Contesting Death: Conservation, Heritage and Pig Killing in Far North Queensland, Australia

CARLA MEURK

UQ Centre for Clinical Research,
The University of Queensland
Building 71/918, Royal Brisbane and Women's Hospital Campus
Herston, QLD, 4029 Australia
Email: c.meurk@uq.edu.au

ABSTRACT

What constitutes legitimate killing? How do our concerns over animal death fit with respect to our broader beliefs about the conservation or destruction of the 'natural' world? What does this mean for how we think about our own existence? This ethnography concerns itself with such questions as they have played out in a series of entangled conflicts with, and over, the non-human world; specifically, historically rooted tensions over the inception of the Wet Tropics World Heritage Area in Queensland Australia and contemporary arguments over the 'hunting' and 'management' of feral pigs (*Sus scrofa*), an 'exotic' pest species. Similarities evident in the politics of natural heritage and animal death illuminate two distinct contemporary strategies for confronting existential struggles over life, death and destruction.

KEYWORDS

human–animal relationships, life and death, heritage, technologies, hunting, environmental conflict, endogenous and exogenous identities, vital politics

INTRODUCTION

What constitutes legitimate killing? How do our concerns over animal death fit with respect to our broader beliefs about the conservation or destruction of the 'natural' world? What does this mean for how we think about our own existence?

Nikolas Rose (2007) characterises the contemporary era in terms of a 'politics of life itself' – a time typified by an orientation towards 'optimization' and

Environmental Values **24** (2015): 79–104.
 doi: 10.3197/096327115X14183182353827
Submitted 25 August 2013; accepted 29 September 2014

where the presupposed inevitability of human mortality is increasingly brought under the control of human ingenuity (see also Jalland 2006). While Rose himself writes about biomedicine, his insight may be helpful in understanding contemporary human–environment relationships broadly and human–animal relationships, and hunting, in particular. Take, for instance, the conservationist slogan, 'extinction is forever'. It gains much of its moral traction from eliciting a negative emotional response to the idea of permanent loss of species from the global ecology. At an individual, rather than species, level the killing of animals is increasingly contested, requiring ever more stringent moral justifications for such acts to take place (McLeod 2007). This is particularly evident in the contemporary politics of hunting, where hunters who kill animals find themselves subject to moral suspicion, especially if they expressly hunt for 'pleasure' or trophies rather than for subsistence purposes (Boglioli 2009, Dizard 1994, Marvin 2000, McLeod, 2007).

In response to this moral opprobrium, a number of explanations have been given as to what underpins different ethical beliefs regarding hunting as a means of killing. Some scholars have noted that the distinction between those who support hunting as a means of killing animals versus those who are opposed aligns with beliefs that humans are interconnected with nature versus those which consider them separate (Boglioli 2009, Dizard 1994, Robbins 2006). Others consider that views both for and against hunting draw on notions of human–animal similarity. Carmen McLeod (2007: 165), for instance, suggests that '[a]nimal rights advocates construct the view that animals are like humans (with "cultural" human rights), whereas hunters construct that humans are like animals (embedded in natural life-cycles and food chains)'.

These dialogues over the meanings associated with killing animals index the issue of legitimate killing to questions about intimacy with and detachment from the natural world. The value of peacefulness and stigma of violence have been important undercurrents of such debates. Tim Ingold (1994: 15) has depicted persons within hunter-gatherer societies as having a 'basically nonviolent' relationship with their quarry, with the relationships between humans and animals existing within an intimate broader relationship between these humans and their environment. John Knight (2012) has recently argued against this thesis, proposing instead that the relationship between hunter and animal is necessarily an anonymous rather than intimate one. Knight sees the kind of intimate relationship depicted by Ingold as existing in human relationships with domesticated animals but not hunted ones (Knight 2012). Knight (2005: 4, 2012) suggests that modern hunters hold a 'population-centred' perspective on animals which aids the anonymity of, and hunters' detachment from, the hunted animal. Contrary to Ingold's (1993) distinction between the dwelling hunter-gatherer and the globist environmentalist, Knight aligns hunters with 'wildlife managers' and 'conservation biologists'.

Although taking opposite positions on whether hunting is a form of human–animal intimacy, Ingold's and Knight's writing on hunting conveys an important similarity. In positioning themselves in respect to whether hunting is violent or non-violent, both scholars' depictions uphold the value of peacefulness in these engagements. While Ingold's animal killing is constructed as 'non-violent', Knight assumes that intimate relationships are genial, neglecting that intimate relationships can include those which are strained and possibly confrontational. In his critique of Knight (2012), David Anderson highlights that intimacy does not entail the absence of conflict, and it is not necessarily non-violent. Thus, while conveying different ethical stances on hunting, Knight and Ingold potentially both provide examples of the kind of vital politics Rose (2007) depicts as framing contemporary biopolitics, in which the fact of death is to be minimised and, where it persists, it must be constructed in a way that, at least discursively, minimises the bloodshed involved.

My multi-sited ethnographic fieldwork between 2006 and 2010 (Marcus 1995, Trigger, Forsey and Meurk 2012) placed me in a unique position to examine the complex entwinements of intimacy, detachment, peacefulness, conflict, violence, killing and death. Death and destruction existed on both sides of the conflict I sought to examine: what was to be done about feral pigs (*Sus scrofa*) in Far North Queensland. Death and destruction were inevitable within the framing of this debate, as, generally speaking, no-one argued that feral pigs should not be killed. Rather, it was the contested construction of killing, and of destruction more generally, that emerged as an important theme. To examine this theme, I begin by introducing the space, history and politics of the Wet Tropics World Heritage Area, the geographic focus of my study. I then introduce the human and non-human actors that best illuminate aspects of the issues I seek to discuss. Finally, I provide descriptions of the socio-environmental relations enacted through three dominant forms of pig killing: live-catch pig trapping, hunting and poison baiting.

AUSTRALIA'S WET TROPICS WORLD HERITAGE AREA: SPACE, HISTORY AND POLITICS

The Wet Tropics of Far North Queensland is an ecologically defined 'bioregion' that covers a narrow strip of land approximately 500 kilometres long and fifty kilometres wide, stretching along the coast of north Queensland between the cities of Townsville in the south and Cooktown in the north (Figure 1). The ethnography presented is based on fieldwork centred in Mossman, about one hour's drive north of the city of Cairns (pop. 120,000) and home to approximately 1,900 residents. This landscape is dominated by sugarcane farms with limited fruit growing operations, including banana farms, interspersed throughout. As one drives northwards from Mossman to the Daintree River,

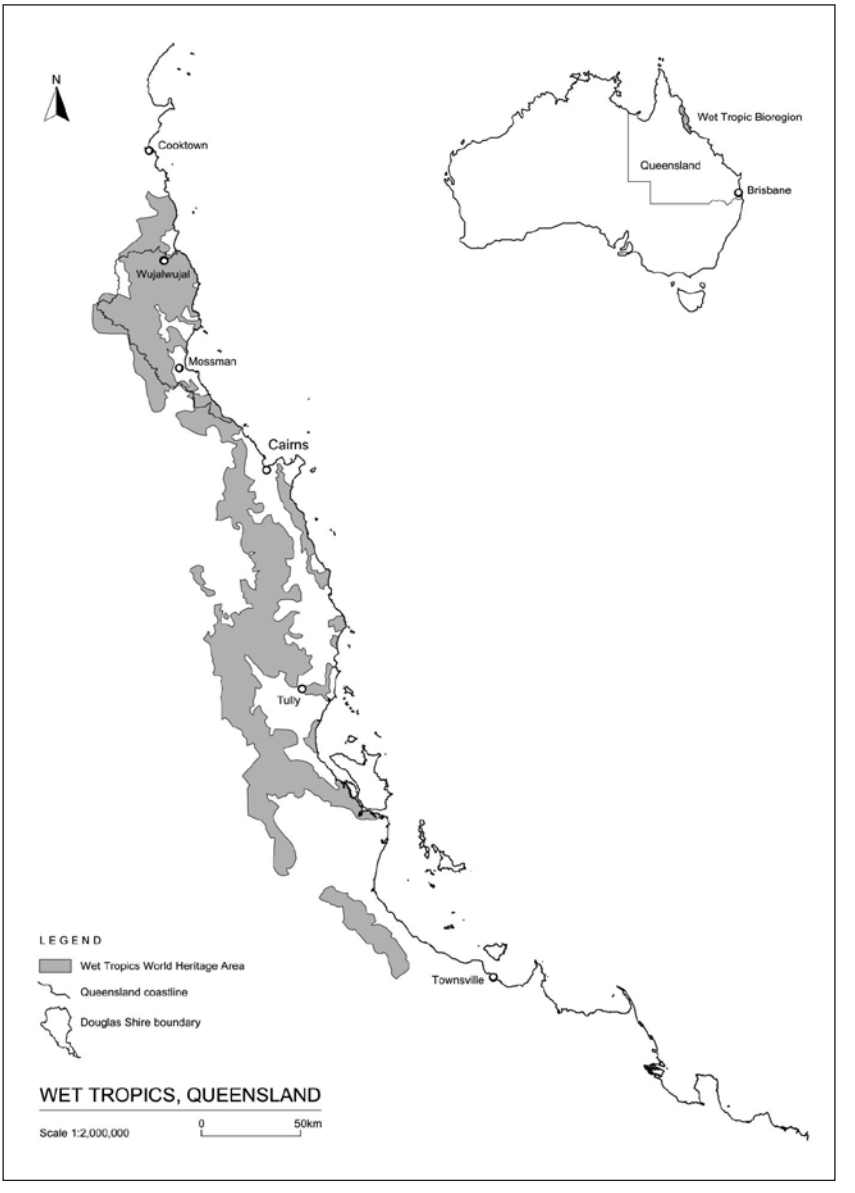

Figure 1. Wet Tropics of Far North Queensland including Wet Tropics World Heritage Area.

sugarcane fields give way to properties grazed by Brahman cattle. Rainforest, restricted to the hilly fringes of the sugarcane paddocks further south, shrouds the sides of the road and small beachside settlements pepper the coast.

The Daintree River forms an important socio-spatial boundary within this region. Settlements north of the river can only be accessed from the south on the Daintree Ferry, which operates from 6:00 a.m. to midnight, seven days per week. Once across the river, one is immersed in a dense rainforest environment. A narrow two-way sealed road snakes along the coast past the settlement of Cow Bay (pop. 300) to Cape Tribulation (pop. 100). This 35 kilometre stretch of road takes approximately one hour to cover by car before it turns into an unsealed, four-wheel drive only track connecting Cape Tribulation with the Aboriginal settlement of Wujal Wujal. In contrast to the southern part of the region, lack of mains electricity and restricted access have strictly limited development in this northern enclave of wet tropical rainforest. Logging, cattle grazing and various horticultural activities have been attempted north of the river, with limited success, although logging persisted through until the 1970s (Willis Burden 2008: xiii). Primary industries are restricted to a few fruit growing operations, a heliconia (flower) farm and a small number of cattle grazing properties concentrated along the north bank of the Daintree River – the only area that can access mains electricity. Instead, eco-resorts, ecotourism operations and NGO-owned private reserves are prevalent in this area, terminating a few kilometres north of the Bloomfield Track. It is this part of the region, north of the river, which has been the focus of historical and contemporary controversies.

Aforementioned constraints on development north of the river had restricted the clearing of tropical lowland rainforest that had occurred elsewhere. While early classifications described this biota as a recent arrival to the Australian continent, related to rainforest in India and South-East Asia (Webb 1959), it was reassessed in the late 1970s as growing acceptance of the theory of continental drift and then plate tectonics instigated revisions of Australia's natural history. This new understanding of the Australian continent's bio-geographical relationships with other landmasses as part of the supercontinent Gondwana, coupled with discoveries of key floristic species in the area, saw the Daintree rainforest re-appraised as a refugium for several 'ancient' species (Webb and Tracey 1981, Sanderson 2008).

In 1978, property developers bought land within the Daintree rainforest, intent on creating a rural subdivision (Willis Burden 2008: xiii–xiv). Small rainforest blocks were created and sold in the early 1980s, supported by a wider Queensland Government initiative aimed at 'opening up' Far North Queensland for development by providing increased infrastructure, including roads and electricity, to the area. These development activities drew opposition from environmental activists, leading to protests that garnered extensive national and international media attention (*Four Corners* 1984).

Activists moved to the region from Australia's southern states – some permanently – and instigated a bid for the area to be inscribed as a UNESCO listed world heritage site because of the region's scientific significance as 'a storehouse of knowledge' (Keto and Scott 1986: 53). International scientists offered their support, with one opining that the importance of protecting this lowland forest remnant was linked to the fact that 'no complete and comprehensive study of the entire biota has been undertaken … If protection is denied now … numerous taxa may become extinct before they are discovered' (Schuster 1986: 159, 161). Activists' nomination was successful and the Wet Tropics World Heritage Area (WTWHA) was inscribed as a World Heritage site in 1988. Subsequent changes in local government halted the development agenda and initiatives were instituted to repurchase the subdivided freehold land for state and NGO owned conservation estate – an 'undevelopment' agenda.

Alongside contemporaneous environmental activism that prevented the development of the Franklin Dam in the Tasmanian 'wilderness' (Hutton and Connors 1999), this protection of the Daintree constituted an early 'success' for the Australian environmental movement in its quest for nature conservation over economic development. Concern with the extinction of the Daintree, now understood as an evolutionarily ancient rainforest, and a valuation of nature on the basis of the transcendental quality of 'species', was persuasive; the rainforest was endowed with a valuable 'lifespan' according to the evolutionary age of the collection of species it contained.

However, in both the Franklin and the Daintree cases, environmentalists' short-term 'success' has caused long-term divisions and, in the Daintree, a counter 'pro-development' discourse persists (McDonald and Lane 2000). During the activism of the early 1980s, then Minister for the Environment in the Queensland Government, Martin Tenni, expressed disdain for environmental activists, denigrating 'academics' in contrast to 'sensible, thinking Australian people and tourists'. Tenni argued:

> You can't have all academics, you've got to have the ordinary bloke that can wander the scrub, that knows the country, that can cut a stick o' [sugar] cane or dig a hole in the ground and ah, so, I don't listen to just academics. I listen to all sorts of people, and I've got all sorts of people in the electorate of Barron River (Martin Tenni, *Four Corners,* 1984).

Although no longer the dominant discourse, as it was then, this rhetoric continues to resonate through a 'local', anti-scientific, counter discourse that rejects the scientific valuation of the area's environment. But, this discourse does not reject the idea that certain forms of nature have intrinsic value. In place of a concern with species extinction, as espoused by environmentalists, the local discourse asserts an immanent valuation, one in which the forest is valued in terms of the age of individual specimens i.e. the extent of old growth (cf. Peace 1996, 1999; Satterfield 2002). Under this view, the disputed territory (much of which has been cleared in the recent past) is not ancient, as scientists argue,

but quite the opposite: 'about the newest [rainforest] in the world, with no massive curtain figs, ancient cowrie pines or giant red cedars, as you will find [elsewhere]'. (Reichardt 2007)

These disputes over land clearing versus conservation and world heritage listing provide the broader context to the region's existential politics. Machinations over what is to be done with feral pigs (*Sus scrofa*) offer another. Embedded within the region's ongoing environmental politics of the WTWHA, the 'pig problem' is unusual in that it is an environmental issue around which there is an apparent consensus of belief: 'pigs seem to be the one thing that most people in Daintree can agree on, that they are a problem' [Interview Manager 1, 2008]. In spite of this unusual agreement, however, those in the region have been unable to agree on a long-term, sustainable, management plan. To the contrary, pigs are inculcated as an anchor around which historical disputes over rescinded development rights on subdivided rainforest properties, that have gone along with the region's 'undevelopment' agenda, may be advanced:

> People who still have their development rights are entitled to clear a miserly 400sq m of their freehold land … There is more damage by feral pigs … to habitat and native animals. (O'Doherty 2008)

INTRODUCING THE ACTORS

Before turning to the region's pig killing politics, a description of the actors (human and non-human) in this ethnography is in order. Methodologically, my approach in this study was to identify and follow a number of key 'issues of debate' (Henry 1999) that were articulated by research participants in discussions about feral pig management. The question of what constitutes legitimate killing was one issue of debate I examined. I conceived of my study as a form of situational analysis, an approach that is focused on social processes and the situational negotiation and use of cultural norms (Van Velson 1967). Each 'issue of debate' presented itself as a situation to be followed, described and contextualised. Dependent on the particular issue, however, this pursuit required me to engage with a variety of actors, organisations, technologies, policy documents and animals that sat along slightly different spatialised trajectories (Latour 1996). In fact, as my study progressed, the field began to 'cling to me' as my circulation in the debates I followed made me a highly politicised actor (I describe this matter in detail in Trigger, Forsey and Meurk 2012. See also Hamilton 2009). The resultant ethnography became, although this seems somewhat paradoxical at first glance, an example of a multi-sited ethnography as well as situational analysis (Marcus 1995).

An overview of the human actors portrayed here helps emphasise how conflict over feral pig control technologies parallels the pre-existing environmental

politics of the Wet Tropics, including the place- and non-place-based topography of both. The actors I represent here are drawn from what is, on the one hand, a very small sample of *in situ* actors relevant to the debates I describe but, on the other hand, inordinately large samples in terms of the broader interest groups who pervade these issues (e.g. 'environmentalists', 'hunters', 'animal rights advocates' etc.). Consequently, in some cases, the views I describe are an effective census of views. For example, there was only one government appointed pig trapper employed in the Daintree region during the period of my research. Samples of natural resource managers and ecologists in this region are also fairly small. It is not possible to quantify these numbers with any kind of exactness because the relevance of these actors is not determined by their location of residence and work but rather varies depending on the specific issue that one is focussed on. In what follows I represent two kinds of positions: (1) a fairly exhaustive representation of the views of those most close to the debate *in situ* and (2) a representation of texts that reflect a broader (Australian) scientific, animal welfare and natural resource management 'wisdom'. In the cases where I represent the views of individuals in respect to a larger group within the region, e.g. pig hunters, the excerpts I present have been selected for their representativeness, with respect to the issue of debate I discuss here.

The human actors are as follows. The area's pig trapping contractor (Trapper) was born in Western Australia and has settled with his family in the study region. Trapper is also a recreational pig hunter. Managers 1 and 2 are natural resource managers for local and state governments. Both managers are originally from other parts of Australia and moved and settled with their families in this region. The ecological scientist, Ecologist, moved to the region to conduct research into pig ecology and left following his fieldwork. Hunters 1–3 are 'locals' – residents with multi-generational ties to the area. Hunter 4 is from another part of Australia and has now settled in the region. My broader study included interviews with two female managers; however, my study participants were overwhelmingly male. All actors in this narrative are male.

This précis of participants highlights the extent of migration to this region. While historical disputes initially followed a 'local' versus 'outsiders' divide, such a classification resonated with, but did not accurately describe, the division I witnessed (cf. Dunk 1994). Ultimately, I understood my interlocutors in terms of the development of two oppositional identities that I termed endogenous and exogenous identities (Meurk 2011). These classifications depicted socio-environmental identities viewed as processes. These identities were influenced by, but not isomorphic to, differences in location or duration of residence as might underpin the determination of a 'local' versus 'non-local' status. They were also influenced by preferences for 'scientific' versus 'lay' knowledge. I observed each type of identity (endogenous and exogenous) as being reproduced through relations of similarity with a cluster of different but

overlapping identities as much as through relations of difference to opposing identities (Meurk 2011).

CLASSIFYING MODES OF HUMAN–ENVIRONMENT ENGAGEMENT

I characterise a dwelling, endogenous, identity as 'growing from within' (OED Online 2010) a set of truncated networked relations. This identity is contrasted with one that is conceptually detached from their networked relations – an exogenous identity – that grows 'by additions on the outside' (OED Online 2010). I acknowledge Ingold (1993) for introducing the nomenclature of endogenous and exogenous modes of action, although he does not identify these concepts as identities. For Ingold (1993: 37), an endogenous mode of action is one in which 'nature transforms itself' whilst an exogenous mode of action is where 'nature [is] transformed through the imposition of non-natural, human design'. For Ingold, these endogenous and exogenous modes of action are indexed to two modes of perception labelled 'indigenous' and 'Western'. The former identity dwells within its environment, in contrast with the latter who perceives the environment as a self-contained globe from which humanity is conceptually separated. Ingold's choice of 'Western' and 'indigenous' labelling may be read as referring to culturally distinct identities. However, as he himself suggests, these identities are known to be intra-cultural, and perhaps even intra-personal, phenomena (see also Boglioli 2009, McLeod 2007).

The classification I propose is equally informed by Latour's (1993) divisions of 'modern' and 'non-modern' identities. Latour's moderns undertake extensive interpretive purification in order to categorically separate the world into kinds of things that are classed as either 'nature' or 'culture'; his non-moderns are not caught up in this conceptual task and consciously immerse themselves within networked relations that comprise both human and non-human actors, including technologies. By immersing themselves within hybrid networks, Latour argues that the non-modern truncates them. In contrast, the conceptual undertaking of the moderns facilitates the proliferation of extended networks. Adding Latour's networked interpretation to Ingold's phenomenological descriptions helps to spatialise these identities, so that we may view endogenous and exogenous identities as strategies or choices to *create* 'local' closure through dwelling or, alternatively, to situate oneself at a conceptual distance from one's immediate surrounds and invest instead in knowledge-making practices that foster the creation of broader, global, networks.

FERAL PIGS: ORIGINS AND IMPACTS

The feral pigs that inhabit Australia are descendants of the Eurasian wild boar. The species originated in island South-East Asia and subsequently dispersed throughout Eurasia before spreading, with human assistance, to inhabit the American continents, Australia, Oceania and other parts of the world (Larson et al. 2005, Tisdell 1982). It is estimated that domesticated pigs (also *Sus scrofa*) appeared in Oceania, including New Guinea, between 10,000 and 3,000 years BP (Larson et al. 2005). Despite the proximity of Papua New Guinea to the mainland of Australia, ongoing trade relations across the Torres Straits and visits by Macassans from southern Indonesia that intensified around 1700 (Macknight 1976), pigs did not arrive in Australia until European settlement.

Pigs were not subject to deliberate release into the wild and it is unlikely that pigs were introduced by Captain Cook during his exploration in 1770. The earliest reports of feral pigs being sighted exist in journals of European explorers from 1847 onwards. Feral colonies were most likely founded from escaped domestic stock that quickly lost their domestic characteristics and reverted to those associated with the European wild boar (Pullar 1950). Since then, feral pigs have become well established throughout Australia except in the arid desert regions in the centre of the continent. Concentrations of feral pigs are highest in the wet and dry tropical areas in the north and east of Australia, particularly in the Northern Territory and Queensland (Wilson et al. 1992). There are an estimated four to six million pigs in Queensland, with approximately 75 per cent of the population thought to reside in the tropical north (McGaw and Mitchell 1998).

ANTHROPOLOGICAL ENGAGEMENTS WITH FERAL ANIMALS: FROM BELONGING TO EXISTENCE

Anthropological analyses of 'feral' and/or 'exotic' animal management regimes have been heavily influenced by the observed ways in which the discourses surrounding the treatment of plants and animals deemed 'native' and 'exotic' overlap with societal negotiations over cultural belonging, particularly in settler descendent societies such as Australia (see, for example, Franklin 2006, Milton 2000, Mulcock and Trigger 2008, Trigger and Mulcock 2005). At an extreme, this scholarship has included analyses that document how xenophobic anxieties can be articulated through 'nature' (Comaroff and Comaroff 2001, Hage 1998). At this extreme, one could view how the categories of 'native' and 'exotic' have been used to measure value as a kind of eugenic logic being applied to nature. As Rose (2007: 57) describes (albeit speaking of humans):

> Once each life has a value that may be calculated, and some lives have less value than others, such a politics has the obligation to exercise this judgement

> in the name of the race or the nation. All the eugenic projects of selective reproduction, sterilization, and incarceration follow.

While I acknowledge the importance of this previous literature, I do not pursue this line of analysis myself. Instead, I wish to explore Rose's idea, and its implications, that contemporary (techno-scientific) biopolitics may be characterised as an orientation towards the governance of life itself.

STATE SANCTIONED PIG CONTROL: LEGAL DEFINITIONS AND PEST MANAGEMENT THEORY

Feral pigs are listed as a 'key threatening process' in the *Environmental Protection and Biodiversity Conservation Act 1999* (Cwth) and a class 2 pest according to the *Land Protection (Pest and Stock Route Management) Act 2002* (Qld). Commonwealth legislation describes the *impacts* of pigs as including, explicitly, their impacts on 'native ecosystems' and agricultural production – through their rooting, wallowing and other behaviours – as well as their potential as vectors of zoonotic and agricultural diseases (Department of Environment, Water, Heritage and the Arts 2009). The subtle discourse of this bureaucratic text is important. First, only one side of the 'native' versus 'exotic' calculus – nativeness – is rendered. That which is 'native' is valued; however, that which is 'exotic' or 'feral' is not correspondingly devalued, at least not explicitly. Instead, the language which implicitly defines feral pigs as a threat is as they are 'processes' that 'impact'. This discursive separation splits the animal from its actions on the environment. Thus, the animal itself as an individual, species or type (native, exotic and/or feral) is not demonised as intrinsically 'bad'.

Pest management theory furthers this conceptual separation between that which is a 'pest' and the idea of 'pest damage' (Carrier 2001, 2003; Meurk 2014). The 'new' scientific paradigm of pest management dictates that optimal pest control is often not achieved by a focus on population reduction. Instead, it is achieved first through the identification and quantification of damage done by a species to objects of value (e.g. pasture, crops or areas of ecological significance) and second by identifying, mathematically, the relationship between the density of a pest (how many there are in a given area) and the damage they are causing the target resource. Following this logic, 'optimal' species control may take place in a way that explicitly focuses on reducing *damage* rather than the *population* of the animal that causes it (Braysher 1993, Gong et al. 2009, Hone 1994).

LIVE-CATCH PIG TRAPPING

Within this scientific, legal and political setting, live-catch pig trapping is the current, albeit limited, state sanctioned management method in the Daintree region, operated by a sole trapping contractor. Live-catch trapping is a process whereby traps are set and baited with foodstuffs attractive to pigs. When a pig is trapped, it is caged alive until the trapper, who circulates between all set traps once every 24 hours, dispatches the pig with a low powered rifle.

As a method of control, pig trapping is legitimised in the scientific literature as an 'effective' management method; however, a key disadvantage of trapping cited includes the high labour and skill requirements for successful administration – a person is necessary to kill pigs. If labour costs become too high, relative to damage control, this method may be judged ineffective. Consequently, it is a method considered inadequate for broad-scale control (Choquenot, McIlroy and Korn 1996). Management theory and Queensland government regulations inform the trap design and weaponry that may be used to dispatch a trapped pig, dictating where the rifle is to be aimed and how many shots are to be fired in order to ensure a swift kill (Department of Natural Resources and Mines 2005). Legitimised by the state and ecological theory, the practice of pig trapping enacts an abstracted logic in which trapping is carried out for damage control rather than pest control. However, the need for a trapper to fulfil the job of killing forges an important site of endogenous human–environment engagement:

> Trapper: There's a guy just up here who's got a Heliconia farm … [I]t's a tropical flower … and pigs are giving them a real hard time … Apparently there's one [pig] that's been a bit annoying [the farmer], they'll only go for one variety … [The grower has] got tons of varieties … [the pig will] chew out one whole row here and then another one in the other corner, the same variety … That one, we've tried to trap that one for about two months, ever since I've been here and it just wouldn't go in a trap.
>
> Interviewer: Did you try putting … flower bulbs in the trap?
>
> Trapper: Yeah, we put them in there … we've moved this trap about three times and there's still, there's nothing we can do, he just won't go into the trap. I think [the grower] was going to get a dogger [hunter] to come in. It's only one pig, it's the same one.
>
> Interviewer: There's one pig that has a bit of a niche
>
> Trapper: Yes, likes the flowers … I might just have a chat with [the grower] and just see if the pig is still there. I haven't talked to him for a week. [Audio recorded during Trapper's rounds 2007]

In his daily rounds, the trapper is immersed in a set of immediate relations with both the pigs he traps and the landholders in the region on whose properties the traps are placed. The trapper sees killing pigs as 'part of life'. It is part of

Figure 2. A ‘fantastic’ catch.

life in the region for many reasons. The trapper’s activities are a great source of interest, not only to the landholders on whose properties he traps but to the wider community as well. His four-wheel drive utility vehicle, laden with dead pigs hanging off the back, draws favourable comments from Australian tourists who visit the World Heritage Area (Figure 2). Local children ‘check’ traps for him – in practice more a hindrance than a help – and tour operators will stop when they see the pig trapper’s vehicle and explain the trapper’s job and the ‘pig problem’ in Far North Queensland to both domestic and international tourists whose light bulbs flash from inside the buses as they photograph the ‘haul’ of pigs hanging from his vehicle.

Pig trapping, as a method of control, thus straddles two forms of practice and ideology. From ‘above’, the fact of death is obscured as pest management is enshrined in discourses of ‘damage control’. Yet, from ‘below’, matters of life, death and sociality are simultaneously articulated. The actions of the individual who traps and kills pigs conveys an endogenous identity and brings him into both transient and more permanent relationships with human others on a day-to-day level.

PIG HUNTING

Unlike trapping, scientists generally view pig hunting as a poor management method. Among other things, it is deemed, negatively, to interfere with 'normal pig behaviour' (Choquenot, McIlroy and Korn 1996: 83). This value judgement, that behavioural adjustment by animals to humans is abnormal and negative, distinguishes management theorists from hunters who are knowingly comfortable with the transformative engagement they have with their animal quarry. Hunters articulate the notion that they are dwellers within hybrid networks (cf. Ingold 1993, Latour, 1993) and are explicit about the extent to which hunting technologies have changed their relationships with pigs, as well as the pigs themselves:

> Hunter 1: Technology has changed [over the past 30 years] … When I first started doing the night hunts it was holding the dolphin torch [the brand name of a large rectangular shaped plastic torch] under your barrel and when the pig comes out you got to pick your bloody shotgun up with open sights and flick your torch on and do everything at once. Whereas now you've got battery pack, you gotta switch on your gun, whatever gun type you're going to be using, and you sorta have it all ready and as they break turn the light on and sorta ... and I think that these youngfellas here now, are really, have got it easy as far as what we had when we first started hunting the cane.
>
> Hunter 2: Yeah, [but the] pigs have wisened up now too.
>
> Hunter 1: Well, they're smartening up to the technology as well.
>
> Hunter 2: Yeah, that's right, we do have it easier but pigs are bigger and, like you said, they are smarter. [Focus Group 1, Hunters, 2008]

Technologies incorporated into hunting practice provide momentary competitive advantage, but technological innovation remains a constant part of an ongoing, competitive, human–animal relationship.

Like trapping, hunting is also a means of interaction whereby an individual engages in long term relationships with the individual pigs they hunt – a core element of what makes hunting enjoyable:

> Hunter 1: I'm pretty sure we got 'im last year, because he used to come out of the forest through a small paddock of cane and slide down a bank and into the other block of cane, and this had been happening for years. And he's so switched on that the dogs, the dogs can get 'im here and he'd run out down the other end where no one was waiting, or he'd be in the middle of the paddock and he'd run out and you'd get a shot at 'im and he was always too far away and very very cunning … so probably ten years this [pig] had been sliding down this bank. This year he's no more sliding down this bank because he's gone to pig heaven. [Interview 2007]

Immersed in such a visceral, endogenous, relationship with the environment, hunters' claims to being interested in 'management', and their moral character

generally, are frequently called into question by those for whom killing is indexed to a greater need to 'conserve' other forms of life:

> Ecologist: Hunting … does have uses for conservation benefits, I mean it can be used to mop up the last few individuals in a population if you're doing an eradication on an island or something like that, it certainly, you know, dogs and things, have been used to, to get animals like that. So, you know there's some situations where it's useful, where it's warranted … I mean, I'm not comfortable with the idea of killing for recreation … The thing that really shits me about it, is other people, just, bullshit about it, and trying to say that they're doing it for some, for purposes other than just getting their jollies by killing something. [Interview Ecologist 2009]

The importance to ecologists and managers of purpose in the definition of what is 'hunting' and what is 'management', and by extension what is viewed as illegitimate versus legitimate killing, is given further weight in the context of Manager 2's description (below) of his own actions as a spotlight shooter. Spotlight shooting is a practice that takes place at night. A spotlight is used, possibly from the vantage of a moving vehicle, to sight pigs which are then shot. This practice is interpretively flexible, readily defined as 'hunting' by hunters but 'management' by managers. When explicitly asked whether he had ever hunted, Manager 2 responded:

> Manager 2: Ah, no [pause] yes and no [pause] I've been involved in trapping programmes before. No, not for sport no, for management yes …
>
> Interviewer: [What] type of management?
>
> Manager 2: So, I have been involved in … a recovery programme for [an endangered] wallaby before and part of that was trapping and spotlight shooting at night for feral animals. But to me, that was, the motivation was because of a conservation outcome and that was a tool that we [used], and like, I've got no objections to hunting, I actually think that hunting is a valid recreation but I personally don't hunt, I wouldn't want to go out and hunt, it's not something that I do. So no, I don't hunt for sport, but in my job previously I have been involved in feral animal control, which may be defined as hunting, but I wouldn't because to me hunting, you're pursuing it for sport, or for food or for some other reason.
>
> Interviewer: Did you enjoy it, your feral animal control?
>
> Manager 2: Yeah, yeah, yeah, definitely, it was good. [Interview 2009]

Manager 2 contrasted his own actions with that of hunting which he later defined as 'recreation', 'sport' or as a means of food gathering. This construction of 'appropriate intentions' uncovers the key cultural quality of 'management' as a practice aimed at enhancing life rather than glorifying death.

Hunting is illegal on state owned land in Queensland and thus it can only legally take place within the context of a relationship between landholders and hunters. No commercial businesses (chiller boxes) operate in this region, as

they do in other parts of Australia, to collect carcasses from hunters for export, nor are hunters used in a professional capacity as natural resource managers. However, informal though enduring arrangements exist between hunters and landholders, where money and other goods may be exchanged in lieu of hunting services.

Sugarcane hunting is a particular variant of hunting practised in Far North Queensland. It is a group activity comprising a small number of hunters

Figure 4. Trophy pig tusks collected by hunters.

(usually between three and six), often kin. Hunters exert proprietorship over the properties they hunt, but do not own:

> Hunter 3 (mid 40s): I know a lot of fellas my age and maybe a little bit younger, soon as they see someone come onto their turf they're onto 'em say: 'whatya doing, this is my area, piss off.' [Focus Group 2, Hunters, 2008]

Furthermore, they carry out extensive 'research' in order to time their hunt so as to arrive at a property while pigs are feeding within a sugarcane paddock. A sugarcane hunt begins when pig dogs are released by one hunter at one side of a paddock to flush pigs out of the sugarcane. Pigs are briefly exposed in the open laneways where hunters with rifles or shotguns are stationed to shoot them.

In addition to fostering long term engagements between human and pig, this mode of hunting fosters tightly bound socio-spatial relationships between hunters, the sugarcane property and the property owner, as exemplified through practices of place naming (cf. Dominy 2001). Place names are created based on events that have occurred at particular locations of a hunting paddock and are functional because they assist the hunting group communicate their locations to one another. Places can be visibly demarcated in some cases but are often solely maintained orally within the social relationships of the hunting group. The functional aspect of this spatial practice, coupled with the fact that names are maintained through immediate social relationships, supports the ongoing bonding and maintenance of small hunting groups.

Hunters exhibit an endogenous identity in which they are intrinsically competitive dwellers. Although, through the act of hunting, they are immersed within their environment, the process of killing enacts a separation of the human victor from, and over, his environment. And yet, acts of remembrance take place, not only in the stories hunters tell about particular individual pigs (as described earlier) but also in the collection of trophy pig tusks (Figure 3).

POISON BAITING

At the time of writing, the main poison under debate was sodium monofluoroacetate (compound 1080). As has been indicated so far, the 'appropriate purposes' that define what is 'management' in this region for scientifically minded environmentalist actors is biodiversity conservation. Although not an exclusive driver of poison baiting as a desirable means of control, a techno-scientific conservation position strongly supports a trajectory towards this kind of technology. As with conservation oriented 'management' generally, a focus on enhancing life informs the interpretive work that makes poisoning morally acceptable for its supporters.

As described above, hunters depict pigs as intelligent agents, and worthy adversaries. Scientific constructions focus on biology. The practice of 1080 baiting fitted with Ecologist's belief system regarding the treatment of animals. While he acknowledged the unpleasantness of baiting for the individual pig, he supported it due to its greater (conservation) benefits:

> Ecologist: I'd love to come up with some way of really reducing population levels and seriously reducing the impacts, using baiting or something, I think that's justifiable, although I'm not entirely comfortable with it … just on the level of the individual pig I s'pose, just out of empathy for the individual pigs that get poisoned … it's not an altogether pleasant experience. But if there's some greater benefit that comes out of it, then I think it's probably worthwhile, but, certainly it wouldn't be worthwhile, if we didn't have a decent impact on mitigating the impacts of pigs in the forest. I think, I wouldn't support baiting in the forest at all, in that case, if all it did was kill pigs without sort of ameliorating their impacts. [Interview 2009]

Conservation discourse coincides in a powerful way with that of animal welfare groups in this issue. Through shared beliefs by these groups in the value of scientific knowledge, and a shared *modus operandi* of the bureaucratic process, the fact of death undergoes further concealment. The federal government's Australian Animal Welfare Strategy (Department of Agriculture, Fisheries and Forestry 2006) and legislation such as the *Animal Care and Protection Act (2001)* (Qld) explicitly highlights the importance of scientific knowledge in the improvement of animal welfare. Specifically, the *Animal Care and Protection Act* endeavours to achieve: 'standards for the care and use of animals that — ... allow for the effect of advancements in scientific knowledge about animal biology' (s 4, p. 12).

Within scientific discourse it is deemed important that animals exhibit 'normal behaviours'. In the context of baiting, this is measured in terms of biophysical and behavioural 'indicators of pleasure' (Sharp and Saunders 2008: 14), suggesting that 'pain' is abnormal and to be avoided (cf. Boglioli 2009, Dizard 2003).

Where a means of animal killing may be deemed 'less humane' but more 'effective' than other controls, according to this scientific schema, a utilitarian calculus may be used to justify its use. An example of this is given in a research report commissioned by an Australian scientific research cooperative focussed on research and technology development for pest animal management:

> [T]he reduction of feral pig populations will reduce the number of feral pigs which undergo 'environmental' deaths each year ... These environmental deaths clearly cause welfare compromises in feral pig populations. It could be argued that controlling feral pig populations to low levels with effective control tools can result in improved welfare outcomes since large numbers of potential 'environmental' deaths of feral pig are avoided. (Cowled and O'Connor 2004: 7)

Here, the argument is made that welfare benefits may result as a consequence of having non-existent and therefore non-suffering animals, leveraging the welfare compromise an animal may face by being subjected to the (non-human) environment. By placing strict interpretive and legislative controls around animal death, these texts facilitate the further conceptual removal of the non-human animal body away from the suffering caused by the 'natural' environment.

The abstracted reasoning that underpins what constitutes humane killing, in both animal welfare and damage-based pest animal management paradigms, lends support to the development and application of poison baiting solutions such as the use of 1080 (which is not to say that animal welfare groups are supportive of the use of 1080), while simultaneously constructing hunting as inhumane and ineffective. This is in spite of the length of time it may take a pig to die from 1080 when compared to a death from hunting (which takes a matter of seconds or minutes). The onset of signs of poisoning for feral pigs appear between 1.9 and 47.3 hours after ingestion and the onset of death occurs between 2.8 and eighty hours after ingestion of the poison (Sherley 2007: 453). Australian RSPCA scientist Miranda Sherley (2007: 454) describes the physiological signs of 1080 poisoning as including:

> lethargy, retching and vomiting, trembling, faecal and urinary incontinence, unusual vocalisations, hyperactivity, excessive salivation, muscular weakness, unco-ordination, hypersensitivity to nervous stimuli, and respiratory distress. Localised nervous signs including tail twitching, twitching or jerking of limbs, twitching of facial muscles, nystagmus, and tetanic seizures, are common, and may progress to generalised convulsions … Death may occur either during convulsions or during these lucid periods … Several of the signs of toxicoses listed above are potentially painful and/or distressing.

The usefulness of baiting as a means of cost-effective control stems primarily from the fact that the baiting technology exacts the killing rather than a person. Consequently, unlike trapping and hunting, baiting provides a method of killing that reduces local labour requirements and costs, redistributing them to research facilities and pest control and management businesses where costs may be offset by the international marketing of the technology to other countries where pigs are pests.[1]

Once again, hunters' logic is of quite a different character. In their depictions, hunters focussed at the level of the individual and its immediate ecological networks. And, tellingly, their depictions included those in which they reflected on the issue of killing in terms of their own bodies and preferences. As Hunter 4 described it:

1. Feral pigs are considered pest species in numerous locations around the world including New Zealand (Cowan and Tyndale-Biscoes 1997), Hawaii (Noguiera-Filho, Noguiera and Fragoso 2009), the Galapagos (Cruz, Donlan, Campbell and Carrion 2005) and continental North America (Pimental, Zuniga and Morrison 2005).

> Hunter 4: … I think baiting, if anything's barbaric it's … going over the scrub in a helicopter with non-selective baits and dropping them out hoping pigs are gonna get 'em, where a cassowary could get 'em or ah, even if a pig gets, a little sucker [piglet] eats a bait and dies, if a wedge tail eagle comes and eats that, eats that pig, it's going to die. So I can't understand their theories about baiting is good where hunting is bad … 1080's a cruel poison, if I was a pig, I'd rather have a dog grab me by the ear and a bloke come in and stick a knife in than eat a 1080 bait and slowly, slowly die a horrible death. I mean, they say pig hunting's cruel and that sort of thing [dying from 1080 can take] hours. [Interview 2008]

Further, because in this form of control the technology kills the pig rather than a human, moral deliberations associated with constructing legitimate killing may be determined through the aforementioned policy and legislative processes and embedded in the technology prior to its implementation in the environment, rather than at the individual level of the interspecies engagement. Thus, the technology can be implemented in accord with an exogenous identity, from upon the world rather than from within it (cf. Ingold 1993). This is not to say that poisoning processes do not require human engagement. Humans often lay bait and monitor, through field cameras, bait uptake by target and non-target animals. Nevertheless, the implementation of baiting technologies reinforces ideologies and meanings that support conceptually detached, exogenous, human–animal relationships. Moreover, 1080 is lethal to dogs and therefore, by default, the use of baiting excludes dog hunting practices in areas that are baited. Baiting thus has a further socio-spatial effect in that it demarcates and defends spaces sequestered for conservation to the exclusion of hunting groups.

CONTESTING DEATH: CONSERVATION, HERITAGE AND PIG KILLING

What constitutes legitimate killing? How do our concerns over animal death fit with respect to our broader beliefs about the conservation or destruction of the 'natural' world? What does this mean for how we think about our own existence?

For the five years of this study, I bathed in the inescapable, irreconcilable, but most of all bloody, hypocrisies of 'destruction itself' – highly contested yet ubiquitous processes that sit at the edge of a compatibilist rationality. On the one hand, I observed those I describe as exogenous identities, who espouse a transcendent view of nature, echoing an 'optimization' focussed biopolitics (Rose 2007). These identities were oriented towards conservation and peacefulness, desires which nonetheless necessitate substantial animal death, albeit separated from the hands of a human agent (Carrier 2001, 2003). As Rose (2007) notes, the fact of death as an outcome is not the same as aiming to kill.

For those actors I described as 'exogenous', the possible anxiety about death was assuaged by indexing such killing to the 'greater good' of conserving life.

On the opposite side of this debate were the cluster of identities I describe as endogenous – supporters of a valuation of an individualist nature comprising old-growth specimens – and comfortable with the grit of destruction to facilitate human habitation. Endogenous identities were comfortable confronting death and killing, at least in part through a robust and explicit understanding of their own mortality.

As I have attempted to show, the prominence of an exogenous identity and its supporting discourses perhaps conveys its expansiveness rather than its absolute power. Exogenous views are established in texts and enacted through bureaucracy so that these identities hold an official authority that endogenous identities do not have. Yet, the power of exogenous discourses is sheared by a resolute endogenous narrative that, at least in the case study here, can obstruct the domination of a globist view in at least some spaces.

The extent to which the disputes described here pit scientific views of nature against non-scientific views is demonstrably a clear point of difference in identities. A tendency to foster local versus expansive sociospatial relations further distinguishes how these kinds of identities cluster together (Latour 1993). Thus, I disagree with Knight's (2012) grouping of hunters with conservation biologists and wildlife managers. Instead, I determined that hunters and the region's trapper exhibited endogenous identities while ecologists and natural resource managers exhibited exogenous identities (Ingold 1993).

In both identities, one can view distinct strategies for dealing with existential questions regarding mortality of both self and other. In particular, heritage conservation allows the believer to suffuse into the continuance of matter that transcends their mortal body; it provides a secular activity to assuage the anxieties mortality can arouse. Rather than confronting death, and seeking satisfaction in immediate and immanent socio-material relations, these individuals may seek solace by linking their purposeful being to the indefinite life they construct within heritage areas, even though this life is dependent on broad-scale deaths.

This ethnography highlights that caring, violence and killing are not antithetical processes. Furthermore, this complexity underpins why socio-environmental relationships are inherently, and unavoidably, hypocritical. Endogenous identities confront the necessity of destruction and its relationship to violence and killing in a way that has not been comprehensively confronted by intellectuals (Ingold 1993, Knight 2012), and I include in this myself, whose orientations share an affinity with exogenous rationalities. In particular, for intellectuals who take practices like hunting seriously, there appears to be a desire to morally square-off caring and killing, whilst leaving the discomfort of violence aside (but see Boglioli 2009, Dizard, 2003). This alignment of anthropological and sociological theory with certain ethnographic subjects over

others, particularly in intra-cultural studies, risks lopsided analysis of the kinds of hypocrisies and grit that human–environment interactions entail.

Further anthropological investigation is needed into 'destruction itself' and its complex associations with violence, conflict and killing, caring, salvation, conservation and deliverance. This will require a greater acceptance and willingness to dwell in the gore of destruction. Acceptance of destruction need not mean one is complicit or compliant with it. Simply, acceptance ensures we look towards destruction with an open mind in our empirical work. Analysts should be mindful of the fact that these processes may exist side by side. Alternatively, they can sit at a great distance from each other while still being causally linked, depending on the networks at play and the extent of intervening technologies, texts and persons that may be placed between rationally irreconcilable practices.

ACKNOWLEDGEMENTS

The author gratefully acknowledges the Invasive Animals Cooperative Research Centre for funding, research support and critical feedback provided through their science writers' workshop in 2011. The Australian Network of Student Anthropologists provided conference funding to present early versions of this paper. Prof. David Trigger, Prof. Iain Gordon, Dr. Sally Babidge and Dr. Wolfram Dressler provided supervisory support that has contributed to the conceptualisation of this research. The author also thanks Prof. David Trigger and Dr. Colin Meurk for comments on an earlier version of this paper and to the editors and anonymous reviewer for their useful comments.

REFERENCES

Boglioli, M. 2009. *A Matter of Life and Death: Hunting in Contemporary Vermont*. Massachusetts: University of Massachusetts Press.

Braysher, M. 1993. *Managing Vertebrate Pests: Principles and Practice.* Bureau of Rural Sciences. Canberra: Australian Government Publishing Service.

Carrier, J. 2001. 'Social aspects of abstraction'. *Social Anthropology* **9**: 243–256. **CrossRef**

Carrier, J. 2003. 'Mind, gaze and engagement: Understanding the Environment'. *Journal of Material Culture* **8**: 5–23. **CrossRef**

Choquenot, D., J. McIlroy and T. Korn. 1996. *Managing Vertebrate Pests: Feral Pigs*. Bureau of Rural Sciences. Canberra: Australian Government Publishing Service.

Comaroff, J. and J. Comaroff. 2001. 'Naturing the nation: Aliens, apocalypse and the postcolonial State'. *Journal of Southern African Studies* **27**: 627–651. **CrossRef**

Cowan, P. and C. Tyndale-Biscoe. 1997. 'Australian and New Zealand mammal species considered to be pests or problems'. *Reproduction, Fertility and Development* **9**: 27–36. **CrossRef**

Cowled, B and C. O'Connor. 2004. *A Project that Investigates Current Options for Managing Feral Pigs in Australia and Assesses the Need for the Development of More Effective and Humane Techniques and Strategies*. Canberra: Pest Animal Control Cooperative Research Centre.

Cruz, F., J. Donlan, K. Campbell and V. Carrion. 2005. 'Conservation action in the Galàpagos: Feral pig (*Sus scrofa)* eradication from Santiago Island'. *Biological Conservation* **121**: 473–478. **CrossRef**

Department of Agriculture, Fisheries and Forestry. 2005. *The Australian Animal Welfare Strategy*. Canberra: Department of Agriculture Fisheries and Forestry.

Department of Environment, Water, Heritage and the Arts. 2009. 'Predation, habitat degradation, competition and disease transmission by feral pigs'. Electronic document, http://www.environment.gov.au/biodiversity/threatened/ktp/feralpigs accessed 3 December 2009.

Department of Natural Resources and Mines. 2005. *Vertebrate Pest Manual: A Guide to Pest Animal Management in Queensland*. Brisbane: Department of Natural Resources and Mines.

Dizard, J. 1994. *Going Wild: Hunting, Animal Rights, and the Contested Meaning of Nature*. Massachusetts: University of Massachusetts Press.

Dizard, J. 2003. *Mortal Stakes: Hunters and Hunting in Contemporary America*. Massachusetts: University of Massachusetts Press.

Dominy, M. 2001. *Calling the Station Home: Place and Identity in New Zealand's High Country*. USA: Rowman and Littlefield Publishers Inc.

Dunk, T. 1994. 'Talking about trees: Environment and society in forest workers' culture'. *Canadian Review of Sociology and Anthropology* **31**(1) 14–34. **CrossRef**

Four Corners. 1984. No Through Road. Television Programme, Australia: ABC Television.

Franklin, A. 2006. *Animal Nation: The True Story of Animals and Australia*. Sydney: New South Wales Press.

Gong, W., J. Sinden, M. Braysher and R. Jones. 2009. *The Economic Impacts of Vertebrate Pests in Australia*. Canberra: Invasive Animals Cooperative Research Centre.

Hage, G. 1998. *White Nation: Fantasies of White Supremacy in a Multicultural Society*. New South Wales: Pluto Press.

Hamilton, J. 2009. 'On the ethics of unusable data', in J. Faubion and G. Marcus (eds) *Fieldwork is Not What it Used to Be: Learning Anthropology's Method in a Time of Transition*. Ithaca, New York and London: Cornell University Press. pp. 73-88.

Henry, R. 1999. 'Confronting ethnographic holism: Field site or field of sociality?' *Canberra Anthropology* **22**(2): 51–61. **CrossRef**

Hone, J. 1994. *Analysis of Vertebrate Pest Control*. Cambridge: Cambridge University Press. **CrossRef**

Hutton, D. and L. Connors.1999. *A History of the Australian Environmental Movement*. Cambridge: Cambridge University Press.

Ingold, T. 1993. 'Globes and spheres: The topology of environmentalism', in K. Milton (ed.) *Environmentalism: The View from Anthropology*. London: Routledge. pp. 29–40. **CrossRef**

Ingold, T. 1994. 'From trust to domination: An alternative history of human-animal relations', in A. Manning and J. Serpell (eds) *Animals and Human Society: Changing Perspectives*. London: Routledge. pp. 1–22.

Jalland, P. 2006. *Changing Ways of Death in Twentieth Century Australia: War, Medicine and the Funeral Business*. Sydney: University of New South Wales Press.

Keto, A. and K. Scott. 1986. *Tropical Rainforests of North Queensland: Their Conservation Significance*. Canberra: Australian Heritage Commission.

Knight, J. 2005. 'Introduction', in J. Knight (ed.) *Animals in Person: Cultural Perspectives on Human-Animal Intimacies*. Oxford: Berg. pp. 1–14.

Knight, J. 2012. 'The snonymity of the hunt: A critique of hunting as sharing'. *Current Anthropology* **53**(3): 334–355. CrossRef

Larson, G., K. Dobney, U. Albarella, M. Fang, E. Matisoo-Smith, J. Robins, S. Lowden, H. Finlayson, T. Brand, E. Willerslev, P. Rowley-Conwy, L. Andersson, A. Cooper. 2005. 'Worldwide phylogeography of wild boar reveals multiple centers of pig domestication'. *Science* **307**(5715): 1618–1621. CrossRef

Latour, B. 1993. *We Have Never Been Modern*. Cambridge, USA: Harvard University Press.

Latour, B. 1996. *Aramis or the Love of Technology*. Cambridge, USA: Harvard University Press.

Marcus, G. 1995. 'Ethnography in/of the World System: The emergence of multi-sited ethnography'. *Annual Review of Anthropology* **24**: 95–117. CrossRef

Macknight, C. 1976. *The Voyage to Marege: Macassan Trepangers in Northern Australia*, Australia: Melbourne University Press.

Marvin, G. 2000. 'The problem of foxes: Legitimate and illegitimate killing in the English countryside', in J. Knight (ed.) *Natural Enemies: People-Wildlife Conflicts in Anthropological Perspective*. London: Routledge. pp. 189–211.

McDonald, G. and Lane, M (eds). 2000. *Securing the Wet Tropics?* Sydney: The Federation Press.

McGaw, C. and J. Mitchell. 1998. *Feral Pigs (Sus Scrofa) in Queensland: Pest Status Review Series - Land Protection*, Department of Natural Resources and Mines, Queensland.

McLeod, C. 2007. 'Dreadful/delightful killing: The contested nature of duck hunting'. *Society and Animals* **15**:151–167. CrossRef

Meurk, C. 2011. Loving nature, killing nature, and the crises of caring: An anthropological investigation of conflicts affecting feral pig management in Queensland, Australia. Ph.D. dissertation, The University of Queensland, Brisbane.

Meurk, C. 2014. 'The econo-techno-social design of invasive animal management: Costs and benefits or beneficiaries and benefactors?' *Australian Geographer* **45**(1): 37-52. CrossRef

Milton, K. 2000. 'Ducks out of water: Nature conservation as boundary maintenance', in J. Knight (ed.) *Natural Enemies: People-Wildlife Conflicts in Anthropological Perspective*. London: Routledge. pp. 229–248.

Mulcock, J. and D. Trigger. 2008. 'Ecology and identity: A comparative perspective on the negotiation of "nativeness"', in Dan Wylie (ed.) *Toxic Belonging? Identity*

and Ecology in Southern Africa. Newcastle: Cambridge Scholars Publishing. pp. 178–198.

Noguiera-Filho, S., S. Noguiera and J. Fragoso. 2009. 'Ecological impacts of feral pigs in the Hawaiian Islands'. *Biodiversity and Conservation* **18**: 3677–3683.

O'Doherty, R. 2008. 'Lights out in Daintree'. *The Port Douglas and Mossman Gazette*, 15 May.

Peace, A. 1996. '"Loggers are environmentalists too". Towards an ethnography of environmental dispute. Rural New South Wales 1994-1995'. *The Australian Journal of Anthropology* **7**: 43–60. **CrossRef**

Peace, A. 1999. 'Anatomy of a blockade. Towards an ethnography of environmental dispute (Part 2), Rural New South Wales 1996'. *The Australian Journal of Anthropology* **10**:144–162.

Pimental, D., R. Zuniga and D. Morrison. 2005. 'Update on the environmental and economic costs associated with alien-invasive species in the United States'. *Ecological Economics* **52**: 273–288. **CrossRef**

Pullar, E. 1950. 'The wild (feral) pigs of Australia and their role in the spread of infectious diseases'. *The Australian Veterinary Journal* **26**: 99-110. **CrossRef**

Reichardt, T. 2007. 'Quaid sold farmland, Not Daintree'. *Port Douglas and Mossman Gazette,* 18 October.

Robbins, P. 2006. 'The politics of barstool biology: Environmental knowledge and power in Greater Northern Yellowstone'. *Geoforum* **37**: 185–199. **CrossRef**

Rose, N. 2007. *The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century.* Princeton: Princeton University Press.

Sanderson, R. 2008. 'Re-writing the history of Australian tropical rainforests: "Alien invasives" or "ancient indigenes"?' *Environment and History* **14**: 165–185. **CrossRef**

Satterfield, T. 2002. *Anatomy of a Conflict: Identity, Knowledge, and Emotion in Old-Growth Forests*. Vancouver: UBC Press.

Schuster, R. 1986. 'Evaluation by Rudolf M. Schuster, Professor Emeritus of Botany, University of Massachusetts, Amherst', in A. Keto and K. Scott (auths), *Tropical Rainforests of North Queensland: Their Conservation Significance*. Canberra: Australian Heritage Commission.

Sharp, T. and G. Saunders. 2008. *A Model for Assessing the Relative Humaneness of Pest Control Methods*. Canberra: Department of Agriculture Fisheries and Forestry.

Sherley, M. 2007. 'Is sodium fluoroacetate (1080) a humane poison?' *Animal Welfare* **16**: 449–458.

Tisdell, C. 1982. *Wild Pigs: Environmental Pest or Economic Resource?* Singapore: Pergamon Press.

Trigger, D., M. Forsey and C. Meurk. 2012. 'Revelatory moments in fieldwork'. *Qualitative Research* **12**(5): 513-527. **CrossRef**

Trigger, D. and J. Mulcock. 2005. 'Forests as spiritually significant places: Nature, culture and "belonging" in Australia'. *The Australian Journal of Anthropology* **16**: 306–320. **CrossRef**

Van Velson, J. 1967. 'The extended-case method and situational analysis', in A.L. Eptein (ed.) *The Craft of Social Anthropology*. London: Tavistock Publishing. pp. 129-143.

Webb, L. 1959. 'A physiognomic classification of Australian rain forests'. *Journal of Ecology* **47**: 551–70. **CrossRef**

Webb, L. and J. Tracey. 1981. 'The rainforests of Northern Australia', in R. Grove (ed.) *Australian Vegetation*. Cambridge: Cambridge University Press.

Willis Burden, P. 2008. 'North of the river', in P. Willis-Burden (ed.) *Remembering the Douglas Shire: Incorporating Early Days of the Douglas Shire* Mossman: Douglas Shire Council.

Wilson, G., N. Dexter, P. O'Brien and M. Bomford. 1992. *Pest Animals in Australia - A Survey of Introduced Wild Mammals*. Kenthurst: Kangaroo Press.