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Infrastructures of conservation: Provoking new natures with predator fencing

Gay Hawkins and Gillian Paxton
Institute for Culture and Society, Western Sydney University, Australia

Abstract

This paper examines the use of predator fences for conservation in Australia. It argues that these major infrastructures for enclosure act as a form of 'provocative containment' in which particular forms of nature are not simply protected but made to happen. The primary focus is Newhaven, a property in remote central Australia managed by the Australian Wildlife Conservancy, a non-profit organization with the biggest estate of privately managed land for conservation in the nation. At Newhaven, the first stage of an ambitious and expensive predator fencing programme has recently been completed, with a second phase under construction that will see the property become the site of the largest feral cat-free enclosure on the planet. In analysing this significant material infrastructure, and the practices and discourses that the Australian Wildlife Conservancy deploys to both justify and attract funding for it, it is possible to see a new conceptualization of conservation emerging in which nature is not simply offered sanctuary but actively stimulated and simulated. The Newhaven fence is much more than a passive material boundary between desired and undesired life. It is a reality-generating device with complex and contradictory biopolitical effects. The concept of provocation highlights how the fence emerges as a deliberate intervention into the dynamics of life. We examine how this is done in four distinct ways: through the sociotechnical design and construction of the fence as 'cat-proof', by enrolling Indigenous labour and tracking skills to kill cats, through the use of ecological surveys and baselines to make some life calculable, and via the translocation of species in order to allow them to be both protected and flourish. Each of these practices is essential to making new natures at Newhaven through the complex dynamics of provocation and containment. The issue is: what sort of nature?

Keywords

Provocative containment, Australian Wildlife Conservancy, predator fencing, wildlife conservation, biopolitics

Introduction

> The mission of the Australian Wildlife Conservancy (AWC) is the *effective* conservation of all Australian animal species and the habitats in which they live . . . Our work is driven by a strong

Corresponding author:
Gay Hawkins, Institute for Culture and Society, Western Sydney University, Penrith, Australia.
Email: g.hawkins@westernsydney.edu.au

> sense of urgency because we as a nation have a narrow window – perhaps the next decade – to halt the decline that has been occurring for 200 years in Australia's unique biodiversity. Remarkably, despite Governments spending billions of dollars every year on conservation, this loss of biodiversity continues. (AWC, 2017a: 2, emphasis in the original)

These quotes from the glossy journal of the Australian Wildlife Conservancy (AWC) capture many of the recurrent framings of contemporary conservation. The sense of urgency in the face of inexorable decline, the impacts of humans, the appeal to 'biodiversity' as the ultimate rationale for action and the implied ineffectiveness of government are familiar themes that resonate with conservation discourses and advocacy around the world. However, they are also highly situated and distinct. Not only do they reflect the very particular colonial and ecological history of Australia, but they are also evidence of the rapid emergence of non-profit organizations as major players in conservation management over the last 30 years.

This paper explores the practices of the AWC, the largest non-government owner and manager of land for conservation in Australia. Our primary focus is its use of predator fencing as a key conservation strategy and infrastructure. The AWC, more than any other conservation organization in Australia, is committed to building extensive cat and other vermin proof fencing to enclose and protect endangered species. We focus our attention on one AWC site: Newhaven, a 262,600 hectare arid landscape property in remote central Australia, and the location of one of the largest predator fencing projects in the world. This massive structure, designed to keep out feral cats and allow threatened species to flourish, raises critical questions about the role of containment infrastructures in conservation, how to analyse their performative and biopolitical effects and how to evaluate them as devices for intervening in life and provoking new natures.

Many official AWC accounts of the Newhaven predator fence justify it in terms of conservation as a protection and restoration practice. The fence is a defensive infrastructure necessary for the effective safeguarding of species on the brink of extinction. However, there is also a powerful counter discourse circulating within the AWC that justifies the fence as an *offensive* strategy and a device designed to make valued life happen. Consider this quote from the US Ambassador to Australia on the US website of the Friends of the AWC (2017): 'So much of conservation today is playing defense. The Australian Wildlife Conservancy is playing offense - and putting good scores on the board'. This publicity spin is doing more than differentiating the AWC from mainstream conservation practices. It is also signalling that, in the face of rapid extinctions and ineffectual government, conservationists have to go on the offensive; life cannot simply be protected it has to be stimulated and *provoked*.

The idea of conservation as a form of provocation and the role of containment infrastructures in this process drive our empirical analysis of Newhaven. At the heart of our approach is the assumption that conservation does not 'come after' nature in order to retain or restore it (Braverman, 2015; Hinchliffe, 2007: 125; Lorimer, 2015, 2017; Whatmore, 2002). Instead, what counts as 'nature', what warrants conserving, and what will be valued and protected emerge in the myriad practices, devices, bodies, species and arrangements in which conservation is done and new natures enacted. This processual and posthumanist approach is indebted to current debates within geography and science and technology studies (STS) that analyse conservation as a cosmopolitical strategy for *living with* wildness or the nonhuman (e.g. Haraway, 2008; Hinchliffe and Whatmore, 2006; Lorimer, 2015). This is the debate we are writing into, we identify with its theoretical contours and ethical commitments. However, while we start from this debate, we also want to extend it, to push its claim that conservation is not simply instrumental or reactive but performative.

What does this practically mean in the case of Newhaven? How could we consider the role of various containment infrastructures in this? Do they simply enclose or actively provoke new realities? And what of the biopolitical effects of fencing as an intervention in life? Which life is contained within the fence, and which is excluded and how? The aim of this paper is to explore the potential of provocation as a potent concept for assessing the ontological and biopolitical implications of predator fencing.

Our primary interest is in understanding *how* conservation infrastructures provoke new natures, how they make realities. Our theoretical approach draws on recent debates about the relationship between ontology and infrastructures and the ongoing 'performativity program' (Muniesa, 2014: 10) within STS. Both these fields are focused on the constitutive capacities of various knowledge practices, technical devices and discourses in bringing realities into being or modifying existing ones. While others may be 'over' performativity (Hirschman, 2015) or happily settled in a post performative world, we are not. The performativity programme in STS is central to our analysis because it offers powerful tools and insights into how conservation could be considered as a very particular and complex reality generating practice. The critical issue at stake in our argument is not so much the fact that conservation constructs new natures but *how* it actually realizes or brings them about; and how these realities become ontologically and politically potent. For Muniesa (2014) 'reality is really real when it is provoked' (17), in the case of Newhaven the challenge is to understand exactly how the conservation practices in play there become capable of orchestrating a different reality.

In pursuing these concerns, we develop our argument in several steps. First, we briefly review the role of the AWC in the current conservation field in Australia in order to contextualize its huge investment in predator fencing. Then we examine the conceptual significance of configuring conservation as provocation by reviewing recent debates within STS. Of particular interest is how the idea of 'provocative containment' can be put into conversation with debates about the biopolitics of conservation as a process of modulating flows of life. How do various techniques of provocation intervene in existing realities, reorient relations and make novel ecosystems happen? In the empirical analysis that follows, we examine a series of conservation practices in play at Newhaven that can be understood as biopolitical provocations. These include: the construction of predator fencing infrastructure that is defined as 'cat-proof' – how does this classification mutually configure specific qualities in both cats *and* the fence? We then investigate the practice of making the enclosure 'cat-free' by killing feral cats inside the containment zone. This killing is done by Indigenous rangers from the nearby Warlpiri community, and we identify some important questions about how Indigenous labour is enrolled at Newhaven and how their skills and labour are used to bring a sense of authority to the life provoked within the fence. Finally, we review the re-introduction of animals long missing from the Newhaven landscape and the scientific enumeration practices essential to making the life incited at Newhaven calculable and the returns on provocative containment demonstrable. In conclusion, we examine the various realities that emerge through conservation as provocation. What sorts of natures become present? How is life configured in these realities and whose lives matter? In the shift from a restorative conservation narrative to a future oriented one, is the kind of world being provoked at Newhaven one that we want?

Non-profit conservation in Australia and the rise of the AWC

Since the ratification of the Convention of Biological Diversity at the United Nations Earth Summit in Rio de Janeiro in 1992, there has been a growing awareness that publicly owned

and managed nature reserves will not be sufficient to stem the tide of species extinctions. To combat this issue the Australian government has actively sought through a long-running, coordinated process of consolidation, investment and partnership, to expand the area of land protected for biodiversity conservation. It has done this not only by expanding government owned national parks or reserves, but by formally consolidating a variety of protected land into what is now known as the National Reserve System, a network of protected areas covering 150 million hectares of Australia. Four types of managed land comprise the System: government owned reserves, indigenous-owned and managed reserves called Indigenous Protected Areas (IPAs), shared management reserves and a category referred to as 'private protected areas'. This latter category can include land owned and managed by individual landholders under conservation covenants, and also land owned or managed by independent, non-profit organizations which leverage government grants, charitable donations and other funding to acquire land for the purposes of wildlife protection. These non-profit organizations include the Nature Conservancy, Bush Heritage and the AWC and are recognized by the Australian government as key partners in the National Reserve System. They are becoming well-known and powerful actors in Australian conservation, together managing approximately 140 properties or around 4.6 million hectares of land (Fitzsimons, 2015). While they have established many valuable 'havens for biodiversity' (Bingham et al., 2017: 13) their role, influence and how they differentiate themselves from government in the performance of Australian conservation are less examined.

An investigation of the shift to private and philanthropic conservation models in Australia is urgently needed. This shift signals major institutional and political changes in how conservation is governed and who is considered responsible for protecting or 'saving' nature. As Buscher et al. (2014), Brockington and Duffy (2011) and Braverman (2015) have shown, these developments are part of wider neoliberal transformations involving new conservation arrangements that cut across traditional divides of state and NGOs and generate new forms of territorialization and regulation. However, as important as these changes are, they are not our primary focus here. While we acknowledge the critical context of the shift to private conservation in Australia, our key concern is with the actual conservation practices of one of these non-government organizations, the AWC. We are interested in what distinguishes the AWC from other non-profit conservation organizations in Australia and a key element in this is the predator fence.

The AWC is responsible for an estate of land for conservation that is currently the largest in Australia, consisting of 23 properties covering a total of 3.15 million hectares. Since the purchase of its first property in the 1990s,[1] it has pioneered the creation of 'feral free' nature sanctuaries using special purpose fences as one of its most distinctive conservation strategies. While fencing has always been an important element in the protection of endangered wildlife, it has gained increasing popularity both in Australia and elsewhere (Ringma et al., 2017). The AWC (2017b) has placed itself at the forefront of this push, marketing itself as 'the recognised leader in the design and implementation of conservation fencing' and 'the only organisation to have established multiple, large feral predator-free areas on mainland Australia' (3). Large-scale fencing projects have been implemented on many of the AWC's 23 properties. These projects have become increasingly ambitious, pushing at the boundaries of what is possible. AWC properties have become the site of innovative and extensive fencing ventures, including those designed to keep out feral predators such as the fox and cat fences at Mt Gibson, Paruna, Yookamurra, Newhaven and Scotia, and also fences designed to keep out larger, non-predatory feral animals such as pigs, goats and cattle at Brooklyn, Mornington-Marion Downs, Wongalara and North Head.

In justifying this huge investment in fencing infrastructure, the AWC (2017c) describes itself as part of a 'new model' for conservation, creating and managing urgently needed sanctuaries for endangered native animals. The organization has attracted significant government and philanthropic capital using powerful rhetorics of environmental collapse and descriptions of the dire state of play for many species in Australia. Having set up this disturbing framing of the current state of nature, the AWC promotes itself as uniquely positioned to intervene. Its strategy is simple: expand its network of properties, or 'conservation estate', and implement 'practical land management informed by good science' (AWC, 2017c) on these properties. With this emphasis on the *doing* of conservation, the AWC differentiates itself from both the symbolic politics of environmental lobby groups and the inert protectionism of government. Its conservation ethos, based on principles of private, applied stewardship, goes beyond cordoning off pockets of landscape in perpetuity to act as habitat and haven for wildlife. While it does this on many of its properties, it is also committed to far more active intervention, designed to repress some aspects of damaged ecosystems and bring better ones into being. All these strategies are biopolitical, but they involve different understandings of life and different ways of securing it. In the AWC 'sanctuary' means both haven *and* provocation zone, a space where immanent new natures can be incited.

The idea of sanctuary as an enclosure and provocation zone is most in evidence at Newhaven, our focus in this paper. Newhaven is a 262,600 hectare AWC property in the southern Tanami Desert in the Northern Territory where building predator fencing is the privileged conservation practice (Figure 1). Previously operating as a cattle station, Newhaven's vast and variable landscape supports a range of mulga, spinifex sandplain and other habitats as well as many threatened plant, mammal, reptile and bird species. Purchased for its conservation value as a site rich in avian biodiversity by Birds Australia in December 2000, in 2006 the property was transferred to the AWC which commenced considerable investment in the site under the Newhaven Endangered Wildlife Restoration Project. This project has seen part of Newhaven slated to become the site of the most ambitious cat

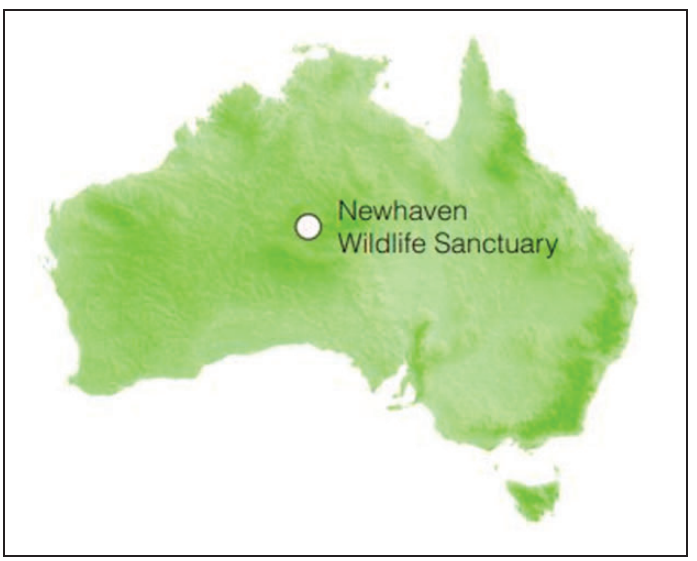

Figure 1. Newhaven sanctuary location. Source: AWC (2017b).

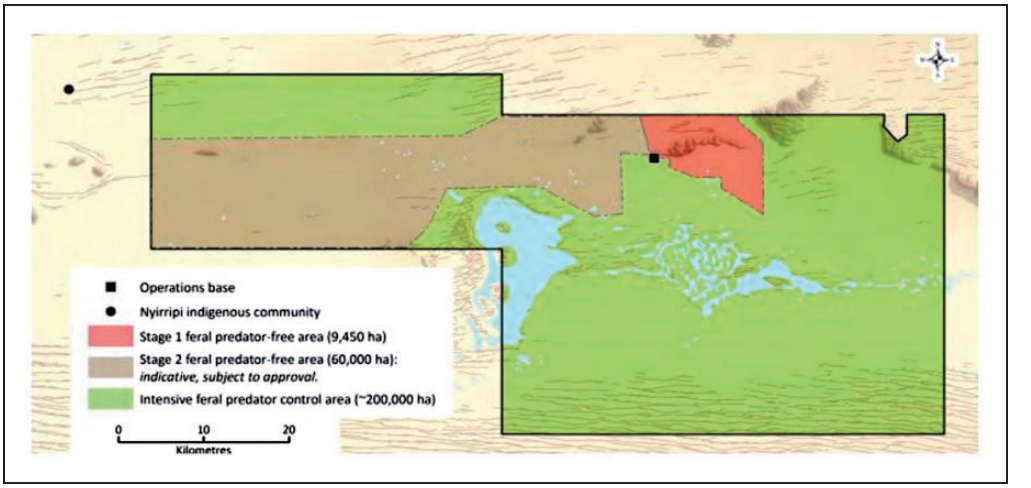

Figure 2. Map showing Stage 1 (in red) and Stage 2 (in brown) predator-free areas. Source: AWC (2017b).

eradication programme on the planet and the 'largest fox and cat-free area on mainland Australia' (AWC, 2017b: 14). This programme centres around the construction of a special purpose conservation fence, one of the most extensive in the world, which is being implemented in two stages. The first stage, completed in 2018, saw the construction of a 44 kilometre section of fence enclosing a total of 9450 hectares. The second stage, scheduled for completion in 2021, will add another 130 kilometres of fence, taking the total enclosed area to a massive 69,000 hectares, an area just a little smaller than Singapore (Figure 2). Given its size and ambition, the project at Newhaven will further solidify the AWC's reputation as a key player in the practice of Australian wildlife conservation fencing, and the energy and resources that have been invested into it are huge. The budget for just the first phase of the project was $5 million, achieved through donations and grants including a $750,000 pledge from the Australian government (AWC, 2017b), and its construction is the culmination of extensive planning, consultation, scientific mapping and monitoring, and physical labour.

As we have noted, the AWC promotes itself as committed to 'playing offense not just defense' and at Newhaven fences are at the heart of this strategy. The issue is how does the construction of predator fencing conceptualize and enact conservation; how does it provoke new natures? Central to these questions is the assumption that life is not a self-evident and stable property awaiting conservation. As recent debates on biopolitics and the governance of things show (Braun, 2014; Hawkins, 2018; Lemke, 2015) what counts as life is constituted through a retinue of situated knowledges and technical objects that actively condition it. In the case of Newhaven, this process is in play where fences, cat traps, Indigenous trackers, scientific surveys, and more are not merely regulating or protecting life but configuring it in very particular ways. Understanding and evaluating these processes is our aim. In the next section, we set out some to the conceptual tools necessary to our analytic method. Also central to our method was a field visit to Newhaven and detailed reviews of the publicly available official documents explaining the predator fence and its history and purpose.

Conservation as provocative containment

Debates within STS, geography and social theory have, in different ways, pursued the question of how new realities emerge? Central to these debates is the concept of

performativity which assumes that realities are not fixed or pre-given essences and nor are they constructed. Rather, they are the contingent outcomes of the manner in which they are apprehended and enacted. The performativity programme functions as the backdrop to much contemporary social theory and references to the 'performative' are endemic. It is a kind of theoretical baseline in many senses, the point from which analysis proceeds. Our aim is not to review this massive literature or evaluate its conceptual legitimacy. Rather, we want to pick up a recent lively conversation within this broad field that is focused on the idea of *provoking* realities or what Lezaun et al. (2013) describe as 'choreographing situations of induced spontaneity' (279). This is a very suggestive line of thinking for investigating conservation as an experimental technique for making particular or desired futures happen. It also extends current thinking on the biopolitics of conservation by illuminating how provocation practices can dynamically reconfigure life by articulating it into new modes of biopolitical governance.

Lezaun et al. develop their argument about the dynamics of provoking realities through a detailed analysis of a unique type of social scientific experiment popular before the Second World War and now widely discredited. In these experiments, participants were put into contained and invented situations and various devices were deployed to stimulate responses and incite a reality. Critics described these experiments as dangerous 'social engineering' and dismissed them as contrived and manipulative. In contrast, Lezaun et al. investigate them as exercises in 'provocative containment', that is deliberate attempts to make a reality happen. As they say: 'Provocative containment is thus a technique for the production and display of social reality. Provocation is to be understood here in the sense of both generation and challenge. To provoke is to trigger an effect' (Lezaun et al., 2013: 279).

In analysing the significance of these experiments for the wider performativity programme, Lezaun et al. argue that what they do is foreground concerns about how 'real' reality might actually be. The experiments brought into existence something that otherwise would not have happened. However, while the conditions prompting the behaviours under observation might have been triggered and contained, they were still very real. The term they use to describe this paradox is 'factitious' (279), and it is this framing of the real and how it is incited that makes the concept of 'provocative containment' so suggestive for investigating the AWC's predator fencing strategies. Prompting as it does questions about how these devices and techniques of conservation actually bring forth or realize new natures?

The massive conservation infrastructure being built at Newhaven is resonant with the role of containment in the experiments that Lezaun et al. analyse. In experiments in provocative containment, researchers weren't interested in studying social life 'in the wild', they did not go seeking an unconfined objective reality awaiting observation and analysis. Instead, they set up a very controlled setting with fixed boundaries in which to study an emergent reality, and in which any overflowings and excesses could be limited. As they explain:

> containment is to be understood in the sense of confinement or restraint but also as a holding . . . containment is close to the notion of a device which can convey an idea of storing, separating, delineating and allocating but *also of articulating in discourse*. (Lezaun et al., 2013: 280 emphasis added)

This idea of containment as a technique that simultaneously holds and also rearticulates is compelling. It alludes to the ways in which containing is always a dynamic process for making worlds (Sofia, 2000). The containment device is not a neutral holder. It has effects, it reconfigures what is contained in two senses: by delineating a boundary and separating things off from the world, and also by framing and projecting them back into the world

and capturing or orienting particular responses – human and nonhuman. As Hawkins et al. (2015) argue, containment is an infrastructural technology that provokes something new.

There are parallels here with accounts of conservation as a process of composition and as an experimental practice (Lorimer, 2015). But there is also something new. The focus on provocative containment as a form of incitement that reconfigures what is contained has the effect of implicitly declaring: a new reality and nature starts here. The issue is how and with what effects? These questions are epistemological and ontological. Lezaun et al. were interested in analysing the epistemic power of contained experiments; how they established the authority of what unfolded as valid and *real*; engineered but also unpredictable and authentic. To make provocative containment relevant to conservation practices it is necessary to investigate not only how these new natures are realized and authorized but also their implications. What are the ontological consequences of this form of spatial enclosure and how does it intervene in the immanent dynamics of ecosystems?

Recent debates about the role of containment and borders in conservation have wrestled with these questions. Many of these debates examine the ontological and biopolitical consequences of practices designed to control rather than simply conserve life. Examples such as invasive species management, culling and biosecurity have been investigated as critical evidence of what Hinchliffe et al. (2013) describe as the 'will to closure' (531). This will to closure, manifest in everything from fixed border lines, to spatial separation, to rigid classifications, seeks to secure desired life by containing or excluding undesired life that threatens it. However, in the emergent biopolitics of these practices, perfect control and containment are rarely realized. As Atchison and Head (2013) show in their analysis of invasive plant management in northern Australia, the conservation goal of strict spatial segregation from weeds was actually characterized by complex and diverse interactions in which different lives, human and non-human, were inextricably entangled. Instead of separation or eradication there were intimate and uneasy adjustments to living together. This resonates with Hinchliffe et al.'s analysis of biosecurity where attempts to demarcate desired and undesired life create border*lands* rather than fixed borderlines. In borderlands, life is modulated by ongoing transactions and interactions that are topological in character. This topological sensibility disrupts assumptions of inside and outside or pure and impure life as discrete and secure categories. Instead these categories inhabit and inflect each other generating continual transformations in how life is actualized. As these authors argue in their account of viruses:

> Infectious agents, in that sense, are a set of potential forms actualized only in relation to the environments engaged. They endure, yet change in different ways, depending upon the nature of the intra-actions involved. In conventional topological terms, the shape and size of things or the distance between them is less significant than the relationships that tie them together. (Hinchliffe et al., 2013: 538)

This topological account of biopolitics in containment zones is important for our argument. However, our claim is that provocation – as a deliberate intervention in the dynamics of life – develops another perspective in this conversation. Topology foregrounds the intra-actions of various elements in configuring life, but provocation draws attention to the effects of these intra-actions, how 'what is' comes about; how 'to be an effect is a provocation of reality' (Muniesa, 2014: 23). Effects are not intrinsic they emerge and, following Latour (1999), their emergence is often tied to an event like a scientific experiment or the construction of a predator fence. In understanding effects, the challenge is to investigate how the capacity to provoke a reality effect emerges, how certain devices and practices intrude in an existing reality and reveal a peculiar new one. Equally significant is the issue of how this reality is

accounted for. Who authorizes it and takes responsibility for its effects? Who or what devises it (Lezaun et al., 2013: 280)? Our interest in Newhaven is driven by a concern with the reality effects that are provoked by the predator fence; how it acquires capacities to modulate life and demonstrate a different social reality, a different nature.

Predator fencing: The provocative effects of 'cat-proof' infrastructure

Predator fences exemplify the will to closure. They enact desired life, by interfering with the flows, movements and trajectories of the animate entities they are designed to contain and control (Instone, 2010: 360; Netz, 2004). In Australia, a huge variety of fencing projects have played an important role in the making of post-colonial natures. Many fences have been implemented to secure the expansion of agriculture by interrupting the trajectories of competitive endemic animals or introduced animals gone feral. Or they have been built as biosecurity borderlines to manage the transmission of parasites and diseases (Pickard, 2007, 2010). These fences have resulted in Australia having 'the most complex set of vermin-proof fences ever erected in the world' (Pickard, 2007: 197). Thousands of kilometres of which still crisscross the continent in various states of repair and with various containment effects.

The Newhaven fence is part of this history, but it is also distinctively different. As we have shown, the AWC promotes fencing as a key element in its unique model of conservation. This model is focused not simply on the goal of containing and protecting wildlife but also provoking it, making new natures happen. In its desire to be seen as a proactive organization capable of going on the offense with nature, the AWC has to configure the fence as active infrastructure capable of making new realities. In order to ensure this process, the fence has to be accounted for and its biopolitical responsibilities established. These accounts link the technical capacities of the fence to various forms of social regulation, they make the fence into a political device. However, our point is not so much that the fence is a political actant in a wider regime of conservation management; that it is an instrument that realizes pre-existing governmental objectives. Rather, that it actively constitutes new forms of biopolitical governance through its ontological effects, through the way in which it participates in modulating life. The key way in which the fence does this is by becoming 'cat-proof'. In the imperative that it becomes responsible for keeping cats out, the fence has the effect of making cats into feral, threatening and unwelcome life. The fence helps bring *certain* qualities in cats into being and, at the same time, becomes responsible for controlling those qualities. It acquires biopolitical agency through its intervention in the myriad realities of cats, making some aspects of their modes of being present while denying others. This is mutual configuration and also powerful evidence that governance and accountability are not antecedent to ontology but effects of it (Hawkins, 2018; Woolgar and Neyland, 2013).

The AWC spends a lot of time explaining and promoting the technical capacities of the Newhaven fence to its various stakeholders. These explanations are often framed within a wider discourse of loss and calamity. According to AWC promotional materials, Australia is one of the few 'megadiverse' nations on earth, with more unique species of wildlife than any other developed nation, yet it faces an 'extinction crisis' with 1700 species at risk of disappearing altogether and the worst rate of mammalian extinctions in the world. These woeful national extinction rates are connected to habitat loss and feral threats, particularly from cats. In much AWC publicity troubling statistics and grainy camera trap photographs are used to emphasize the destructive influence of feral cats and their responsibility for the deaths of millions of small mammals, reptiles and amphibians. Areas of inland Australia, apparently once rich in mammals such as the mala, the bilby, the numbat and the bettong,

are described as mammalian 'ghost towns' (AWC, 2015). Given the urgency of this situation, the AWC website concludes, that 'business as usual' in Australian conservation will only see a continued decline in species numbers, and more and more extinctions.

The fence is situated within this disturbing reality and its unique qualities are framed as a direct intervention in it. In much of the Newhaven publicity material, the fence is implicitly represented as an infrastructural experiment designed to disrupt. It is an object that establishes the grounds on which another reality can be created. This experimental aspect of the fence is connected to the fact that it creates a segregated space separate from the current spatiality of Newhaven in which existing objects, forms of life and conceptual framings are put into new relations. Just like the STS claim that experiments involve segregations from ordinary space, so too with this infrastructure of containment (Brun Jensen and Morita, 2015). While the explicit function of the Newhaven fence is to provide a material barrier to the movement of cats, the effectiveness of this barrier is only to be established by identifying which particular aspects of cat movement have to be regulated.

Experimental trials of predator fences have shown that cats demonstrate extraordinary tenacity in the face of physical impediments. They seek out weak points such as junctions and joins, jump or climb over wiring and fence posts, and forcibly push at netting expanding existing gaps in fences made by other animals (Moseby and Read, 2006). Trust in a fence's ability depends on overriding cats' efforts to penetrate. This is how the quality 'cat-proof' is established and calculated. The fence at Newhaven follows existing guidelines (e.g. Long and Robley, 2004) recommended for a cat-proof fence. It has wire netting with small hexagonal weave to remove the ability of cats to squeeze through or climb, and it has claw-resistant steel posts rather than timber. It stands at 180–200 centimetres tall with an overhang and electrified wiring at the top to prevent animals from scrambling over. A wire mesh skirt at the bottom stops cats from digging or pushing underneath. These technical capacities are accounted for in relation to cats. In this way 'feral' cats are an emergent effect of their interactions with an infrastructure designed to repel them.

The fence demands vigilant upkeep long after construction to maintain its integrity as a technology of separation in the face of ongoing and unwanted feline challenges. It runs down the middle of a flat, 8 metre-wide vegetation-free alignment, graded and cleared so it cuts through the surrounding habitat, preventing animals from using vegetation to scale the fence while also allowing access for vehicles down either side (Figure 3). This makes it possible for property managers at Newhaven to monitor the fence, detecting paw-prints in the graded soil and other traces of attempted incursions into the fenced area. To further limit the challenges that feral cats can pose to the fence, it has been built within an area in which the AWC has already implemented an intensive feral predator control programme, involving a combination of trapping, shooting and Indigenous hunting. The influence of cats is curtailed within and around the fence, both before and after its construction.

The Newhaven fence is a powerful material barrier constructed to intervene in the movements of cats and much else. It is also a biopolitical borderland in Hinchliffe and Lavau's (2013) sense where myriad new topological relations emerge. However, more critical for our argument is the way in which the fence becomes a reality generating device by provoking certain effects. As an infrastructure experiment it intervenes in existing life and in the same moment influences and reinvents it. These interactions between intervention and invention are evidence of social enactment at work (Marres et al., 2018). The cats that are provoked by this fence appear to have a singular reality and identity as feral killing machines. Repelling them with a massive physical structure separates them from their other realities and requalifies them as unwanted life. The 'cat-proof' fence is a critical material semiotic force in making cats at Newhaven objects of biopolitical calculation and control.

Figure 3. Newhaven Warlpiri Ranger Duncan Jungala Gallagher (foreground) and Newhaven Wildlife Sanctuary manager Josef Schofield (background) inspect a completed section of the Newhaven cat-proof fence with electrified wires and overhang at the top and wire skirt at the bottom. Source: AWC (2017c).

Indigenous labour and the creation of cat-free space

A second and equally crucial step in the AWC's experiment at Newhaven involves the lethal removal of all feral cats within the enclosed area. The interplay of these two practices – material containment and the purification of life within – underpins the AWC's model of conservation. Without each, the achievement of 'a pristine version of the social phenomenon of interest' (Lezaun et al., 2013: 285), integral to creating the conditions for simulating new ecologies, would be impossible. However, getting rid of feral cats is no easy task. They are widespread in large numbers, but remain solitary and wily, making them difficult to detect and to shoot in any great number. They are also difficult to poison, preferring live prey to baited meat, and there is as yet no option for their biological control through introduced diseases. Trapping has limited effectiveness because not only do feral cats in such remote environments tend to be wary of traps, but any killed by this method are readily replaced as others migrate into the vacant territory (Biosecurity Queensland, 2016). Such is the invasive and evasive agency of feral cats in Australia that, apart from some small islands off the mainland, complete eradication is not a practicable goal in open landscapes. However, by segregating a feral cat population discrete and small enough to eradicate, the cat-proof Newhaven fence enables a new possibility: a carefully choreographed 'cat-free' zone which provides a 'radical form of contingency' for witnessing what might happen when ecologies are not 'qualified and contaminated by the vagaries of uncontrolled social life' (Lezaun et al., 2013: 285).

While the fence makes eradication a realizable goal, just one cat remaining in the fenced area will undermine the AWC's experiments in provocative containment. According to one media story, the AWC estimates that over 500 cats roam Newhaven, of which 30–50 need to be killed in the first phase of the Newhaven Endangered Wildlife Restoration Project, and a further 100–150 in the second (Aikman, 2017). To assist with the systematic killing of the cats within and around the fence, the AWC draws upon the local Warlpiri community, who have long-held cultural connections with and recognized Native Title rights over both Newhaven and the 10 million hectare section of land that surrounds the AWC property.

Under a voluntary agreement, the Warlpiri people manage this adjoining land under the government's National Reserve System as the Southern Tanami IPA. For this, they receive government support through the Warlpiri Indigenous Rangers programme, following a long-running employment model combining traditional customary practices of obligations to 'Country' and contemporary land management goals (Gorman and Vemuri, 2012). Since taking over the management of Newhaven, the AWC has worked with the Central Land Council to obtain grants to provide paid employment to the Warlpiri people to work on Newhaven projects (Central Land Council, 2012), creating its own cohort of Indigenous land managers that are referred to on its website and newsletters as the 'Newhaven Warlpiri Rangers'. As well as working on other aspects of the Newhaven project, such as the construction of the fence, three Newhaven Warlpiri Rangers – Christine Ellis Michaels, her mother Alice Henman and Benedict Mosquito – engage in the laborious task of detecting, catching and killing all the cats within the Newhaven fence.

While it is not our intention here to interrogate the efficacy of Indigenous ranger programmes, which often play a laudable role in the economies of very remote communities, we do want to explore how Warlpiri skills are drawn on to lend authority to the 'cat-free' natures being created inside the fence. As others have written, negotiating the interplay of violence and care that takes place under the banner of 'killing for conservation' can become a politically complex and controversial business (Crowley et al., 2018; Meurk, 2015; van Dooren, 2011). Programmes to cull and eradicate animals can be met with concern, and even acts of resistance, by the public and voices still pop up on AWC social media pages criticizing its vilification of cats and questioning the necessity of cat eradication. The AWC appears keenly aware of this as it negotiates its global presence and reputation as a conservation leader. In a 2017 interview on ABC News24, for example, CEO Atticus Fleming obfuscates the fate of the cats as he describes them being 'removed' from Newhaven, adopting a strategy similar to that described by Meurk (2015) and Crowley et al. (2018) in the context of feral pig and grey squirrel management, respectively. When pressed to account for what happened to the cats, which the interviewer describes as being a 'touchy' issue, Fleming frames the killing as a reparative practice, collateral to conservation, responding with mild frustration:

> I don't think it's very touchy. I mean, feral cats are killing millions of native animals every night, so we have a choice: cats . . . or bilbies, for example. So when we catch the cat, we kill the cat. Humanely, but . . . the objective of this exercise is to save our wildlife from extinction and to do that we have to remove feral cats.

To emphasize this point, he then paints a vivid picture of the possibilities enabled by the Newhaven fence by the eradication of cats, likening these to 'turning back the clock' to a pre-colonial nature teeming with small mammals. Rather than acknowledging the centrality of killing as a practice of contemporary conservation, Fleming instead chooses a key manoeuvre of provocative containment: obscuring the 'prosaic intelligibility' (Lezaun et al., 2013: 286) of the deaths of hundreds of cats with accounts of a dramatic new reality about to emerge.

In contrast to this public interview on national radio, the killing skills of the Newhaven Warlpiri Rangers are openly described in much of the AWC's communications material. Ellis Michaels and Henman are often described as having 'outstanding' (AWC, 2017b: 3) tracking and hunting skills, which are attributed to their 'lifelong experience' tracking and hunting cats 'highly sought-after as bush tucker' (AWC, 2019). A story for the Australian Magazine, written by a journalist invited to Newhaven as part of a press junket (Aikman, 2017), sheds more light on the nature of these skills. Ellis Michaels and Henman are

Figure 4. Publicity photos showing Newhaven Warlpiri Rangers Christine Ellis Michaels (top) and Alice Henman (bottom) displaying the cats and kittens they have killed. Source: Top photo taken from AWC (2017c) and also displayed on social media, bottom photo taken from AWC (2019).

described 'reading' the ground as they walk, demonstrating a sharp awareness of cat movement and a keen ability to find traces of them in the landscape. They follow cat footprints that appear to Aikman as little more than 'clustered dimples in the soft sand', and describe how they track and follow cats in hot conditions, sometimes for several days, so that they grow exhausted from never being allowed to hide and rest. When they finally overcome the cats, the women describe hitting them with a crowbar, a method demanding agility and strength. This killing the AWC appears happier to acknowledge, with photos of Ellis Michaels and Henman displaying their kills posted on social media pages, in its newsletters and on its website (Figure 4).

As it enables a potentially cat-free environment, the AWC appears to step back from the killing that comprises a core part of its biopolitical experiment. Instead it maintains a position of 'exogenous' authority (Meurk, 2015): it is an optimizer of life, global in its reach and transcendent over the natures it seeks to provoke. As it sub-contracts the grittier, on-ground work of killing cats to the Newhaven Warlpiri Rangers, the AWC can promote the hunting of cats as 'endogenous' (Meurk, 2015) to the Newhaven landscape. This is not traditional hunting for food but hunting for species eradication, yet it is presented as emergent in Warlpiri dwelt histories and pragmatic relationships with feral cats. This raises more questions than can be answered with our desktop review. Participative, empirical research is required to gain firsthand accounts of the Newhaven Warlpiri Rangers' experience of paid killing for conservation at Newhaven, including how they reconcile their traditional hunting practices with the AWC's biopolitical agenda of experimental eradication, how they anticipate the natures being simulated, and how the fence impacts on their work and their relationships with their country. There are important ethical questions to be addressed, too, regarding whether Warlpiri hunting practices will continue to be of value in the natures being simulated at Newhaven once the cats have been removed. Tensions between conservation and Indigenous interests over what constitutes the right things to hunt have already been observed at Pungalina-Seven Emu, an AWC property in Queensland's Gulf country. Martin and Trigger (2016) describe the local Garawa people expressing concern regarding the eradication of introduced species, and exercising discretion when hunting native bush foods on the property due to disapproval from AWC staff. When the AWC realizes its vision of a landscape teeming with small native mammals at Newhaven, will the Warlpiri people be able to exercise traditional economic relationships with these animals too? Or will the fence exclude these practices as well, once desired life has been provoked?

Stimulating value and enumerating effects

After the cat-proof barrier is erected and the Newhaven Warlpiri Rangers have removed the cats within, the AWC (2015) can realize its ultimate goal, which is to

> restore, as far as possible, the wildlife of a large area of central Australia to the state it was in at the time the early European explorers arrived – before the impact of feral animals and altered fire regimes robbed the region of its native mammals.

Much of this wildlife is no longer found in the area, so this step in the AWC's experiment requires several species to be re-introduced to the contained area. The 10 small-mammal species that will be introduced to the Newhaven sanctuary (AWC, 2017b) number among Australia's rarest. Through a series of what it calls species translocations, the AWC will source representatives of these species from isolated remnant populations and captive breeding programmes and bring them to the Newhaven sanctuary. Once there, it is intended that these species will not only establish themselves but also multiply and 'flourish'. There is risk involved here, but the AWC's vision is ambitious. It is not simply about returning these animals to the landscape to eke out a living within the fenced area, but about making them *thrive* in the carefully contained and purified landscapes engineered for them. In the AWC's (2015) words:

> Success will be defined not only by the number of species that are returned but also by our ability to fill the landscape with large populations of these endangered mammals. The rocky ranges on

> Newhaven will once again 'swarm' with Black-footed Rock-wallabies. The Burrowing Bettong warrens will be re-opened, hosting large, boisterous Bettong families led by a senior matriarch. Red-tailed Phascogales will reclaim hollows in the bloodwoods and a nocturnal walk through the sandplains will flush Mala and Golden Bandicoots, causing Bilbies to canter off with their characteristic, ungainly gait. (5)

Like the construction of the fence and the removal of feral cats, this stage in the realization of the AWC's factitious world requires painstaking work. So far, only one species has been re-introduced to the Newhaven sanctuary. In November 2017, 27 Rufous hare-wallabies or *Mala* from a fenced sanctuary at Watarrka National Park (approximately 400 kilometres away) were brought via plane to Newhaven after the groundcover in their enclosure was destroyed by bushfire, leaving them vulnerable to predators. Because this was an emergency situation, the mala were translocated before the Stage 1 fencing project was complete, and a smaller 143 hectare enclosure within the Stage 1 fenced area was made ready to accommodate them. In July 2018, the AWC bolstered this population with another 30 animals from the AWC's Scotia wildlife sanctuary in western New South Wales (approximately 1300 kilometres away) creating a 'founder population' at Newhaven of almost 60 individuals (AWC, 2018). According to the AWC website (AWC, 2018), in addition to fencing and removing the cats, the environment within this enclosure has been made amenable to the mala in other ways, so that they will establish quickly and multiply. Controlled burns of grass-cover prior to re-introduction have ensured that the animals have fresh regrowth to feed on and the right conditions under which to build burrows, and supplementary food and water will be provided to the mala as the population establishes and grows. Enhancing the nature on offer within the enclosure is done deliberately to maximize the malas' fecundity. In good conditions, mala can breed and wean their young continuously, enabling each female to potentially yield three offspring per female per year (AWC, 2018).

By placing the mala in this contrived, contained situation, the AWC provokes them to become complicit in the reality being generated at Newhaven. According to Lezaun et al. (2013), provocative containment is a form of spectacle, and what is happening with the mala is no exception. It is not enough for this population to simply sustain itself. This experiment must have the potential to create something that is exciting, and that the AWC can promote as evidence of the success of the fence and of conservation through the construction of contained environments. In the case of mala, the AWC projects that the founder population within the Stage 1 fenced area can grow to 2400 individuals, and in the coming decades, it can reach 18,000 individuals in the Stage 2 fenced area. Should the final figure be achieved, it will constitute a staggering 450% increase in mala numbers nationally. By inciting the mala to thrive within the fence and the enhanced, cat-free environment, the AWC promises an accumulation of biotic value that exceeds the material costs and labour invested in the fence, the eradication of cats and the enhancement of the contained environment. This lively profit is the currency that underpins the AWC's mandate of conservation as offense rather than defence. As the AWC's CEO describes:

> The good news is, that, once you release these animals into a cat free area, they'll breed like rabbits [laughs]... the 'return', if you like, is huge on this investment, because we'll double the surviving population of at least 6 of Australia's most threatened mammals'. (Atticus Fleming speaking on ABC News24, 13 June 2017)

Numerical translations of this potential biotic value feature prominently in the AWC's promotional discourses. Figure 5 frames the potential biotic gains enabled by the fence in ledger-like terms.

Species	Global pop est (2012)	Newhaven pop est (9,450 ha)	% increase	Newhaven pop est (69,000 ha)	% increase
Western Quoll	13,500	90	1%	650	5%
Red-tailed Phascogale	<10,000	625	6%	2,500	25%
Numbat	<1,000	210	21%	1,300	130%
Golden Bandicoot	25,000	7,000	28%	32,500	130%
Bilby	10,000	700	7%	4,500	45%
Burrowing Bettong	14,500	2,500	17%	22,500	155%
Brush-tailed Bettong	<18,000	1,200	7%	9,000	50%
Rufous Hare-wallaby (Mala)	4,000	2,400	60%	18,000	450%
Black-footed Rock-wallaby	<10,000	750	8%	1,500	15%
Shark Bay Mouse	10,000	7,500	75%	48,750	488%
Central Rock-rat (Antina)	<1,000	1,250	125%	1,825	183%

Estimated mammal populations to be established at Newhaven

Figure 5. A table from the Newhaven Endangered Wildlife Project Prospectus (AWC, 2017a) showcasing the predicted effects of mammal translocations on global populations of these animals from Stage 1 and Stage 2 of the fencing project.

It is too early to call any outcomes on the AWC's predictions, and a large part of the AWC's work at Newhaven consists of setting up and carrying out ways of accounting for the *actual* impact of containment in the provocation of desired life. This process of enacting something 'really real' (Muniesa, 2014: 17) from the AWC's grand vision is led by AWC scientists and will be delivered by way of a thorough species monitoring programme at Newhaven. This programme builds on an already established monitoring programme which has tracked the numbers of birds, reptiles, cats and certain threatened mammals for the past 10 years. Additional monitoring, however, is aimed at specifically capturing the effects of the fence and the cat-free environment on the life within. This monitoring consists of obtaining baseline data, by counting species and vegetation at Newhaven prior to the construction of the fence, and the ongoing tracking of fauna and vegetation at 50 sites inside and outside the Stage 1 fenced area (AWC, 2017c). There is a growing literature on the power of baselines in knowledge practices underpinning conservation (e.g. Alagona et al., 2012; Craig, 2014; Ureta, 2018). By fixing a set of measurable parameters that act as an uncontained and purified nature degraded by cats, the baseline measurements at Newhaven provide a historical yardstick for the new nature, against which effects of the fence can be numerically measured and assessed. From these measurements, versions of nature *after* containment and purification – a provoked, simulated nature – can be assembled into numbers and words and communicated to the world. Here, the fence becomes an apparatus that translates and demonstrates reality at the same time as it acts as a material container. Although tangible results of the effects of the fence on species numbers are not yet available, these will likely form a prominent part of AWC promotions in the future.

Conclusion: Provoking new natures

Our focus has been on investigating how the commitment to predator fencing at Newhaven makes conservation a form of provocative containment. The investment in predator fencing at this site depends on several key processes that are critical to affecting or enacting a new nature. The technical infrastructure of the fence is accounted for in relation to certain biophysical qualities of cats. These qualities are singled out and rendered calculable through the design of the fence. 'Feral' and 'cat-proof' do not precede these actions, they are effects of them. Then there is the work of killing and the way in which the tracking skills of Indigenous rangers are reconfigured as conservation practices through the dynamics of economic exchange. And finally, scientific activities provoke facts, baselines and numbers that articulate a reality that is not only ordered but also able to be measured and judged as better or worse than what went before or what remains outside the containment zone. Through these practices, and others that we have not examined, a new nature is being provoked at Newhaven where what counts as valued life is actively conditioned. Although Lezaun et al. (2013) remain agnostic about the engineered realities that are obtained via provocative containment, the question about whether the carefully simulated natures achieved through ambitious conservation fencing projects are the best outcome for conservation is impossible to avoid. This is because the fence is not simply a neutral reality generating device, but it is also a biopolitical intervention that is securing some life and not others.

With its emphasis on conservation as a process of careful simulation and composition, aimed at maximizing returns on conservation investment in terms of population numbers of individual species, the AWC is configured as the arbiter and creator of new natures. Alternative approaches to conservation, and experimental explorations of new combinations and convivialities between the new and the old are not on the table here. Contrast this approach with the work of the South Australian Arid Recovery programme (Aikman, 2017; Bearup, 2018) which is also grappling with the issue of species that are sensitive to threats becoming dependent on contained environments and losing their fear of predators. Here they are experimenting with strategies where sensitive species are being exposed to predators to build their skills in adapting and responding to less than pristine realities.

Another issue is the AWC's dependence on philanthropic wealth. Quoting Kate Moseby from the Arid Recovery programme, Aikman (2017) describes how the AWC's key success has been its ability to 'prise money away for environmental projects that would otherwise be spent on ''fast cars and yachts'''. There would be significant implications should the AWC be unable to continue to fund these projects through these sources, and sanctuaries had to be sold or passed on. This has been known to happen in Australia, as was observed when John Walmsley's company Earth Sanctuaries Ltd failed. Fences like Australia's dingo and rabbit proof fences can remain in the landscape. Even unmaintained, they continue to have effects, long after their ability to harness and contain valued resources have become compromised. What realities might they provoke then?

Provocative containment is a process of making realities through very specific practices. The act of containing doesn't simply enclose a space, it triggers and simulates something new. As we have argued Newhaven's predator fence is not so much a compositional conservation device, it is a biopolitical intervention and provocation. Provocation is performative. It is a forward looking intervention that, when connected to containment strategies, appears to *re*source what is contained by implicitly declaring: a new reality and nature starts here.

Highlights

- We explore a non-profit wildlife conservation organization and the construction of a massive predator fence at Newhaven in central Australia.
- We argue that the fence is an excellent example of the performative effects of conservation infrastructures *making* worlds not just saving them.
- Our analysis demonstrates conservation infrastructures as technologies of provocative containment through which particular and peculiar forms of nature are made to happen.
- The fence's power is imbued by its design and maintenance, the purification skills of Newhaven's traditional owners and the scientific enumeration of life within its boundaries.

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Note

1. The AWC founder, Martin Copley, began acquiring properties in the 1990s and then created the AWC as a public, non-profit company several years later.

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