern Australia. Across the region, primarily due to low human population density, the presence of welfare payments to ensure food security (amongst other things), and a generally negative attitude to the consumptive use of wildlife, direct human consumption of wildlife does not have a significant impact on the environment. The biggest threat to biodiversity in northern Australia comes from landscape change (Woinarski et al. 2007). This includes uses of land that require large-scale landscape transformation, such as mining, clearing, damming and other large-scale agricultural land modifications, the introduction and spread of feral animals, the introduction and spread of weeds, and the occurrence of large, hot wildfires due to inappropriate land management.

Within this context IWBEs may theoretically be able to protect species and their habitats from large-scale development pressures by creating value and incentives for landholders to conserve their natural resources and to protect extant ecosystems. In a country like Australia, particularly northern Australia, the real value of an IWBE is that it can provide alternative sources of market-based income to large-scale and destructive land uses that would otherwise have detrimental consequences for both species and for ecosystems as a whole. Further, where the protection of wildlife has negative consequences for the lives of local people, IWBEs can provide an alternative to removing the subsistence harvest of local people, which would effectively extinguish activity in the customary sector and represent a reduction in the economic activity of local people in pursuit of sustainable livelihoods (Altman 2007). Thus, while mainstream enterprises may prove more
profitable financially, they will not necessarily improve wellbeing or be successful against the other metrics of success applied by those engaged in the IWBEs.

However, while theoretically possible, there is actually no available evidence of an IWBE being used as a tool in opposition to large-scale, landscape transforming economic development. The author has been made aware (through personal correspondence – B. Dann pers. comm.) of the argument that access to natural resources is important to land owners due to (amongst other things) the potential it offers them in terms of IWBE development in the ongoing debate and protests concerning the development of a gas hub north of Broome. The Woodside-owned $30 billion liquefied natural gas hub is being opposed by many Traditional Owners of the land (Manning 2011). Though the right to engage in an IWBE is a minor argument (compared to the cultural and environmental significance of the site), it has nonetheless been expressed by some Indigenous landowners in the debate. Whether this argument has any effect on the development of the gas hub is yet to be determined. The outcomes of the struggle are not yet clear (Guest 2011). Further complicating the assessment of whether or not IWBEs have a role as conservation tools in this debate is that there are many opposition voices expressing diverse messages. For this reason it will be very difficult to identify the effective contribution, if any, made to the debate by IWBE proponents.

In summary, given that there has been little contemporary large-scale development pressure for much of the northern Indigenous estate, it is highly unlikely that IWBEs have historically contributed to the protection of vulnerable species or habitats in
northern Australia. Whilst there may be evidence of some beneficial natural resource management activities being facilitated and financed by IWBE activity, the primary method by which conservation through sustainable use is purported to protect ecosystems from ecologically harmful development remains unproven.

7.6. Conclusion

It has been found that understanding the factors that contribute to success in entrepreneurship (including Indigenous entrepreneurship) could help policy makers create a supportive political and economic environment for entrepreneurial growth (Foley 2000; 2003; 2006; Henrekson and Roine 2006; Nikolakis 2008). It is suggested that although traditionally linked to positivist inquiry (in Australia especially), the assessment of success or failure can also be usefully pursued through inductive inquiry. Ignoring non-positivist methods merely serves to encourage remedialism and its attendant movement towards assimilation (Kowal 2008). However, a balanced approach must be pursued as the opposite is equally true; an Orientalist approach to measuring success serves only to continue disadvantage through tolerance of inequality.

This chapter has had the primary focus of measuring IWBE success from the perspective of those involved in the case studies. This approach to measuring success is in line with the methodological approach of the thesis (i.e. qualitative and inductive). To the extent to which one can generalise the findings of the subjective appraisal of success (which may be very little given the cultural diversity amongst
Indigenous Australians, but could also be significant given the shared histories and shared aspirations of many Indigenous people), these results will be useful in monitoring the performance of IWBEs in the future.

It must be acknowledged that Indigenous entrepreneurs desire unique outcomes from their participation in the market-based economy and that this is important for successful development of independent Indigenous livelihoods (Dana 1995). The pursuit of individual and communal wellbeing is only limited by the range of options available to the individual or the group for pursuing their desired ends. By acknowledging the diversity of desired ends and maximising the tools available to individuals to pursue these, society can then encourage and support the flourishing of all its citizens.
Eight: Success Factors for Indigenous Wildlife-Based Enterprise

8.1. Introduction

In this chapter the key factors for success in each of the Indigenous Wildlife-based Enterprise (IWBE) case studies will be discussed. In total there were 23 success factors identified separately in the case studies (see Table 9.1). These are condensed into seven key factors – the resource base, minimal anti-use sentiment, demonstrably sustainable harvest, markets, access, social capital, supportive institutions – which are subsequently unpacked and analysed. This will help guide IWBE development in northern Australia by: i) assisting current and prospective IWBEs to plan strategically for the future; ii) enhancing the capacity of government and non-government support agencies to invest in IWBE development activities (Anderson et al. 2004; Henerekson and Roine 2006; Nikolakis 2008); and iii) provide fruitful insight into the IWBE phenomenon in northern Australia for the purposes of future research.

8.2. The Resource Base

As seen in all three cases, the species used by the harvesters are abundant, resilient, high yielding and are relatively predictable. These traits are fundamental to ensuring the sustainability of harvests and that harvesters are able to efficiently target their activities to achieve economic viability.
Table 8.1 Success factors for individual IWBE case studies

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Factors of Success</th>
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<tbody>
<tr>
<td><em>Terminalia ferdinandiana</em></td>
<td>• The resource base</td>
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<td>• Indigenous access</td>
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<td>• Traditional Ecological Knowledge</td>
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<td>• Market commitment</td>
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<td>• Public investment</td>
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<td>• Local networks</td>
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<td>• Trust</td>
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<td>• Goodwill</td>
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<td></td>
<td>• Indigenous entrepreneurialism and shared goals</td>
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<tr>
<td><em>Gulin Gulin Buffalo Company</em></td>
<td>• Productive capacity of the buffalo and the resources it consumes</td>
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<td></td>
<td>• Minimal anti-use sentiment towards commercial use of buffalo</td>
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<tr>
<td></td>
<td>• Size of the market and its indifference to wild harvested stock</td>
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<td></td>
<td>• Consistent culturally aware management</td>
</tr>
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<td></td>
<td>• Strong historical roots in the pastoral industry</td>
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<td></td>
<td>• Considerable alignment of activities to local culture</td>
</tr>
<tr>
<td></td>
<td>• Strong relationships with community</td>
</tr>
<tr>
<td><em>Djelk Wildlife Enterprises</em></td>
<td>• Minimal anti-use sentiment</td>
</tr>
<tr>
<td></td>
<td>• Demonstrably sustainable harvests</td>
</tr>
<tr>
<td></td>
<td>• The market</td>
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<tr>
<td></td>
<td>• Social capital</td>
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<tr>
<td></td>
<td>• Institutional support</td>
</tr>
<tr>
<td></td>
<td>• Activating and enhancing capitals and capabilities</td>
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<td></td>
<td>• Locally relevant enterprise activity</td>
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</table>

Whilst IWBEs exploit wildlife that is classified as natural capital, pastoral and agricultural enterprises use domesticated stock that is more appropriately viewed as financial capital. For non-wildlife-based enterprises, saleable stock is bought for the express purpose of making future profit on its sale based on the natural capital embodied in grass, soil and water etc. Whilst natural and human capital are used to increase the worth of the stock, and in-so-doing prepare it for sale, the traded commodities themselves can only be considered as financial capital throughout their lifecycle. In contrast, though an additional royalty cost is involved, IWBEs do not buy stock and invest in minimal husbandry and farm maintenance. These
investments are instead subsidised by the natural capital of the harvest area and the services performed by local ecosystems. This ‘outsourcing’ of husbandry effort to the environment provides significant cost savings for the IWBEs.

However, though they are wild, it should not be assumed that these stocks of wildlife occur in abundance ‘naturally’. For example, the saltwater crocodile population of northern Australia was endangered in the 1970s (Webb and Manolis 2009). This imperilment was caused by overharvesting both for skins and for sport (Webb et al. 1987). It has only been through the effective implementation of a conservation programme that the species has been brought back to near pristine abundance (Webb 2002). These efforts to safeguard the species have facilitated the natural capital abundance that has made Djelk Wildlife Enterprises’ harvest possible.

The *Terminalia ferdinandiana* tree exists in abundance along the coasts of north-western Australia (Woods 1995). Anecdotes from Indigenous research participants suggest that the role of humans as natural resource managers has been important in preserving the abundance of *Tf* across its range. For example, these trees are susceptible to damage caused by large-hot fires. Traditional burning regimes maintained by the Indigenous people of the region prior to European colonisation were effective in limiting the occurrence of these fires, by using seasonal patchwork burns to limit fire intensity. Controlled burns conducted at the right time of year meant that fires were cooler and less destructive (Yibarbuk et al. 2001). Since European colonisation, the number of large, hot fires has increased and is changing.
the plant community structure (Yibarbuk et al. 2001). As such, the abundance of the
trees, and their commercially valuable fruit, is directly influenced by the success of
human management of fire in the north Australian savanna. In light of this,
traditional knowledge of fire management is being combined with western
scientific knowledge to manage fire appropriately and with some effect (Russell-
Smith et al. 2009).

Swamp buffalo would not exist in Australia if it was not for their introduction by
humans. Imported as a source of labour and protein, buffalo have now colonised
most of the Top End (Collier et al. 2011). The mustering of wild buffalo for their
hides and their meat holds a prominent place in the history of the NT (Letts 1982;
Baldwin and Baldwin 2000; Albrecht et al. 2009). Buffalo are still a source of
protein for many Aboriginal people and for the south-east Asian live export market,
but are predominantly seen as pests by most Australians (Albrecht et al. 2009).
Buffalo face very little competition for resources from native herbivores and have
few predators. Their populations have been managed over time and culling has
seen populations temporarily reduced to very low numbers (Bradshaw et al. 2007).
However, buffalo numbers have rebounded dramatically and now number about
150,000 (Bradshaw et al. 2007; McMahon et al. 2011).

Broadening the scale, it can be observed that each of the species examined in these
case studies is abundant due to the health of their habitats. The maintenance of
healthy ecosystems is key to ensuring species abundance. For buffalo, this is more
complex due to the threat they pose to the function of ecosystems across the Top
End. If buffalo populations are allowed to reach carrying capacity, the animals have and will continue to degrade environments. Over the long-run, this may cause significant harm to native species in the region, probably resulting in a decline in biodiversity, and ecosystem function would change (Werner 2005). This could reduce the carrying capacity of buffalo themselves. As such, even for invasive species, healthy ecosystems are integral to ensuring that their abundance is sustained over the long-term.

It is a popular assumption that the north of Australia is a pristine landscape that has largely avoided the impacts of human development. To some extent this is true as the type and amount of landscape modification in the north has been less dramatic than elsewhere in Australia (Woinarski et al. 2007). However, prior to European settlement, Indigenous Australians managed natural resources intimately (Keen 2004; Wills-Johnson 2010; Gammage 2011). For example:

- As is commonly known, Aboriginal people hunted and gathered a broad variety of animals and plants from all types of ecosystems depending on seasonality. Less commonly appreciated is that some Aboriginal people used animal husbandry to domesticate some species (such as dingo *Canis lupus dingo* and cassowary *Casuarius casuarius*) for their use (Keen 2004). Indigenous Australians had direct impacts on the number and type of animal species in any given area of their estate, including causing the extinction of megafauna (Rule et al. 2012).
- Aboriginal people planted seeds of food plants and replanted the tops of yams to ensure that there were plentiful supplies in the next season (Gott
Indeed, in the *Tf* case study, it was suggested by one of the harvesters that his grandparents intentionally planted *Tf* seeds in locations close to settlements so that, when the seasons coincided with geographic location, there were natural groves available for harvest.

- Small creeks and streams were diverted into canals to trap aquatic species and to irrigate lands. In some cases small dams were erected to ensure that crucial pockets of watersheds did not dry out during periods of little rain, to ensure that food species and animals thrived and were readily accessible (Keen 2004).

- Fire was used precisely and in a controlled way across the Australian continent to hunt, signal, clear tracks and pattern habitats. It was used to manage vegetation type to attract and condition preferred hunting species, such as kangaroo, and to promote the growth of food plants (Yibarbuk 2001; Keen 2004; Russell-Smith et al. 2009).

Following European colonisation, the use and transformation of the north Australian landscape intensified. For example:

- Pioneering colonists brought with them a variety of domesticated species for use in horticulture and agriculture. Many of these ventures proved to be economically marginal at best, but have left an indelible impact on the environment (Woinarski et al. 2007).

- This agricultural and horticultural endeavour has resulted in large-scale landscape modifications in the form of land clearing and cultivation, dam building and irrigation (Woinarski et al. 2007).
• Dams have been built to service large-scale agricultural development, such as the Ord Scheme in Kununurra, WA. This has had effects both upstream and downstream on river flows, fish migration and plant and animal community structure (Doupe and Pettit 2002; Burford et al. 2011).

• Intentionally or by accident, the numbers of introduced feral animal and weed species have increased dramatically since colonisation (Franklin 2006). This has often been to the detriment of native plants and animals, and their ecosystems. Examples of these invasions in northern Australia besides buffalo are *Mimosa pigra*, *Salvinia molesta*, gamba grass, cane toads, pigs, cats, dogs, rats, donkeys, horses and cattle.

• The marine environment has been heavily targeted by commercial and recreational fishers.

• Townships and cities have been created and mines developed with transport infrastructure usually linking the two.

• As mentioned previously, fire regimes and general land management practices have been modified significantly.

In fact, since humans first migrated to the Australian continent at least 50,000 years ago (Bowler et al. 2003), north Australia has never been ‘pristine’. Humans have managed and modified the land in an effort to create livelihoods. Populations of species valued for their utility or cultural significance have been cared for and promoted at the expense of ‘non-useful’ species (Franklin 2006).

As demonstrated by the case studies in this thesis, use of wild resources does not necessarily lead to detrimental results in terms of biodiversity and ecosystem
function. Indeed, given the co-dependence of the species on their environments, human use of wildlife can be beneficial in managing natural resources for sustainability. As pressures on the finite natural resources of the world increase due to human population growth, it will become increasingly important that these natural resources are used sustainably. Though IWBEs offer examples of how this can occur, their long-term existence is contingent on moderating the impact of humans on ecosystems locally, regionally and globally.

8.3. Minimal Anti-Use Sentiment

Unfavourable attitudes towards consumptive use of wildlife have significant potential to influence the success or failure of IWBEs (Choquenot et al. 1998; Whitehead 2003b; Simpson and Chudleigh 2007; Gorman et al. 2008). For reasons that will be discussed presently, human-wildlife interaction is a considerably political topic in Australia. Similar to citizens in other post-settler and post-racist nation-states, Australians look to flora and fauna to differentiate their unique identity (or identities) and to express ideological predispositions. Through this process, narratives are constructed around wildlife species that consequently influence the legitimacy of their use. For all three case studies here examined there was minimal anti-use sentiment with regards to consumptive commercial use. Although explanations for this are different for each of the cases, a common thread is the narrative constructed around each of the species that is generally supportive of their use.
At the core of the contemporary Australian identity is eco-nationalism (Head and Muir 2004; Franklin 2006; Craw 2008; Smith 2011). Eco-nationalism describes the complementary use of environmentalist and nationalist sentiments to generate a sense of identity (Smith 2011). As described by Comaroff and Comaroff (2001), post-racist and post-settler nation-states use eco-nationalism to safeguard and strengthen their legitimacy. Phenomena such as secularism, migration, transnational business and an increasingly global worldview, act in opposition to this legitimacy and increasingly serve to undermine the identity of the constructed nation-state. Humans have always used nature, and conceptions of the native, to differentiate themselves from Others. Socially constructed narratives about wildlife leverage claims of autochthony to bolster a ‘native’ identity and engender a sense of belonging (Comaroff and Comaroff 2001). Similarly, though consistently contested, some naturalised species can be used to inform national identities depending on the narrative constructed for them and the credibility of the species’ claim to belonging (Franklin 2006).

Evidence of the strength of eco-nationalism as a political idea in contemporary Australia can be seen in the symbolism of wildlife and landscape in art (Mulligan and Hill 2001), cinema (Carter 1998), television (Carter 1998), poetry (Fenton-Keane 2010), cuisine and food-related literature (Craw 2008), the popularity of the writings of scientists/public intellectuals such as Tim Low (1989a; 1989b; 1990; 1991; 1999; 2002) and Tim Flannery (1994), the fame of personalities such as the Bush Tucker Man, Jack Absalom, the Leyland Brothers, Crocodile Dundee, Harry Butler and the Crocodile Hunter (Carter 1998; Northfield and McMahon 2010), and
the symbolism employed by Australians and their various governments to buttress and constantly re-create the Australian identity (e.g. the coat of arms and State/Territory floral and faunal emblems). Commenting on eco-nationalism in the Australian context, Smith (2011, p.3) suggests:

Settler Australians have imaginatively identified with the particularities of the Australian biophysical environment to represent their collectivity to themselves and to distinguish themselves from Others... A key theme of recent environmental texts is the idea that settler Australians have identified with native nature as a source of belonging and yet some argue that belonging is unattainable until such time as settler Australians can imagine themselves as Indigenous.

In the pursuit of a unique identity and the development of a cogent sense of autochthony, post-settler Australians have bestowed values on wildlife and landscape. These values have been used to construct narratives about wildlife that influence human-wildlife interaction.

As Smith (2011) summarises, environmentalism is an overarching term that brings together diverse and disparate political elements that advocate for increased protection of the environment and that rely on a morality, ethics or codes of conduct that seek to challenge excessive and destructive exploitation of natural resources. Given the location of native (and some naturalised) flora and fauna at the core of the Australian identity, it is unsurprising that environmentalism has some currency in Australia (Frawley 1992; Hutton and Connors 1999; Franklin 2006; Tranter 2009). Today, environmentalism can be readily detected in many of the instruments of contemporary Australian governments (See Table 9.2).
Further, the Australian public’s concern for the protection of wildlife is evident in
the State and Territory provisions that seek to safeguard animal welfare. In the NT,
WA and QLD cruelty towards an animal through deliberate, aggravated and reckless
acts of harm is banned, with prosecution resulting in significant penalty and/or jail
(Garnett et al. 2010).
Table 8.2. Key Australian legislation that seeks to protect the environment

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Legislation</th>
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<tbody>
<tr>
<td>Commonwealth</td>
<td>Environment Protection and Biodiversity Act 1999</td>
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<td></td>
<td>Great Barrier Reef Marine Park Act 1975</td>
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<td>Environment Protection (Alligator Rivers Region) Act 1975</td>
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<td>Antarctic Treaty (Environment Protection) Act 1980</td>
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<td></td>
<td>Antarctic Marine Living Resources Conservation Act 1981</td>
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<td>Environment Protection (Sea Dumping) Act 1981</td>
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<td>Natural Heritage Trust of Australia Act 1997</td>
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<td>Northern Territory</td>
<td>Cobourg Peninsula Aboriginal Land, Sanctuary and Marine Park Act 1996</td>
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<td>Environmental Assessment Act 1994</td>
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<td>Territory Parks and Wildlife Conservation Act 2000</td>
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<td>Queensland</td>
<td>Soil Conservation Act 1986</td>
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<td>Nature Conservation Act 1992</td>
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<td>Environmental Protection Act 1994</td>
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<td>Wet Tropics of Queensland World Heritage Area Conservation Act 1994</td>
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<td></td>
<td>Coastal Protection and Management Act 1995</td>
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<td>Vegetation Management Act 1999</td>
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<td>Queensland Wild Rivers Act 2005</td>
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<td>Western Australia</td>
<td>Pollution of Waters by Oil and Noxious Substances Act 1987</td>
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<td>Soil and Land Conservation Act 1945</td>
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<td>Conservation and Land Management Act 1984</td>
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<td>Waterways Conservation Act 1976</td>
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<td>Wildlife Conservation Act 1950</td>
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<td>Environment Protection Act 1986</td>
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<td>South Australia</td>
<td>Environment Protection Act 1993</td>
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<td>Coast Protection Act 1972</td>
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<td>Development Act 1993</td>
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<td>Environment Protection (Sea Dumping) Act 1984</td>
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<td>National Parks and Wildlife Act 1972</td>
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<td>Native Vegetation Act 1991</td>
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<td>Natural Resources Management Act 2004</td>
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<td>River Murray Act 2003</td>
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<td>Wilderness Protection Act 1992</td>
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<td>New South Wales</td>
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<td>Threatened Species Conservation Act 1995</td>
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<td>Soil Conservation Act 1938</td>
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<td>Protection of the Environment Administration Act 1991</td>
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<td>National Parks and Wildlife Act 1974</td>
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<td>Victoria</td>
<td>Environment Protection Act 1970</td>
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<td></td>
<td>Pollution of Waters by Oils and Noxious Substances Act 1986</td>
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<td>Catchment and Land Protection Act 1994</td>
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<td>Conservation, Forests and Lands Act 1987</td>
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<td>National Parks Act 1975 (Vic)</td>
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<td>Planning and Environment Act 1987</td>
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Whilst environmentalism through eco-nationalism exerts a strong influence over
the identity of most Australians, it is not necessarily the dominant force shaping
human-wildlife interaction in Australia. The emergence of environmentalism in the
mid-twentieth century was (and remains) a counter-response to the
developmentalism favoured by settler and post-settler Australians (Koshin 2011).

As defined by Koshin (2011, p.2), developmentalism is:

...that ideology which, in the name of progress, believes in, and promotes the
establishment or growth of industry – particularly manufacturing and processing
plants, power plants, resource extraction – and the associated infrastructure and
any necessary government assistance or legislation to make that possible. It
incorporates perceptions of the right to use land, water, minerals, timber and air-
space for the benefit of humankind to achieve the best possible outcome for the
greater good. It is regarded as the means, by which progress – the perceived
improvement of the condition of humankind as measured against earlier indicators
or yard-sticks – takes place.

Early European colonists largely adopted a developmentalist position that involved
the consumption of native wildlife to supplement livelihoods and a formalised
process of modification through mass killing of native animals and conscious
transformation of ecosystems to ‘improve’ conditions for European-style
agriculture and pastoralism (Singer 1992; Franklin 2006; Koshin 2011; Smith 2011).
Flourishing from these roots, developmentalism still inhabits a central place in the Australian identity. Evidence of this can be seen in the fervour with which the nation is expanding its mining operations (ABS 2011) and the persistence of ‘the myth of the north’ as a major agricultural producer (Davidson 1965; Head 1999; NALWT 2009).

The oppositional forces of developmentalism and eco-nationalism create an irreconcilable tension in the Australian identity (Koshin 2011; Smith 2011). This tension suggests that, in certain contexts, the existence of certain species and ecosystems are inherently valued as part of the nation (e.g. koalas and the Great Barrier Reef). In other contexts, species and ecosystems are open to consumption or destruction in pursuit of the national interest (within administratively applied environmental impact assessment criteria) (e.g. kangaroos and the Ord River). This is not a neat dichotomy. The position of a species or ecosystem lies at a point between developmentalism and environmentalism which is constantly negotiated and challenged in public debate. Contemporary clashes over the use of natural resources and the requisite modification of ecosystems and landscapes can be seen in the debate over the *Queensland Wild Rivers Act 2005* (Iles and Johns 2010) and the proposed gas hub at James Price Point in Western Australia (Wall 2010). Both these cases embody different mixes of developmentalist and environmentalist/eco-nationalist sentimentalities expressed through political struggle over the rights of some people to use or not use natural resources.
Eco-nationalism and developmentalism are both used to construct the Australian identity and, through this, have considerable influence over human-wildlife interactions. In recent times, the prevalence of developmentalism has been challenged by eco-nationalism, which given current trend seems likely to continue to gain strength and influence (Smith 2011). This shift in attitudes to wildlife in Australia has resulted in modified sentiment towards the consumptive use of wildlife.

Historic developmentalist attitudes of Australian landholders saw swaths of native bushland as standing in the way of progress and cleared it to make way for more productive pastoral grasslands (Franklin 2006). Indeed, it is suggested that at one point Australia was amongst the top ten land clearing nations in the world (Bush Heritage Australia 2012). However, no longer do the majority see bushland as unproductive and therefore worthy of transformation. Instead, to a considerable degree it is valued for its autochthony and the role it plays in both Australian identity and the health of ecosystems. For example, the wattle is now seen as an iconic Australian species that holds a prominent place in the Australian identity (Robin 2002). Due primarily to the emergence of eco-nationalism in Australia, and the subsequent recognition of their autochthonous presence across the continent, there is stronger protection of the wattle, and other native plant species, through regulation that, for example, governs the clearing of land and the subsequent destruction of flora (e.g. *Native Vegetation Act 1991* (SA), *Native Vegetation Act 2003* (NSW), *Vegetation Management Act 1999* (QLD), *Environment Protection and Biodiversity Act 1999* (Cmwh)). This is not to say that bushland is not cleared, nor
that native plant species are not used consumptively in Australia. Indeed, the use of
sprigs of wattle on the lapels of dignitaries as a symbolic device involves
consumptive use (Robin 2002), a forestry industry still persists (HRSCARFF 2011),
and land clearing continues to occur (Bush Heritage Australia 2012). However, the
strength of eco-nationalism requires that the developmentalist drive to exploit or
eliminate native plants is now mediated so that any use must first be deemed
acceptable by the Australian public.

Animals have also been recruited to support eco-nationalism in Australia (Smith
2011). However, this recruitment has been selective – not all animals are seen as
equal. Franklin (2006) identifies four categories of animal in contemporary
Australia:

- **Native-wild**: wildlife native to Australia;
- **Domestic-domestic**: domesticated animals that have remained
domesticated;
- **Wild-domestic**: formerly domestic animals that have managed to establish
wild populations; and
- **Introduced-wild**: non-native animals that have been introduced into the
wild.

In general, the first two categories’ rights to existence are secure in Australia. That
is, native wildlife is to be valued and protected in the interests of the environment
and the nation; and domestic animals are inherently valued by society. However, as
explained by Franklin (2006), animals that can be assigned to the categories of wild-
domestic and introduced-wild have a far more ambiguous relationship with the
Australian public. Highlighting this ambiguity are the contrasting statuses of the brown trout (Salmo trutta) and the European carp (Cyprinus carpio). The brown trout has been adopted by the Australian public who enjoy it primarily for sport fishing and for food (Franklin 2006; Smith 2011). However, the European carp has been vilified for its damaging effects on freshwater ecosystems and has been aggressively culled as a result (Franklin 2006; Smith 2011). Both are predatory freshwater fish, both are from Europe, both were introduced for sport and protein; yet their histories and symbolism lead to drastically different outcomes in terms of their naturalisation (environmental and social) (Franklin 2006). Further, wild non-native animals in Australia are legally owned by no one, which is highly symbolic of their undesirability and can have negative implications for their welfare through neglect (Garnett et al. 2010). Some non-native animals are incorporated and treasured as symbols of the common Australian ‘newcomer’ heritage, whilst others are despised for their un-Australianness; it is the narrative of the species that largely influences its fate.

There are however, many nuanced versions of eco-nationalism and developmentalism that manifest themselves in various ways. Based on fundamental differences in the drivers of their preferences for protecting wildlife, the Australian public has at times clashed with natural resource managers on the culling of non-native, introduced wild animals (e.g. brumbies (HWP 2002)). Environmentalists are generally concerned with the preservation of a ‘natural’ or ‘native’ (or even ‘pristine’) ecosystem (Smith 2011). This concern is sometimes based on biological or ecological science that suggests the benefits of biodiversity preservation and
ecosystem function, though is also strongly informed by politics, social movements, morality, culture and/or worldview (Smith 2011). That is, given the importance of the introduced species (such as brumbies) in the cultural heritage of the Australian nation, their elimination is often seen as unacceptable (Franklin 2006). The same is true for the camphor laurel (*Cinnamomum camphora*) tree that is simultaneously a noxious weed, a culturally valued ornamental species (particularly in urban settings) (Head and Muir 2004) and the major food plant for some native species (e.g. white-headed pigeon (Date et al. 1991)). This demonstrates that, though ecosystem function is a strong consideration in the construction of narratives around wild-domestic and introduced-wild species, their true status as autochthonous or not is socially mediated. As such, their existence is perennially ambiguous and contingent upon the values assigned to them by the Australian public.

For the case studies investigated here commercial use of all species has been tolerated (albeit for different reasons). Whilst there was some anti-use sentiment expressed with regards to the commercial use of *Tf* fruit, this concerned largely the threat of obviously unsustainable harvests and revolved primarily around destruction of a small number of urban trees to obtain fruit in one year (Mason 2003). The fact that it is flora, rather than fauna, also reduced anti-use sentiment.

Given their status as an invasive species (*wild-domestic*), it is unsurprising that consumptive use of buffalo is not widely contested in Australia (Trigger 2008). As opposed to the brumby which also occupies the *wild-domestic* category, was introduced as a working animal and similarly enjoys a highly romanticised history,
buffalo were used by early European settlers as a source of protein (Albrecht et al. 2009). Buffalo are still used consumptively today, though their predominant use is for overseas export, safari hunting and some small-scale local consumption by Indigenous residents of Arnhem Land. Further, buffalo have long been the target of regular culling operations in the Top End due to the threat of disease (Albrecht et al. 2009) and the environmental harm they cause (Bradshaw et al. 2007; Albrecht et al. 2009). Environmentalists have been effective at identifying and communicating the damage caused by wild buffalo and have garnered support for the eradication of the species from the wild in Australia (Bowman and Robinson 2002; Albrecht et al. 2009). The position of eradication has not been significantly contested by non-Indigenous Australians. However, many Indigenous Australians see buffalo as an inexpensive and readily available source of protein (Altman 1982; Bowman and Robinson 2002) and in some places have bestowed cultural significance on the species (Bowman and Robinson 2002). Further the forebears of many Indigenous Australians were involved in buffalo and cattle mustering enterprises as stockmen and ringers up until the 1970s (Cowlishaw 1999). Employees of GGBC expressed their concern about proposed measures to eradicate or significantly reduce populations of wild buffalo as it would reduce income for the community, they would lose jobs and “it would be really sad” (P14). All of this combined with their resemblance to cattle both in terms of their morphology and their presence on the menu of restaurants (at least in Darwin), means that buffalo are represented symbolically as an animal to be used consumptively by humans. Basically, like cattle and sheep, their primary purpose for existing is seen as being as meat for humans.
Consequently, there has been little anti-use sentiment expressed with regards to the consumptive use of wild buffalo in Australia.

Whilst the cases of *Tf* and buffalo support Franklin’s (2006) abovementioned categories, the crocodile case presents an exception to the rule. Up until the 1970s, crocodiles were hunted for sport and for their skins to the point of near extinction (Fukuda 2011). As such, protection of this species in the NT occurred much later than the change of general public sentiment towards protection of native wildlife in Australia (the late nineteenth century).

The lag-time involved in the protection of the saltwater crocodile may be explained by its much maligned character as a man-eater and, consequently, an enemy (Ryan 1998). Crocodiles are amongst Australia’s most charismatic species (Garnett 1991). However, they are not charismatic in the same sense as human-friendly and easily anthropomorphised species like dolphins (Ryan 1998). Rather, it is their impressive aggression and lethal potential that engenders awe. This nature, made famous by their public narrative, leads Australians to harbour mixed sentiments towards the species. Whilst some of the Australian public have a strong desire to see saltwater crocodiles in the wild, which has seen strong and effective advocacy against a recent proposal to introduce safari-hunting of adult crocodiles (Northfield and McMahon 2010), another portion of the population have a strong dislike for the species (Shackley 1996; Ryan 1998) with frequent lobbying to reintroduce culling, particularly after human fatalities. The consequence is a general ambivalence to the consumptive use of the species.
There is evidence that conservation through sustainable use assisted in the protection of the saltwater crocodile in the NT (Webb 2002; Tisdell and Nantha 2005). It is argued (Webb 2002) that commercialisation of saltwater crocodiles, both through consumptive uses and tourism, has enhanced the public value of the species and therefore contributed to its protection. This is a common theme of conservation through sustainable use theory and practice which proposes that use does in fact enhance protection (Webb and Manolis 1993; Webb et al. 1996; Webb and Vardon 1998; Wilson and Mitchell 2005; Wilson 2009; Wilson et al. 2010).

As evidenced by the general public sentiment towards crocodiles, where native animals are considered a threat to the safety of humans their rights to exist undisturbed by humans become less secure. Conservationists, the crocodile industry and proponents of environmentalism have reinforced these rights through advocacy and the provision of economic and voyeuristic incentives to promote protection of the species (Webb et al. 1984; Garnett 1991; Webb and Manolis 1993; Ryan 1998; Webb 2002; Tisdell and Nantha 2005). The natural charisma of the species, combined with its commercial value, has strengthened the right of saltwater crocodiles to exist in the Northern Territory. However, the foundation of the charisma that serves to protect crocodiles (i.e. their aggression and lethality), also means that it is unlikely that a majority of Australians would oppose their sustainable consumptive use. A solution to this dilemma has been the promotion of conservation through sustainable use, which not only creates additional value for
saltwater crocodiles, but simultaneously ensures their existence in the wild, thus satisfying developmentalists, environmentalists and eco-nationalists alike.

Indigenous Australians seem less likely to harbour anti-use philosophies to the consumption of native wildlife. For example, Indigenous Australians have used native plants and animals to maintain livelihoods for tens of thousands of years (Keen 2004; Gammage 2011). Evidence suggests that their attitudes to this have not changed since colonisation (Rose 1995; Trigger 2008). There has been considerable substitution of proteins, carbohydrates and other food types with Western foods, but this has not eliminated wildlife from the diet of many Indigenous Australians (Altman 1982; Altman 1987; Rose 1995; Buchanan et al. 2008; Trigger 2008). Indigenous Australians have merely adapted to the new ‘food landscape’ of Australia by incorporating ‘invasive’ foods into their own diet (Altman 1982). Similarly, the four categories identified by Franklin (2006) do not apply for Indigenous Australians. As with invasive foods, some invasive species are indeed welcomed by Indigenous people and have been incorporated into their diet, land and culture. For example, wild buffalo, cattle, pigs and cats have in places been eaten, kept as pets and/or have their own culturally embedded identities established through the creation of dreaming stories (Altman 1987; Rose 1995; Cowlishaw 1999; Bowman and Robinson 2002; Franklin 2006; Trigger 2008). It appears that for Indigenous Australians it is the utility of a species in their socio-cultural and spiritual worlds that is the deciding factor as to whether the species is seen as belonging to the land or not (Rose 1995; Trigger 2008).
As discussed, one of the success factors identified for all of the case studies investigated here is that they have all experienced minimal anti-use sentiment. This lack of anti-use sentiment is facilitated for three different reasons for each case: for Tf it is a general permissiveness regarding the sustainable use of native flora; for buffalo it is a general indifference to their consumptive use due to their invasive nature and the narrative about them in Australia; and for crocodiles it is their reputation as a threat to be controlled in an effort to protect humans from harm, with strong science to support sustainability. Linking all of the cases investigated here is the narrative of use that is constructed by the Australian public about them. The strongest influences on this narrative are the historic tensions between environmentalism and developmentalism that is woven into the fabric of Australian culture and identity. As will be discussed further in the next chapter, these results have important implications for the future of IWBE in Australia.

8.4. Demonstrable Sustainability

Given the restrictions imposed on the use of wildlife in Australia (Tucker 2008; Cooney and Edwards 2009), it was seen in both the crocodile and Tf case studies that the ability to demonstrate sustainability of proposed harvests is essential to the ultimate success of IWBEs. A considerable amount of the work to demonstrate sustainability is dedicated to IWBEs themselves. This is partly due to the anti-use sentiment discussed above, but is also due to the incorporation of the precautionary principle in the legislative and policy context that surrounds IWBEs.
The precautionary principle, as defined by Dickson (2005, p.275), states that:

...action should be taken against threats to the environment even when there is some uncertainty about those threats.

Cooney (2005, pp.4-5) elaborates on this by explaining that under the precautionary principle:

...complete certainty regarding an environmental harm should not be a prerequisite for taking action to avert it. The precautionary principle counters the presumption that activities should proceed until and unless there is clear evidence that they are harmful, and supports action to anticipate and avert environmental harm in advance of, or without, a clear demonstration that such action is necessary.

Given the previous discussion of anti-use sentiment with regards to consumptive wildlife use in Australia, it is not surprising that the precautionary principle has been applied in a relatively strong sense in an effort to protect native flora and fauna from human threats. Cooney (2005, p.7) defines a strong application of the precautionary principle in the following:

In strong versions of the principle, the burden of proof (evidentiary presumption) is reversed so that actions or substances are considered ‘guilty until proven innocent’ rather than ‘innocent until proven guilty’.

Given this definition, the legal and policy context in Australia is such that the precautionary principle is applied strongly to protect native flora and fauna from unsustainable use. Though consumptive use is legally possible, it is only allowed once proponents have been able to demonstrate that their use will not threaten
the species or reduce biodiversity (Cooney and Edwards 2009). That is, consumptive wildlife uses are presumed guilty of unsustainability until proven innocent.

For example, in 1971 the saltwater crocodile was protected by the Northern Territory Government due to the drastic decline in the population from overharvesting (Webb et al. 1987). In 1979, *C. porosus* was listed on Appendix I of CITES in light of a perceived (though contested) threat of extinction (Webb et al. 1987). This meant an immediate end to any consumptive use of the species. As a result of this protected status, crocodile populations in the NT rebounded rapidly (Webb et al. 1987). Increased populations meant that there was a related increase in crocodile attacks, both on humans and on livestock, which prompted calls for culls to commence (Webb 2002). However, in 1985, Australia was able to demonstrate the merit of ranching activities in an effort to shift the public opinion of crocodiles to one of tolerance, and was subsequently successful in having the saltwater crocodile shifted from CITES Appendix I to Appendix II (Webb et al. 1987; Webb 2002; Leach et al. 2009). Listing on Appendix II meant that it was possible to obtain permits to export crocodile products if it could be demonstrated that they were obtained legally (Leach et al. 2009). This opened opportunities for the ranching of crocodiles, specifically the purchase of wild harvested eggs from landowners, and advanced the cause of crocodile conservation in the Top End (Webb 2002; Leach et al. 2009). However, due primarily to the influence of the

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6 Only the Australian, Papua New Guinean and Indonesian *Crocodylus porosus* populations are listed on Appendix II. All other wild estuarine crocodiles are listed on Appendix I, which prevents use of any kind (Leach et al. 2009).
precautionary principle on CITES listings, this reduction in the endangered status of the species was only achieved by demonstrating that ranching activities would not be detrimental to the crocodile populations of the NT and that they may in fact be beneficial to their conservation. Not all crocodile harvest methods were shown to be sustainable and, thus, are not permitted. Whilst permits for the collection of crocodile eggs from the wild for commercial purposes are widely issued, permits to take adult crocodiles in the same manner are more restricted (Leach et al. 2009). Without research that supports the sustainability of the harvest of eggs (Webb et al. 1977; Webb et al. 1983; Webb and Smith 1987), it is unlikely that the de-escalation of the threatened status of saltwater crocodiles in Australia would have occurred, which would likely have led crocodile management in the country along a different (arguably less successful) path (Webb and Manolis 1993; Webb et al. 2000; Webb 2002; Fukuda et al. 2011).

The precautionary principle creates a *burden of proof* for the proponents of activities that are considered potentially harmful to, in this case, the existence of native flora and fauna. Conducting the research and monitoring demanded by the current legislative regime is both time consuming and an opportunity cost. Typically, IWBEs and/or the organisations that host them are under-resourced and are required to dedicate scarce time and resources to the operations of the enterprise. Placing the burden of proof on IWBEs reduces the capacity of the enterprises to harvest wildlife and to create profits (in their multiple forms).
As mentioned, for the crocodile industry this burden of proof was shared amongst both publicly and privately funded research initiatives. For the Tf industry, research into the sustainability of harvests was publicly funded (Whitehead et al. 2006; Fukuda et al. 2011). This research garners the support for proposed harvests and builds trust in the enterprise. However, there is a direct relationship between the perceived risk of harm (calculated by multiplying society’s valuation of the species and the perceived potential harm of the practice), and the certainty of the demonstration of sustainability. Andresen et al. (2005) suggest that science plays only a minor role in implementing the precautionary principle. As such, where the science is opposed to the dominant politics of the sustainable use in question, the certainty with which research can demonstrate sustainability must be stronger so as to counter all of the other arguments it faces.

Having ‘scientific evidence’ that ‘demonstrates’ that harvest regimes are biologically and ecologically sustainable reduces public anti-use sentiment, gives politicians surety that they (and their bureaucracies) can support harvests, allows business partners to feel more comfortable investing in partnerships and/or contracts, and allows IWBEs to feel confident that they are not depleting the resource. This evidence can be used to inform management plans (e.g. the NT crocodile management plan (Leach et al. 2009)) and thus have the interests of IWBEs incorporated into the policy process.

It should be noted, however, that irrespective of the evidence provided to demonstrate the sustainability of harvest, those opposed to the human use of
wildlife (for any consumptive use) will not be assuaged. Especially with regards to the consumptive use of animals, the ethical positions adopted by IWBEs and anti-use proponents are oppositional and non-negotiable (Webb 2002). This means that, politically, demonstrating sustainability will not guarantee IWBEs support from all sectors of the community.

There is no clear definition of who exactly should prove that IWBEs are sustainable. A simple reading of the relevant Australian and State/Territory legislation signals that it is not the public who should shoulder the burden, but the proponents of the use (Cooney and Edwards 2009). However, the Northern Territory Government has supported policy and funded research on sustainable use of wildlife for almost 15 years (PWCNT 1997). Subsequently, this policy position has shaped the management of wildlife in the region in a way that effectively softens the precautionary principle and creates more space for sustainable use of wildlife. Publicly-funded research projects have investigated the sustainability of use of native fauna and flora endemic to the NT, such as Tf (Whitehead et al. 2006), cycads (Griffiths et al. 2005), Bombax ceiba (Griffiths et al. 2003), and magpie geese (Brook and Whitehead 2005).

However, due to the multi-jurisdictional application of the precautionary principle to the sustainable use of wildlife in Australia, the onus to demonstrate sustainability prior to commencing harvests remains. This not only has implications for current IWBE activities, which require on-going monitoring and reports on harvests to demonstrate activity, but also restricts opportunity for trial harvests to take place.
Bawinanga Aboriginal Corporation has in the past been prevented from taking advantage of market opportunities, such as selling Oenpelli pythons (*Morelia oenpelliensis*) and the fruit of the *Morinda citrifolia* tree, due to prohibition of use or lengthy deliberations and/or issuance of permits to harvest (I. Munro and B. Corey pers. comm.). BAC suggests that their proposed harvests were of a scale that could not possibly have threatened the populations of these species in the Maningrida region. However, due to the application of the precautionary principle and a lack of rigorous scientific data to suggest otherwise, it was assumed by authorities that harvests would be unsustainable until evidence to the contrary could be provided. As such, market opportunities to exploit these species have been postponed or have passed entirely.

Wildlife use is a highly politicised topic in Australia. One need only look towards the controversy surrounding the commercial use of kangaroos to be able to see that sustainability of harvests is merely one factor amongst many that influences decisions about whether to support or oppose particular wildlife harvesting activities (Lunney 2010). Democratic systems of governance require that governments make decisions based on the desires of the people. Governments that consistently legislate and regulate against the wishes of the majority of the population are quickly replaced with more accountable representatives. As such, where there is clear benefit to some or all of its constituents, combined with public approval, it seems that Australian governments may be supportive of wildlife-based enterprise and are willing to partially or fully shoulder the burden of proof. Such support could take the shape of investing in a peak body for IWBEs that coordinates
marketing and research and development functions for the industry (however loosely aggregated). This investment would need to remain until the industry reached a critical mass whereby producers could be charged a levy to fund the peak body (similar to arrangements for industry bodies such as Meat and Livestock Australia, the Australian Wheat Board, Rice Growers’ Association, etc.).

For the cases investigated here (excepting buffalo) demonstrable sustainability was important to prove ‘innocence’. That is, the application of the precautionary principle in the area of wildlife management in Australia requires that IWBEs demonstrate that their activities will not threaten the existence of the targeted species and will not deplete biodiversity in the ecosystems where harvests take place. Demonstrating sustainability is fundamentally important to ensuring the capacity of IWBEs to exploit natural resources over the long-term. After all, it is towards this end that the sustainable use and conservation legislation and policy was originally drafted and subsequently implemented. Though in some cases they may be seeking contrasting ends, IWBEs and conservationists have a mutual interest in ensuring that ecosystems remain robust over the long-term. In this sense then, it can be seen that the policy and legislative context within which IWBEs operate is fundamentally supportive of the interests of wildlife harvesters over the long-term.
8.5. Markets

All the enterprises studied supplied produce to distinctly different markets (i.e. nutraceutical, food and beverage, cosmetic and perfume markets; international meat markets; and leather goods markets). However, across all of these industries there were four commonalities: all markets were pre-existing; the majority of supply has been to international markets; commodities purchased by consumers could be considered luxury items; and the enterprises leverage the unique properties of the produce, or the unique context in which it is harvested, to overcome the challenges of operating in a remote Indigenous context. These common features of the markets supplied generate insight into underlying factors of success for IWBEs.

All the businesses examined supply new products to old markets (Cunningham et al. 2009b). At the time of this research, most of the produce in the Tf industry was supplied to the well-established nutraceutical market for Vitamin C supplements (Cunningham et al. 2009b). GGBC mustered buffalo are supplied to South-East Asian markets where the animal is a traditional source of protein (associated particularly with feasts occurring around the end of Ramadan, known as Hari Raya)(Cruz 2007). The crocodile leather market, of which crocodile farms supplied with eggs by Djelk are a part, is a well-established component of the domestic and international leather industry (MacNamara et al. 2003; Goulding et al. 2007).

For all these enterprises, much of their success (indeed, their viability) has been the result of participation in the global economy (Anderson et al. 2003; Anderson et al.
The majority of *Tf* fruit used for Vitamin C supplement production was exported to the United States of America in powder form. The supplements themselves were then distributed internationally (Cunningham et al. 2009b). As mentioned, almost all buffalo mustered by GGBC are destined for South-East Asia, specifically Indonesia and Malaysia. Many of the skins produced from crocodiles farmed in the NT are sent to manufacturers in Europe, Japan and the US (amongst others), where they are made into leather goods for sale domestically and/or exported internationally (MacNamara et al. 2003; Goulding et al. 2007). Given their position at the root of the supply chain, it is not immediately obvious that these enterprises are important components in international trade. However, as demonstrated from these cases, the opportunity for enterprise creation using these wild products is made possible by the existence and open access of international markets.

In all three cases, for the people who consume the commodities produced from the wildlife-based inputs harvested are purchasing what could be considered a luxury good. Put simply, a luxury good is something that people consume more of as their income increases. This occurs in a disproportionate manner; that is, as incomes increase the rate at which luxury goods are purchased itself increases at a rate that is not proportional to the increase in income (Kemp 1998). As such, all the items produced from the harvested wildlife in these case studies are consumed by those with relatively high incomes. In the case of *Tf*, its Vitamin C supplements are relatively expensive compared to other sources of Vitamin C. They are used by people to supplement their diet to obtain reputed health benefits beyond those...
attributed to Vitamin C derived from conventional sources (Cunningham et al. 2009b). Saltwater crocodile leather is considered by many to be the best quality leather in the world (Goulding et al. 2007). It is not unusual for a crocodile leather handbag to be sold for AU$30,000 in the United States, Japan, Italy or France (MacNamara et al. 2003; Goulding et al. 2007; Blackmore 2009; MacGregor and Blackmore 2009). Though not considered a luxury item in Australia, buffalo beef is not part of a staple diet for the majority of people in Indonesia or Malaysia, but is generally consumed on special occasions. Across the region, the consumption of beef is increasing in tandem with the increase in wealth, which supports claims that it remains a luxury item in South-East Asia (Cruz 2007).

All the enterprises take advantage of the unique properties of their produce, or the unique situation in which it is grown, to overcome the challenges of operating in a remote Indigenous context (i.e. high costs, distance to markets, generally low human capital, limited access to capital, etc. (Young 1995; Altman 2001; IBR 2003; Altman et al. 2005; Dillon and Westbury 2006; Nikolakis 2008)). Tf harvesters have been able to leverage the significantly high levels of naturally occurring Vitamin C and antioxidants in the fruit to obtain market share (Cunningham et al. 2009b). Further, the market values the association of Indigenous Australians with the product, which was also crucial to obtaining legal permission to use the produce for the manufacture of nutraceuticals under the Therapeutic Goods Administration Act by demonstrating long-term use with no adverse side effects (Cunningham et al. 2009b; Garnett 2010). For buffalo, it is their unusually low cost of production (using only a narrow method of accounting for cost that does not include environmental
externalities) that creates market opportunity. Though the animals supplied by GGBC are similar to those farmed domestically in the region, the supply of invasive stock from Australia is novel. Even though high costs of production and unfavourable currency exchange rates work against GGBC, they remain competitive with other suppliers as there is no husbandry and minimal maintenance costs involved with this natural resource. Djelk takes advantage of conservation oriented legislation and regulation of the take of wildlife in Australia for commercial purposes. As the harvest of crocodile eggs is governed by a permit system there is greater demand for eggs than can be satisfied through legal wild harvest. This effectively increases the price that farms are willing to pay for eggs, which creates the opportunity for this enterprise to overcome the challenges of operating from a remote context.

8.6. Access

Given the dispossession enacted as part of the European colonising process in Australia, the ability of Indigenous people to access commercially valuable resources is an important aspect of IWBE success. Land tenure facilitates this access, as does the sympathetic support of regulatory bodies. Land rights have been returned to Indigenous Australians through five key mechanisms:

- The creation of Aboriginal reserves as a result of protectionist policies in the late 1800s and early 1900s;
- Land rights legislation passed in various states and territories since the 1960s;
• Other legislation that allows transfer of land rights or leases to Indigenous groups;
• Land acquisition programmes since the 1960s; and
• Native title processes following the *Mabo No.2* High Court decision in 1992 (Altman et al. 2007).

Most of these land rights involve communal ownership, which can be as strong as exclusive possession, or freehold title (e.g. ALRA), or as weak as non-possessory rights that allow access, but do not transfer title (e.g. non-exclusive native title) (Altman et al. 2007; AIATSIS 2011). The aggregated Indigenous lands that are held/managed under these various tenure types across the nation are now widely known as the ‘Indigenous estate’.

As mentioned in each of the case study chapters, all of the IWBEs studied here have been operating either wholly or partly on the Indigenous estate. Access to this land was important as Indigenous people mostly harvested *Tf* fruit from their own land or that of their kin. This harvest is relatively straightforward as under Australian law, the ownership of plants is vested in the landholder themselves. Without this access, people would need to negotiate permission to harvest the fruit from other property holders. While such negotiations are indeed navigable, due to the history of dispossession and a colonial legacy of disempowerment, this becomes a further disincentive in addition to the barriers that already prevent Indigenous people becoming involved in entrepreneurial activity based on consumptive use of wildlife. A research participant who had been collecting fruit from a neighbouring pastoral property said that the “hassle” of dealing with the pastoralist to negotiate access to
the property in the fruit picking season was “hardly worth it” (P33). It is this increased transaction cost, in the form of negotiating access, that can provide an additional barrier to the spontaneous emergence and on-going success of IWBEs. It has been well documented that Indigenous people face significant barriers to their participation in free market economic activity (Young 1995; Arthur 1999; Altman 2001a; Altman and Whitehead 2003; IBR2003; Westbury and Dillon 2006; Altman 2007; Schaper 2007; HRSCATSIA 2008; Nikolakis 2008; Altman 2010; Mundine 2010; Pearson 2011). Much of this can be attributed to a colonial legacy. Native Title has remedied this to an extent, and has offered easier access to resources on non-Indigenous owned/managed land, but is limited in its effect (Altman et al. 1995). Whilst land is still owned or occupied by non-Indigenous people, Aboriginal Australians will need to negotiate access to land (especially to conduct commercial activity). This may not be a legal requirement, but will take place in conversations, phone calls and meetings between land owners/occupiers to organise visits. It is a negotiation that takes place, not in the courts or offices of bureaucrats, but in the local social context. This barrier, combined with the relative disadvantage experienced by many Indigenous Australians, suggests that it will be difficult for Indigenous Australians to compete unsupported in a free market environment.

Access to harvest of wild animals is made more complex by the fact that native animals are protected by state and territory legislation. Therefore, having title over ones land does not mean that one can choose to consumptively use native animals. Rather, animal-based IWBE proponents are required to apply for permits to harvest native animals on their property and, if it can be demonstrated that this harvest is sustainable, are granted permission to do so for selected species. In contrast, wild
non-native animals, such as buffalo, are not owned by the state and can be used commercially at the will of the landowner (Garnett et al. 2010). Through this bureaucratic process however, landholders are able to be granted limited access to the wild animal resources endemic to their properties.

The complex legislative framework that exists around IWBEs could have been applied in a strict sense to prevent consumptive use of wildlife by Indigenous Australians (Cooney and Edwards 2009). However, due largely to the sympathetic stance adopted by the authorities responsible for the implementation of the regulations, along with the supportive policy related to sustainable use of wildlife in the north, minor breaches have not been punished with a heavy hand (P. Whitehead pers. comm.). Indeed, in some cases, authorities have been proactive in building the awareness and capacity of Indigenous wildlife harvesters to operate within the confines of the law.

Access to land and the associated natural resources is important as it facilitates the involvement of Indigenous people in the opportunities presented by IWBE. Whilst each of the enterprises analysed (crocodile egg collecting, Tf fruit collecting and buffalo mustering) is also conducted separately by non-Indigenous Australians, without access to land and sympathetic application of the law to wildlife harvesting, it is unlikely that a significant number of Indigenous Australians would be in a position to participate in wildlife-based enterprises. Social disadvantage and other documented barriers to participation in free market (Young 1995; Arthur 1999; Altman 2001a; Altman and Whitehead 2003; IBR2003; Westbury and Dillon 2006;
Altman 2007; Schaper 2007; HRSCATSIA 2008; Nikolakis 2008; Altman 2010; Mundine 2010; Pearson 2011), combined with regulatory burden and a lack of easy access to land and resources, makes it unlikely that Indigenous wildlife-based entrepreneurs will be able to compete with non-Indigenous people without additional support. This factor does not describe a fundamental aspect of enterprise success, but concerns the capacity of participation of Indigenous Australians in commercial wildlife harvesting and the subsequent realisation of the economic, social, cultural and environmental benefits it may offer over the longer-term.

8.7. Social Capital

Social capital was important to the success of all the IWBEs investigated. Specifically, this was bonding social capital that served to embed the enterprise within the community, and bridging social capital that formed weak ties with external network clusters. Both these aspects of social capital will be discussed with respect to the IWBEs investigated.

The case studies presented here are consistent with the significant body of literature has emerged in recent decades on the social and cultural nature of economic transactions (Granovetter 1985; 2005; Amin and Thrift 1992; Thrift 1994; Thrift and Olds 1996; Leyshon 1997; Curry 1999; 2003; 2005; Rauch and Casella 2001; Dutta and Jackson 2003; Calvo-Armengol 2004). Granovetter (2005, p.35) summarises social embeddedness as:
...the extent to which economic action is linked to or depends on action or institutions that are non-economic in content, goals or processes.

Prior to the recognition of the social nature of market-based economic transactions, it was assumed by economists that as ‘pre-capitalist’ societies ‘modernised’ and developed a market-based economy, social relations would become commoditised (Marx and Engels 1976; Granovetter 1985, 2005; Curry 1999). It was assumed that societies would release markets from their grasp and allow individuals to act within them on purely rational, profit-seeking terms (Granovetter 2005). However, it has been demonstrated that this is not the case. Experience around the globe suggests that as economies become capitalist and markets emerge, local people firmly embed enterprise into local culture (Curry 1999; Granovetter 2005; Cahn 2006) because financial decisions and transactions are but a small facet of social life. The consequence is that enterprises need to function in a way that complements rather than conflicts with the local socio-cultural landscape.

Building relationships with traditional land owners was important in all three IWBE cases studied. For GGBG and Djelk, building strong relationships with local people is especially important in the LUA negotiation process. Indeed, this relationship building is enhanced by the offer of royalty payments for access to and use of natural resources. Though the Tf stalwarts are not required to sign LUAs with local land owners, they similarly build relationships through the exchange of fruit for cash. In many cases Traditional Owners were happy for fruit to be picked from their
country without royalty payments being made as it was generating employment for their family members (J. Gorman pers. comm.). In contrast to GGBC and Djelk Wildlife Enterprises, there is already a considerable degree of trust between these parties in that they are (predominantly) mutual members of kin networks. In this sense, the exchange of goods is not governed bureaucratically as in the NT, but is required under local cultural obligations. In some ways this can be seen as ‘buying’ social capital. However, viewed in a different light, this is a tool used to embed the enterprise in the local community through the establishment of a relationship based on the fair exchange of goods. What is deemed to be a fair price for the LUA is decided by the sellers (i.e. the Traditional Owners). The NLC facilitates the opportunity for the enterprises operating under the ALRA in the NT to establish relationships with local people, whilst the Tf harvesters in WA access and activate existing social networks to achieve enterprise success.

Given that LUAs are not perpetual and are renegotiated often (in the case of Djelk’s egg collecting activities, this was once per annum until recently), relationships with the local community require ongoing maintenance. A strong track record of providing royalty payments that are deemed fair by the local clan groups is the primary tool for achieving this, but as mentioned previously, the enterprises use other methods to nurture relationships for bonding social capital. For example, an important tool was to ensure that harvesting activities always abided by cultural protocols and restrictions. As members of the local culture, employees/entrepreneurs were able to use their relationships to keep up to date with changes in the cultural landscape and advise on how to adjust the enterprise’s
activities appropriately. Each of the employees involved in the IWBEs is also a member of local cultural groups and so are privy to important culture-based information. Djelk employees explained that they must consult Traditional Owners about the suitability of conducting harvests in particular areas prior to commencing harvests. In fact, as much as possible, this consultation occurred prior to making an LUA application. Traditional owners will occasionally inform Djelk that certain areas are not accessible due to ceremonial obligations. There is sufficient flexibility built into Djelk’s harvesting activities to incorporate this without threatening the entire season’s harvests. This adaptability is crucial to remaining a welcomed member of the local community and, subsequently, to being granted future LUAs. GGBC behave in much the same manner in their relationship with the clan groups within the boundaries of their LUA. The situation was only slightly different in WA, with cultural protocols being enforced socially rather than legislatively. One interviewee told a personal story of committing a minor transgression and being violently reprimanded for their actions. To prevent injury to their employees and/or the reputation of the IWBE, and to ensure the economic sustainability of the enterprises, understanding and responding sensitively to the local cultural landscape was key for all the IWBEs. Indeed, cultural obligations almost always took precedence over the demands of the IWBE.

One of the results of improved race-relations between Indigenous and non-Indigenous Australians, and the subsequent expansion of rights returned to the former by the latter, is the enhanced possibility for the interaction of parties from either culture as peers. This is as true for economic interactions as any other.
However, due to the poorer socio-economic and political status of Indigenous Australians (which could be described as a ‘gap’ (FaHCSIA 2009)), race-based prejudice that remains in Australia (Paradies and Cunningham 2009), and the lag between receiving rights and actualising them, many interactions between Indigenous and non-Indigenous Australians remain unequal. Nonetheless, the IWBEs investigated here appear to be empowering Indigenous Australians. The very fact that enterprises are operating in Indigenous spheres of existence, and that these enterprises are compelled (either legislatively or voluntarily) to embed themselves in the local context, demonstrates that Indigenous owners of land are exercising their rights and that Indigenous people as a whole are using their social and cultural knowledge and practice to modify enterprise to fit into their cultures and societies and to meet their desired ends (as is occurring with IWBEs elsewhere: Bargh 2012; Giovannini 2012; Pengelly and Davidson-Hunt 2012; Meis Mason et al. 2012). The IWBEs investigated remain by definition western constructs and operate as such, though in a less ‘pure’ sense than one might expect. They are forced to adapt to the local conditions (not only economic and geographic, but also social and cultural) to achieve success.

The weak social ties that individuals have with those outside the cluster of close ties are the most valuable in creating opportunities and integrating them into the wider community. As Granovetter (1973) first demonstrated, it is the weak ties that individuals enjoy that lead to economic opportunity, and encourage entrepreneurship and economic development (see also Burt 2005). Though an individual may have more regular contact via their strong ties (i.e. family, friends,
colleagues), these interactions tend to reinforce beliefs, behaviours and norms. However, interaction between individuals with weak ties can sometimes challenge these beliefs, behaviours and norms, and in-so-doing encourage new ideas, opportunities and solutions. Indeed, many weak ties may not produce any of these, but the potential impact of new ways of thinking and acting developed through weak ties offers greater potential for the individual. Further, weak ties increase social capital in an almost exponential manner in that they form connections to clusters of people who were not part of an individual’s original network (Granovetter 1973; Burt 2005). This then creates new opportunities for the establishment of further weak ties, and so on. Granovetter (1973) demonstrates that it is these weak ties that are the richest source of entrepreneurship and innovation.

Weak ties are essentially akin to the aforementioned concept of bridging social capital. In all three cases it was seen that bridging relationships were enjoyed between the IWBEs and researchers, government and buyers of their produce. These relationships were important to the smooth operation of the enterprises and, as observed with IWBEs elsewhere (e.g. Meis Mason et al. 2012), are a key component of their success.

However, the weak ties to government, research and industry were mediated in different ways for all three enterprises. For the Djelk crocodile egg harvests, relationships that went beyond the immediate sphere of the local Maningrida community were almost solely mediated by the parent organisation BAC. Similarly
for GGBC, a ‘white adviser’ (Batty 2005) was key to establishing links to the pastoral and live export industry, along with government. Alternatively, some of the formation and maintenance of weak ties between Indigenous Tf harvesters and ‘outsiders’ was mediated by Indigenous industry stalwarts themselves, who have been quite proactive in pursuing their interests. However, government also adopted a significant share of the responsibility for establishing weak ties (in cooperation with some of the stalwarts).

The findings from this research provide support for Maru and Davies’ (2011) call for increased investment in cross-cultural brokers for the establishment of innovative weak ties. These individuals, be they Indigenous or non-Indigenous, are able to bridge the cultural distance between local people and that of the dominant Australian culture. Maru and Davies (2011) suggest that investment in this brokerage is especially important in that, at present, there are very few obvious incentives for individuals to perform this role. In fact, there are often significant disadvantages (Schwab 1995; Batty 2005; Woodward 2008; McRae-Williams and Gerritsen 2010; Maru and Davies 2011; Mahood 2012). For the case studies investigated here the incentives provided mostly came from the motivations of the brokers to be involved in work that was core to their values (e.g. justice for Indigenous people, passion for wildlife conservation and research, etc.), and/or offered lifestyle benefits to the broker and their families (living in picturesque remote parts of Australia, either permanently or on a seasonal basis). For Indigenous brokers, living in their own communities and strongly bonded to their local network clusters, the role of broker was observed to be significantly
burdensome. Relying on non-Indigenous people to act as brokers on behalf of Indigenous people is problematic. As Woodward (2008) describes, this effectively decreases the resilience of the local group in that the social capital, including the important weak ties to external clusters, that is accrued over time by the non-Indigenous broker can only be mobilised whilst that broker remains connected to the group. It is widely recognised that non-Indigenous professionals working in remote Indigenous communities in Australia are highly mobile. Subsequently, as identified by Woodward (2008), efforts to increase the social capital of IWBEs needs to focus specifically on building leadership and networking skills of Indigenous employees in an effort to increase the resilience and success of wildlife harvesting activities (see Recommendation 13).

In all the case studies, as observed with IWBEs elsewhere (Meis Mason et al. 2012), weak ties were crucial to identifying the enterprise opportunities in the first place. Weak ties also helped to build human capital, physical capital, social capital (in the form of other weak ties and access to clusters otherwise not accessible) and, most importantly, to overcome barriers.

In summary, social capital was important for the following reasons:

- It created the opportunity for the local natural capital to be used commercially;
- It was key to linking producers to buyers, who then linked produce to markets;
And, through weak ties, external agents were used as tools to access further capital (particularly human capital and additional social capital) to overcome barriers.

The social capital of the enterprises has waxed and waned over time and is in a permanent state of flux due to the dynamic nature of communities, enterprises and the relationships that exist at all levels between the parties. Further, changes in the economic or biophysical environments, over which the enterprises may or may not have control, have impacts on these relationships. However, it can be seen that over time, with continued operations that conform to local social and cultural mores, enterprises are able to accrue more social capital. This is certainly not fixed and can be eroded or ignored, however, the familiarity and goodwill developed over time has a tendency to create trust that mitigates drastic changes in social capital stocks. It is suggested that deeper investigation of the relationship between IWBEs and ‘their communities’ could prove fruitful in understanding this phenomenon better. Without healthy stocks of social capital, it is difficult to envisage these IWBEs being able to operate successfully.

8.8. Supportive Organisations and Formal Institutions

In all of the cases the support of organisations and formal institutions was important for the success of the enterprises. The institutional support came specifically from two primary sources: public investment by government in the form of welfare, skills development and training, coordination and research; and the incubation, subsidisation and accommodation of wildlife harvesting activities by a
parent corporation. This support was key to overcoming issues with livelihood continuity, regulatory complexity, knowledge and skills deficits (both about operating the enterprise and the sustainable use of wildlife), industry development and coordination, cross-cultural communication, and the costs of business in remote locations.

One of the vulnerabilities for IWBEs identified and discussed previously was livelihood continuity. Due mostly to their seasonality in terms of harvests, IWBEs (single species focused) cannot provide a sustainable livelihood for participants. Of course, without this continuity of livelihood income, people would not be able to participate in wildlife harvesting at all; they would either be forced to move or to perish. As discussed, the government provides a welfare safety net for all Australian citizens to ensure that they have some form of livelihood at all times. It has been argued however that welfare-based livelihoods contribute to the poor wellbeing of many Indigenous Australians (Sutton 2009; Pearson 2011). However, in terms of facilitating IWBEs, welfare (in all its forms) has been important in allowing Indigenous people living in remote areas to engage in the economic opportunity presented by IWBEs. In both the Tf and buffalo case studies, the harvesters were only employed in IWBE for a maximum of two and six months respectively. Aside from a few who were involved in other entrepreneurial activities, most of these people relied on Community Development Employment Projects (CDEP) programme or basic welfare income for their livelihoods throughout the rest of the year. In terms of livelihood continuity, the situation for Djelk was slightly different in that many of the people involved in crocodile egg harvesting were also employed
in other functions with BAC (mostly working as Indigenous rangers), which allowed for flexibility in their work schedules to participate in the harvests. Without this flexibility, these people would have also been forced to look for other employment. This is particularly problematic in a community which has chronic unemployment and very little market-based economic activity (as with most remote Indigenous communities in northern Australia).

The regulation of IWBE activities is complex and potentially burdensome (Cooney and Edwards 2008). In the case of Tf, harvesters were supported by both the WA Department of Agriculture and Food (DAF) and the WA Department for Environment and Conservation (DEC) to navigate this complexity through community consultations and workshops to build awareness of regulatory requirements and improve people’s capacity to fulfil these requirements. Similarly, officers from the Northern Land Council (NLC) have worked with Tf pickers in the NT to the same end. Though not evidenced by research conducted here, it is also probable that relevant NT Government authorities (such as NRETAS) have periodically delivered similar advice in the NT as requested by IWBEs themselves. This was not clear from this research however, and almost certainly has not been as coordinated and as specific as the extension work conducted by the authorities in WA with regards to Tf harvesters.

These same organisations (DAF, DEC, the NLC and NRETAS) have invested in capacity building activities to enhance the ability of Indigenous people to participate in specific wildlife-based enterprises. For example, DAF staff worked to
improve the knowledge and skills of Tf harvesters in identifying and implementing sustainable harvest practices and quality control measures. The case is similar with the NLC in the NT. For Djelk Wildlife Enterprises this service has been performed largely by their parent organisation, which has invested in the skill development and training of employees across all of its business activities, and their principal buyer.

Under their New Opportunities for Tropical Pastoralism and Agriculture (NOTPA) programme, DAF was involved specifically in the development of the Tf industry in northern WA. NOTPA were successful in coordinating the development of industry through engagement with the local Indigenous community, the dissemination of information, the facilitation of network building and the coordination of stakeholder workshops. From this, the various resources of all of the industry participants were coordinated and mobilised to, in essence, establish the industry and encourage its progress. This development and coordination effort was important in the advancement of the Tf industry and the enhancement of local Indigenous people to take advantage of the opportunity presented.

As discussed, the Tf and crocodile industries have been supported significantly by research into the biology of targeted species and the sustainability of commercial harvests. Whilst some of this research has been funded privately, much of the investment has been from government. This investment has not been direct, but has most often been channelled through research institutions. The importance of
this research in demonstrating sustainability and thereby facilitating harvests has been discussed.

It should not be forgotten that IWBEs by their very nature require Indigenous people to interact with the dominant culture (i.e. western, non-Indigenous Australia) and to participate in the economic system that has been adopted by that culture (i.e. capitalism). Institutions such as DAF, DEC, and the NLC have been important intermediaries in the process of cross-cultural communication. For Djelk, their parent organisation BAC performed a similar service. These institutions enhance the capacity of IWBEs to ‘walk in both worlds’ by acting as intermediaries in the communication process.

Finally, BAC also supported the development of the Djelk crocodile egg harvests by providing access to back office functions such as accounting services, administration costs, and legal expertise. It was not possible to quantify this support financially, though it would have made a considerable contribution to reducing the operating costs of the enterprise by reducing the amount of time employees would otherwise have invested in these tasks and/or the cost of contracting similar external services. Further subsidisation of Djelk’s egg harvests has occurred whereby the financial capital of BAC has been accessed to absorb recent financial losses incurred through increased royalty costs.

BAC performed the role of entrepreneurship incubation for Djelk in that employees were able to pursue new income streams without requiring certainty that profits
would be made (immediately or ever). BAC was supportive of this entrepreneurship as they saw the potential benefit it could create in terms of new sources of income for the organisation, which could then finance expanded land management practices and local economic development in Maningrida. The crocodile egg harvesting enterprise itself was a product of a gamble to invest in an apparent opportunity to participate in the market economy. At that stage, the ranger group was not involved in commercial activities, but the potential benefits were recognised. There was no guarantee that the enterprise would be profitable, but BAC nonetheless dedicated resources (financial and other) to developing the capacity of the rangers to participate in the crocodile industry. BAC’s size and diversity minimised the risk of crocodile egg harvesting as any losses incurred (whilst undesirable and detrimental) would not have significantly affected the future of the organisation over the long-term.

GGBC has not enjoyed as much support from formal institutions, and has no affiliation to a parent organisation or representative body, as compared to the other case studies investigated. Aside from the provision of welfare payments to ensure that people have been able to maintain livelihoods outside of the mustering season and government grants for equipment, there has been very little support offered to GGBC. The reasons for this were not revealed in this research.

In reality, few Indigenous people in remote northern Australia would be able to engage in IWBE if it were not for the support of the organisations and formal institutions mentioned. The nature of remote Indigenous communities is such that
non-welfare-based livelihoods are marginal and economic opportunities constrained. As part of the effort to take advantage of a market-based economic development opportunity, the support of institutions has been vital to establishing and continuing IWBE activity. The removal of this support, even for more mature enterprises like Djelk and GGBC, would seriously threaten the existence of IWBEs in remote northern Australia.

8.9. Summary

Key factors of success for the IWBEs investigated are:

- **The resource base** – the species used by the harvesters are abundant, resilient, high yielding, have high fecundity and are relatively predictable. These traits are fundamental to ensuring the sustainability of harvests and that harvesters are able to efficiently target their activities to achieve economic viability.

- **Minimal anti-use sentiment** – unfavourable attitudes towards the consumptive use of wildlife have significant potential to influence the success or failure of IWBEs. For all of the case studies examined, there was minimal anti-use sentiment towards their consumption or commercialisation.

- **Demonstrable sustainability** – given the restrictions imposed on the use of wildlife in Australia, it was seen in both the crocodile and Tf case studies that the ability to demonstrate sustainability of proposed harvests is paramount to the ultimate success of IWBEs. The buffalo case study is an
exception in that buffalo are an invasive species and, as discussed, are less protected.

- **Markets** – though the enterprises supplied produce to distinctly different markets, there were four commonalities: all markets were pre-existing; the majority of supply has been to international markets; commodities purchased by consumers could be considered luxury items; and the enterprises leverage the unique properties of the produce, or the unique context in which it is harvested, to overcome the challenges of operating in a remote Indigenous context.

- **Access** – given the dispossession enacted as part of the colonising process in Australia, the ability of Indigenous people to access commercially valuable resources is an important aspect of IWBE success. Land tenure facilitates this, as does the sympathetic support of regulatory bodies.

- **Social capital** – bonding social capital that served to embed the enterprise within the community, and bridging social capital that formed weak ties with external network clusters, were vital to the success of the enterprises.

- **Supportive organisations and formal institutions** – in all of the cases the support of organisations and formal institutions was important for the success of the enterprises. Support came from two primary sources: public investment in welfare, skills development and training, coordination and research; and the incubation, subsidisation and accommodation of wildlife harvesting activities by a parent corporation. This support assisted in overcoming issues with livelihood continuity, regulatory complexity, knowledge and skills deficits (both about operating the enterprise and the
sustainable use of wildlife), industry development and coordination, cross-
cultural communication, and the costs of business in remote locations.
Chapter Nine: Conclusion and Recommendations

9.1. Summary

Across northern Australia, residents of the Indigenous estate have become increasingly interested in using natural resources commercially for livelihoods development. Indeed, many Indigenous Australians are already using wildlife commercially to supplement their livelihoods, expand natural resource management capacity and enhance their ability to fulfil cultural obligations to country. This thesis investigated the key factors of success for a selection of these Indigenous wildlife-based enterprises.

In Chapters One and Two, the thesis topic was introduced, the theoretical framework used to shape the research was discussed, and the methods employed to conduct fieldwork and analysis were described.

Chapters Three, Four and Five presented three case studies of successful IWBEs. Chapter Three discussed the participation of Indigenous entrepreneurs from coastal areas in the west Kimberley and the Darwin region in the emerging Tf industry. Chapter Four described the Gulin Gulin Buffalo Company, which musters wild buffalo from the tropical savanna of southern Arnhem Land. Chapter Five presented the crocodile egg harvesting conducted by Djelk Wildlife Enterprises on the floodplains of northern Arnhem Land. These case studies profiled the asset-base accessed, vulnerabilities faced, and the key factors underpinning each of the IWBEs.
Chapter Six gave an overview of a typical IWBE asset profile; details the vulnerabilities presently faced, or likely to be faced, by IWBEs; and analyses the institutional context in which IWBEs operate. This chapter could assist in the assessment of feasibility for prospective IWBEs and/or the comparative strengths and weaknesses of other currently operational IWBEs. Further, acknowledging and understanding the vulnerabilities of IWBEs on northern Australia will assist IWBEs to enhance their resilience by mitigating or minimising the impact of their eventuality. Finally, understanding the way in which institutions influence the success of IWBEs allows for reflection on possible changes to the way in which institutions engage with and shape IWBEs to optimise the productivity and efficiency of enterprises operated by Indigenous people that exploit wildlife in northern Australia.

Chapter Seven uses IWBE employees’ self-appraisal of success to offer a qualitative and inductively produced metric against which IWBE performance could be managed. This chapter also draws conclusions on the potential for IWBEs to enhance the livelihoods and wellbeing of Indigenous people in remote northern Australia and to act simultaneously as a natural resource management tool. The findings of this chapter challenge the reader to consider the use of alternative measures of success for Indigenous entrepreneurs, in that their aspirations and motivations may vary considerably from those of non-Indigenous entrepreneurs.
Finally, Chapter Eight provides a detailed analysis of the key factors underpinning the success of the IWBEs investigated. Briefly, the key factors of success for the IWBEs investigated were:

- **The resource base** – the species used by the harvesters are abundant, resilient, high yielding, have high fecundity and are relatively predictable. These traits are fundamental to ensuring the sustainability of harvests and that harvesters are able to efficiently target their activities to achieve economic viability.

- **Minimal anti-use sentiment** – unfavourable attitudes towards the consumptive use of wildlife have significant potential to influence the success or failure of IWBEs. For all of the case studies examined, there was minimal anti-use sentiment towards their consumption or commercialisation.

- **Demonstrable sustainability** – given the restrictions imposed on the use of wildlife in Australia, it was seen in both the crocodile and Tf case studies that the ability to demonstrate sustainability of proposed harvests was paramount to the ultimate success of IWBEs. The buffalo case study was an exception in that buffalo are an invasive species and, as discussed, are less ‘protected’.
• *Markets* – though the enterprises supplied produce to distinctly different markets, there were four commonalities: all markets were pre-existing; the majority of supply was to international markets; commodities purchased by consumers could be considered luxury items; and the enterprises leverage the unique properties of the produce, or the unique context in which it is harvested, to overcome the challenges of operating in a remote Indigenous context.

• *Access* – given the dispossession enacted as part of the colonising process in Australia, the ability of Indigenous people to access commercially valuable resources is an important aspect of IWBE success. Land tenure facilitates this, as does the sympathetic support of regulatory bodies.

• *Social capital* – bonding social capital that served to embed the enterprise within the community, and bridging social capital that formed weak ties with external network clusters, were vital to the success of the enterprises.

• *Supportive organisations and formal institutions* – in all of the cases the support of institutions was important for the success of the enterprises. Support came from two primary sources: public investment in welfare, skills development and training, coordination and research; and the incubation, subsidisation and accommodation of wildlife harvesting activities by a parent corporation. This support assisted in overcoming issues with livelihood continuity, regulatory complexity, knowledge and skills deficits
(both about operating the enterprise and the sustainable use of wildlife), industry development and coordination, cross-cultural communication, and the costs of business in remote locations.

The case studies investigated resemble other forms of wildlife harvesting for commercial purposes in the global commons (Berkes and Davidson-Hunt 2010). This thesis supports similar research on commercial use of wildlife and community-based natural resource management that identifies high market demand (Lichtenstein 2010), scientifically demonstrable sustainability (Gruber 2010), social capital (Peredo and Chrisman 2006; Davies et al. 2008; Gruber 2010; McIntosh and Renard 2010), formal and informal institutional support (Gruber 2010), capitalizing on local assets and skills (Peredo and Chrisman 2006; Gruber 2010; Orozco-Quintero and Davidson-Hunt 2010), rights to harvest the resource commercially (Lichtenstein 2010; McIntosh and Renard 2010; Orozco-Quintero and Davidson-Hunt 2010), and accountability to the local community (Gruber 2010; Orozco-Quintero and Davidson-Hunt 2010) as important for Indigenous wildlife-based enterprise success. Further, contrary to some of the literature (Ostrom 1990; Rose 2002), the cases investigated suggest that market-driven, community-governed natural resource management can be conducted in a sustainable manner.

This research supports the suggestion that the natural resources abundant on much of the Indigenous estate in northern Australia can be converted into income and employment through sustainable commercial use. The findings of this research can assist in designing IWBEs that are flexible and adaptable enough to capitalise on
market opportunities as they arise. Though other factors of success may be important in different locations, when using different species, or when accessing different markets, Indigenous entrepreneurs will be able to assess prospective wildlife-based enterprises against these benchmarks before making investment decisions. Ultimately, it is suggested that these results will assist IWBE operators, policy-makers and development practitioners to design and implement IWBEs that have an increased likelihood of success.

9.2. Limitations

All of the cases investigated in this research involved the consumptive use of wildlife. Enterprises that use wildlife in a non-consumptive manner (e.g. tourism) also exist in northern Australia (Higginbottom 2004), with some being owned and/or operated by Indigenous people (Muloin et al. 2001; Tremblay and Wegner 2008; Buultjens et al. 2010). However, it was realised early in this research that enterprises that employ non-consumptive uses of wildlife are significantly different in nature to those that use wildlife consumptively in terms of both the legal and policy framework and the factors underpinning success. This difference, combined with a need to limit the scope of the thesis to a manageable level, led to a decision to investigate consumptive use only.

The intentionally ‘glass-half-full’ approach to case study selection also introduces a limitation to the research findings. Whilst offering insight into the factors that underpin the success of IWBEs, this approach limits its contribution to the
understanding of the factors that inhibit IWBE success. It is not correct to assume that simply identifying the success factors for the case studies presented in this thesis will allow IWBEs in other contexts to realise success in that there may be inhibiting factors that prevent success being emulated in different contexts.

Flowing from the above observation about the limits of investigating success are the limits to the generalisability of the research findings. Whilst the differences between the cases can optimise the applicability of findings to other contexts that IWBEs may operate, this is constrained in its applicability due to the unique social, cultural, economic and environmental contexts that any given IWBE may operate in. As such, the findings with regards to factors of success presented here must be considered as general principles that may be useful for guiding IWBE development in other locations. However, it is highly likely that they will need to be adapted and modified to suit local contexts.

Finally, due primarily to the nature of the case studies investigated, there was a significant gender imbalance amongst research participants. Out of 32 interviewees, only six were female. This should not be understood as being representative of the desire of women to be involved in IWBE, but merely represents the nature of the enterprise activities investigated. It is acknowledged that it is possible that the results of this research could be different if a larger sample of female IWBE entrepreneurs/employees participated.
9.3. Recommendations

Given the findings of this research, a number of recommendations can be made that aim both to assist Indigenous people to establish and operate IWBEs, and to inform policy-makers and development practitioners about how best to support and sustain Indigenous entrepreneurs.

1. IWBEs should seek to harvest species that are sufficiently abundant and resilient to withstand commercial-scale harvesting over the long-term. Given that most IWBEs in northern Australia operate at a small-scale, it is likely that there are numerous species that meet both of these criteria. Not only does the legal and policy context require this (at present – see 6.3 for discussion of commercial rights to wildlife), but it also makes sense in terms of long-term business sustainability (i.e. appropriately managing natural capital).

2. IWBEs should generally focus on delivering new products to old markets. It is easier to obtain market share through product differentiation than to create an entirely new market.

3. The task of operating an IWBE is made easier if they supply produce/goods to luxury or niche markets. This is due to the higher costs of production associated with operating IWBEs in remote northern Australia. Luxury or niche commodities command a higher price at market and therefore
contribute significantly to the viability of the IWBEs (assuming that enough of this value is passed down the value chain).

4. Though none of the enterprises investigated used it, certification and branding may offer an opportunity to contribute to the ‘luxury’ or ‘niche’ status of the produce. Points of differentiation that could be certified are: the connection of the commodities to Indigenous people (ethical value) and Indigenous Australian culture (cultural value) and the fact that produce has been harvested from the wild (i.e. organic and free-range).

5. Each of the IWBEs investigated here participated in markets that were international. This suggests that, in terms of pursuing IWBEs, Indigenous people should not limit their horizons to local, regional or national markets, but, as suggested elsewhere (Anderson et al. 2006), can benefit from ‘opting-in’ to the global economy.

6. The burden of proof for IWBEs to demonstrate sustainability is likely to remain because:

   i) they do constrain environmentally destructive practices;
   ii) they allay any incipient anti-use sentiment towards the consumptive use of the wildlife concerned;
   iii) the amendment of legislation, policy and regulations to create more freedom for IWBEs would be time consuming, expensive and could produce unfavourable unintended consequences; and
iv) legislation and regulation is at most a minor cause of most IWBE failure.

This administrative burden does represent an opportunity cost for IWBEs in that scarce resources have to be dedicated to obtaining LUAs/permits, paying royalties and monitoring harvests. In an economic sense, this decreases efficiency and threatens viability. However, the legislation and regulations in question (see section 6.3.3.) do provide checks against overzealous exploitation of natural resources and empower Traditional Owners to negotiate the terms of economic activity on their country.

Indeed, it could be against the interests of Indigenous land owners to amend the legislation and regulation affecting the commercial harvest of wildlife in that, in some cases, it is this restriction that creates a comparative advantage and facilitates access to market share. For example, there is a quota placed on the number of crocodile eggs that can be taken from the wild and used for commercial purposes in the Northern Territory. This quota system also sets limits on how many eggs can be taken from specific regions across the Top End. Consequently, whilst ever market demand remains high, saltwater crocodile eggs will need to be sourced from the Indigenous estate.

Given the worthy and important intent of legislation and regulation that protects the environment and Traditional Owners from exploitation, and the real potential for negative unintended consequences of amendment, a conservative approach to legislative change is recommended.
Acknowledging this, and given the minimal capacity for IWBEs to shoulder the burden of proof by demonstrating harvest sustainability through rigorous research, it is recommended that government and/or industry partners invest in these activities through partnerships with wildlife harvesters that are aimed at identifying new species whose maximum sustainable yield is greater than current and/or foreseeable market demand. This targeted investment that shares the burden of proof of sustainability in a more just manner would effectively enhance the capacity of IWBEs and lead to increased success for current IWBEs. It may also contribute to the emergence of new and innovative wildlife harvesting activities.

7. Technological solutions exist that can ease the ‘burden of proof’. For example, the Djelk Wildlife Enterprises’ use of handheld devices with I-Tracker software installed (Ansell and Koenig 2011) increased the ease and efficiency of monitoring harvests, and provided substantial, reliable data for research purposes. The use of this technology, or similar options, could assist IWBEs to reduce administrative burden and to demonstrate the sustainability of their activities.

8. Similarly, the ALRA mandated negotiation and signing of LUAs, as facilitated by the NLC, needs to be conducted in as efficient a manner as possible to ensure that IWBEs do not miss out on the sometimes fleeting market opportunities presented to them.
9. To attract such investment, Indigenous people and representative bodies need to demonstrate actively their desire to conduct IWBEs actively and lobby government and the private sector for support. The benefits of IWBE need to be made clear and communicated in a language that is readily understood by decision- and policy-makers. This may require some further investigation (see 10.4. Further Research). However, as suggested elsewhere (Cunningham et al. 2009b), the formation of an IWBE association or peak body could advance this cause by facilitating the flow of communication amongst producers, coordinates marketing, research and development function, and performs an advocacy role.

10. Related to the need to demonstrate sustainability is the issue of anti-use sentiment towards the consumptive use of wildlife. It is suggested that IWBEs can avoid the problems associated with this issue by selecting species whose consumptive use is likely to have an existing social license to operate regardless of legal constraints, e.g. most plants and invasive animals. However, if sustainability can be reasonably demonstrated, the argument in favour of consumptive use is strengthened. As such, it is important that IWBE proponents work closely with scientists to identify species that are able to withstand commercial harvests over the long-term.

11. Though they appear not to have contributed directly to biodiversity conservation in northern Australia, aligning IWBEs with the work of
Indigenous natural resource management activities seems a sensible strategy for the following reasons:

i) Sharing of resources to perform complementary activities;

ii) IWBEs are dependent on appropriate land management at the ecosystem scale to maintain natural capital stocks; and

iii) IWBE employees spend considerable time on country and are often aware of the abundance and distribution of environmental threats such as weeds and feral animals. This information is particularly useful for strategic planning for the monitoring and management of natural resources. Further, wildlife harvesting activities often occur alongside other culturally obligated ‘caring for country’ activities, such as mosaic burning which is itself strongly correlated with effective biodiversity management.

12. Being socially embedded, IWBEs need to be conscious of establishing and maintaining bonding social capital. This can specifically be achieved by ensuring that harvesting activities are negotiated and conducted in accordance with local social norms and cultural practices, and that members of Traditional Owner groups are involved in planning and carrying out harvests. Further, an important mechanism for accruing and maintaining bonding social capital is the legislatively mandated LUA process. When negotiating LUAs, IWBEs should not only offer Traditional Owners a suitable royalty payment, but also make explicit the non-financial benefits of their
commercial harvests of wildlife (for example, local jobs, land management activities, etc.).

13. Bridging social capital, specifically ‘weak ties’ to industry and research/training organisations, should also be actively nurtured by IWBEs. These weak ties provide opportunity for innovation, entrepreneurship and capacity building. As such, IWBEs should not see themselves as operating within a discrete local domain, but as an intermediary between local communities and the rest of the world. As with Indigenous land and sea managers in northern Australia (Woodward 2008), IWBE proponents and their supporters would benefit from targeting investment in building leadership and networking capacity among employees to consolidate and diversify the range and extent of weak ties to external network clusters.

14. Given this intermediary role, IWBEs need to ensure that they have the human capacity to function in both Indigenous and non-Indigenous domains. This capacity can come from the human capital within the enterprise themselves, or from support structures provided by government and/or other institutions.

15. The success of IWBEs (and Indigenous enterprise more generally) needs to be assessed under a different framework to that of non-Indigenous enterprise. This research is consistent with evidence that many Indigenous people participate in market-based activity for reasons other than financial
gain. As such, it is inaccurate and unhelpful to be assessing business success based solely on financial profit. It is suggested that consultation with Indigenous entrepreneurs in specific geographic locations and/or specific industries about their motivations and aspirations can provide goals against which performance can be assessed.

9.4. Further Research

Given the complexity of defining success, a broader and deeper investigation of the aspirations and motivations of Indigenous people involved in enterprise (particularly in remote locations) is warranted (Bargh 2012; Giovannini 2012). Whilst an attempt has been made here to define success, it has been done within the relatively narrow confines of the IWBEs investigated. While it is known that there are high levels of interest in Indigenous communities to be working in IWBEs (Zander et al. 2013), a larger project investigating the aspirations and motivations of Indigenous people conducting, or considering engaging with, enterprise activities that uses a broadly representative sample and employs participatory action research would be useful. This research could assist governments and other development agencies to better target support for Indigenous entrepreneurs and in-so-doing optimise the likelihood of realising aspirations and enhanced wellbeing (Bargh 2012; Giovannini 2012).

Though this research was able to identify some of the contributions of IWBEs to livelihoods and wellbeing, further research in this regard is required. Royalty
income is an important benefit from IWBEs, but it is not well understood how this income is used by Traditional Owners (of particular interest is how much of it is re-invested in other livelihood activities, such as wildlife harvesting for subsistence or natural resource management). The health benefits of IWBE activities are worthy of further investigation, as are the benefits in terms of increased ecosystem health through non-productive (from an IWBE perspective) natural resource management activities performed by wildlife harvesters (e.g. traditional fire management, weed control, etc.). Further, it appears that IWBEs can facilitate the transfer of traditional ecological knowledge and other culturally important information/practice. Research in this area could demonstrate the full non-market value of IWBEs and in-so-doing provide a stronger justification for support for IWBEs.

As mentioned previously, research that demonstrates the sustainability of proposed and/or current IWBE harvests has important implications for the social license under which they operate. Some research has been done in this regard (Whitehead et al. 2003b, 2006; Griffiths et al. 2003, 2005; Gorman et al. 2006, 2008), but, as identified in Chapter Nine, under the current political, legislative and regulatory regime in which IWBEs operate, it is vital to their on-going success that they can demonstrate sustainability of their harvests. Consequently, as most IWBEs have very limited resources for research, monitoring and evaluation, they will need to collaborate with external agencies to demonstrate sustainability and justify their existence.
A key finding from this research was that all of the enterprises engaged in international markets that supplied luxury or niche goods to consumers. Research could be conducted to identify similar market opportunities that can be filled by the sustainable use of Australian wildlife that is endemic to the Indigenous estate. Though operating in distinctly different disciplines, this market research could usefully be linked to the research concerned with demonstrating the sustainability of the commercial consumptive use of targeted species.

As discussed in Chapter Six, a rich set of data on bonding social capital linking IWBEs (and other enterprises) may exist in the form of LUAs signed between Traditional Owners and enterprise proponents. Though they do not capture the bonding social capital between the enterprise and non-Traditional Owners and the bridging social capital (notably, weak ties), it is proposed that LUAs are significantly representative of the social capital enjoyed by enterprises with the local community. Whilst the decision to grant an LUA to a proponent involves more than just relationships and is open to considerable administrative discretion from the NLC, analysing trends in the LUA negotiation and approval process (from Traditional Owner, proponent and NLC perspectives) could offer further insight into Indigenous enterprise activity, the role of social capital in local economic and livelihood development, and conditions for success.

A related, though more in-depth, analysis of the social embeddedness could also be pursued through an ethnographic investigation of the bonding social capital accessed and accrued by IWBEs (and other enterprise types) and how this
influences the success. There is a large literature on the role of social embeddedness in economic development (e.g. Granovetter 1973, 2005; Curry 1999, 2003, 2005) on which this research could build.

The role of weak ties in the development of Indigenous enterprises is also worth further investigation. It has been identified elsewhere that it is these relationships that are the richest source of entrepreneurship and innovation (Granovetter 1973, 2005; Curry 1999, 2003, 2005). However, the role of weak ties in entrepreneurship in the Indigenous Australian context has not been sufficiently investigated, especially the effect of remoteness on potential entrepreneurs’ abilities to establish sufficient stocks of bridging capital.

### 9.5. Future Prospects

A new era of Indigenous self-determination is emerging in northern Australia. Many battles over land ownership and access to resources have been won, with an expansive Indigenous estate now secured and continuing to grow (Altman et al. 2007). Whilst numerous challenges in terms of rights to land and resources remain (e.g. Jackson 2007; O’Donnell 2011), many Indigenous Australians are looking to use their assets (particularly natural and human capital) to realise independent and Indigenous sustainable livelihoods.

Whether IWBEs become common tools for economic development and natural resource management in northern Australia is in the hands of Indigenous people.
Though an academic analysis can point out the benefits realised by some entrepreneurs already engaged in IWBE and the way in which they have been achieved, the decision as to whether this is an appropriate and desirable pursuit for Indigenous people in northern Australia can only be decided by entrepreneurs. Practitioners, policy-makers and researchers can support Indigenous people in these pursuits, but should not set the agenda.

If IWBEs are to be further pursued in northern Australia, this thesis will help guide their development by: i) assisting current and prospective IWBEs to plan strategically for the future; ii) enhancing the capacity of government and non-government support agencies to invest in IWBE development activities (Anderson et al. 2004; Henerekson and Roine 2006; Nikolakis 2008); and iii) provide fruitful insight into the IWBE phenomenon in northern Australia for the purposes of future research. However, as suggested by Howitt (2012, p.827), researchers “…need to document and re-present the stories of co-existence and the institutions that we mobilize to secure outcomes that foster sustainable and viable social and environmental justice for Indigenous Australians”. It is hoped that this research contributes to this project.

IWBEs are a potential source of livelihood income for those living in the northern Indigenous estate. Whilst it is unlikely that any individual or family will become wealthy from the commercial use of a single wildlife species, the income generated can be an important complementary source of income that, as a component in a suite of livelihood activities (which may include the seasonal harvest of other
species of wildlife), could be used by Indigenous people to enhance their wellbeing. Further, as described recently by numerous studies (Dana 1995; Anderson et al. 2004; 2006; Foley 2003; 2006; 2008; Banerjee and Tedmanson 2010; Davies and Maru 2010; McRae-Williams and Gerritsen 2010; Peredo and McLean 2010; Holcombe et al. 2011; Bargh 2012; Giovannini 2012; Pengelly and Davidson-Hunt 2012), Indigenous peoples usually do business differently to the entrepreneurs in the dominant cultures that surround them. There is usually much less of a focus on improving wellbeing through the benefits of enhanced financial and material wealth, but through strengthened relationships, practiced culture, and increased health of the local environment. This must be acknowledged as a legitimate way of doing business, supported by policymakers and investors as such, and indeed, as Bargh (2012) suggests, learned from as innovative and progressive sustainable livelihood development for the 21st Century.

Though they may not be focused solely on the production of economic and material wealth, and may not be structured and operated in the same manner as enterprises in the dominant culture, IWBEs and the entrepreneurs behind them are worthy of increased investment and support due to the potential gains in wellbeing for remote dwelling Indigenous people in northern Australia. If Australians are honest about their desire to apologise to Indigenous people for the devastating effects of colonisation, rhetoric is not enough. As Howitt (2012, p.827) suggests:

> In such political vision, there is no sense of a politics of belonging; and yet that is precisely what we need to move towards – indeed in our looming crises of sustainability... suggests it is imperative. The political imaginaries constructed by
the new Australian Government, which framed its apology... for the devastating impacts of the genocidal policies of governments and mainstream institutions that produced the stolen generations as one of its first political shifts to mark a new national direction, must encompass a lot more than simply tolerance of diversity.

In that IWBEs have been identified by some Indigenous Australians as a preferable livelihood strategy, and have a demonstrable track record of enhancing wellbeing (albeit modest), the case for increased investment (financial, political and institutional) is impossible to ignore. It is highly likely that IWBEs will be an important component of the suite of sustainable livelihoods that Indigenous people are developing in their effort to secure and revitalise the Indigenous Australian estate.
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Appendix A – Research Participants

<table>
<thead>
<tr>
<th>Participant no.</th>
<th>Description</th>
<th>Age</th>
<th>Interest in IWBEs</th>
<th>Location</th>
</tr>
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<tbody>
<tr>
<td>P1</td>
<td>Indigenous male</td>
<td>20-30</td>
<td>Wildlife harvester</td>
<td>Maningrida</td>
</tr>
<tr>
<td>P2</td>
<td>Indigenous male</td>
<td>20-30</td>
<td>Wildlife harvester</td>
<td>Maningrida</td>
</tr>
<tr>
<td>P3</td>
<td>Indigenous male</td>
<td>20-30</td>
<td>Wildlife harvester</td>
<td>Maningrida</td>
</tr>
<tr>
<td>P4</td>
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<td>30-40</td>
<td>Wildlife harvester</td>
<td>Maningrida</td>
</tr>
<tr>
<td>P5</td>
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<td>30-40</td>
<td>Wildlife harvester</td>
<td>Maningrida</td>
</tr>
<tr>
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<td>20-30</td>
<td>Wildlife harvester</td>
<td>Maningrida</td>
</tr>
<tr>
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<td>20-30</td>
<td>Wildlife harvester</td>
<td>Maningrida</td>
</tr>
<tr>
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<td>20-30</td>
<td>Wildlife harvester</td>
<td>Maningrida</td>
</tr>
<tr>
<td>P9</td>
<td>Non-indigenous male</td>
<td>30-40</td>
<td>Current manager of wildlife harvesting enterprise</td>
<td>Maningrida</td>
</tr>
<tr>
<td>P10</td>
<td>Non-indigenous male</td>
<td>50-60</td>
<td>Former CEO of Aboriginal corporation that harvests wildlife commercially</td>
<td>Darwin</td>
</tr>
<tr>
<td>P11</td>
<td>Non-indigenous male</td>
<td>40-50</td>
<td>Former manager of wildlife harvesting enterprise</td>
<td>Darwin</td>
</tr>
<tr>
<td>P12</td>
<td>Non-indigenous male</td>
<td>60-70</td>
<td>Long-term buyer of wildlife produce from an Indigenous wildlife harvesting enterprise and wildlife harvesting expert</td>
<td>Darwin</td>
</tr>
<tr>
<td>P13</td>
<td>Indigenous male</td>
<td>40-50</td>
<td>Wildlife harvester</td>
<td>Bulman</td>
</tr>
<tr>
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<td>20-30</td>
<td>Wildlife harvester</td>
<td>Bulman</td>
</tr>
<tr>
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<td>Bulman</td>
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<td>Wildlife harvester</td>
<td>Bulman</td>
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<td>Bulman</td>
</tr>
<tr>
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<td>Indigenous female</td>
<td>30-40</td>
<td>Wildlife harvester</td>
<td>Bulman</td>
</tr>
<tr>
<td>P21</td>
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<td>40-50</td>
<td>Current manager of wildlife harvesting enterprise</td>
<td>Bulman</td>
</tr>
<tr>
<td>P22</td>
<td>Indigenous male</td>
<td>20-30</td>
<td>Ranger</td>
<td>Bulman</td>
</tr>
<tr>
<td>P23</td>
<td>Indigenous male</td>
<td>20-30</td>
<td>Ranger</td>
<td>Bulman</td>
</tr>
<tr>
<td>P24</td>
<td>Indigenous male</td>
<td>20-30</td>
<td>Ranger</td>
<td>Bulman</td>
</tr>
<tr>
<td>P25</td>
<td>Indigenous female</td>
<td>20-30</td>
<td>Ranger</td>
<td>Bulman</td>
</tr>
<tr>
<td>P26</td>
<td>Indigenous female</td>
<td>20-30</td>
<td>Ranger</td>
<td>Bulman</td>
</tr>
<tr>
<td>Page</td>
<td>Gender</td>
<td>Age Range</td>
<td>Occupation</td>
<td>Location</td>
</tr>
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<td>------</td>
<td>----------------------</td>
<td>-----------</td>
<td>-----------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>P27</td>
<td>Non-indigenous male</td>
<td>20-30</td>
<td>Ranger Coordinator</td>
<td>Bulman</td>
</tr>
<tr>
<td>P28</td>
<td>Indigenous male</td>
<td>50-60</td>
<td>Wildlife harvester</td>
<td>Dampier Peninsula</td>
</tr>
<tr>
<td>P29</td>
<td>Indigenous female</td>
<td>50-60</td>
<td>Wildlife harvester</td>
<td>Dampier Peninsula</td>
</tr>
<tr>
<td>P30</td>
<td>Indigenous female</td>
<td>40-50</td>
<td>Wildlife harvester</td>
<td>Broome</td>
</tr>
<tr>
<td>P31</td>
<td>Indigenous female</td>
<td>50-60</td>
<td>Wildlife harvester</td>
<td>Broome</td>
</tr>
<tr>
<td>P32</td>
<td>Indigenous male</td>
<td>30-40</td>
<td>Wildlife harvester</td>
<td>Lombadina</td>
</tr>
<tr>
<td>P33</td>
<td>Indigenous male</td>
<td>50-60</td>
<td>Wildlife harvester</td>
<td>Broome</td>
</tr>
<tr>
<td>P34</td>
<td>Indigenous female</td>
<td>40-50</td>
<td>Wildlife harvester</td>
<td>Lombadina</td>
</tr>
<tr>
<td>P35</td>
<td>Indigenous female</td>
<td>30-40</td>
<td>Wildlife harvester</td>
<td>Darwin</td>
</tr>
<tr>
<td>P36</td>
<td>Indigenous female</td>
<td>20-30</td>
<td>Wildlife harvester</td>
<td>Darwin</td>
</tr>
<tr>
<td>P37</td>
<td>Indigenous female</td>
<td>20-30</td>
<td>Wildlife harvester</td>
<td>Darwin</td>
</tr>
<tr>
<td>P38</td>
<td>Indigenous male</td>
<td>50-60</td>
<td>Extension officer working with wildlife harvesters</td>
<td>Broome</td>
</tr>
<tr>
<td>P39</td>
<td>Non-indigenous male</td>
<td>40-50</td>
<td>Extension officer working with wildlife harvesters</td>
<td>Broome</td>
</tr>
<tr>
<td>P40</td>
<td>Non-indigenous male</td>
<td>50-60</td>
<td>Extension officer working with wildlife harvesters</td>
<td>Broome</td>
</tr>
<tr>
<td>P41</td>
<td>Non-indigenous female</td>
<td>40-50</td>
<td>Enterprise development officer</td>
<td>Broome</td>
</tr>
<tr>
<td>P42</td>
<td>Non-indigenous male</td>
<td>40-50</td>
<td>Training provider for wildlife harvesters</td>
<td>Broome</td>
</tr>
<tr>
<td>P43</td>
<td>Non-indigenous male</td>
<td>50-60</td>
<td>Buyer of wildlife produce</td>
<td>Broome</td>
</tr>
<tr>
<td>P44</td>
<td>Non-indigenous male</td>
<td>50-60</td>
<td>Buyer of wildlife produce</td>
<td>Broome</td>
</tr>
<tr>
<td>P45</td>
<td>Non-indigenous male</td>
<td>40-50</td>
<td>Training provider and enterprise facilitator for wildlife harvesters</td>
<td>Darwin</td>
</tr>
</tbody>
</table>
Appendix B – Personal Communications

There are numerous references made throughout the thesis to personal communications between the author and participants in the research. All personal communications were obtained through interviews conducted with the relevant experts. Details of each of these participants are listed below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Relationship to IWBEs</th>
<th>Location of interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Val Sibosado</td>
<td><em>Tf.</em> Producer and Traditional Owner in the West Kimberley.</td>
<td>Broome</td>
</tr>
<tr>
<td>Julian Gorman</td>
<td>Wildlife Enterprise Officer, Northern Land Council.</td>
<td>Darwin</td>
</tr>
<tr>
<td>Kim Courtenay</td>
<td>TAFE lecturer, Broome. Catalyst for much gubinge research and development.</td>
<td>Broome</td>
</tr>
<tr>
<td>Dr. Clive McMahon</td>
<td>Senior Research Fellow, Wildlife Management, Charles Darwin University.</td>
<td>Darwin</td>
</tr>
<tr>
<td>Ian Munro</td>
<td>Former CEO of Bawinanga Aboriginal Corporation, Maningrida.</td>
<td>Darwin</td>
</tr>
<tr>
<td>Markus Rathsmann</td>
<td>Coordinator of Gulin Gulin Buffalo Company and Pastoralist.</td>
<td>Adelaide River</td>
</tr>
<tr>
<td>Bruno Dann</td>
<td><em>Tf.</em> Producer and Traditional Owner in the West Kimberley.</td>
<td>Broome</td>
</tr>
<tr>
<td>Ben Corey</td>
<td>Coordinator of Djelk Wildlife Enterprise, Maningrida.</td>
<td>Maningrida</td>
</tr>
<tr>
<td>Dr. Peter Whitehead</td>
<td>Former Director of the Key Centre for Tropical Wildlife Management, Consultant to NAILSMA, expert in Indigenous livelihoods and NRM in northern Australia.</td>
<td>Darwin</td>
</tr>
</tbody>
</table>
### Appendix C – Fieldwork Schedule

<table>
<thead>
<tr>
<th>No.</th>
<th>Dates</th>
<th>Location</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11-15 November 2008</td>
<td>Broome</td>
<td>● Participated in the <em>Terminalia ferdinandiana Industry Workshop</em> organised by the Western Australian Department of Agriculture and Food.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Built relationships with potential research participants, meet with key stakeholders and obtain an overview of the industry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Organised return visits to conduct field trips and interviews with industry participants.</td>
</tr>
<tr>
<td>2</td>
<td>18-24 February 2009</td>
<td>Broome, Beagle Bay, Chilli Creek,</td>
<td>● Field trips to plum picking locations across the west coast and northern tip of the Dampier Peninsula.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lombadina, Middle Cove, One Arm</td>
<td>● Spent time on the blocks of some of the producers. Investigated equipment used. Did not pick plums as timing was slightly off. Able to visit numerous groves of <em>Tf</em>.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Point</td>
<td>● Conducted interviews in Lombadina and Broome.</td>
</tr>
<tr>
<td>3</td>
<td>24-30 August 2009</td>
<td>Broome</td>
<td>● Participated in the <em>The ARC TK IP Project Indigenous Economic Development Workshop</em> (27-28) to discuss issues to do with intellectual property and Indigenous knowledge, and options for using branding in products.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Conducted numerous interviews with key industry participants around Broome.</td>
</tr>
<tr>
<td>4</td>
<td>2-9 August 2009</td>
<td>Bulman</td>
<td>● Participate in buffalo mustering in southern Arnhem Land</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Discuss proposed research and scout feasibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Plan subsequent field trips and methods</td>
</tr>
<tr>
<td>5</td>
<td>4-12 September 2009</td>
<td>Bulman</td>
<td>● Participatory observation while mustering buffalo in southern Arnhem Land</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Interviews employees at night after mustering</td>
</tr>
<tr>
<td>6</td>
<td>2-5 November</td>
<td>Bulman</td>
<td>● Conduct interviews with the Mimal</td>
</tr>
<tr>
<td>Year</td>
<td>Date</td>
<td>Location</td>
<td>Activities</td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>----------</td>
<td>------------</td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td>Rangers about buffalo and GGBC</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Re-visit GGBC employees when coordinator not present</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Deliver a DVD of mustering activities to the employees of GGBC</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>15-19 June 2010</td>
<td>Maningrida</td>
<td>• Discuss potential research partnership and, if approved, commence gathering data about crocodile egg harvesting activities of the Djelk Wildlife Enterprise</td>
</tr>
<tr>
<td>8</td>
<td>9-13 August 2010</td>
<td>Maningrida</td>
<td>• Conduct interviews with employees of the Djelk Wildlife Centre/Djelk Rangers whilst on a feral animal culling exercise with the rangers on the Arnhem Plateau.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Gather hardcopy records on enterprise activities (where available).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Analyse data alongside Djelk/BAC employees</td>
</tr>
<tr>
<td>9</td>
<td>10-15 January 2011</td>
<td>Maningrida</td>
<td>• Participatory observation of harvest, processing and incubation of crocodile eggs from Liverpool River area.</td>
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<td>• Follow-up informal interviews with Djelk staff to triangulate data.</td>
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