Island Extinction and Animal Remains in Museums

by

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During my PhD, I have had the privilege of visiting places that many would only dream of—the Galápagos Islands, the Hawaiian Islands and the island of Mauritius. I hope this thesis does justice to these places that I visited, the people I encountered and the animals I discuss in the pages of this thesis.

Summary

This doctoral thesis argues that the way in which museums display and communicate extinction needs to consider the uneven geographical loss of biodiversity. Hugely impacted by practices of colonial exploitation, islands in this respect are particularly illuminating. Islands have been sites of scientific collecting and have suffered significantly from dramatic changes induced by humans on their environments. This thesis presents four articles that each centre on questions surrounding the display of island extinction in museums.

The four articles are based on case studies from four geographically distinct island locations. The first article examines the extinction of rice rats throughout the Caribbean and, in particular, the only two remaining Saint Lucia giant rice rat specimens. The second article then turns to the island of Santa Cruz in the Galápagos archipelago, where the last remaining Pinta Island tortoise is displayed. The third article casts light on the ghostly presences of giant lizards on Culebra Island through specimens that, since collected, have never been found on the island again. Finally, the fourth article takes the investigation to Hawai'i and the 'ahu'ula (cloaks or capes) made from feathers of endemic forest birds now extinct or threatened by extinction.

Together the articles reveal the complex interplay between extinction, the communities to whom species belonged and the museums that today display specimens of them. What is highlighted in each case is that extinct specimens displayed in museums embody meanings that exceed those ascribed to them by museums. They draw attention to a task currently facing museums to account more fully for their longstanding implication in colonial practices that have played such a devastating role in the global loss of biodiversity.

Sammendrag

Denne doktorafhandling undersøger, hvorledes museer bør være mere bevidste om måden, hvorpå de udstiller og formidler artsudryddelse i forhold til den geografiske skævvridning, der knytter sig til tab af biodiversitet. I denne forbindelse er øer i særdeleshed et godt eksempel qua deres lange koloniale historie. Øerne har været steder for videnskabelig indsamling af naturalia og samtidig lidt betydeligt under menneskeskabte klimaforandringer. Denne afhandling præsenterer fire artikler, der hver især stiller spørgsmål ved måden, hvorpå museer udstiller udryddelse af artsmangfoldighed på øer.

De fire artikler er basereret på casestudier fra fire forskellige øer. Den første artikel undersøger udryddelsen af risrotter i Caribien gennem to eksemplarer af denne art indsamlet fra øen Saint Lucia. Den anden artikel retter blikket mod Santa Cruz, der er en del af Galápagosøerne, hvor den sidste Pinta Island-skildpadde er udstillet. Den tredje artikel belyser den spøgelsesagtige tilstedeværelse af gigantiske firben på Culebra i Puerto Rico gennem bevarelse af eksemplarer, der, siden de blev indsamlet, aldrig er fundet på øen igen. Afslutningsvis tager den sidste artikel efterforskningen til Hawai'i i undersøgelsen af 'ahu'ula (kapper) lavet af fjer fra honningædere, der er udryddet eller truet af udryddelse.

Artiklerne demonstrerer det komplekse samspil mellem udryddelse af dyr, de samfund som arterne var en del af, samt de museer der fortsat har eksemplarer af dyrene i deres samlinger. De enkelte artikler afslører, hvordan fragmenter af udryddede dyrearter indeholder mange flere facetter til deres udryddelseshistorie end de, museerne tilskriver dem. Museerne står derfor overfor en formidlingsopgave, hvor sammenhængen mellem de langvarige konsekvenser af koloniale praksisser knyttes tydeligere sammen med globale tab af biodiversitet.

Table of Contents

List of Articles

Article I:

Westergaard, Gitte. 'Colonial Entanglements in Extinction Narratives: The Afterlives of Two Sanit Lucia Giant Rice Rats'. *Journal of Natural Science Collections* 11 (2023): 3–12. http://www.natsca.org/article/2795.

Article II:

Westergaard, Gitte, and Dolly Jørgensen. 'Making Specimens Sacred: Putting the Bodies of Solitario Jorge and Cụ Rùa on Display'. In Sarah Bezan and Robert McKay (eds), *Animal Remains*, 68–86. London: Routledge, 2021. https://doi.org/10.4324/9781003129806-7.

Article III:

Westergaard, Gitte. 'Ghostly Presences: Giant Lizards and Conservation on Culebra Island'. In Pavla Šimková and Milica Prokic (eds), *Entire of Itself? Towards an Environmental History of Islands*, 99–120. Cambridgeshire: The White Horse Press, 2024. http://www.jstor.org/stable/jj.12638983.8.

Article IV:

Westergaard, Gitte. 'Hidden Stories of Extinction: the Hawaiian 'Ahu'ula Feather Capes as Biocultural Artefacts'. *Museum and Society* 20(1) (2022): 105–118. https://doi.org/10.29311/mas.v20i1.3803.

Beyond the Dodo

Species are disappearing more rapidly than ever before in human history. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Service (IPBES) estimates that as many as one million species will face extinction within decades unless immediate action is taken to reduce the drivers of biodiversity loss, which they relate mostly to the ways in which humans impact the globe through habitat destruction, the overexploitation of wildlife and the global spread of species.[1]

A flightless bird endemic to the island of Mauritius in the western Indian Ocean, the dodo was the first species humans realised they had driven to complete extinction. It disappeared within a century after it had been brought to the attention of the western world by Dutch sailors in 1598. The dodo was hunted but its extinction was mostly caused by the rats, pigs, monkeys and goats that were introduced to the island, which disturbed a natural environment that had developed in isolation for millions of years. The extinction of the dodo happened quickly and, except for a few written accounts of the bird by sailors and exiles, some illustrations and bone fragments, not much was left of the dodo when its extinction became clear. The only known taxidermy specimen of a dodo had deteriorated and only the head, one foot and a few feathers were saved from a once-living specimen.[2] Yet, the dodo has been defined as the 'first proto-typical symbol of extinction' and even though very little

[1] IPBES, 'The Global Assessment Report on Biodiversity and Ecosystem Services: Summary for Policymakers', *IPBES*, 2019: https://zenodo.org/records/3553579 (accessed 20 October 2023).
[2] H.E. Strickland and A.G. Melville, *The Dodo and Its Kindred; or the History, Affinities, and Osteology of the Dodo, Solitaire, and Other Extinct Birds of the Islands Mauritius, Rodriguez, and Bourbon* (London: Reeve, Benham, and Reeve, 1848), 22–23; the remaining parts of the only known taxidermy specimen of a dodo is in the collection of the Oxford University Museum of Natural History.

remains of it today, the dodo is still used as a prime example of extinction.[3]

The common extinction narrative of the dodo, however, does not recognise the significance of the dodo's evolution, nor why the human impact on islands is substantially higher than on the mainland. Instead, it portrays the dodo as an animal that has been self-selected for extinction. From the sparse descriptions of the dodo by sailors that focused on the dodo as a food source, the dodo gained a reputation as a fearless and stupid bird unaware of the danger that humans presented, burdened by its own weight that made it too slow and incapable of flying. The well-known oil painting of the dodo by the Dutch artist Roelandt Savery (1626) contributed to this image. It was further emphasised when bone remains, found in the wetland *Mare aux Songes* on Mauritius in 1865, were sold to museums around the world and incorporated into recreation models that depicted the dodo in similar ways. Many of these models are still exhibited in museums and often mistaken to be taxidermy specimens of the dodo.[4] This human-created image of the dodo is the way it is displayed in museums today.

[3] M.V. Barrow, *Nature's Ghosts: Confronting Extinction from the Age of Jefferson to the Age of Ecology* (Chicago and London: The University of Chicago Press, 2009), 50.
[4] J.S. Lucas, 'Reconstructing a Dodo', *Breakthrough Magazine* 86 (2007), 85.

Figure 1: Recreation model of a dodo displayed at the University Museum in Bergen (photo credit: Gitte Westergaard)

Natural history museums are places that we entrust with an enormous authority to tell 'the truth' about the natural world. They hold rare and valuable specimens of extinct species in their collections. As human activities cause more and more biodiversity loss, it is important that museums are conscious of the ways in which they represent human-induced extinction to the public. There is a greater demand for museums to be more aware of their responsibility as sites where the public come into direct encounter with species that no longer exist in nature or are extremely rare to observe in nature. As the example of the dodo demonstrates, museums are partly responsible for perpetuating a stereotypical image of islands and extinction.[5]

This doctoral thesis attempts to depart from this stereotypical image of island extinction. It examines a selection of animal remains of species whose extinction has been caused by humans. The research framework is that of the project 'Beyond Dodos and Dinosaurs: Displaying

[5] The Natural History Museum in London has a small exhibition on the 'changing image' of the dodo, viewed 2021.

Extinction and Recovery in Museums', whose overarching objective consists in generating new understandings of the ways in which extinction narratives in museums are constructed. Within this research framework, the purpose of my thesis is to examine different representations of island extinction in museums and to consider what they can reveal about human relationship to island nature. My inquiry is based on how the animal remains of specific extinct species have been collected, preserved and displayed in museum contexts. Four case studies make up my investigation into island extinction and their representation inside museums.

Islands provide an ideal site to consider extinction and the construction of extinction narratives in museums. They were among the first places that provided European societies with an understanding of their tremendous implication in the loss of entire species. Islands are bounded places where the human impact on the natural environment is easily perceptible and happens much more rapidly than on the mainland. Their isolated nature has resulted in an unusual development of endemic species found nowhere else and naturalists such as Charles Darwin and Alfred Russel Wallace were both inspired by islands when they independently developed their theories on evolution and natural selection.[6] Islands have contributed to some of the greatest scientific discoveries of the natural world, but the imagery of islands as bounded and isolated places has also fuelled the colonialist mindset to establish new markets and sustain European societies with desired and exotic products. Their smallness and strategic oceanic placements have made islands important sites of international trade and, in more recent times, distant sites for nuclear testing. Islands have been made into living-museums and laboratories, fulfilling a fantasy on the part of visitors to

[6] Ideas expressed in C. Darwin, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (London, John Murray, 1859) and A.R. Wallace, *Island Life, or the Phenomena and Causes of Insular Faunas and Floras, including a Revision and Attempted Solution to the Problem of Geological Climate* (London: Macmillan, 1911).

catch a glimpse of an unspoilt nature while, ironically, drawing in ever-expanding numbers of new visitors.

The high level of endemism on islands comes with a high degree of vulnerability to change, meaning that island biodiversity has suffered substantially more from human-induced extinction than elsewhere. Indeed, 60 percent of all modern extinct species come from islands, and almost 40 percent of all species enlisted as critically endangered on the IUCN Red List of Threatened Species are located on islands.[7] In the nineteenth century, the realisation that humans were playing a role in the extinction of other species served as a reason to collect and catalogue their disappearance. This explains why museums today house many rare and valuable specimens of extinct island species in particular. The imagery of islands and island extinction is often shaped by Europeans in their encounter with island species.

In 2021, when I visited Mauritius to undertake research, the imagery of the dodo as a 'dumpy, dowdy' bird was maintained as part of the island's cultural heritage and widely used to promote the island to tourists.[8] The dodo is used on bank notes and coins as well as on stamps; they are the main souvenirs to bring back from Mauritius, available in such forms as fridge magnets, beach towels and small 'smiling' figurines. This ubiquitousness of the dodo underscores the extent to which animal remains displayed in museums live a kind of second life beyond the museum and, in this case, become an emblem of an entire island nation.

The Mauritius Natural History Museum in Port Louis makes little attempt to correct this image. In the Dodo Gallery of the museum is a recreation model of the dodo placed in its original forest environment as part of a newly developed artificial reality experience, where one can see several dodos come 'alive' by using a mobile phone. The dodos are

[7] B.R. Tershy et al., 'The Importance of Islands for the Protection of Biological and Linguistic Diversity', *BioScience* 65(6) (2015): 592–7.
[8] Quote from the exhibition label 'the World of the Dodo' in the Dodo Gallery at the Mauritius Natural History Museum.

moving around and making squeaky sounds on the visitor's smartphone, even though it is unknown how the dodo looked or sounded. The closest the visitor gets to a genuine depiction of the dodo is a complete skeleton of a single dodo specimen, completely striped of its feathers, also displayed in the Dodo Gallery at the Mauritius Natural History Museum. The dodo is a prime example of how the human imagination has played a role in constructing visual imprints of extinct species. New research from the discovery of fossils on the island of Mauritius suggests that the dodo was a much hardier animal than previously thought. In addition, previously overlooked or ignored illustrations of the dodo in its natural habitat reveal that it was a slimmer and more athletic bird that survived many changes to its environment, except the changes brought about by humans.[9] It continues to be important that animal remains inside museums are reinterpreted and told anew—especially in times of biodiversity loss.

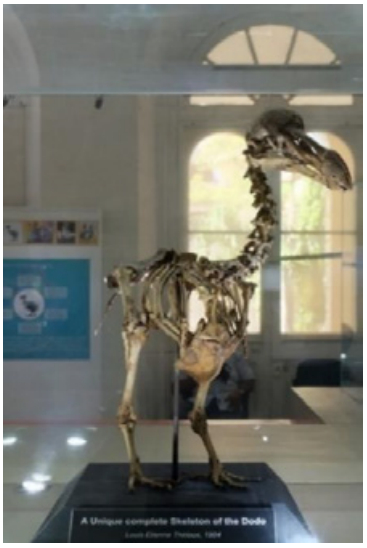

Figure 2: A complete skeleton of the dodo exhibited at the Mauritius Natural History Museum in Port Luise (photo credit: Gitte Westergaard).

[9] A.C. Kitchener, 'On the External Appearance of the Dodo, *Raphus cucullatus* (L., 1750)', *Archives of Natural History* 20(2) (1993): 279–301.

Research Objectives

The thesis is anchored in three research questions that relate to the past, present and future representation of island extinction in museums:

- In what ways are island narratives embedded in material evidence of extinct animal remains?
- To what extent does the display of island animal remains hide or elucidate stories of extinction?
- Are museums able to contribute to the decolonisation of islands through present and future engagements with animal remains?

Taken together, these three questions bring into dialogue extinction studies, islands studies and museum studies. The first research question is concerned with the material evidence of island extinction and what animal remains can tell us about the uneven loss of biodiversity. This question is historical in the sense that sources are consulted to reveal how and by whom the animal remains in question were collected. It aims to bring to light new perspectives on island extinction in relation to the colonial practices that were implicated in the collection of the animal remains and the associated loss of biodiversity. The second research question investigates the present-day display of animal remains through analyses of the context in which the animal remains are displayed. This involves taking into consideration where in the museum the animal remains are placed, what they are placed alongside and what information is included in their accompanying display labels. These analyses should yield insights into how island extinction is disseminated within museums as well as what narratives the museums have chosen to focus on. The third research question is forward-looking in its desire to point towards how museums might go about decolonising their displays of island species and narratives of island extinctions.

Thesis Structure

The thesis is divided into three parts. Part I sets out the Theoretical Frame of my project, consisting of the historiography of three bodies of literature—extinction studies, island studies and museum studies—within which this project is situated. This section clarifies the key concepts employed in my research and specifies what contribution I hope to make to the three research fields. A section then follows that articulates my methodology of tracing animal remains inside museums together with decolonial methods within island studies. Part II, Articles, consists of the four articles together with introductory texts that explain the choice of the different case studies and provide a brief commentary on the experience of conducting the fieldwork. I also set out the source material on which the articles are based. Part III presents some concluding remarks on the overarching research questions drawing on the content of the four articles.

Theoretical Frame

Historiography

It has long been known that species are going extinct and that humans are playing a fundamental role in their extinction. In the section on *Extinction Studies*, I address how the humanities have begun to attend to a topic that has typically been the preserve of the natural sciences. As elaborated in the previous sections, due to their exceptionally high rates of extinction, I have confined my study of extinction to islands, whose legacies in the human imagination of isolation and exoticism are prominent features in the stories of extinction displayed in museums today. In the section on *Island Studies*, I elaborate on how this highly constructed image of islands has been challenged by the establishment of the academic field of island studies. I focus especially on how islands have been used by the natural sciences, which continues in the discourse of climate change today. What remains of extinction is often found inside museums that safeguard cultural and natural material from the past, which raises questions that have been debated regarding the wider role of museums in society. In the final section on *Museum Studies*, I wish to elaborate on the establishment of natural history museums and what it means to represent animals in a time of massive biodiversity loss.

Extinction Studies

It is often said that extinction is a natural part of life. As species develop, some will also die out. But since the second half of the twentieth century, it has become clear that modern extinction is largely caused by human-induced changes. Whereas only one extinction per million species would naturally occur per year, the extinction rate is now between 100-1000 times the normal background rate of extinction.[10] This is extinction

[10] G. Ceballos et. al., 'Accelerated Modern Human-induced Species Losses: Entering the Sixth Mass Extinction', *Science Advances* 1(5) (2015): 1–5.

understood in numbers. But extinction is not only caused by humans; it is also shaped by cultural discourses that shape our perceptions of the natural world. In this section, I elaborate on the different approaches to extinction found within the humanities, engaging such questions as: what species do we care about and for what reasons? What does it mean for a species to go 'extinct'? What role do the humanities play in the present extinction crisis?

Humans' perception of extinction has changed historically. In the eighteenth century, when fossils of extinct species were first discovered, extinction as a concept was largely rejected as it conflicted with religious beliefs of a perfect and stable natural world, and it was rather assumed that the species must exist in some unknown place to us.[11] This changed in the first half of the nineteenth century, when not only was extinction recognised, it took on positive connotations as a natural or even necessary part of the evolutionary process, not least in Darwin's theory of natural selection.[12] The extinction of species was related to an improvement of life where some species would naturally die out as new and 'better fitted' species developed to take their place. Later, it was discovered that not only do species go extinct, but that the loss of species can be so widespread as to be classified as a mass extinction—already experienced five times. Today, extinction is looked upon as something alarming that could even potentially threaten human existence.[13] Scientists fear that the massive biodiversity loss that we are now witnessing might be leading us towards yet another mass extinction. Indeed, the concept of extinction framed in 'the catastrophism of climate

[11] Barrow, *Nature's Ghosts*, 2.
[12] P.B. Wignall, *Extinction: A Very Short Introduction* (Oxford: Oxford University Press, 2019), 2.
[13] D. Sepkoski, *Catastrophic Thinking: Extinction and the Value of Diversity from Darwin to the Anthropocene* (Chicago: University of Chicago Press, 2020).

science and Anthropocene discourses' has, according to Dominic O'Key, largely come to shape the academic field of extinction studies.[14]

Even though it is undeniable that humans are the primary drivers of extinction, several scholars have pointed out the importance of identifying which humans in particular are responsible for the global extinction crisis, rather than pinning responsibility on 'humanity' as a general and universalised concept. Ashley Dawson couples extinction and capitalism by pointing out that it is only with the development of modern capitalism that extinction became a truly global crisis. Taking the extinction of the Steller's sea cow as his example, Ryan Tucker Jones has drawn a link between imperial expansionism and modern extinction. Miles A. Powell has meanwhile pointed to the scientific racism in the development of environmental movements.[15]

Extinction Studies as a subdiscipline of the Environmental Humanities was first introduced in the book *Extinction Studies: Stories of Time, Death and Generations*. This book consists of a series of essays largely contributed by the members of the Extinction Studies Working Group—a scholarly collective located mostly in Australia—who all have a 'shared conviction that our present time demands considered, lively, and creative responses from the humanities' in a time of extinction.[16] Each of the essays focuses on an endangered or extinct animal species, blending fieldwork with historical and scientific research into narratives of extinction. The storytelling is centred around personal encounters focusing on the significance of a specific species and its own world-

[14] D. O'Key, 'Extinction in Public: Thinking through the Sixth Mass Extinction, Environmental Humanities, and Extinction Studies', *Environmental Humanities* 15(1) (2023), 175.
[15] A. Dawson, *Extinction: A Radical History* (New York and London: OR Books, 2022); R.T. Jones, *Empire of Extinction: Russians and the North Pacific's Strange Beasts of the Sea, 1741-1867* (Oxford and New York: Oxford University Press, 2014) and M.A. Powell, *Vanishing America: Species Extinction, Racial Peril, and the Origins of Conservation* (Cambridge: Harvard University Press, 2016).
[16] D.B. Rose, T. van Dooren and M. Chrulew, (eds), *Extinction Studies: Stories of Time, Death, and Generations* (New York: Columbia University Press, 2017), 2.

making entanglement with ours in an attempt to open up new possibilities for more ethical responses to the loss of companion species. Central to this approach is a break away from divisions of nature and culture, 'insisting that extinction is an inherently and inextricably *biocultural* phenomenon'.[17] Common to each chapter is a focus on the loss of multispecies communities and the many ways humans are implicated in the lives and deaths of non-human animals.

The essays in the book are largely inspired by Thom van Dooren and Deborah Bird Rose's call for 'lively ethnographies' when storying animist worlds, an approach previously pioneered in their own writings on extinction.[18] They define this way of working as a 'mode of knowing, engaging, and storytelling that recognizes the meaningful lives of others and that, in so doing, enlivens our capacity to respond to them by singing up their character or ethos'. [19] By doing so, they expand the Greek word *ethos* to not only apply to humans but also to non-humans (or more-than-humans). 'Telling these kind of stories', van Dooren and Rose continue, 'is an inherently multidisciplinary task, one that draws us into conversation with a host of different ways of making sense of other's world'.[20] Often this entails humans' meaning-making of the natural world. When telling stories about the life and death of other living beings and how different people respond to them in different ways, ethnographic storytelling is an act of standing '*as* witness and actively to *bear* witness'.[21] This requires an 'openness' to understanding others and comes with an ethical obligation towards them that allows others 'response-ability' (defined by Donna Haraway as the capacity to

[17] Rose, van Dooren and Chrulew, *Extinction Studies*, 5.
[18] D.B. Rose, *Wild Dog Dreaming* (Charlotteville: University of Virginia Press, 2011) and T. van Dooren, *Flight Ways: Life and Loss at the Edge of Extinction* (New York: Columbia University Press, 2014).
[19] T. van Dooren and D.B. Rose, 'Lively Ethnography: Storying Animist Worlds', *Environmental Humanities* 8(1) (2016), 77.
[20] Ibid., 85.
[21] Ibid., 89.

respond) in the way that we tell their stories. 'The stories we tell', they argue, 'are powerful contributors to the becoming of our shared world.'[22]

Extinction is not a singular event 'that begins, rapidly takes place, and then is over and done with'.[23] Rather, extinction is a drawn-out *process* that affects more than the last population of a species. What is lost in extinction, van Dooren argues, is more than the current manifestation of a species; it is 'all that this species has been, as well as all that its past and present might have enabled it to one day become'.[24] He is therefore critical of the focus on the last individual of a kind. 'To allow the term "extinction" to stand for only the death of the last of a kind', he writes, 'reduces species to specimens'.[25] This stands in contrast to the general public's engagement with extinction, which typically comes in the form of an encounter with the last individual(s) of a species: the last passenger pigeon 'Martha' (1914); the last thylacine posthumously called 'Benjamin' (1936); the last Pinta Island tortoise 'Lonesome George' (2012).[26] Each of these animals has been named and personalised to the extent that humans can 'empathize with the imminent end of a whole animal's line'.[27] Dolly Jørgensen has argued that an 'endling' (last surviving individual of a species of animal or plant) has the power to make abstract species extinction concrete.[28] The word 'endling' was

[22] Ibid.
[23] van Dooren, *Flight Ways*, 58.
[24] Ibid., 38
[25] Ibid., 58.
[26] Whose personal stories have also been published as animal biographies of the last living specimens. See R. Paddle, *The Last Tasmanian Tiger: The History and Extinction of the Thylacine* (Cambridge: Cambridge University Press, 2002); H. Nicholls, *Lonesome George: The Life and Loves of a Conservation Icon* (Hampshire and New York: Macmillan, 2006) and M. Avery, *A Message from Martha: The Extinction of the Passenger Pigeon and Its Relevance Today* (London: Bloomsbury, 2014).
[27] D. Jørgensen, 'Endling, the Power of the Last in an Extinction-prone World', *Environmental Philosophy* 14(1) (2017), 121.
[28] Definition of endling was first used in the exhibition 'Tangled Destinies: land and People in Australia at the National Museum of Australia (NMA) in 2001, see Jørgensen, 'Endling'.

originally used to refer to the last individual of a family linage but has been culturally adapted to additionally include the last specimen of a whole species. This individualisation of the last of a species comes from a desire to understand the vastness of mass extinction: 'It can make the narrative personal while retaining the universality of the extinction.'[29] But this is only true for a few species' extinctions, since the last individuals of a species typically remain unknown to us or become known to us only after their extinction. In my research, I build on an ethnographic method similar to the Extinction Studies Working Group in drawing on scientific and historical material in conjunction with field work, but in contrast to this group I am concerned with specific representations of already extinct species in how they 'live on' as specimens inside museums.

A question that remains to be asked is why certain species are cared for over others. According to Ursula Heise, our interest in endangered species, and extinction more generally, is shaped by cultural frameworks. The stories we tell about endangered species not only reveal how we relate to them but also how they are used as 'cultural tools and agents in humans' thinking about themselves'.[30] In her book, *Imagining Extinction*, Heise looks at how this manifests itself through a massive production of photographs, books, films, websites, but also scientific biodiversity databases and legislations on the protection of endangered species. These engagements often betray taxonomic preferences and a bias towards charismatic megafauna that are anthropomorphisable and aesthetically pleasing to us. The species are narrated into stories of elegy and tragedy that 'seek to mobilize readers' emotions though the lament, melancholy, and mourning' of nature's decline.[31] Our ability to grieve over other earthly beings has been pointed out as essential to overcome

[29] Jørgensen, 'Endling', 134.
[30] U. Heise, *Imagining Extinction: The Cultural Meaning of Endangered Species* (Chicago and London: The University of Chicago Press, 2016), 6.
[31] Ibid, 34.

an exceptionalism that separates humans from nature.[32] This becomes especially perceptible in how mourning over lost species manifests itself through public commemoration of them, such as art works, monuments and museum displays of lost species. When a non-human is commemorated in a static form, it reifies a particular human relationship with non-humans at a specific time in history.[33] 'These various spaces in which we reckon with species loss are sites of memory work', Hannah Stark writes, 'where narratives are composed, agreed upon, challenged, and reworked'.[34] Humans play a significant role in what is remembered and forgotten about extinction. This is also the subject of investigation in the volume, *Animals, Plants and Afterimages: The Art and Science of Representing Extinction*, where the afterimage 'describes a belated grasp of the significance of an event, particularly a traumatic one', which often characterises extinction.[35]

On the contrary, there are other species affected by extinction that Audra Mitchell characterises as 'forgotten but not gone'.[36] She argues that not only does extinction 'result in the loss of species or biodiversity, it also proliferates, produces and transforms them'.[37] As humans bear a heavy burden, conscious of their complicity in mass extinction, the stories we tell may also carry implications for the loss of species. The scientific narrative of extinction is not neutral. It is limited by the data available, which has largely focused on species that are large and thereby easier to

[32] van Dooren, *Flight Ways*, 125–145; Barnett, *Mourning in the Anthropocene* (Michigan: Michigan State University Press, 2022).
[33] D. Jørgensen, 'After None: Memorialising Animal Species Extinction through Monuments', in Nancy Cushing and Jodi Frawley (eds), *Animal Count: How Population Size Matters in Animal-Human Relationships* (London: Routledge, 2018), 185.
[34] H. Stark (ed.), *Extinction and Memorial Culture: Reckoning with Species Loss in the Anthropocene* (London and New York: Routledge, 2023).
[35] V. Bienvenue and N. Chare (eds), *Animals, Plants and Afterimages: The Art and Science of Representing Extinction* (New York and Oxford: Berghahn, 2022), 2.
[36] A. Mitchell, 'Beyond Biodiversity and Species: Problematizing Extinction', *Theory, Culture & Society* 33(5) (2015), 32.
[37] Ibid.

survey than more obscure species.[38] Moreover, not all species are capable of stirring an emotional response in us, and so many species threatened by extinction do not feature in the public realm. This is a point upon which Rose and van Dooren remark in their special issue of the *Australian Humanities Review*, 'Unloved Others: Death of the Disregarded in the Time of Extinctions' (2011), when asking the question: 'What hope could there possibly be for the countless other creatures who are less visible, less beautiful, less a part of our cultural lives?'[39] The love for some species 'produces vast inequalities and stark exclusions'.[40] Indeed, it is a premise underlying the notion of 'invasive' species that they are a threat to the species we admire and value. According to Mitchell, the exclusion of certain subjects is related to dominant discourses of mass extinction. These debates on what subjects we choose to commemorate and care for influenced the way I selected animals to include in this study, from the preservation of an endlings to contested unloved animals.

In particular, 'unknown extinctions' or 'unknowable extinctions' have in recent years been discussed within the field of extinction studies. Whereas ethnographic modes of storytelling 'draw readers into imaginative encounters with embodied, specific, and lively creatures to support situated ethical responses', other species threatened by extinction are less likely to register on our consciousness. [41] Michelle Bastian reflects on this problem through the example of whale falls. While whales are one of those charismatic and endeared animals whose endangerment is well known to us, the many species killed when dead whales fall to the sea bottom can never be known. Bastian asks the question: 'What shared ground might there be to develop understandings

[38] Wignall, *Extinction*, 21.
[39] D.B. Rose and T. van Dooren, 'Introduction', *Australian Humanities Review* 50 (2011), 1.
[40] Mitchell, 'Beyond Biodiversity and Species', 37.
[41] M. Bastian, 'Whale Falls, Suspended Ground, and Extinction Never Known', *Environmental Humanities* 12(2) (2020), 455.

of ethics, responsibility and connection in response to these speculative losses?'[42] Drawing inspiration from Mick Smith's thoughts on the many unknown soil extinctions that 'remain invisible and non-individuated',[43] Bastian expands the situated approach not only to apply to *shared ground* but also *suspended ground*, arguing that 'an ecological ethics centrally committed to the encounter does not remain only within the realms of direct appearance'.[44] The many extinctions that exceed our comprehension can be acknowledged by accepting their suspension from appearance. Mitchell further points out that 'there is more to ethics than human experience', problematising the scientific focus on species' visibility alone.[45]

Extinction Studies has to a large extent been concerned with species that are mainly threatened by extinction rather than species that are considered extinct, characterised as an anticipation of 'imagined future extinctions'.[46] Anticipating a future without the species and what is lost with its extinction serves as a motivation to care for endangered species. But it also reveals a specific notion of extinction. When extinction is viewed as 'an irreparable disruption and destruction of the *generativity*'[47] of generations that have brought forth a species, extinction is regarded as a final end. However, extinction is not always something that just belongs to the past as soon as a species is declared 'extinct'. Extinction has presence in the present. 'A world of extinction', in Jørgensen's words, 'is not a world without the species that have died; rather, it is a world in which those species change form.'[48] A seeming paradox is that a species can continue to exist even after its 'extinction'.

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[42] Ibid., 460.
[43] M. Smith, 'Dis(appearance): Earth, Ethics, and Apparently (In)Significant Others', *Australian Humanities Review* 50 (2011), 40.
[44] Bastian, 'Whale Falls', 468.
[45] Mitchell, 'Beyond Biodiversity and Species', 38.
[46] D. Jørgensen, 'Extinction and the End of Futures', *History and Theory* 61(2) (2022), 216.
[47] Rose, van Dooren and Chrulew, *Extinction Studies*, 9.
[48] Jørgensen, 'Extinction and the End of Futures', 217.

Extinction viewed as a *process* rather than as a historical moment in time entails that the transition between existent and extinct is never fixed. It is difficult to declare a species extinct because there is always the possibility that it still exists without our knowledge of it. Jørgensen elaborates on this point by observing that 'the presence of an absence does not necessarily equate to an absence of presence'.[49] Instead, she writes, 'extinction events become real to us through the stories we tell. It is in narrative that a species' presence or absence is determined.'[50] When a species is not completely gone, it allows us to continue to narrate their story. The species act as *ghost species* defined by Nancy Langston as 'those that have not gone completely extinct, although they may be extirpated from a particular area. Their traces are still present, whether in DNA, in small fragmented populations, or in lone individuals roaming a desolate landscape in search of a mate.'[51] Conservationists are often motivated by the uncertainty connected to the extinction of a species.[52] The species are searched for and their habitat is retained on the assumption that the species might still exist. This has led to a whole literature on the spectres and ghosts of extinction involving the appearance of the species through traces and non-scientific sightings of them.[53] The species maintains an agency existing in-between presence and absence—being here and not here at the same time. This has inspired me to investigate how museum specimens are also traces of an animal

[49] D. Jørgensen, 'Presence of Absence, Absence of Presence, and Extinction Narratives', in Lesley Head, Katarina Saltzman, Gunhild Setten and Marie Stensek (eds.), *Nature, Temporality and Environmental Management* (London: Routledge, 2016), 46.
[50] Ibid., 55.
[51] N. Langston, *Climate Ghosts: Migratory Species in the Anthropocene* (Waltham, Massachusetts: Brandeis University Press, 2021), 6.
[52] S. McCorristine and W.A. Adams, 'Ghost Species: Spectral Geographies of Biodiversity Conservation', *Cultural Geographies* 27(1) (2019), 101–115.
[53] B. Bersaglio and J. Margulies, 'Extinctionscapes: Spatializing the Commodification of Animal Lives and Afterlives in Conservation Landscape', *Social & Cultural Geography* 23(1) (2022): 10–28; F. Neyrat, 'Ghosts of Extinction: An Essay in Spectral Ecopolitics', *The Oxford Literary Review* 41(1) (2019): 88–106 and McCorristine and Adams, 'Ghost Species'.

that can trigger the species' continuing existence—even when it can no longer be observed in nature. This literature is connected to environmental injustice where the ghostliness of a species provides it 'with the power of making itself and its history known through haunting and/or reappearance'.[54] In this way, past 'extinctions' continue to have an influence on the present.

I have thought within this literature by considering the afterlives of extinct species that, in spite of their death, continue to exist inside museums and influence our perception of lost species. Museums impact what is remembered and forgotten about the natural world. Museums decide which extinct species we come into close encounter with and they curate the meeting between visitors and the extinct world. They hold many different specimens of extinct species and the specimens put on display are only a fragment of museums' larger collections. Some species only exist through their representation inside museums; others are known only through descriptions of preserved specimens. In that sense, they can make unknown extinctions known to us. But museums are also influenced by the concerns and structures addressed above—they are expected to display what visitors want to see, such as mega-fauna and aesthetically pleasing animals. Nevertheless, museums do have a capacity to challenge such public expectations by drawing from their diverse collections and bringing to the fore different examples of human-induced extinction.

Island Studies

The lure of islands has played a prominent role in the human imagination. As bounded inescapable places surrounded by water, islands have been thought of as self-contained places unaffected by the outside world, and yet capable of reflecting the entire outside world. [55]

[54] Bersaglio and Margulies, 'Extinctionscapes', 24.
[55] G. Baldacchino (ed), *The Routledge International Handbook of Island Studies* (London and New York: Routledge, 2020), xxi.

But no island is by and of itself as the sea does not only separate islands *from* but connects them *to* the outside world. In this section, I outline some contradictions and contrasts within the field of island studies in how islands are perceived both as isolated and connected, unique and homogenised, in order to elaborate on how the study of islands has contributed to constructing an image of island environments.

It is not a simple task to define what an island is. Islands represent a 'bewildering diversity', as Pete Hay points out, that 'renders each island radically particular'.[56] Islands differ in size and shape; some are tropical while others have a cold climate; some islands are oceanic while others belong to a chain of islands; some islands are close to the mainland (and might even be connected to it by tunnels or bridges), whereas other islands are more isolated. Yet the stereotypical view of an island is that of a disconnected 'singular and circular' island that is easy to control and delimit within well-defined maritime borders.[57] Godfrey Baldacchino defines this stereotype as the 'island lure' that throughout history has attracted people to islands.[58] Using the Foucauldian term of heterotopias, Milica Prokic and Pavla Šimková explain how islands in this way have served as 'other places' that in a simplistic and manageable way could reflect the 'outside world'. This has granted license to many different conceptions of islands, ranging from outlying dangerous places to paradises on Earth, often without consideration for the people who already inhabited islands.[59]

The maritime boundaries of islands have made islands difficult places to inhabit, both by humans and non-humans, but once species succeed in

[56] P. Hay, 'What the Sea Portends: A Reconsideration of Contested Island Tropes', *Island Studies Journal* 8(2) (2013), 209.
[57] S. Nimführ and G.N. Meloni, 'Decolonial Thinking: A Critical Perspective on Positionality and Representations in Island Studies', *Island Studies Journal* 16(2) (2021), 3.
[58] G. Baldacchino, 'The Lure of the Island: A Spatial Analysis of Power Relations', *Journal of Marine and Island Culture* 1 (2012): 55–62.
[59] M. Prokic and P. Šimková (eds), *Entire of Itself? Towards an Environmental History of Islands* (Cambridgeshire: White Horse Press, 2024), 11–26.

inhabiting an island they often thrive in isolation. According to the global island database (GID), islands make up only three percent of the Earth's land area, but are home to 20 percent of all bird, reptile and plant species.[60] In spite of the fact that islands lack the richness of species found on the mainland, their level of endemic species by far exceeds those of mainland regions.[61] But islands are not just nature's paradise—islands have experienced the highest rate of extinction in modern times. Flightlessness, gigantism and dwarfism were features that equipped certain species for island life; however, as soon as islands were confronted with non-native species from which they had long been secluded, such endemic species struggled to survive.[62]

When European nations started exploring and expanding into new territories, islands thus became a source of interest for naturalists who grappled with questions of evolution, distribution of species and human-induced extinction. Islands served as a simplified ecosystem 'with the ability to crystallize and manifest environmental problems'.[63] This has been seen with pioneering studies on the loss of island fauna such as the dodo, the moa and the great auk, as well as the development of theories on natural selection and the coining of some of the first conservation acts in Spain, Britain and France that all relied on island studies.[64]

In recent decades, however, island scholars have pushed back on the image of islands as the world in miniature. 'Islands are not merely scaled down versions of larger, continental places. They have an "ecology" of

[60] Global Islands Network, 'Global Island Database', *GIN*, May 2010, http://www.globalislands.net/about/gid_functions.php (accessed 16. November 2023).
[61] G. Keir et al., 'A Global Assessment of Endemism and Species Richness across Island and Mainland regions', *PNAS* 106(23) (2009), 9322.
[62] D. Quammen, *The Song of the Dodo: Island Biogeography in an Age of Extinctions* (New York: Scribner, 1996).
[63] R. Grancher, 'Hybrid Islands: Some Reflections on the Intersection between Island Studies and Environmental History', *Coastal Studies and Society* 2(2) (2023), 157.
[64] See Barrow, *Nature's Ghosts*, 47–78 and R. Grove, *Green Imperialism Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860* (Cambridge: Cambridge University Press, 1996).

their own; which means that islands comprise a target that is suggestive of deserving particular strategies and epistemologies.'[65] Island studies, also known as nissology, developed as an interdisciplinary study of islands 'on their own terms' in reframing what they defined as problematic island discourses that saw islands simply as microcosmic research laboratories for mainlanders.[66] Island studies 'considers islands as places that are critically important, not only for what they can tell us about the islands themselves', James Randall writes, 'but also for the lessons they provide to our global society'.[67] As an established field of research, island studies emerged in the 1980s with the founding of the international Small Island Studies Association (ISISA) and later the *Island Studies Journal.*

According to Stephen A. Royle, it is the geographical characteristics of islands that constitute a sense of 'islandness', from their small scale to their boundedness, fragmentation and isolation.[68] This is the primary reason why species, cultures and languages have developed in distinctive ways, but this perception of islands has also simultaneously allowed for the exploitation of islands as testing grounds for nuclear weapons, natural laboratories or ethnographic/sociological experiments. In the natural sciences, it was recognised early on that islands were also connected, observed through the phenomenon of adaptive radiation, where one linage developed into distinct species within an island group, referred to as archipelagos, defined as a place where each of the species are unique but share certain characteristics.[69] This archipelagic condition

[65] Baldacchino, *The Routledge International Handbook of Island Studies*, xxx.
[66] G. McCall, 'Nissology: A Proposal for Consideration', *Journal of the Pacific Society* 17(1-2) (1994), 1 and A. Grydehøj, 'A Future of Island Studies', *Island Studies Journal* 12(1) (2017), 5.
[67] J.E. Randall, *An Introduction to Island Studies* (New York and London: Rowman & Littlefield, 2021), 1.
[68] S.A. Royle, *Island Nature and Culture* (London: Reaktion Books, 2014).
[69] This natural phenomenon was first observed by Charles Darwin and described in his book *Journal of Researches into the Natural History and Geology of the Countries Visited during the Voyage of H.M.S Beagle round the World, under the Command of Capt. Fitz Roy, R.N.* (London: John Murray, 1845).

has, according to Baldacchino, 'been an epistemological blind spot in the social sciences'.[70] But in recent decades, the importance of islands' connectedness has been pointed out as an essence of island life and their 'islander' inhabitants. One of the first scholars to acknowledge this essence was Epeli Hau'ofa, who in his pioneering essay, 'Our Sea of Islands', urges us not to see 'islands in a far sea' but as 'a sea of islands'. The first notion stresses the boundedness of islands, whereas the latter points to the interconnectedness of islands and their connections to mainlands.[71] The ocean does not just function as a boundary but also as a highway. This has made other scholars put forward concepts such as islands as 'ecotones' or 'aquapelago', stressing the importance of land and sea on islands.[72] Islands are both rendered unique and diverse, while they also share features that 'serve to develop a strong sense of community and shared identity' among islanders.[73]

Islands are also often portrayed as particularly vulnerable places, especially susceptible to dangers such as climate change, extinction, rising sea-levels and natural disasters. However, by characterising islands as particularly vulnerable places, the focus regrettably becomes 'the failure' of islands.[74] Rebecca Hofmann and Uwe Lübken write in the special issue 'Small Islands and Natural Hazards' in *Global Environmental Journal* that islands in this way have come to represent 'a nearly impossible life, a place where societies must, almost necessarily, collapse due to isolation, a limited resource base and, last

[70] Baldacchino, *The Routledge International Handbook of Island Studies*, xxix.
[71] E. Hau'Ofa, 'Our Sea of Islands', in Eric Waddell, Vijay Naidu and Epeli Hau'Ofa (eds.), *A New Oceania: Rediscovering Our Sea of Islands* (Suva, Fiji: Beake House, 1993), 7.
[72] See J. R. Gillis, 'Not continents in miniature: Islands as Ecotones', *Island Studies Journal* 9(1) (2014): 155–66 and P. Hayward, 'Aquapelagoes and Aquapelagic Assemblages: Towards an Integrated Study of Island Societies and Marine Environments', *Shima: The International Journal of Research in Island Cultures* 6(1) (2012): 1–11.
[73] Randall, *Introduction to Island Studies*, 22.
[74] Ibid., 2

but not least, frequent exposure to natural hazards'.[75] It maintains a narrative of islanders being trapped and occludes narratives of movement and resilience. Charlotte Kate Weatherill has investigated extinction narratives of islands and concludes that they 'have relied on an othering of both islands as paradise / doomed islands and islanders as either fatally impacted victims of modernity or innately degenerate and doomed in turn'.[76] Weatherill describes how the connection between islands and vulnerability has been historically constructed through a colonial logic depicting islands as a '"natural" part of climate change'.[77] When we view islands as incapable of resilience, we forget that islanders have always had to react to a changing environment.

Environmental historians have also been drawn to islands as objects of historical investigation.[78] In spite of this, Romain Grancher points out in the introduction to the special issue 'Environmental History of Islands' in the journal *Coastal Studies and Society* that 'looking at the field of environmental history as a whole, this attraction to islands has not resulted in attempts at synthesis or strong theoretical proportions'.[79] He argues that the link between environmental history and island studies could be mutually strengthened. 'Island Studies', writes Grancher, 'does not place much emphasis on the historical dimension of islands while research conducted in environmental history too rarely takes advantage of the approaches and concepts developed by these studies.'[80] Milica Prokic and Pavla Šimková put forward a similar view in their volume,

[75] R. Hofmann and U. Lübken, 'Shrinking, sinking, resurfacing: Small Islands and Natural Hazards in Hisotircal and Current perspective', *Global Environment Journal* (2015), 4.
[76] C.K. Weatherill, 'Sinking Paradise? Climate Change Vulnerability and Pacific Island Extinction Narratives', *Geoforum* 145 (2023), 10.
[77] Ibid., 2.
[78] A. Crosby, *Ecological Imperialism: The Biological Expansion of Europe 900-1900* (Cambridge: Cambridge University Press, 1986); J. R. McNeil, 'Of Rats and Men: A Synoptic Environmental History of the Island Pacific' *Journal of World History* 5(2): 299–349' and Grove, *Green Imperialism.*
[79] Grancher: 'Hybrid Islands', 158.
[80] Ibid., 159.

Entire of Itself? Towards an Environmental History of Islands that also stresses the role of the natural environment in the writing of island history.[81] My articles contribute to this literature by focusing on the particularity of different islands and their individual environmental histories. In doing so, I hope to show that island extinction is more than just the larger context of mass extinction. Species belong to places; they relate to specific people and ecosystems. Rather than accepting that island nature is vulnerable and therefore susceptible to fatalistic 'natural' processes of environmental collapse, I attempt to connect the causes of extinction to colonial systems of exploitation, from the use of islands as bombing testing grounds to evolutionary laboratories and the transformation of islands into sugar plantations.

Museum Studies

Museums are often looked upon by the public as 'trustworthy and objective' institutions.[82] At their core, museums preserve and display objects collected from all corners of the globe, representing different peoples and periods of time, and all accessible in the one place. But recently there has been an urge to be more critical of the museum, shifting our attention from the museum as 'a site of worship and awe to one of discourse and critical reflection' on the stories represented and presented inside museums.[83] This new criticality also extends to questions concerning the provenance of specimens collected from the natural world and the unequal, often colonial, power relations bound up in collection practices. In short, it has become necessary to know: from where and by whom was this object collected? In this section, I look at the development of natural history museums and their representation of

[81] Prokic and Pavla Šimková, *Entire of Itself?*.
[82] J. Marstine, *New Museum Theory and Practice: An Introduction* (Oxford: Blackwell Publishing, 2006), 4.
[83] Ibid., 5.

animal bodies, asking what role the museum can and should play in times of massive biodiversity loss.

In the early nineteenth century, the enlightenment project of cataloguing the world was institutionalised through the rise of museums in metropolitan European cities as 'natural and material culture flowed from the far reaches of the world as never before or since'.[84] Whereas the first museums were characterised as 'Cabinets of Curiosities' or *Wunderkammer* of organised private collections displayed for the enjoyment of a small privileged elite, the establishment of the public museums 'ordered' the world into increasingly specialised domains such as art, anthropology, natural history and geology.[85] 'Museums', in J.M. Mackenzie's words, 'were an expression of the western conviction in the onward march of the rational.'[86] By displaying objects acquired from the countries Europeans held power over, museums became venues for displaying the believed superiority of western civilisation.

Natural history museums could present life-like taxidermy mounts of vertebrates collected from afar to a public audience that had limited, if any, experience with the wild themselves. Specimens were mounted based on observations and field notes of the animals in nature by taxidermists that captured the animal in a 'still life'. Mary Anne Andrei points out in her book, *Nature's Mirror: How Taxidermists Shaped America's Natural History Museums and Saved Endangered Species*, that taxidermists in this regard were also naturalists whose care for the animals 'not only led to new methods in taxidermy, but also provided data for scientists and contributed directly to growing public awareness of the devasting effects of careless human interaction with the natural

[84] S.J.M.M. Alberti, 'Museum Nature', in H.A. Curry, N. Jardine, J.A. Secord and E.C. Spary (eds), *Worlds of Natural History* (Cambridge: Cambridge University Press, 2018), 350.
[85] T. Bennett, *The Birth of the Museums: History, Theory, Politics* (London: Routledge, 1995).
[86] J.M. Mackenzie, *Museums and Empire: Natural History, Human Cultures and Colonial Identities* (Manchester: Manchester University Press, 2009), 1.

world'.[87] The 'saving' of species by killing specimens was paradoxically coupled with environmental beliefs concerning the preservation of a vanishing natural world for future generations, most famously expressed by William Temple Hornaday, who was both a hunter, taxidermist and conservationist. He collected and designed displays of specimens of bison for natural history museums while at the same time becoming renowned for saving the American bison from the brink of extinction in the late nineteenth century.[88]

As Brita Brenna has observed, installed behind glass for public viewing, specimens were both 'visible and untouchable'.[89] These proximate and yet distant objects of the natural world were arranged by scientific classification, where the specimens were placed according to their taxonomic order and genus. The scientific importance of natural museum collections was even enhanced when study skins of animals from different locations could be compared in one location to understand the variation between species in different locations.[90] At the same time, however:

> museum visitors were growing too sophisticated for specimens stuffed—literally stuffed—with as much cotton, hemp, straw, or excelsior as the skin could hold and arrayed in endless rows of unrelated organisms. They recognized these collections for what they were: rude imitations that bore little resemblance to, and no explanation of, their living counterparts.[91]

[87] M.A. Andrei, *Nature's Mirror: How Taxidermists Shaped America's Natural History Museums and Saved Endangered Species* (Chicago and London: The University of Chicago, 2020), 11.
[88] G.J. Dehler, The *Most Defiant Devil: William Temple Hornaday & his Controversial Crusade to Save American Wildlife* (Charlottesville and London: The University of Virginia Press, 2013), 4–5.
[89] B. Brenna, 'The Frames of Specimens: Glass Cases in Bergen Museum Around 1900', in Liv Emma Thorsen, Karen A. Rader and Adam Dodd (eds), *Animals on Display: The Creaturely in Museums, Zoos, and Natural History* (University Park, Pennsylvania: Pennsylvania State University Press, 2013), 39.
[90] Andrei, *Nature's Mirror*¸ 9.
[91] Ibid.

This changed significantly in the beginning of the twentieth century with the development of dioramas in U.S. museums of natural history.[92] Museums went from being 'Cathedrals of Science' to serving an additional role as public educational institutions. It was no longer satisfactory to exhibit individual specimens side by side in glass cabinets; instead, the specimens were to be displayed 'in ways that broader audiences would find useful and visually appealing'.[93] By placing taxidermy animals together in groups among elements from their respective environments, dioramas met this need to breathe more life into museum displays. The dioramas were referred to as important 'windows' into the natural world that provided 'an intimate, personal encounter with a "real" creature in its habitat'.[94] But as Donna Haraway argues, 'dioramas are meaning-machines. Machines are time slices into the social organisms that made them.'[95] Through her analysis of the African Hall at the American Museum of Natural History in New York, she has famously shown that dioramas represent social constructions of race and gender projected onto the animal world.

The same is the case for taxidermy specimens. Rachel Poliquin argues 'that all taxidermy is deeply marked by human longing. Far more than just death and destruction, taxidermy always exposes the desires and daydreams surrounding human relationships with and within the natural world.'[96] Animals are preserved for different reasons, Poliquin explains, ranging from their cultural significance to aesthetic appearance or an emotional connection. But even though the reason for preserving a

[92] K.A. Rader and V.E.M. Cain, *Life on Display: Revolutionizing U.S. Museums of Science & Natural History in the Twentieth Century* (Chicago and London: The University Press of Chicago, 2014).
[93] Ibid., 12.
[94] S.C. Quinn, *Windows on Nature: The Great Habitat Dioramas of the American Museum of Natural History'* (New York: Abrams, 2006), 8.
[95] D. Haraway, 'Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908-1936', *Social Text* 11 (1984-84), 52.
[96] R. Poliquin, *The Breathless Zoo: Taxidermy and the Cultures of Longing* (University Park, Pennsylvania: The Pennsylvania State University Press, 2012), 6.

species might vary; all taxidermy expresses a human desire to prevent the animal from natural deterioration so that this relationship can be maintained.[97] An animal on display not only represents the animal; it is also a human representation of the animal. Hence, 'taxidermy can no longer be unproblematically read as nature, neither can taxidermied animals be simply understood as mute mounted skins'.[98] They reveal a human imagery of the animal shaped by the creator's socio-historical context.

Adam Dodd, Karen A. Rader and Liv Emma Thorsen argue that the ways animals are represented are 'crucial to ways of thinking about, and ultimately interacting with, animals themselves'.[99] In their volume, *Animals on Display*, museum scholars investigate how our understanding of specific animals are shaped by a variety of different representations of them. These representations continue to inform the kinds of relationships we may have with non-humans 'as we encounter animals as objects and signs more often than we encounter animals themselves'.[100] It is therefore important, they write, to illuminate 'critical aspects inherent to our own conceptions and understandings of what animals are, what they mean, and what they should and should not be "used for"', especially in times of environmental loss.[101] I build on this work in my investigation of how extinct island species are displayed inside museums, since their remains are shaped and keep shaping our conceptions of them. As one million species potentially face extinction within decades because of humans' problematic relationship with the natural world, animal remains of already extinct species can open up new

[97] Ibid., 7.
[98] Poliquin, 'The Matter and Meaning of Museum Taxidermy', *Museum and Society* 6(2) (2008), 125.
[99] L.E. Thorsen, K.A. Rader and A. Dodd (eds), *Animals on Display: The Creaturely in Museums, Zoos, and Natural History* (University Park, Pennsylvania: The Pennsylvania State University Press, 2013), 1.
[100] Ibid., 3.
[101] Ibid., 5.

understandings of core problems concerning how humans relate to companion species.

In *Museums in a Troubled World*, Robert R. Janes investigates why museums tend not to engage with environmental issues in their collections and displays. He asks the question: 'If museums are one of society's principal repositories of collective knowledge and wisdom, as they claim to be, how can they continue to downplay or ignore their role in addressing the grim litany of cultural and environmental destruction?'[102] They hold irreplaceable collections to help understand the human impact on the natural world, but 'marketplace ideology, capitalist values and corporate self-interest' stands in the way of museums fulfilling their greater role as socially engaged institutions.[103] In the last few decades, however, scholars within museum studies have explored such questions of social engagement through the issue of climate change, one of the largest moral challenges faced by contemporary society. There has been a demand for museums to become more sustainable by reducing their carbon-footprint; in addition, and perhaps more importantly, there has also been a demand for museums to assume a greater responsibility in engaging present-day issues and challenges. For example, as 'platforms where multiple stakeholders come into contact', museums have a potential to serve as venues for the discussion of climate policies.[104] Such potential, however, must acknowledge the fact that museums represent a diversity of voices in the climate debate, which might complicate the task of making them launching sites for collective political action.[105]

[102] R.R. Janet, *Museums in a Troubled World: Renewal, Irrelevance or Collapse?* (London and New York, Routledge, 2009), 51.
[103] Ibid., 184.
[104] B. Þórsson, 'Introduction: Curating Climate – Museums as Contact Zones of Climate Research, Education and Activism', *The Journal of Nordic Museology* 3 (2020), 4.
[105] Ibid., 9.

Fiona R. Cameron and Brett Neilson introduce the edited volume *Climate Change and Museum Futures* with an exploration of this tension between how museums might become important mediators in the debate regarding climate change and a society faced with increasing polarisation regarding the 'facts' of the matter and the moral obligations that go with them. They suggest that 'a renewed philosophical inquiry must be made into the museum idea and museums as institutional forms'.[106] The essays in the volume are especially centered around the institutional history of museums and the changes they undergo 'due to economic pressures, shifting social expectations, and new kinds of relations with audiences and publics.'[107] Mike Hulme contributes by pointing out that climate change means different things to different people and that it is important for the museum to engage in 'the range of different human cosmologies, values and aspirations with which the idea engages'.[108] Jennifer Newell, Libby Robin and Kirsten Wehner are optimistic as to how museums might address climate change, 'celebrating how museums can function as spaces that enable the "coming together" across time and geography of peoples, ideas and stories'.[109] Their focus in particular is on how the objects in museums can create a network of relations and allow for new responses when involving the relevant communities in the museums.

Addressing environmental issues within museums cannot be done without also identifying its causes and relations to social injustices of colonialism and extractive systems.[110] Colonial structures in cultural museums have long been recognised, but it is only recently that the

[106] F.R. Cameron and B. Neilson (eds), *Climate Change and Museum Futures* (New York: Routledge, 2015), 3.
[107] Ibid., 2.
[108] M. Hulme, 'Why We *should* Disagree about Climate Change', in Fiona R. Cameron and Brett Nielson (eds), *Climate Change and Museum Futures* (New York: Routledge, 2015), 12.
[109] J. Newell, L. Robin and K. Wehner (eds), *Curating the Future: Museums, Communities and Climate Change* (New York: Routledge, 2017), 1.
[110] A. Guasco, '"As Dead as a Dodo": Extinction Narratives and Multispecies Justice in the Museum', *Environment and Planning E: Nature and Space* 4(3) (2021): 1055–76.

debate has reached natural history museums. This is especially the case with Subhadra Das and Miranda Lowe's pioneering article, 'Nature Read in Black and White: Decolonial Approaches to Natural History Collections', which shines a torch on the 'covert racism' perpetuating itself within natural history museums.[111] They point out that natural history museums often present a nature disconnected from their colonial collection history, which often entails 'stories, work and knowledge of non-white people'.[112] When natural history museum shy away from presenting the origins of their collections, they alienate museum visitors who come from the same places where their museum specimens originate. Their work has led to a host of new publications showing that many more people than was previously believed were involved in the collection of specimens now in the stewardship of western natural history museums—people whose stories are overshadowed by the focus on white male collectors.[113] The colonial violence and abuse of indigenous people, their knowledge and land is also often omitted from the narratives told inside natural history museums.[114] Jack Ashby explores how colonial narratives are also present in how Australian mammals are presented as 'primitive' or 'weird' inside natural history museums.[115] Das and Lowe's work has been foundational for my own thinking on how natural history museums can engage their inherited colonial legacies also when displaying remains of extinction collected from lands that

[111] S. Das and M. Lowe, 'Nature Read in Black and White: Decolonial Approaches to Natural History Collections', *Journal of Natural Sciences Collections* 6 (2018), 8.
[112] Ibid.
[113] See J. Middleton, 'The Harrison Collection: Addressing Colonialism in the Collections of a Victorian Big Game Hunter', *Journal of Natural Science Collections* 9 (2021): 29–34 and K. Kaiser, 'Duplicate Networks: The Berlin Botanical Institutions as a "Clearing House" for Colonial Plant Material, 1891-1920', *The British Journal for History of Science* 55(3) (2022): 1–18.
[114] J. Ashby and R. Machin, 'Legacies of Colonial Violence in Natural History Collections', *Journal of Natural Science Collections* 8 (2021): 44–54.
[115] J. Ashby, 'The Political Platypus and Colonial Koala – Decolonising the Way We Talk about Australian Animals', *Journal of Natural Sciences Collections* 9 (2021), 36; see also Ashby, *Platypus Matters: The Extraordinary Story of Australian Mammals*, (London: William Collins, 2022).

were colonised. As island ecologies have been exposed to threatening processes of colonial extraction, the remains of extinction often carry stories of colonial conquest. The decolonial museum discourse, however, has mainly been concerned with the colonial oppression of humans, while the colonial impact on nature has received less attention.

Fiona Cameron appeals for a departure from museological frameworks that 'advance human-centred interpretive approaches that focus of the social, ideological and cultural constructions of the human subject'.[116] In its place, she advocates a re-interpretation of museum objects as consisting of 'other material, discursive, technological, biological and non-human aspects' based on post-human museum practices.[117] In a more-than-human world, 'objects' comprise both human and non-human 'actants' (vital subjects). By stressing this, Cameron attempts to break away from an established subject-object dichotomy and to ascribe museum objects 'thingness' comprising 'ontologically diverse vital elements that include the non-human', which she argues has the potential to reveal a multitude of different interspecies connections embedded in the 'things' on display in museums.[118]

These topics of colonialism, anthropocentrism and multispecies relationships are especially present in new literature on museums and extinction. As already pointed out, animal representations are an expression of human imaginations of the animal. The display of extinction is therefore particularly important to observe, since the traces are the only remainders of a lost species and a gateway to understanding 'the kind of ideas and beliefs that underpin' representations of extinction.[119] Anna Guasco advocates a 'multispecies justice framework' when narrating extinction inside museums, whereas Dominic O'Key

[116] F.R. Cameron, 'Posthuman Museum Practices', in Rosi Braidotti and Maria Hlavajova (eds), *Posthuman Glossary* (London and New York: Bloomsbury, 2018), 349
[117] Ibid.
[118] Ibid., 350.
[119] Bienvenue and Chare, *Animals, Plants and Afterimages*, 6.

purposes the development of 'new posthumanist museum practices' addressing the inherited implication of natural history museums in species extinction.[120] Both articles investigate entire exhibitions of extinction, from the permanent 'Survival Gallery' at the National Museum of Scotland and the permanent 'Room of Endangered and Extinct Species' at the Museum Naturelle d'Histoire in Paris, to temporary exhibitions and interventions, such as the Harvard Museum of Natural History's 'Next to Kin: Seeing Extinction Through the Artist's Lens' at (2016) and the exhibition at the Bristol Museum 'Extinction Voices' (2019).

A special issue on 'Exhibiting Extinction' was also recently published in the journal *Museum and Society* (2022) suggesting that museums are ideal places to deal with 'multi-temporal environmental changes such as extinction that can seem too overwhelming to process', since museums have the potential to slow down time for reflection in a rapidly changing world.[121] In this special issue, several scholars deal with specific specimens of extinct species to suggest what their individual histories might reveal about extinction and their representations inside different museums. Adam Searle shows the importance of displaying the last bucardo inside the local museum, *El Museo del Bucardo*, to recover its 'lost' memory for the region.[122] Laura M. F. Bertens and Ann Marie Wilson's analysis of the Nature's Treasure Trove exhibition for the two-hundred-year celebration of *Naturalis* reveals how specimens of extinct species continue to be displayed as wonders of the world, at the expense

[120] Guasco, 'As Dead as a Dodo' and D. O'Key, 'Why Look at Taxidermy Animals? Exhibiting, Curating and Mourning the Sixth Mass Extinction Event', *International Journal of Heritage Studies* 27(6) (2020): 635–53.
[121] D. Jørgensen, L. Robin and M.-T. Fojuth, 'Slowing Time in the Museum in a Period of Rapid Extinction', *Museum and Society* 20(1) (2022), 3.
[122] A. Searle, 'Exhibiting Extinction, Recovery Memory, and Contesting Uncertain Futures in the Museum', *Museum & Society* 20(1) (2022): 13–32.

of confronting present-day environmental issues of massive biodiversity loss.[123]

My articles contribute to this new literature within museum studies by examining museum specimens from island habitats that have suffered disproportionately from extinction and often as a direct result of European colonialism. In the articles, I investigate the links between island colonialism and extinction, drawing attention to the hidden human stories of colonialism embedded in the material remains of the animal in question. My case studies reveal that extinction narratives derive from a wider range of sources than museums have traditionally been willing to include in their stories of extinction, which tend to project a western and imperialist view onto the specimen. Since there is substantial evidence showing that taxidermy animals reflect a narrow western perspective on the non-human, I suggest that the human gazes embedded in museum specimens are an untapped source of extinction stories. In practice, I hope that this research might motivate the construction of museum displays of extinct species that draw more heavily upon the human stories implicated in the animal remains. Such a practice would bring an increased and much-needed attention to the role humans have played in biodiversity loss, particularly in the case of islands where colonialism has had a greater effect than elsewhere.

[123] L.M.F. Bertens and A.M. Wilson, 'Wonder, Empire, Science: The Quagga and Other Extinctions on Display at Naturalis', *Museum & Society* 20(1) (2022): 33–49.

Methodology

My methodology is divided into two sections. The first section considers the question of what historical insights into the representation of island extinction in museums might be drawn from an attentiveness to animal remains. The second section then considers decolonial methods in island studies. These methods call for a greater focus on the colonial pasts of islands and suggest how these colonial pasts might guide the investigation of island extinction.

Tracing Animal Remains in Museums

In the volume, *The Afterlives of Animals*, Samuel J.M.M. Alberti, along with several other scholars, trace a selection of iconic animal personalities and their remains, revealing the shifting meanings that these animals embodied as they transited from a mortal life to a post-mortal life inside museums. Alberti points out that 'the biological death of the living beast is the birth of the specimen', and although the death of an animal might not have been a purposeful human act, 'a sustained afterlife certainly is'.[124] Liv Emma Thorsen takes a similar approach in her investigation of four taxidermy mammals; a gorilla, a Tonkean macaque, a walrus and an African elephant within the Gothenburg Natural History Museum, revealing how each of them in their own distant way embody the history of the museum.[125] Tracing the shifting meanings from the animal's former life to its continuing life inside museums shows how animal remains are entangled in the lives of other humans, different contexts and the objects with which the animal has come into contact. The animal represents all these entanglements, even if many of these entanglements are not visible in the display of the animal.

[124] S.J.M.M. Alberti, *The Afterlives of Animals: A Museum Menagerie*, (Charlottesville and London: University of Virginia Press, 2011), 6.
[125] L.E. Thorsen, *Elephants are not Picked from Trees: Animal Biographies in Gothenburg Natural History Museum* (Aarhus: Aarhus University Press 2016).

In contrast to human biographies, the animal 'lives on' inside the museum and acquires new significations as an object that still engages in meaning-making. This way of tracing an animal's life story draws upon a literature on the social life of things within museum studies.[126] Tracing the life story of museum animals often reveals that the animal on display does not represent wild nature even though it is in a diorama of its natural habitat. On the contrary, the animal often lived in some form of captivity, in a zoo or as part of a circus troupe. The essays in *The Afterlives of Animals* shed light on the many different historical contexts that animals can inhabit throughout their lives, about which their remains hold valuable information. Whereas the animals of concern in this volume are those with whom humans have enjoyed a special relationship—a relationship that continues after their death—this is often not the case for many of the animals we encounter in museums. In the afterword to this volume, Geoffrey N. Swinney points out that 'the museum menagerie is animated and vitalized through a broader range of afterlives, that these are not restricted to vertebrates, not necessarily associated with celebrity, and extend through a variety of spaces of the museum, and beyond'.[127] It is possible to trace the stories of lesser-known animals in museums that have relevant stories to tell as well.

These specimens, however, often have little information attached to them. Sometimes it is unclear when they were collected, from where and by whom. But if one starts to look in written sources, the specimens might appear in inventories leading to a location of collection, a historical period and even a collector. In the volume, *Traces of the Animal Past: Methodological Challenges in Animal History*, the editors Jennifer Bonnell and Sean Kheraj are concerned with how historians tell

[126] A. Appadurai, *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge: Cambridge University Press, 1986) and A. Henare, M. Hobraad and S. Wastell (eds) *Thinking through Things: Theorising Artefacts Ethnographically* (London: Routledge, 2006).
[127] G.N. Swinney, 'An Afterword on Afterlife', in Samuel J.M.M. Alberti (ed) *The Afterlives of Animals: A Museum Menagerie*, (Charlottesville and London: University of Virginia Press, 2011), 219.

stories about animals who often only exist on the margins of historical evidence. They write that 'non-human creatures have been present at every major event in human history… and yet historical scholarship about animals is often limited to glimpses or traces of animals in the past'. [128] This volume is therefore about the methodological challenges that historians face when writing animal stories based on archival records 'produced by people, and preserved and organized for anthropocentric purposes'.[129] They argue that animals can be found in the archives, however marginalised they are, if only the researcher knows where to look for them and proceeds 'from the assumption that historical animals had agency, however limited by the structures and circumstances they found themselves within'.[130]

I have traced animal remains by moving through both exhibition and backroom spaces, searching scientific papers and historical documents where the animal in question is mentioned. This exercise relies, as Etienne Benson writes, on the researcher's 'ability to imaginatively reconstruct coherent sequences of events—and their underlying causes or deeper meanings—from fragmentary, inconclusive traces' to understand the animal's life story and how it connects to other animals, people, different contexts and historical events. Animal remains in this regard have a broader story to tell about the places they are absent from and the places they now find themselves within.[131]

Thinking through animal remains requires a reflection on what exactly qualifies as animal remains. The parts of the physical animals that I examine in the thesis have been preserved by people. One might argue

[128] J. Bonnell and S. Kheraj (eds), *Traces of the Animal Past: Methodological Challenges in Animal History* (Calgary, Alberta: University of Calgary Press, 2022), 3.
[129] Ibid., 5.
[130] Ibid., 6.
[131] Benson, 'Animal Writers: Historiography, Disciplinarity, and the Animal Trace', in Linda Kalof and Georgina M. Montgomery (eds.), *Making Animal Meaning* (Michigan: Michigan State University Press, 2011), 9.

that this is a trace that the 'animal' has left behind, testifying to its existence, but a trace nevertheless affected by the people who preserved it. The existence of the animal in article IV is known only from a few specimens, apart from which there are no other traces of the animal. Yet animal remains are not confined to the physical remnants of bodies. Sarah Bezan and Robert McKay argue that we have to broaden our horizon on 'the material persistence of animal remains on a planet indelibly altered by anthropogenic activities'.[132] In their edited volume *Animal Remains*, Bezan and McKay are not only occupied with animal remains themselves, but also on *how* animals remain, i.e. the cultural constructs and practices that proliferate remainders. When writing animals into histories centered around animals, historians are dependent on 'material-semiotic remnants' that testify to the animal's existence.[133] In a traditional sense, these will often be written documents, but this approach limits the historian to sources solely produced by humans. Benson writes that 'we would be better served by broadening our conception of what counts as a legitimate "primary source"'.[134] He argues that 'the traces left by other kinds of animals besides the human need not have been left intentionally to be useful for the historian'.[135] For example, bone remains of extinction found at archaeological sites are documents of animals that used to inhabit the island, but the animals have not intentionally left them as traces for humans to find. To narrate new stories of extinction, it is important to look for traces of the animal in different places and also traces that were not necessarily preserved with the intention of historical investigation of different kinds.

To trace animal remains of extinct species is to understand what more this animal on display might reveal about its extinction. In my studies, I have traced the relationship that people have formed and still form with

[132] S. Bezan and R. McKay (eds), *Animal Remains* (New York and London: Routledge, 2022), 2.
[133] Benson, 'Animal Writers', 3.
[134] Ibid., 7.
[135] Ibid., 10.

animals that have physically disappeared and yet continue to exist through different traces of them. The animal remains sometimes continue to exist as ghostly appearances or in cultural references promulgated after their death. There are limitations to what different animal remains historically can tell, whether they are intentionally saved for a specific purpose or not. Museums house artefacts from the past; they sometimes conserve remnants that might seem irrelevant at the present time but are seen to hold a potential relevance in the future. This is often the case with extinction. The animals that feature in my articles tell stories of colonialism, suppression and complete eradication, stories related to events and world views of their island homes that ultimately brought about their extinction.

Decolonial Method in Island Studies

Decolonisation was originally used as a concept referring to the fight for independence of nation-states from colonialism that took place in Africa and Asia following the Cold War.[136] But this decolonisation was only partly successful as 'the relationship between the European – also called "Western" – culture, and the others, continue to be one of colonial domination'.[137] With the failure of decolonisation, it became necessary to re-define what decolonisation really meant. The South American research collective 'modernity/(de)coloniality' emerged out of such a need in the 1990s. 'They criticize a Eurocentric understanding of the world and focus on entangling knowledge production from a dominating Eurocentric episteme', as they distinguish between colonialism and coloniality as a concept that is related to the establishment of modern society.[138] Decoloniality is to escape the dominant universal truth to instead create relationality. There is therefore 'one way to do and

[136] W.D. Mignolo and C.E. Walsh (eds), *On Decoloniality: Concepts, Analytics and Praxis* (Durham: Duke University Press, 2018), 4.
[137] A. Quijano, 'Coloniality and Modernity/Rationality', *Cultural Studies* 21(2-3) (2007), 169.
[138] Nimführ and Meloni, 'Decolonial Thinking', 8.

conceive decoloniality', Walter Mignolo and Catherine E. Walsh write, 'for us to think that we are in possession of a decolonial universal truth would not be decolonial at all'.[139]

The continuing colonial dominance also concerns the way we relate and represent nature. Elizabeth DeLoughnrey, Jill Didur and Anthony Carringan write in their volume, *Global Ecologies and the Environmental Humanities: Postcolonial Approaches*, that 'the history of globalization and imperialism is integral to understanding contemporary environmental issues'.[140] Graham Huggan and Helen Tiffin insist in their volume, *Postcolonial Ecocriticism: Literature, Animals, Environments*, to look 'for the colonial/imperial underpinnings of environmental practices in both "colonising" and "colonised" societies of the present and the past' in centralising environmental issues in literary works.[141] Postcolonial environmental humanities broadly respond to an excessive anthropocentrism within postcolonial studies and Eurocentrism within eco/environmental studies.

During the decolonisation of countries after the Cold War, many islands also gained sovereignty, but as Nadarajah and Grydehøj write, 'the island state has maintained a paternalistic relationship with the former colonial power, which to this day has an impact on language, legislation, education, culture and tourism'.[142] They are therefore calling for an island perspective on decolonisation for 'a better understanding of how decolonization can be archived and how indigenous cultures and knowledges can be supported' within island studies.[143] They are concerned with how intended decolonisation can easily become a re-

[139] Mignolo and Walsh, *On Decoloniality*, 1.
[140] E. DeLoughrey, J. Didur and A. Carrigan (eds), *Global Ecologies and the Environmental Humanities: Postcolonial Approaches* (New York and London, Routledge, 2015), 2.
[141] G. Huggan and H. Tiffin, *Postcolonial Ecocriticism: Literature, Animals, Environment* (London and New York: Routledge, 2015), 3.
[142] Nimführ and Meloni, 'Decolonial Thinking', 5.
[143] Y. Nadarajah and A. Grydehøj, 'Island Studies as a Decolonial Project', *Island Studies Journal* 11(2) (2016), 439.

colonisation in more complex arrangements. The first special thematic section on 'Island Decolonization' in the *Island Studies Journal* was a first step to 'privilege islanders' perspectives over mainland-centric dreams of ideal islands'.[144] But studying islands on their own terms, Grydehøj has remarked, 'may both mask the extent to which islanders' terms are negotiated with those of the mainland and the extent to which island researchers are themselves in complex webs of island dreams'.[145]

In 2021, Sarah Nimführ and Greca N. Meloni edited another special issue on 'Representing Islands – Producing Islandness', likewise published in the *Island Studies Journal*, which also deals with the role of the researchers' own positionality conducting research on and about islands. They write 'that if we are not aware of our own ascriptions, we transfer them—perhaps unintentionally—to our research object and subject'.[146] The first step is therefore to be aware of our own positionality to be able to deconstruct or decolonise it. I especially became aware of my own positionality when I travelled to the Hawaiian Islands and met with two Hawaiian museum specialists. I was confronted with my scientific perception of extinction and became aware of how native Hawaiians might understand extinction differently.

In my research, I try to locate some of these island perspectives when it comes to the conservation of island natures and species and how they are represented inside museums and on the islands themselves. I therefore use decoloniality as a way of reading sources—I try to identify the colonial context and push beyond it by making visible other experiences and relationships with the non-humans and knowledge systems. I do not attempt to 'speak' on behalf of animals. Instead, my aim with this thesis has been to understand the human impact on how we come to understand an animal through its representation. I base my analyses on my own encounter with the 'animal' on display. In doing so, there is without

[144] Ibid., 442.
[145] Grydehøj, 'A Future of Islands', 6.
[146] Nimführ and Meloni, 'Decolonial Thinking', 6.

doubt a subjective element, but it is a subjectivity of which I am aware, that I challenge, revise and nuance as the sources that I consult clash with and prompt me to reconsider my individual viewpoints and culturally inherited conceptions of the animal.

Articles

My thesis comprises studies of a Pinta Island giant tortoise, Hawaiian forest birds, Antillean rice rats and Culebra Island giant lizards. This section explains how I went about selecting these species and outlines how they collectively shed light on the research questions behind this thesis. The four studies intersect with the three different bodies of literature—extinction studies, island studies and museum studies—on which I have elaborated in the previous sections.

All four articles are concerned with the organic traces of animals preserved in different ways by specific people that were later handed over to museums. These organic traces can be referred to as 'biocultural', since they were the natural parts of an animal that were embedded in different cultural contexts of preservation, which in turn reveal aspects of specific relationships between humans and non-humans.[147] The cultural aspects of taxidermy specimens can be as hard to grasp as the natural elements of cultural artefacts, but paying attention to these specific interrelations between nature and culture defines an 'endangerment sensibility' that Vidal and Dias advocate in their volume *Endangerment, Biodiversity and Culture*, providing an understanding of why certain natures are more threatened with extinction than others.[148]

The remaining traces of an extinct species that I analyse range in form. Among them are the external parts of an animal, either as a re-animation through taxidermy of the dead animal into a life-like position or a study-skin used for science. Others range from entire animals preserved in liquid inside glasses to the last remaining feathers of extinct birds embedded into cultural artefacts and animal bones dug up from the ground long after their disappearance. The animal remains vary from

[147] J. Salich, K. Konchar and M. Nesbitt, *Curating Biocultural Collection: A Handbook* (Chicago: The University Chicago Press, 2014).
[148] F. Vidal and N. Dias, *Endangerment, Biodiversity and Culture* (New York and London: Routledge, 2017).

preserved animals that existed in abundance when collected to the preservation of the last of its kind. In all cases, their remains are perceived as rare and valuable. They are preserved with a care that some of the animals did not experience during their biological lives. Some of the animals like the Pinta Island giant tortoise also exist in other forms, such as DNA-tissues or as a skeleton. For the purposes of my research, I have chosen to focus on animals that were on display for public viewing.

This thesis expands the museum context of extinction to encompass art museums, cultural museums, as well as places that originally would not have counted as museums, such as a temple and a research station. I have found it necessary to widen the museum context beyond natural history museums when it comes to bringing new stories of extinction to the fore to show that the display of animal remains *anywhere* often functions in similar ways and is subject to some of the same power dynamics and issues of authority. Widening the museum concept is also a way of making extinction more accessible in places where species are lost but no longer present.

This thesis furthermore connects the chosen specimens to the places where they are extinct in order to tell more inclusive stories of island extinction. It investigates different island contexts that in one way or another are connected to the vanishing of a species. This varies from viewing archipelagos as fragmented landmasses that could be transformed into separate colonies supporting European colonial powers to viewing islands as bounded isolated specks of land in strategic locations, traded and utilised for mainland purposes, to viewing islands as laboratories for science still preserved as living museums showcasing the evolution of different species. Island specimens are often used inside museums to narrate extinction stories, but the island context is often not prominent. Having visited the Hawaiian Islands and the Galápagos Islands where specimens of my studies were displayed, I have attempted to redress this lack of attention to the island context by making it a focal point of my investigations.

Article I: Colonial Entanglements in Extinction Narratives: The Afterlife of two Saint Lucia Rice Rats

In article I, 'Colonial Entanglements in Extinction Narratives: The Afterlives of two Saint Lucia Rice Rats', I investigate the extinction of Antillean rice rats within the Caribbean through two specimens of Saint Lucia giant rice rats at the Muséum national d'histoire naturelle and the London Natural History Museum. I discovered the Antillean rice rats through the webpage www.whatismissing.org. This webpage was created by the American artist, Maya Lin, as a multi-sited memorial to raise awareness about the present sixth mass extinction of species through science-based artworks.[149] I have found this virtual map useful on multiple occasions, especially to find species that I had no knowledge of beforehand. When I searched the geographical area of the Caribbean, images of two taxidermy rice rats from St Lucia and Martinique appeared as some of the only examples of species that had gone extinct within the Caribbean.

Given that the Caribbean Islands have been identified as a hotspot of anthropogenic extinction, it seems surprising that so few species from the Caribbean feature on the map.[150] We must assume that some specimens of these lost species were collected and still exist inside museums. Through an investigation of the complete erasure of the Caribbean monk seal, Jørgensen shows that even though Caribbean monk seals were collected and exist in small numbers inside collections,

[149] M. Lin, 'About the Project', *What is Missing*, https://www.whatismissing.org/about (accessed December 5, 2023).
[150] S.B. Cooke et al., 'Anthropogenic Extinction Dominates Holocene Declines of West Indian Mammals', *Annual Review of Ecology, Evolution, and Systematics* 48 (2017): 301–27.

they are in pure condition and rarely on display inside museums.[151] The island context furthermore illuminates how archipelagos have been seen as fragmentation of lands clearly defined by their sea borders. The Caribbean served as an 'ideal' place to establish colonies belonging to different European nations that transformed the islands into plantations supporting mainland nations. This also means that the Caribbean islands suffered substantially from deforestation and that foreign species were introduced into the islands that played a part in the extinction of endemic species. This correlation between European colonisation and the disappearance of flora and fauna is something that I highlight in this article.

As I started to read the scientific articles about the evolutionary development of the Antillean rice rats, I learned that they represent one of the most significant adaptive radiations, with over twenty different species within the Caribbean. This is a common evolutionary phenomenon that especially occurs within oceanic archipelagos as species develop into new species when isolated from each other. But compared to the often-used example of the Hawaiian honeycreeper or Darwin's finches, they have not received much scholarly attention. Although being a mammal, the Antillean rice rats do not benefit from anthropomorphic qualities of charismatic mega-faunas or the aesthetic appearance of avian species that invoke emotional responses in humans. On the contrary, rats hold a bad reputation of destroying human food systems and are often categorised as intruders or pests. They can be said to belong to a blacklist (instead of the famous red list) of *unloved* animals we do not have much attachment to and therefore not much love for. They feature very low in a human-created value system of animals and often suffer painful deaths in eradication programs—especially on islands where they have caused significant damage to endemic species. I

[151] D. Jørgensen, 'Erasing the Extinct: The Hunt for Caribbean Monk Seal and Museum Collection Practices', *História, Ciências, Saúde – Manguinhos* 28 (2021): 161–83.

thus thought that it would be revealing to take a contested animal that is also endemic because it breaks with our understanding of 'the rat' as an intruder.

To challenge the general perception of 'the rat', I present a different historical-human relationship to the endemic Antillean rice rats. I show how the zooarchaeological material indicates that the Amerindian population lived in commensalism with the rice rats—where the rice rats lived off crops cultivated by humans and the rice rats simultaneously served as a source of food for the Amerindians. This relationship seems to have existed since the first humans colonialised the islands. However, I can only roughly point to this relationship, since the sources on which I rely are limited to archaeological evidence. This material indicates that the rice rats lived in proximity to human populations and that the rice rats served as a food source for the Amerindians in how the bones have been broken and burned (equally observed in a written testimony by a French naturalist visiting Martinique in 1654). We have no written sources from the now extinct native population and that poses certain limitations to what we can really know about this relationship, in particular, whether it extended further than the rice rats solely serving as a food source.

Bone fragments are a material seldom on display in museums, unless in the form of a full skeleton or skull. I have been unable to find out where the bone fragments of the rice rats are stored today, since the scientific articles only mention the different archaeological excavations where bone fragments were found, but I suspect that only a few bones have been preserved today and possibly outside of the islands because these archaeological excavations were typically carried out by mainlanders. But I am intrigued by the traces of extinction preserved in the soil and the potential these have to narrate new stories of extinction in deep time. Thom van Dooren makes a similar observation in the Epilogue to his book, *A World in a Shell*, where he writes about a cliff side on the westernmost tip of the Hawaiian island O'ahu, where shells from extinct

snails can be found functioning as a 'wild archive of ancient snail life'.[152] The bone fragments tell more about the actual presence of the rice rats on the islands than the few taxidermized specimens of them. But we are often not paying much attention to this material. During my master studies, I participated in archaeological excavations in the Caribbean where animal remains such as snail shells have been tossed away. I was surprised how we are saving fragments of ceramics, clay pipes and other remains from people that oppressed native populations and exploited the land, all while the remains of species that may have disappeared during this process were considered unworthy of saving.

Even though the bone fragments of the Antillean rice rats probably exist in abundance within the islands (even if hidden in the soil), there are only a few live-caught specimens, all of which are preserved in European museums that hold colonial power over the islands. I visited the Muséum national d'Histoire naturelle (MNHN) in Paris to see a mount of a Saint Lucia giant rice rat that I knew was displayed in the Room of Endangered and Extinct Species. In its cabinet there was very little information about its story of extinction. I also arranged a meeting with Cécile Callou, the Manager for the vertebrate collection at the MNHN, who kindly made it possible for me to see the other specimens of Antillean rice rats held in the museum storage room. These included specimens preserved in jars, a full skeleton, a cranium and a few other taxidermy specimens. She also provided me with a full list of their specimens that provided information on where, when and by whom the specimens had been collected. This information then enabled me to find this exact specimen in the museum's bulletin from 1952, which I accessed through the Biodiversity Heritage Library, a site that has made biodiversity literature openly available online. The specimen on display at MNHN was brought back to Paris alive and exhibited before it died at the Menagerie Jardin des Plantes. From this source I also learned that

[152] T. van Dooren, *A World in a Shell: Snail Stories for a Time of Extinction* (Cambridge, Massachusetts: MIT Press, 2022), 198.

this specimen was only one of two. I found the second specimen of the Saint Lucia giant rice rat in the *Proceedings of the Zoological Society* of London from 1949. It had a similar history attached to it, spending it last years in the London Zoo. This specimen still exists at the National History Museum in London, but owing to its fragility it is not on display. I tried to arrange to see this specimen but this was not possible due to ongoing works inside the museum. Instead, the museum staff kindly sent me images of the specimen and the sparse information they possess concerning its journey to the museum.

Both stories testify to a historical fascination with island nature, but as I learned about the species' extinction story I started to question the location of these specimens in countries that took part in the animals' complete disappearance. I therefore wanted this article to consider the repatriation of animal remains in the same way that many museums are repatriating human remains to their source communities. Repatriating animal remains would serve as a form of decolonisation to create awareness of the fact that nature, not just people, was colonised, and continues to be colonised in the display of nature within museums. Repatriation is originally connected to humans who claim to be the rightful owners of ancestral remains or cultural artefacts; however, unlike these examples, since nobody has claimed the specimens, where should their remains be returned? In the article, I therefore elaborate on the significance of the rice rats' evolutionary development, their relationship to the native population and how their extinction story is connected to European colonisations of Caribbean Islands as a way of justifying a claim for future repatriation.

The article found its publication home in the *Journal of Natural Science Collection*, where I think it rightly belongs. It is within this journal that the discussion of the decolonisation of natural history museums has taken place within the last couple of years. More research on the provenance of animal remains is needed before a debate about the repatriation of animal remains can truly take place. I hope this article contributes to that

debate as I argue for why it is important to connect extinction narratives to the colonial causes of their disappearance.

Colonial entanglements in extinction narratives: The afterlives of two Saint Lucia giant rice rats

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Abstract

European colonialism exposed islands to significant threatening processes that drove species to or near extinction. At the same time, they were regular sites of collecting living animals especially because of their high level of endemism. Natural history museums house animals that carry stories of colonial conquest over island ecologies. I argue that existing decolonising approaches to natural history museums do little to decolonise our human-non-human relationship with the species on display. Through a discussion of the extinction of Antillean rice rats in the Caribbean and the only two specimens remaining of the Saint Lucia giant rice rat (*Megalomys luciae* (Fortsyth Major, 1901)), I emphasise the importance of connecting extinction narratives to the colonial causes of their disappearance. Three lessons follow to show how natural history museums can address their inherited colonial legacies in displaying extinct animal remains collected from colonised lands.

Keywords: Animal remains, endemic rats, anthropogenic extinction, museums, decolonisation, giant rice rats

Erasing colonial extinctions from public narratives

When the Grand Gallery of Evolution at the Muséum national d'Histoire naturelle in Paris reopened in 1994, its former bird gallery was transformed into the Room of Endangered and Extinct Species. The original interior dating back to the late nineteenth century remains in place, but the specimens now filling the cabinets are either extinct or threatened, with extinction classified according to area of geographical origin: France, tropical rainforests or islands. Over two hundred animals and plants are gathered here, testifying to the mass-extinction event that we are currently witnessing.

Most of the specimens on display link directly to French overseas colonial activities, yet there is very little recognition on the display labels of the connection between these activities and the extinction of the species, nor is there recognition of France as a former imperial power over these habitats. It corresponds with Anna Guasco's (2020, p. 11-12) observation of extinction narratives in the *Survival Gallery* at the National Museum of Scotland: 'although many of the endangered species discussed are from biodiversity "hotspots" in the Global South, topics such as the Global North's or former imperialist nations' ecological debt towards these areas are not addressed'.

It is only within the last few years that scholars and museum practitioners have started to analyse the colonial legacy of natural history museums. Subhadra Das and Miranda Lowe (2018, p. 8) uncovered how natural history museums convey a 'covert racism' by only including the contribution of white people to Western science, thereby alienating certain museum visitors from natural history museums. Such erasure of the colonised manifests itself through historical collections of plants (Kaiser, 2022), minerals (Gelsthorpe, 2021) and animals (Ashby and Machin, 2021; Middleton, 2021), examples that all show how the collecting of natural history specimens from former European colonies both oppressed people and relied on local and Indigenous people's knowledge that remain unrecognised in natural history museums.

To decolonise natural history museums, Das and Lowe argue (2018, p.11) that museum professionals 'need to do better at acknowledging past wrongs for what they are, and telling the whole of the story of science'. Ashby (2021, p. 35) makes a valuable remark in his analysis of the displays of Australian fauna, when noticing that 'decolonisation in museums is most commonly applied to human stories', despite the fact that colonisation has also impacted nature and how we relate to it (Plumwood, 2003). Decolonial approaches which focus mainly on how to make natural history museums more inclusive and diverse for people overlook the potential to change and challenge our relation to the natural world. As a counter to this approach, Guasco (2020, p. 15) proposes an inclusion of 'multispecies justice museum storytelling' into displays of extinctions. This has potential for addressing the museums' responsibility to inform the visitors about colonial oppression of island ecologies as stewards of some of the only surviving remains of now extinct endemic species.

Since they hold some of the only remains of past natures that existed in former colonies prior to European colonisations, it can seem peculiar that natural history museums do not address the damage of ecological systems caused by European extractive systems, especially because natural history museums themselves carry a colonial legacy of collecting and displaying animals from oppressed nations. One reason that Ashby and Machin (2021, p. 45) identify in their article on legacies of colonial violence in natural history museums is that certain objects, such as trophy specimens associated with game hunting, 'undermine museums' conservation messages'. They are therefore often removed from public displays instead of reinterpreted from decolonial perspectives (2021, p. 45). By applying frameworks from postcolonial ecocriticism or postcolonial environmental humanities, which brings 'postcolonial and ecological issues together as a mean of challenging continuing imperialist modes of social and environmental dominance' (Huggan and Tiffin, 2015, p. 2), museums could interrogate their inherited coloniality also when it comes to the display of lost natures. This is best seen with the display of the dodo as a prime example of modern extinction caused by European activity on the island of Mauritius, but often natural history museums also relate its extinction to its evolutionary development as a flightless bird (Guasco, 2020, p. 2). Postcolonial environmental humanities respond to an excessive anthropocentrism within postcolonial studies and Eurocentrism within eco/environmental studies (DeLoughrey, Didur and Carrigan, 2015, p. xiv). Thinking through museum displays as spaces with colonial legacies that have contributed to biodiversity loss might allow new extinction narratives able to nuance the visitors' understanding of the mass extinction we experience today.

In this article, I argue that existing decolonising approaches to the natural history museums do little to decolonise our relationship with the species on display. Through a discussion of the extinction of Antillean rice rats in the Caribbean as a result of European colonisations and some remnants of them preserved and displayed in Western museums, the article argues for the importance of connecting extinction narratives to the colonial causes of their disappearance. It juxtaposes the historic collecting of individuals of Antillean rice rats with the present excavation of rice rat bones among archaeological remains. The historic remains of the now extinct species are all preserved in Western museums, all collected at a time when the species were on the brink of extinction. They constitute a collection of Caribbean origin but shaped by Western scientific norms as a desire to cataloguing the entire natural world (Barrow, 2009, p. 48). On the other hand, the discovery of the bone remains, uncovered from food waste deposits at Amerindian archaeological sites, reveals a past natural and cultural Caribbean reality that no longer exists.

A colonial extinction story

The first recorded encounter by a European of an Antillean rice rat in the Lesser Antilles was the French Catholic botanist, Jean Baptiste Du Tertre 1610-1687, as described in his book, *Histoire générale des îles Saint-Christophe, de la Guadeloupe, de la Martinique et autres de l'Amérique* (1654). On his mission to the Caribbean in 1640 he encountered rice rats in great numbers on the

island of Martinique. They looked vaguely like the black rats he knew from Europe but were of such great size that not even four European rats would weigh the same as one *pilori*, as he called them in his book. He described how the endemic rats served as a food source for the Amerindian population on the island and provided an account of how they prepared the rats.

They would singe off the rats' hair, then expose the rats to air overnight to get rid of their strong musky smell before boiling them (Du Tertre, 1654, p. 342; also see Allen, 1942, p. 91). Bonyhady (2019) reveals a similar relationship between First Nation Australians and the endemic long-haired rats in his book *the Enchantment of the Long-haired Rat.* He writes that 'the *majaru* [long-haired rat] enriched the Diyari's diet and constituted a great source of fat which the Diyari rubbed on their bodies to keep their skin soft … The long-haired rat probably loomed large in the cosmology of most if not all Aboriginal groups who encountered it' (2019, p. 167). The long-haired rat played a significant role in creation stories of Australia and was enchanted by some First Nation Australians as a totem animal (2019, p. 168). While there is no firm evidence that the Antillean rice rats played a similar role for the Amerindians inhabiting the Lesser Antilles, archaeological remains do suggest that particularly the Taíons 'practised animistic and cemíistic beliefs with some totemic and matrilineal remains in their social structures' (López, 2016, p. 454). But as López (p. 454) also points out, it is a difficult task to explore extinct societies when 'only archaeological remains are left and, occasionally, a few ethnohistoric ideologically-biased attestations.'

What is known about the co-existence of the rice rats and the Amerindians comes from Du Tertre's eyewitness account, and excavated bone fragments of the rice rats - with signs of butchery and burning marks - found at Amerindian archaeological sites from the 1970s to today (Wing, 2001, p. 114). This zooarchaeological material shows that 'the rice rats of the Lesser Antilles lived close to human settlements and crops areas' and that 'this tendency to commensalism was probably established since the first human occupation in the archipelago' (Durocher *et al*., 2021, p. 441). Even though the rice rats were killed as a source for food by the Amerindians when they inhabited the archipelago 7000 years ago, the rice rats did not disappear from the archaeological record before the arrival of Europeans.

Our knowledge about the vast existence of Antillean rice rats in the Lesser Antilles comes from the fact that they constituted an essential part of the Amerindians' diet. Molecular analysis of the bones shows that the Antillean rice rats inhabited the Lesser Antilles roughly six million years ago, possibly on oceanic dispersals from South America (Brace *et al*., 2015, p. 1, Durocher *et al*., 2021). The rice rats lived on almost all the Lesser Antillean islands - approximately twenty different species of rice rats once existed - which makes it one of the most significant adaptive radiations within the Caribbean islands (Brace *et al*., 2015, p. 2). Species of rice rats are still being identified from the recovered bone material of the extinct species (Turvey *et al*., 2010; Turvey *et al*., 2012). But it is important not to limit the bone remains either to be a story about the Amerindians' diet or the evolutionary significance of the Antillean rice rats. As Trevathan (2017,43) explains 'there is a need … for narrative and analysis to descend into the depths, to submerge in ecological devastation in the hopes of contemplating other future alternatives.' The uncovering of extinct animals among the remnants of equally extinct human populations offers insights into the natural and cultural past of the Caribbean islands - a reality that largely disappeared with European colonisations and is almost invisible in the islands today.

To return to Du Tertre's encounter from Martinique in 1640, he observed not only the endemic Antillean rice rats but also the influx of the black rats (*Rattus rattus* Linnaeus, 1758) that accompanied the European ships to the Caribbean islands (1654, p. 342). The black rat 'was feared and loathed in Europe because it was so destructive' (Bonyhady 2019, p. 13). On the ships and as unwelcomed neighbours in the colonies, rats were considered vermin that 'destroyed harvested grain and devastate food systems' (Cole 2016, p. 143). Rats of any kind had a bad reputation and it seems to have impacted the colonists' view on the endemic rice rats they encountered when colonising the Caribbean islands. The rice rat 'was said to live in burrows in the ground and against it the colonists waged war on account of its destructive habits in their plantations' (Allen 1942, p. 91). For the colonists the rice rats were not a source of food but became a pest when the Caribbean was transformed into cultivated landscapes dominated primarily by sugar canes. Eventually, it was the accidental introduction of black rats that caused the extinction of the Antillean rice rats (Turvey *et al*., 2010, p. 767). The endemic rice rats had developed in isolation with few, if any, predators and were defenceless against the black rat that took over their habitats. As McNeill (1994, p. 317)

explains, rats were in general, throughout island communities, 'the single most consequential alien intruder,' by his phrasing, 'shock troops of ecological imperialism.'

Alfred W. Crosby (1986) coined the term *ecological imperialism* in his book of the same name, arguing that the success of European imperialism was a combination of ecological factors - especially since the European imperialists broke millions of years separation between continents and introduced sudden changes into otherwise closed ecosystems (Crosby, 2004, p. 7). It trigged biological changes that were often unintended but nevertheless made the colonisation of islands easier because of the instability it wrought on the environment (Crosby, 2004, p. 192). Crosby recognised that the introduction of various invasive species played a significant role for the success of the European colonisation of island spaces, but at the same time he also exempts the colonists from the responsibility of the ecological damage they caused. Yet islands became unstable when European settlers exploited island spaces of their resources and deployed the land to produce crops for the colonising countries (McNeill 1994, p. 302). They bear the responsibility of those detrimental changes, and museums are good places to inform the public about the connections between ecological losses and Western colonial activities abroad.

Colonial collecting of living animals

Only a handful of skin-based specimens of the Antillean rice rats from Martinique, St Vincent and St Lucia exist today (Specimens are held at the following institutions: Muséum national d'Histoire naturelle 2006-187, 1979-385, 2006-188, 1994-1329, 1883-312; Naturalis, Leiden 21287.b; London Natural History Museum 1850.11.30.6, 1853.12.16.2, 1855.12.24.201, 1897.12.26.1). These specimens were collected in the nineteenth century. The species no longer existed at the levels of abundance previously observed by Du Tertre in the early seventeenth century but were now considered rare by naturalists visiting the islands (Lorvelec *et al.*, 2007: p. 301). Animals were collected to establish a taxonomy system that should "contribute to the enterprise of cataloguing the globe's flora and fauna" (Barrow 2009: p. 48). Islands were regular sites of animal collecting because of their high level of endemism. As specimens were removed from their original context and placed inside Western collections, they immediately became part of a European rational project of knowing the entire world (Mackenzie, 2009).

The skin-based specimens which are the focus of this paper, are the only two specimens of the Saint Lucia giant rice rat (*Megalomys luciae*) known to exist today. One specimen (MNHN-ZM-MO-1994-1329) is exhibited in the Room of Endangered and Extinct Species of the *Muséum National d'Histoire Naturelle* (MNHN) in Paris. It came into the collection in 1851 and is described in the museum report, *Bulletin du Muséum National D'Histoire Naturelle,* from 1952: 'Megalomys Luciae (Forsith Major [1901]). One specimen mounted: 1 ♀ ad., brought back by M. De Bonnecourt; this animal lived in the Menagerie Jardin des Plantes from 25 August to 12 November 1851' (MNHN, 1952, p. 70) (translated from French). From this it appears that the specimen was brought or shipped to Paris alive by M. De Bonnecourt, who also contributed other specimens from the Caribbean islands to the *Muséum National D'Histoire Naturelle.* This Saint Lucia giant rice rat spent her last few months in the Ménagerie du Jardin des Plantes until she died. The dead body was afterwards handed over to the MNHN and mounted as posed taxidermy still existing today.

The second specimen of the Saint Lucia giant rice rat (NHM-1853.12.16.2) came into the collection of the National History Museum (NHM) in London in a similar way. In *The Proceedings of the Zoological Society of London* (1849, p. 105), where all the living animals that came into their collection from 1833-1965 are recorded, one Saint Lucia giant rice rat also appears. It was presented to the Royal Menagerie in London November 1849 by lieutenant R.E. Tyler. The Saint Lucia giant rice rat died in 1852 after three years of captivity in London Zoo (Flannery and Schouten, 2001). It was handed over to the British Museum, later transferring to what is now called the NHM following the establishment of that institution, where it remains today. It was not prepared as a mount but is rather a study skin.

The establishment of the zoological department of the Jardin des Plantes in Paris and the Zoological Society of London with London Zoo marks the rise of the modern zoo (Mitchell 2018, p. 418). They were both founded to foreground natural history. The scientific endeavour to classify the world's species led to the removal of exotic animals from their lands to enhance public knowledge and research. However, the display of exotic animals was not a new phenomenon. They had been around for centuries in various forms as fairs and menageries but the display of the 'wild' was often solely for entertainment before the development of the modern zoo. Menageries often had limited knowledge of the animals, their natural diets, breeding habits, natural grouping and life-styles (Hancock, 2001, p. 55), so the collected

animals did not tend to live long. Western European natural history institutions were fundamentally 'grafted onto a Eurocentric and essentially English concept' of the menagerie (Hancocks 2001, p. 17), and this is apparent in that museum collections often acquired animals exhibited in menageries and zoological gardens. Natural history museums not only represent pristine nature unaffected by humans but in fact also illustrate humans' desire to manage and control nature by exhibiting animals that have been in captivity (Baratay and Hardouin-Fugier 2002, p. 9).

While zoos are often heavily involved in animal conservation projects today, historically they have also been sites of animal extinction: the last known passenger pigeon (died 1914), Carolina parakeet (died 1917) and thylacine (died 1936), were all zoo captives. Similarly, the last Saint Lucia giant rice rat to be collected is the one that died in the London Zoo in 1852. No further specimens were collected, but the species was last reported seen in 1881 (Turvey *et al.*, 2009, p. 768).

Displaying colonial animal remains in museums

MNHN in Paris exhibits a collection of endangered and extinct species in the Room of Endangered and Extinct Species. The room contains over two hundred animal and plant specimens from the three Environments - islands, tropical rainforests and France. According to Cécile Callou, scientific responsible for the vertebrate collection at the MNHN, the gallery exhibits few specimens from mainland France (Callou, *pers comms*, May 2019). This is of course related to the historical founding of the museum where specimens were first collected from all around the world, especially French possessions during the colonial era, but it also indicates the uneven geographical distribution of endangered or extinct species in the world, where an overrepresentation belongs to tropical climates and islands (Vamosi and Vamosi, 2008; Tershy *et al.*, 2015).

The Room of Endangered and Extinct Species is dark with only light shed on the specimens inside the display cases that run down the walls on both sides of the room as well as the middle section. Jørgensen has observed that 'a room with animals in glass cases is an archive of animal bodies, but it is also an archive of animals portraits' (Jørgensen, 2022, p. 362). Jørgensen compares the animal portraits in this room with portraits painted using Dutch seventeenth-century *chiaroscuro* technique, where the only light shed on the subject is from a candlelight. It draws our attention to details and stresses the fleeting nature of life that could easy be 'snuffed out.' (Jørgensen, 2022, p. 363). Even the specimens on display are at risk; if the specimen 'dies' through aging or damage, the record of the animal disappears with it. Every fifteen minutes a gigantic Renaissance clock goes off, reminding you that time is short for many of the species in this room, for some time is already out.

Within the room, the now extinct Saint Lucia giant rice rat sits upright on its hinds with its head bending forward and its forelegs folded together (Figure 1). The tail is between its legs as it sits on a small podium locked inside a wooden display case.

This Saint Lucia giant rice rat can be classified as a mounted taxidermy specimen, where the skin of the dead animal has been preserved to make it 'come alive'. The skull has been kept inside it, but the rest of its insides have been replaced with artificial material. Taxidermy literally means 'the arrangement of skin' (Poliquin, 2012, p. 10) so what the visitor sees replicates the original animal's external appearance, where only the eyes have been replaced with glass eyes. Even though the representation of it looks authentic, the taxidermy practice is not a neutral representation of an animal, but always reflects a human relation to the animal in how the skin is arranged (Alberti, 2011; Poliquin, 2012). It is a human creation of an animal and thereby also a human gaze on that animal. We can start to ask ourselves questions about the mounting choices: Why has the body been placed in an upright position on its hinds instead of all four legs? Why is the head bending down and not straight ahead? Viewers do not know the answers to these questions, but the decisions play a fundamental role in how they make meaning and respond emotionally to the animal.

The Saint Lucia giant rice rat is exhibited in a glass case with three other taxidermy mammals from the Caribbean islands: a Martinique giant rice rat (*Megalomys desmarestii* Fischer, 1829), which is also extinct, a Cuban solenodon (*Solenodon cubanus* Peters, 1861) that still exists in Cuba but is categorised as endangered, and a red-rumped agouti (*Dasyprocta leporina* Linnaeus, 1758) from Guadeloupe, which is categorised as least concern since they are abundant in north-eastern South America. These are all examples of the rich fauna of flightless mammals that existed within the Caribbean islands before they experienced 'the world's highest level of historical mammal Extinction' (Turvey *et al.*, 2017, p. 918), but this is not recognised alongside the display case. The display text next to the body of the Saint Lucia

Figure 1. Taxidermy Saint Lucia giant rice rat (Megalomys luciae) at the MNHN (MO-1994-1329). (Photo credit: Gitte Westergaard)

giant rice rat reads "the Saint Lucia giant rice rat disappeared under circumstances that remained unclear. The species is known only by two specimens, one of which is presented here." [translated from French].

While it is true that the exact reason for the disappearance of the Saint Lucia giant rice rat remains unknown, there is enough archaeological evidence to connect the disappearance of the rice rats to European colonisations of the Caribbean. 'Radiometric dates available for archaeological horizons from different islands show that many taxa definitely survived until close to the time of first European arrival in the region around 500 years ago' (Turvey, 2010: p. 767). How colonial activities led to the extinction of many species could easily be incorporated into the display label. It gives the museum an opportunity to both discuss European colonisations, the spread of invasive species, global trade and the vulnerability of island spaces. It would also be appropriate to reveal that Saint Lucia was a French colony, which would explain why the Saint Lucia giant rice rat is still on display in France far away from its original habitat, as well as how the species was collected in the wild and spent its last years in a menagerie. The missing information about the correlation between European colonisations and the consequential extinction rate in the Caribbean shadows which anthropogenic impact caused the disappearance of the rice rats. There are limitations to what information can be included in the display label, but in the context of this gallery the museum does not seize the opportunity to explore fundamental topics that would explain why the specimen is in their collection and no longer exists in nature.

The second existing Saint Lucia giant rice rat is in the collection at the London Natural History Museum (NHM) stored in the magazine of the museum (Figure 2). If you did not know it was a Saint Lucia giant rice rat, you would not have guessed it from its appearance.

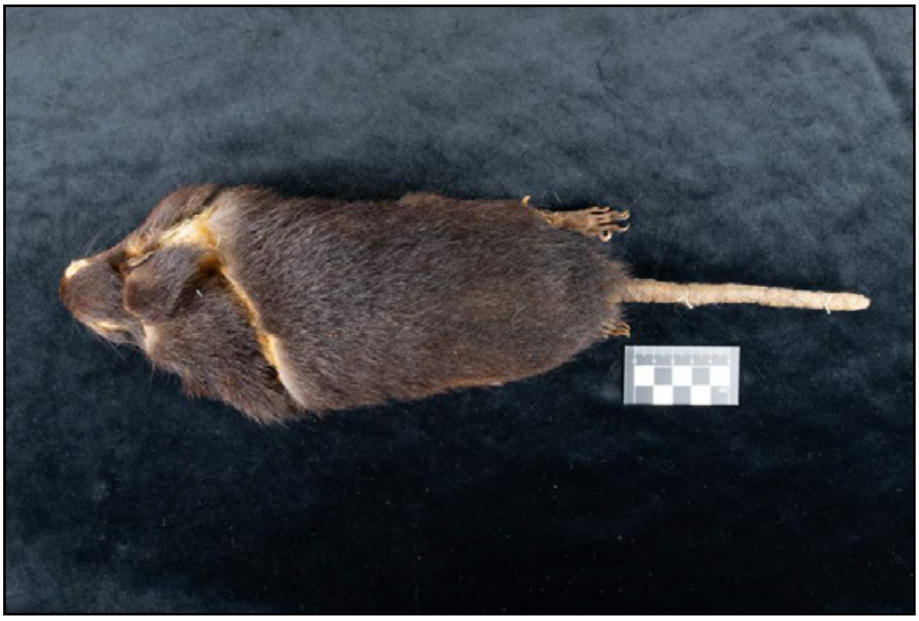

Figure 2. Front side of study skin Saint Lucia giant rice rat (Megalomys luciae) at the NHM (1853.12.16.2). (Photo credit: The Trustees of the Natural History Museum, London)

Flannery (2001) describes his encounter of this Saint Lucia giant rice rat specimen in the book, *A Gap in Nature*, where he, together with Peter Schouten, set out to create portraits of extinct animals in text and illustrations from remaining museum specimens. He writes that 'it resides in a glass-topped box in a museum drawer surrounded by hundreds of its smaller (still surviving) relatives. Whoever stuffed it did a poor job. The specimen, which is a size of a small cat, is now falling apart and is so fragile it bears a label with a strict injunction not to touch it' (Flannery and Schouten, 2001, p. 42). In contrast to the MNHN specimen, this one has been prepared as a study-skin. Since the insides of the body have been removed, the animal now exists in two parts: the skull and the skin. The study skin was what Forsyth Major (1901) used to describe the species and to give it the scientific name *Oryzomys luciae* (now considered a junior synonym) in 1901 and has since been in the hands of many scientists. Unlike the specimen displayed at the MNHN in Paris where the animal is re-animated to look alive again, this specimen is preserved only for scientific reasons.

The Saint Lucia giant rice rat has suffered significant damage as it is missing parts of the tail and forelegs. But the specimen has been CT-scanned in recent times and now exists as a 3-D model. It ensures the specimen's future existence even if its organic material should be lost. But the 3-D model also provides an 'alternative form' of the object that is not meant to replace it, but rather to give it a more dynamic life (Krupa and Grimm., 2021, p. 53). If the 3-D model is made freely available as an online source, the specimen can be shared more widely and easily as well as accessed and used in a way that is less restricted by the NMH. In that way, digital repatriation can, according to Krysiana L. Krupa and Kelsey T. Grimm, serve as a decolonising practice (2021). As it is right now, the specimen is not available for the public to see, not even as an image in the collections online.

Although the two specimens of the Saint Lucia giant rice rat are very differently preserved - one primarily for scientific research and the other specimen as an 'accurate' representation of what this specimen looked like - they are the last two skin-based remains of this extinct species. They reveal two very different means of preserving dead animals for future generations that have equally been important to how we understand the giant rice rats as well as shaping our visual impression of an ecological world that no longer exists. The specimens provide different modes for how the museum could engage themselves in the decolonisation of extinction.

Extinction narratives and colonialism

Specimens of animals have been and continue to be collected from colonised lands. Inside Western natural history museums, they are often only consulted to answer scientific questions but are silent about European colonial violence and complementary ecological devastations (Gladstone and Pearl, 2022). European natural history museums have a colonial legacy that they have just begun to engage with, with an aim of making the museums more inclusive and to break a predominating whiteness inside museum institutions (Das and Lowe, 2018), but decolonisation also concerns extinct specimens on display that have disappeared as a direct consequence of European invasion and settlements.

European colonisations have both caused the loss of nature and shaped a specific relationship to nature which is rarely visible and thereby not challenged in how natural history museums display extinction. Extinction narratives need to go beyond the individual species that are behind glass to the colonial practices that brought them there. This would shed light on past multispecies communities, an uneven loss of biodiversity and cultural practices inflicted in extinction narratives. Here, I draw out three lessons from the story of the extinction of rice rats in the Caribbean to show how European colonialism and museum display practices maintain a colonial structure inside the natural history museum. These lessons built upon Donna Haraway's concept of 'response-ability'. Haraway has defined response-ability as 'that cultivation through which we render each other capable, that cultivation of the capacity to respond' (Haraway, 2015, p. 256-257). The museums take part in this cultivation in how they create or do not create room for visitors to relate in different ways to the species on display. The museum has the responsibility to provide a space for response-ability. Inside museums, response-ability both refers to the responsibility museums have for our surrounding environment through the objects they hold in their collections but also how the museum can create room that allows for responsiveness among their visitors to environmental loss in shaping new ways of relating to the outside world (Endt-Jones, 2020, p. 186).

1. The museum has a responsibility to show different human relationships with nature than the ones formed through colonialism.

As revealed by the archaeological record, Antillean rice rats have a long history of relationships with humans. They lived near humans feeding on their crops, and the rice rats enriched the human population's diet. Their remnants bear witness to human-non-human commensalism and greater Caribbean biocultural diversity. But this historical entanglement is rarely talked about as the bone fragments are either used to understand the evolutionary history of the rice rats and their extinction or the diet of human Caribbean populations. Natural history museums miss an opportunity to reveal a different human relationship to the endemic rats that stands in contrast to how the Europeans perceived them as vermin alongside the black rat introduced into the colonies. This would challenge a dominating European value system of animals where rats are part of the 'unloved' animals that received less attention (Rose and van Dooren, 2011).

2. The museum has a responsibility to connect extinction narratives to the colonial causes of their disappearance.

The black rat was introduced to the Caribbean islands with Europeans and has been identified as the main reason for the extinction of the endemic rice rats (Turvey *et al.*, 2010, p. 767). But European colonialism is exempted from the responsibility of their extinction since the introduction of the black rats happened more by accident than as a conscious choice. This creates a narrative where the rice rats are responsible for their own extinction since they could not survive the changes imposed on their environments. If the museum instead acknowledged the impact of colonialism on the extinction of the rice rat, the uneven geographical disappearance of species would be recognised as well as the harmful effect European extractive systems had on colonised lands (Guasco, 2021).

3. The museum has a responsibility to engage their own colonial involvement in collecting and displaying foreign specimens in their collections.

When European naturalists or other settlers in the colony who took an interest in the flora and fauna started collecting specimens for Western natural history museums, the rice rats were already on the brink of extinction. A few specimens of the Antillean giant rice rats were collected from different Caribbean islands and brought 'home' to spend their last living years in zoological gardens and subsequently in Western museums. In the museum they were inscribed into a European scientific classification system in a desire to know the entire world. Few are on display; the rest are preserved in museums in countries that had the colonial power over Caribbean islands. There are no remaining specimens of the species in any of the Caribbean islands. Natural history museums are invaluable in understanding climate changes,

biodiversity loss and evolutionary history of the more-than-human world (Bakker *et al.*, 2020). But even though natural history museums have succeeded in making their collections relevant and useful in the present day, the historical collecting of specimens still mirrors a colonial view on the natural world that the museums must be cautious not to perpetuate and reproduce. Extinction narratives give the museum an opportunity to engage in their own colonial legacies by illuminating the connection between the specimens preserved in their collections and the biodiversity loss experienced in geographical regions of the world impacted by colonial activities.

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References:

Alberti, S., 2011. *The Afterlives of Animals: A Museum Menagerie.* Charlottesville and London: University of Virginia Press.

Allen, G. M., 1941. *Extinct and Vanishing Mammals of the Western Hemisphere*. [online]. https://www.biodiversitylibrary.org/item/67624#page/9/mode/1up.

Ashby, J., 2021. The Political Platypus and Colonial Koala – decolonising the way we talk about Australian animals. *Journal of Natural Science Collections.*

Ashby, J. and Machin, R., 2020. Legacies of Colonial Violence in Natural History Collections. *Journal of Natural Science Collections.* **8**. pp.44-54.

Bakker, F. T., Antonelli, A, Clarke, J. A., Cook, J. A., Edwards, S. V., Ericson, P. G. P., Faurby, S., Ferrand, N., Gelang, M., Gillespie, R. G., Irestedt, M., Lundin, K., Larsson, E., Matos-Maraví, P., Müller, J., von Proschwitz, T., Roderick, G. K., Schliep, A., Wahlberg, N., Wiedenhoeft, J., Källersjö, M., 2020. The Global Museum: natural history collections and the future of evolutionary science and public education. *PeerJ.* **8**. pp.1-40.

Baratay, E. and Hardouin-Fugier, E., 2002. *Zoo: A History of Zoological Garden in the West*. London: Reaction Books.

Barrow., M. V., 2009. *Nature's Ghosts: Confronting Extinction from the Age of Jefferson to the Age of Ecology.* Chicago and London: The University of Chicago Press. **8**. pp.35-45.

Brace, S., Turvey, T.S., Weksler, M., Hoogland, M. L. P. and Barnes, I., 2015. Unexpected evolutionary diversity in a recently extinct Caribbean mammal radiation. *Proc. R. Soc. B.*, pp.1-9.

Bonyhady, T. 2019. *The Enchantment of the Long-haired Rat – Rodent History of Australia*. Melbourne: Text Publishing.

Callou, C. 2019. Interview. Interviewed by Gitte Westergaard. Muséum national d'Histoire naturelle, Paris, 23 May 2019.

Cole, L., 2016. *Imperfect Creatures: Vermin, Literature, and the Scineces of Life, 1600-1740*. Michigan: University of Michigan Press.

Crosby, A. W., 2004. *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*. Cambridge: Cambridge University Press.

Das, S. and Lowe, M., 2018. Nature Read in Black and White: Decolonial approaches to interpreting natural history collections. *Journal of Natural Science Collections*. **6**. pp.4-14.

Deloughrey, E., Didur, J. and Carrigan, A., 2015. *Global Ecologies and the Environmental Humanities Postcolonial Approaches*. New York and London: Routledge.

Durocher, M., Nicolas, V., Perdikaris, S., Bonnissent, D., Robert, G., Debue, K., Evin, A., and Grouard, S., 2021. Archaeobiogeography of extinct rice rats (Oryzomyini) in the Lesser Antilles during the Ceramic Age (500 BCE–1500 CE). *The Holocene.* **31(3)**. pp.433-445.

Du Tertre, J. B., 1654. *Histoire générale des îles Saint-Christophe, de la Guadeloupe, de la Martinique et autres de l'Amérique*. [online]. Available at: https://www.biodiversitylibrary.org/bibliography/61174.

Flannery, T., and Schouten, P., 2001. *A Gap in Nature: Discovering the World's Extinct Animals.* New York: Atlantic Monthly Press.

Forsyth Major, C. I., 1901. XXVIII. – The musk-rat of Santa Lucia (Antilles). *Annals and Magazine of Natural History,* 7(38), pp. 204-206. http://dx.doi.org/10.1080/00222930108678460.

Gelsthorpe, D., 2021. Decolonising Manchester Museum's Mineral Collection – a call to action. *Journal of Natural Science Collections.* **9**. pp.12-28.

Gladstone, I. and Persephone, P., 2022. Extinction Voices, Extinction Silences: Reflecting on a Decolonial Role for Natural History Exhibits in Promoting Thinking about Global Ecological Crisis, Using a Case Study for Bristol Museums. *Museum & Society.* **20(1)**. pp.50-70.

Guasco, A., 2021. As Dead as a Dodo: Extinction Narratives and Multispecies Justice in the Museum. *Environment and Planning E: Nature and Space* **4(3)**. pp.1055-1076..

Hancock, D., 2001. *A Different Nature: The Paradoxical World of Zoos and Their Uncertain Future*. Berkeley: University of California Press.

Haraway, D. 2015. Anthropocene, Capitalocene, Chthulhucene: Donna Haraway in conversation with Martha Kenney. In H. David and E. Turpin (eds.) *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*. London: Open Humanities Press.

Heise, U. K., 2016. *Imagining Extinction: The Cultural Meanings of Endangered Species.* Chicago & London: The University of Chicago Press.

Huggan, G., and Tiffin, H., 2015. *Postcolonial Ecocriticism Literature, Animals, Environment* 2nd ed. London and New York: Routledge.

Lorvelec, O., Pascal, M., Dellowue, X. & Chapuis, J.L., 2007. Les Mammifères Terrestres non Volants des Antilles Françaises et L'introduction Récente D'un Écureuil. *Revue d Ecologie*, pp.295-314.

López, I. R., 2016. Antillean Islander Space: On the Religious Beliefs and Representations of the Taíno People. *Journal of Religious History.* **40(4)**. pp.453-474.

MacKenzie, J. M., 2010. *Museums and Empire: Natural History, Human Cultures and Colonial Identities*. Manchester: Manchester University Press.

McNeill, J. R., 1994. Of Rats and Men: A Synoptic Environmental History of the Island Pacific. *Journal of World History.* **5(2)**. pp.299-349.

Middleton, J., 2021. The Harrison Collection: Addressing Colonialism in the Collections of a Victorian Big Game Hunter. *Journal of Natural Science Collections.* **9**. pp.29-34.

Mitchell, G. A., 2018. Zoological Gardens. In: H.A. Curry, N. Jardine, J.A. Secord & E.C. Spary, ed. *World of Natural History*. Cambridge: Cambridge University Press. pp.418-432.

MNHN, 1952. Bulletin du Muséum national d'histoire naturelle. *Réunion des naturalistes du muséum* 24(1). [online]. Available at: https://www.biodiversitylibrary.org/bibliography/5943.

MNHN, 2017. *Grand Gallery of Evolution*. Paris: Museum National d'Histoire Naturelle.

Jørgensen, D. (2022). Portraits of Extinction: Encountering Bluebuck Narratives in the Natural History Museum. In J. Bonnell and S. Kherai (Eds.). *Traces of the Animal Past: Methodological Challenges in Animal History*. Calgary, Alberta: University of Calgary Press. pp.359-375.

Kaiser, K., 2022. Duplicate Networks: The Berlin Botanical Institutions as a 'Clearing House' for Colonial Plant Material, 1891-1920. *The British Journal for History of Science*. pp.1-18.

Krupa, K. L., & Grimm, K. T., 2021. Digital repatriation as a decolonizing practice in the archaeological archive. *Across the Disciplines* **18(1/2)**. pp.47-58.

Plumwood, V., 2008. Decolonizing Relationships with Nature. In: W. Adams and M. Mulligan, ed. *Decolonizing Nature: Strategies for Conservation in a Post-colonial Era*. London: Earthscan Publications.

Poliquin, R., 2012. *The Breathless Zoo: Taxidermy and the Culture of Longing*. Pennsylvania: Penn State University Press.

Rose, B. D. and van Dooren, T. 2011. Unloved Others: Death of the Disregarded in the Time of Extinctions. *Australien Humanities Review.* **50**. pp.1-4.

Tershy, B. R., Shen, K.-W., Newton, K. M., Holmes, N. D. and Croll, D. A., 2015. The Importance of Islands for the Protection of Biological and Linguistic Diversity. *BioScience.* **65(6)**. pp.592-597.

Turvey, S. T., Weksler, M., Morris, E. L. and Nokkert M., 2010. Taxonomy, phylogeny, and diversity of the extinct Lesser Antillean rice rats (Sigmodontinae: Oryzomyini), with description of a new genus and species. *Zoological Journal of the Linnean Society.* **160**. pp.748–772.

Turvey, S. T., Brace S., and Weksler, M. 2012. A new species of recent extinct rice rat *(Megalomys)* from Barbados. *Mammalian Biology.* **77**. pp.404-413.

Turvey, S. T., Kennerley, R. J., and Nuñuez-Miño, O. M. & Young R. P. 2017. The Last Survivors: current status and conservation of the non-volant land mammals of the insular Caribbean. *Journal of Mammalogy,.* **98(4)**. pp.918-936.

Trevathan, J. H., 2017. Submergence: On Transatlantic Ecocriticism, Islands and Archipelagos. *Ecozona.* **8 (1)**. pp.42-60.

Zoological Society of London 1949. Proceedings of the Zoological Society of London. *Journal of Zoological.* London: Academic Press. [online]. Available at: https://www.biodiversitylibrary.org/item/96165#page/7/mode/1up.

Vamosi, J. and Vamosi, S. M., 2008. Extinction Risk Escalates in the Tropics. *PloS ONE* 3(12): e3886.

Wing, E. S., 2001. The Sustainability of Resources Used by Native Americans on Four Caribbean islands. *International Journal of Osteoarchaeology.* **11(1–2)**. pp.112–126.

Article II: Making Specimens Sacred: Putting the Bodies of Cụ Rùa and Solitario Jorge on Display

Whereas the extinction of the Antillean rice rats in the Caribbean has been described as the 'forgotten' rice rat mass extinction, article II, 'Making Specimens Sacred: Putting the Bodies of Cụ Rùa and Solitario Jorge on Display', investigates the sacralisation of two contemporary animal endlings deemed sacred in and to the places they belonged.[153] This article is co-written with Dolly Jørgensen, where I am the first author. It is a comparative analysis of the display of the last giant Hoàn Kiếm softshell turtle, Cụ Rùa, at a temple in Hanoi and the last giant Pinta island tortoise, Solitario Jorge, displayed at the Research Station at Santa Cruz Island in the Galápagos Islands. Since I conducted the research of Solitario Jorge, I will focus on the second part of the article in this introduction and explain why we found it fruitful to compare the two turtles.

The death of Solitario Jorge was the most recent example of an island endling whose body had also been preserved after its passing. Since he was found on Pinta Island after the species was assumed extinct, he has been called a 'conversation icon' of the Galápagos Islands representing a hope of restoring lost species. Solitario Jorge lived in captivity for forty years and was the subject of a longstanding effort to make him reproduce. There was always a hope attached to Solitario Jorge that he might save the species from extinction (even though he was the last surviving male). When he died, one might have expected the hope he represented to restore the species would disappear, but this was not the case with Solitario Jorge. His bodily remains are today displayed in the 'hall of hope' at the Charles Darwin Research Station at Santa Cruz Island, part

[153] S.T. Turvey et al., 'Taxonomy, phylogeny, and diversity of the extinct Lesser Antillean rice rats', *Zoological Journal of the Linnean Society* 160(4) (2010), 766.

of the Galápagos archipelago. I wanted to understand what role the continuing presence of his bodily remains play in this island context.

The Galápagos Islands constitutes an island context that is highly influenced by its former use as a scientific laboratory in the nineteenth century. The Galápagos Islands were the first natural site to be listed on the UNESCO world heritage list in 1976. The islands attained this status partly as a result of the great interest drawn towards their unusual animal life since the publication of the *Voyage of the Beagle* by Charles Darwin in 1839. Species such as Darwin's finches, mockingbirds and giant tortoises became well known and contributed to the Galápagos Islands being characterised as a 'living museum and showcase of evolution'.[154] The Galápagos Islands have been preserved as what can be characterised as 'pristine nature', even though the islands have been substantially influenced by humans. I only came to appreciate this when I visited the Galápagos Islands in November 2019.

Before I flew to the Galápagos Islands, I spent several days in the capital of Ecuador, Quito. Even though the Galápagos Islands are perceived as a world heritage site, the islands are also a province of Ecuador. I was curious to know how the natural significance (particularly giant tortoises) of the Galápagos was present and represented here. I spent my days looking for exhibitions or galleries on the Galápagos Islands, but I was surprised to find few of these and even less information about the Galápagos Islands. I visited the *Instituto Nacional de Biodiversidad*, a museum devoted to the biodiversity of Ecuador. Here, I found only skeleton-remains of two giant tortoises. I visited the *Museo de Historia Natural Gustavo Orcés*. They had two taxidermy giant tortoises in poor condition and when I asked about the specimens, I was informed that they had both been zoo animals. At the *Museo Interactivo de Ciencia*, I went to see a temporary exhibition, 'Adventura Galápagos', expecting to find at least one specimen of Galápagos tortoises, but there was only a

[154] UNESCO, 'Galápagos Islands', *UNESCO*, 1976, https://whc.unesco.org/en/list/1/ (accessed December 5, 2023).

1:1 scale sculpture of Solitario Jorge made of fiberglass and an installation of a small airplane where you could 'visit' the Galápagos Islands through virtual reality. It was first when I meet Jorge Salgado, who works at the Socio-Environmental Policy Observatory of the Economics Faculty of the Pontifical Catholic University of Ecuador, that I understood why one finds so few specimens of giant tortoise in Ecuador.

Since 1959, the species has been protected by Ecuadorian law prohibiting all trade of giant tortoises. It stands in stark contrast to how hundreds of thousands of tortoises were killed by whalers and buccaneers in the eighteen century and how western conservation expeditions to the Galápagos collected thousands of tortoises for natural history museums in the nineteenth century.[155] In Ecuador there has not been a culture of collecting specimens, and so there are hardly any specimens of giant tortoises present on the mainland of Ecuador. Further, Salgado informed me that the average Ecuadorian cannot afford to travel to the Galápagos Islands, as it has been transformed into an expensive tourist destination for visitors from wealthier countries. This explains the need for a virtual reality installation that takes one on a round-tour of the Galápagos Islands at the *Museo Interactivo de Ciencia*. Even though I do not refer directly to this material in the article, my experience and encounters with people in Quito shaped my impression of the Galápagos Islands upon travelling there. I came to understand the islands' connection to the mainland and how Solitario Jorge was also intertwined with this story.

I flew into Seymour Airport located on Baltra Island to then cross the little stretch of water to Santa Cruz Island by boat before driving to Puerto Ayora, where Solitario Jorge is displayed on the opposite side of the island. Along this highway that cuts through the forest are signs warning to 'be aware of tortoises crossing the road'. Giant tortoises live in the wild, but only 10-15 percent of the original number of tortoises

[155] S. Bezan, 'The Endling Taxidermy of Lonesome George, The Last Pinta Island Tortoise', *Configurations* 27(2) (2019): 227–32.

remain today and four species have already become extinct.[156] What I was about to see was a tortoise that has been protected in captivity for forty years and now displayed within the same research station after his death put an end to an entire species of Pinta Island tortoises.

While I was in Puerto Ayora, I walked almost daily to see Solitario Jorge. On my first day on the island, I signed up for a guided tour of the 'Path of the Tortoise', which winds its way around the Research Station displaying Solitario Jorge. The 'Path of the Tortoise' was in fact a boardwalk raised off the ground that included stops along the way to pause and reflect over how humans have impacted the natural environment (being both the intruder and the saver of it). We stopped at the giant tortoise breeding centre, where Solitario Jorge had once lived and saw the rearing of young tortoises in captivity. This is one of the measurements that the Galápagos National Park Service uses to rebuild the tortoise population. The path ended at the building where Solitario Jorge is displayed. It was like a ritual entering the building, where visitors stand first inside a smaller room to de-climatise before entering the room where the body of Solitario Jorge is displayed. Here visitors are only allowed to remain for six minutes before exiting again. Later, I realised that this was to ensure a temperature of 18 degrees centigrade inside the building, but it had an impact on the experience of encountering Jorge (even if it was not done deliberately). It was my first encounter with an endling, but in the context of the Research Station, I was left with a feeling that 'we' had failed Solitario Jorge once, but that 'we' should not fail him twice. The display of Solitario Jorge was embedded into a narrative of de-extinction. There was still hope for this species. Hybrid specimens that contained some of the Pinta Island tortoises' DNA had been found on a different island, one could read coming out of Solitario Jorge's chamber, and maybe the species could

[156] People's Trust for Endangered Species, 'Galapagos Giant Tortoises', *PTES*, https://ptes.org/grants/worldwide-projects/galapagos-giant-tortoises/ (accessed December 5, 2023).

be brought back to life and re-introduced into its former habitat with the help of science.

This is a very noble message, but especially after reading Elizabeth Hennessy's book, *On the Backs of Tortoises: Darwin, the Galapagos, and the Fate of an Evolutionary Eden*, I became aware of some of the problems of the Galápagos National Park Service's conservation strategy and wondered how the preservation and display of Solitario Jorge was implicated in this narrative of bringing back the islands to an 'evolutionary eden' at any cost.[157] Hennessy in particular points out that the concept of pristine island nature is a social construction. It overlooks a long history of human occupations of the Galápagos Islands and at the same time justifies the management of the Galápagos Islands as a natural 'untouched' site for the enjoyment of humans. Preserving the dead body of a tortoise endling in what has been defined as a 'living museum' shows how this perception of the islands is more a fantasy than a reality, especially in a time when we are losing more species than ever before. The Galápagos is also a site at risk and has recently been featured on the world heritage list 'in danger'.

Over the following days, I went back to the Research Station to understand the purpose of this site and to see Solitario Jorge a few more times. During my multiple visits, I talked to park ranges that I met and observed people who came to see Solitario Jorge. I came to understand that the animal remains of Solitario Jorge filled the gap that the death of him had left behind. People still came to see and take pictures with the last Pinta Island tortoise, even though he was no longer alive. I tried to set up a meeting with Wacho Tapia Aguilera, who worked for the Galápagos National Park Service at the time of Jorge's death. He was involved in the decision-making of his preservation and everyone with whom I spoke consistently referred to him. Unfortunately, he was out in the field for the entire time I was in Puerto Ayora. We ended up emailing

[157] E. Hennessy, *On the Backs of Tortoises: Darwin, the Galápagos, and the Fate of an Evolutionary Eden* (New Haven and London: Yale University Press, 2019).

each other back and forward after my visit. He became one of my informants, when I later tried to reconstruct the thought-processes that went into the preservation of Solitario Jorge, from how he should be preserved to whom should carry out the preservation of him.

I used a considerable amount of time walking around the city of Puerto Ayora. I observed how great a presence the tortoises were in the cityscape, from souvenir items to the logo of the town hall (and even a sanitaryware company), to graffiti paintings, mosaic morals and statues. The tortoise was an emblem of the city and was almost always portrayed in the same posture as Solitario Jorge. At that point, I had not even seen a tortoise in the wild. I therefore arranged to go to *Reserva El Chato*, which is private land where one can observe tortoises in the wild. Coming home, I noticed that all the pictures that I had taken of the tortoises that day were mainly just these big shells dotting the landscape, occasionally with a head popping out of the shell. I realised that the visual representations of giant tortoises (both Solitario Jorge and alike) were not common to see in the wild and it made me question why Solitario Jorge had been mounted in such a way.

As mentioned in the section on Museum Studies, the representation of animals is never neutral; rather, it is shaped by a human gaze. On my return to Stavanger, I therefore began to search for material on how Solitario Jorge's body had been preserved. Since he is a contemporary example of a historical endling, his preservation had been well-documented. I watched the documentary 'Preserving Lonesome George' made by the American Museum of Natural History (AMNM) who performed the taxidermy of him. It takes the viewer through each step from when he was first shipped to the U.S., the making of the mole based on images of Solitario Jorge, the adjustment of the skin onto the sculpture and the re-painting of him with soil from Pinta Island. All to make him look as scientific accurate and life-like as possible. I talked to the curator at the Department of Herpetology at the AMNM, Christopher J. Raxworthy, to ask some follow-up questions and I also had an email

correspondence with the taxidermist, George Dante, who also provided me with further information about the taxidermy process.

I further noticed that there had been a debate about where his body should be displayed, since the taxidermy process of Solitario Jorge took place in New York. I had not considered the possibility that his body might not be returned to the Galápagos Islands, but when I read the discussion between the Ecuadorian Ministry of Environment and the Municipality of Santa Cruz, I realised that the placement of his body was complex. Often islands do not have the resources required to preserve or display animal remains. The Ecuadorian Ministry of Environment wanted him displayed in Quito where those resources were available and more people would have had the opportunity to see him, this icon of national heritage. The Municipality of Santa Cruz opposed strongly, and, in the end, it was decided that he would return 'home'. After all, this was where he belonged. The Ecuadorian government paid for the construction for a customised building to preserve Solitario Jorge's body in conjunction with the Research Station on Santa Cruz and he is now being monitored 24 hours a day for his body not to deteriorate in the tropical climate. This is how much it meant for the Galápagos National Park and the Municipality of Santa Cruz to be able to keep Solitario Jorge within the islands.

Dolly had just been in Hanoi to see the display of the last giant Hoàn Kiếm softshell turtle, Cụ Rùa, in a temple at the Hoàn Kiếm Lake. The similarities between the two displays were striking, even though they were displayed in two very different contexts (within a temple and a research station for science). In the comparative analysis we decided to investigate how they had both been made sacred in and to the places they belonged, mirroring certain sacred characteristics that placed both animals in a liminal condition—neither alive nor dead. We identified four different elements that lend extinct specimens sacredness when put on display. Both were preserved to give them ever-lasting life; they have been replicated in a multitude of different forms that allowed for infinite

reproduction in spite of their non-reproduction; they were both displayed in the places to which they were deemed scared; and in each case there was a preparation in the forms of rituals or pilgrimages before the encounter with the sacred non-human.

The sacredness of Cụ Rùa is far more obvious due to its connection to the sacred legend of the golden turtle attached to the Hoàn Kiếm Lake in Hanoi. It is easy to understand why the last giant Hoàn Kiếm softshell turtle, inhabiting the lake, was sacralised after it was found dead as he embodied the legend of the golden turtle. It can seem less apparent how evolutionary theory and sacrality are connected. We therefore make it clear that there are different definitions of the sacred from 'a synonym of religion, to denote the supernatural or transcendent reality that religion confront, and as a reference to things set apart with special meaning'.[158] In our article, we use the latter because we believe that it opens up an analysis of secular practices as sacred and demasks how scientific practices also contain elements of sacralising certain non-human beings.

One might ask the question: if science is value-free, why is the survival of certain animals more important than others? Interpreting the display of Solitario Jorge in the light of Cụ Rùa made it transparent that the preservation of his body endows the future preservation of his companion species with a certain value. As discussed in the article, the Galápagos National Park Service even assigned Solitario Jorge a message that he apparently delivered himself and that the Park Service considers to be their obligation to share and act upon. By questioning how certain animal remains are preserved and put on public display over others, we also question the narrative of the Galápagos Islands as a 'sacred site for science' and ask whether this interpretation of the archipelago is in some ways a neocolonial view that imposes limitations on what the islands can be today.

[158] G. Westergaard and D. Jørgensen, 'Making Specimens Sacred: Putting the Bodies of Solitario Jorge and Cụ Rùa on Display', in Sarah Bezan and Robert McKay (eds), *Animal Remains*, (New York and London: Routledge, 2021), 68.

In comparing how the last giant Pinta Island tortoise, Solitario Jorge, and the last giant Hoàn Kiếm softshell turtle, Cụ Rùa, share certain characteristics, this article investigates narratives of endlings and how they are set apart as something sacred in need of preservation. It takes the reader through the different steps of how the last of its kinds have been ascribed a sacred character in a critical analysis of the usage of endlings in maintaining certain views of islands. The article features in the volume *Animal Remains* edited by Sarah Bezan and Robert McKay, published by Routledge in 2022. The aim of this volume is 'to generate a growing index of approaches to animal remains that might prompt new lines of inquiry across the humanistic disciplines'.[159] This book project came out of the conference Animal Remains that I attended in Sheffield in 2019, which was organised by the University of Sheffield Animal Studies Research Centre (ShARC).

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The full text can be found here (subject to subscription):

Westergaard, Gitte, and Dolly Jørgensen. 'Making Specimens Sacred: Putting the Bodies of Solitario Jorge and Cụ Rùa on Display'. In Sarah Bezan and Robert McKay (eds), *Animal Remains*, 68–86. London: Routledge, 2021. https://doi.org/10.4324/9781003129806-7.

[159] Bezan and McKay, *Animal Remains*, 6.

Article III: Ghostly Presences: Giant Lizards and Conservation on Culebra Island

In the case of Solitario Jorge, the emphasis is on maintaining the animal remains in a material sense. In the next case study, the focus shifts to animal remains that influence the continuing existence of a species on an island in a more intangible sense. In the third article, 'Ghostly Presences: Giant Lizards and Conservation on Culebra Island', I investigate how bodies of giant lizards preserved inside museums have affected the protection of its natural habitat on Culebra Island in Puerto Rico.

I stumbled upon five museum specimens of giant lizards, *Anolis roosevelti,* when I visited the Zoological Museum in Copenhagen. They were on display in the exhibition *Precious Things* that showed some of the greatest treasures of the museum and was described as a 'tribute' to the museum's collections that consist of objects collected from all over the world by scientists, explorers, amateurs and naturalists. The specimens of giant lizards were probably among the lesser-known species on display alongside one of the only dodo skulls to exist in the world, a skeleton of a young thylacine that was in high demand for its rarity and exoticism in the late nineteenth century, and jars containing the guts and eyes of the last breeding pair of great auks from the Icelandic Island, Eldey. They are defined as the treasures of the museum, because none of the species exist in nature today. They are all extinct, and further, they all represent islands and the loss of unique and rare species. Even though this exhibition was impressive, I felt a sense of melancholy attached to the exhibition, to the manner in which the specimens were acquired and displayed, and to the pride and novelty of having them in a museum collection today. In comparison to the lizards, the specimens were more collected by luck. Their rarity was unknown at the moment of their collection, and if they had not been collected the animal species would probably have gone on to exist and eventually disappear without our knowing it. This shows that museums are complicit as sites both in

the killing and saving of species for the public memory of a disappearing nature. They show how humans have related to nature at different times in history defined by their collection date.

The exhibition label that was connected to the giant lizards sparked my curiosity. It read: 'In 1986 six museum specimens appeared, all identified and labelled in 1863'. I was looking at specimens that had been 'lost' for over a century before they had re-appeared. Further, the label revealed that two specimens of this species had further been found on the island of Culebra, southeast of Puerto Rico in the Caribbean Sea in 1931. Afterwards, there had been no sightings of the species again. The temporality of the museum is fascinating in how a specimen represents a past but is in constant dialogue with the present because they have been mounted with an eye for future preservation. Inside the jars they represent their own time, but being inside the jar allows them and us to mutually engage in a different space, at a different time. I was intrigued to know more about the species and its island home.

When I looked up the status of the Culebra Island giant lizard (*Anolis roosevelti*) on the IUCN Red List of Threatened Species, I was surprised to learn that the species was identified as a critically endangered species and its critical habitat designated for preservation. Since the lizards had not been observed in nature since the original finding of the species in the 1930s, how could the species be enlisted as an endangered species in 2020? I realised that it was connected to the appearance of the specimens in the Zoological Museum in Copenhagen. In the assessment report it read: 'That there was a gap of some 70 years in collections of the species between the 1860s and the 1920s gives some hope that the current long gap since the last collection might not indicate the species is extinct'.[160]

[160] R. Platenberg, K. de Queiriz and D.L. Mahler, 'Anolis Roosevelti, Culebra Giant Anole', *The IUCN Red List of Threatened Species*, 2020 file:///C:/Users/2920501/Downloads/10.2305_IUCN.UK.2020-3.RLTS.T1319A18967413.en%20(1).pdf, (accessed December 10 2023).

It got me interested in how the preservation of museum specimens could play an active role in safeguarding island nature.

The species had first appeared, then disappeared from nature to re-appear inside museums. When I started to research the 'ghostly presences' of the Culebra Island giant lizards, they mainly appeared to me in text. From Chapman Grant's initial description of the species based on one type of specimen that he had bought off a local boy on the island (1931), to reports on unconfirmed sightings of the species in the 1930s and the proposed endangered status and critical habitat of the giant anole (1977), to arguments for preserving the critical habitat of the lizards when its habitat was accessed for development (1981), to the recovery plan for the species (1982) and the several unsuccessful attempts to locate the lizards in the 1980s, and finally the listing of the species as a critically endangered species (2020). The species came alive in people's textual capturing of the species—almost more alive than the specimens on display. The people who wrote about giant lizards were people who believed in the species' existence and who were committed to dedicating an entire forest area on the basis of two specimens that had been found many years before and never seen again. These texts became the basis of my analysis of the ghostly presences of the giant lizards on Culebra Island.

I could relate the continuing appearance of the giant lizards to an existing literature on the spectres and ghosts of extinction that continue to appear to us through occasional sightings or traces, often related to environmental injustice.[161] Culebra Island has been preserved as a wildlife reservation and used as a military base by the US, who achieved ownership over the island after the Spanish-American war in 1898. The lizard had been found before the island was transformed into a U.S. military base, and when the U.S. navy ceded their presence in the 1970s, the remaining patches of the original forest vegetation being quickly put

[161] See McCorristine and Adams, 'Ghost Species'; Bersaglio and Margulies, 'Extinctionscapes' and Neyrat, 'Ghosts of Extinction'.

forward as the critical habitat of the giant lizards. There were reports of a few sightings of the species, but none that had been confirmed. The critical habitat was not even the same area as the one where the two specimens had originally been found (since that area had been destroyed during the US Navy). I took this as a desire to revert the use of the islands to an island reality before military presence. The specimens of the Culebra Island giant lizards are not only preserved ghosts inside museums; they also haunt (or protect) the remaining forest area on the island. They added to a new discussion on extinction as spectres as well as how museum specimens possess a sense of agency.

This article is published in the volume *Entire of Itself? Towards an Environmental History of Islands* edited by Pavla Šimková and Milica Prokic. The book is the first to investigate the role that islands' natural environments play in the shaping of their history, including how islands have been used for natural experiments, as anthropological laboratories, prisons or expansions of empires. Šimková and Prokic argue that 'we must take a close look at its geology, its topography, its climate and ecology, and its position vis-à-vis other places' to understand a historical fascination with islands.[162] My chapter attempts to shed light on how the island of Culebra has been perceived as a natural habitat worthy of preservation for its development of endemic species and use as a breeding site for migrating birds, as well as a bombing testing ground for its bounded strategic location.

[162] Prokic and Šimková, *Entire of Itself*, 14.

CHAPTER 4. GHOSTLY PRESENCES: GIANT LIZARDS AND CONSERVATION ON CULEBRA ISLAND

Gitte Westergaard

I came to know about Culebra Island (Isla Culebra) after I saw three specimens of giant lizards, which have not been sighted on the island for almost a century, displayed at the Zoological Museum in Copenhagen. When I have encountered extinction in museums, it has always made me wonder: how did the species suddenly disappear and what does the loss mean to the place where it no longer exists? In the case of Culebra giant lizards, I learned that they are only known from the islands of St John, Tortola, Culebra and Vieques in the Caribbean Sea. Those islands were once linked together into one landmass but have since been separated due to the rise in sea level. They shared a richness of flora and fauna that has rapidly disappeared with increasing human influence. The last time the giant lizard was observed on Culebra Island was in the 1930s. Since then, the island, like many throughout the world given their often strategic locations, has been used as a military base. But the island is also recognised as an important wildlife refuge and, when the US Navy abandoned its facilities on the island, I observed how the lizard's ghost and the belief in its continuing existence played a role in renegotiating the preservation of its remaining forest habitat. This area is still protected even at a time when the island is being developed to accommodate a high demand for tourism. Following reports of unconfirmed sightings of the giant lizards and its listing as being critically endangered, recovery plans and field reports have given me an insight into how the natural environment is valued and protected on Culebra Island.

In 1931, Chapman Grant, an expert in reptiles, travelled to the small island of Culebra in Puerto Rico in the Caribbean. There he found two specimens of a new species of anole, an approximately sixteen-centimetre-long lizard. He called it *Anolis roosevelti* after Theodore Roosevelt. Since then, there have been no sightings of the large lizard. But in 1986 six museum specimens appeared, all identified and labelled in 1863, long before Grant's description of the animal.[1]

I stood before three of the six specimens mentioned when I visited the Zoological Museum in Copenhagen one afternoon in March 2020.[2] They were all preserved in alcohol. Their brownish-grey colour had faded into almost see-through bodies floating in awkward positions inside the glasses (see Figure 1). Only four of the six specimens identified in 1986 exist as preserved museum specimens today; the other two specimens have been lost and exist only in the written record.[3] The specimens were collected from different Caribbean islands in the nineteenth century by a Danish pharmacist who lived in the Danish West Indies and saw it as his duty to collect nature for museums and researchers.[4] Inside the museum, the collected giant lizards continue to exist but, in their original habitat, they have not been observed for decades, even though they are classified as a critically endangered species. This chapter examines how the bodies of the giant lizards preserved inside museums have affected the trajectory of environmental protection on Culebra Island.

Isla de Culebra (Culebra Island) consists of a thirty-square-kilometre main island and approximately twenty cays located southeast of Puerto Rico in the Caribbean Sea. It is a municipality of Puerto Rico, an unincorporated territory of the United States, and a longstanding site of US military presence. The giant lizards have not been seen in the wild since they were initially sighted on Culebra Island in 1931. The next sighting of them was in a far different context: in 1986, as preserved museum specimens collected in the nineteenth century. The lizard was thought to be endemic only to Culebra, but specimens had in fact been

[1] Quote from museum label 'the giant anoles' in the exhibition *Precious Things* at the Zoological Museum in Copenhagen, March 2020.

[2] Even though there are five specimens in the picture, only three of them are *a. roosevelti*. The two specimens displayed alongside them are *a. cuvieri*. The three specimens of *a. roosevelti* had wrongly been identified as *a. cuvieri* for a century before they were identified as *a. roosevelti*.

[3] Two collected from Vieques (R37642 and R37643), one from either St John or Tortola (no label) is preserved in the Zoological Museum in Copenhagen and one specimen is preserved in the Swedish Museum of Natural History. A specimen collected from Vieques (Cope 1861) and one from either Tortola or St John (Reinhard and Luthen 1863) are only known from the written records of them today.

[4] H.O. Loldrup, *A.H. Riises Apotek på St Thomas og i Vejle* (Loldrup Forlag, 2017), p. 71.

collected from neighbouring islands – Vieques, Tortola and St John – once linked in the Puerto Rican Bank of the Caribbean Sea. They had been classified wrongly under the taxonomic category of *anolis velifer*[5] and placed in the storeroom for over a century before Gregory C. Mayer, a doctoral candidate at Harvard University working on Caribbean reptiles, became aware of their existence and identified them as *anolis roosevelti*.[6] This case of the Culebra giant lizard is not unusual. In museum collections of millions of specimens from across the world, a specimen can remain unidentified, misidentified or simply forgotten about for decades.[7]

The preservation of these giant lizards in the museum has since been interwoven into the question of whether they still exist today on the island of Culebra. Islands have suffered significantly from human-induced extinction in the last few centuries, partly because they have been subject to human imaginations of them as 'isolated, atemporal island spaces' that could be used for mainland purposes.[8] The majority of extinct species are island species: almost forty per cent of all organisms listed as critically endangered only exist on islands.[9] This makes islands into conservation hotspots as they are still home to many endemic species vulnerable to sudden changes wrought in their environments. The extinction of a species, however, does not always result in its complete disappearance. On the contrary, species from the past may continue to shape conservation trajectories in the present. Since islands are especially subject to human-induced extinction, they are compellingly fecund sites for exploring the nature of 'haunting' and how non-human ghosts play a role in how nature is valued.

This chapter begins by discussing theories of hauntology and spectralities to introduce the notion of ghostly presences, and the ways in which non-humans inside museums exercise an agency that informs the future direction of environmental protection. The museum displays of

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[5] J. Reinhardt and C.F. Luthen, 'Bidrag til det Vestindiske Øriges og navnligen til de dansk-vestindiske Øers Herpetologie', *Videnskabelige meddelser fra den Naturhistoriske Forening i Kjøbenhavn* (1862): 260–61.

[6] The six specimens of *Anolis roosevelti* was discovered by Gregory C. Mayer in 1986. See Mayer's dissertation, 'Deterministic Aspect of Community Sturcture in West Indian Amphibians and Reptiles' (Ph.D. Diss., Cambridge, Massachusetts: Harvard University, 1989), p. 98.

[7] C. Kemp, *The Lost Species: Great Expeditions in the Collections of Natural History Museums*. (SD Books, 2020); J. Davis, 'Dinosaurs and Meteorites: Museum Scientists Described 552 new Species in 2021', *Natural History Museum*, 30 Dec. 2021: https://www.nhm.ac.uk/discover/news/2021/december/natural-history-museum-scientists-describe-552-new-species-in-2021.html (accessed 27 May 2022).

[8] E.M. DeLoughrey, '"The Litany of Islands, the Rosary of Archipelagoes": Caribbean and Pacific Archipelagraphy', *ARIEL: A Review of International English Literature* **32** (1) (2001): 21–51.

[9] B.R. Thershy, K.-W. Shen, K.M. Newton, N.D. Holmes and D.A. Croll, 'The Importance of Islands for the Protection of Biological and Linguistic Diversity', *BioScience* (2015).

the giant lizards are the only physical trace remaining of the species today and yet, as I will show, it keeps them alive. They represent a distant past captured inside a jar but, looking at them through the glass today, they bridge the past and present. The lizards in jars confront the viewer with a 'past present' that keeps alive an imagined future of the species. However, they do not only exist inside the jars; their ghosts also haunt their previous environment. The environmental history of Culebra presented in this chapter unfolds through the story of giant lizards in two parts. First, *Creating a Ghost* explores the way in which two Culebra giant lizards were found and preserved at a time when the landscape was shaped by the US for military purposes. Second, *Caring for Ghosts* investigates the way in which the US Fish and Wildlife service reclaimed the giant lizard and put it in the service of habitat protection and preservation. This leads to a discussion of *Ghostly Presences* and how past natures impact present understandings of Culebra and visions of its future.

Figure 1. Five specimens of Anolis roosevelti on display in the exhibition 'Precious Things' at the Zoological Museum in Copenhagen (photo credit: Gitte Westergaard).

Captured ghosts and haunted environments

Theories of spectres or spectralities are concerned with what is simultaneously here and not here, the in-between presence and absence that keeps haunting the present. The term hauntology was coined by Jacques Derrida in the book *Specters of Marx* as a way of theorising the continued effect of the past on the present, especially that past which has been overlooked or silenced.[10] The past comes to haunt the present when the present is out of balance with itself as an absent-presence that, according to Derrida, can be more powerful than the actual presence of something.[11]

The absent-presence of species has been investigated by various scholars.[12] Literary scholar Ursula K. Heise refers to it as 'the 'ghost species' phenomenon'.[13] This includes unscientific sightings or traces of a species whose existence cannot be confirmed, as well as sightings of a few individuals of a species that no longer play a role in an ecosystem.[14] The ghostly presence of a species through traces and sightings maintains a hope that the species could still exist in certain pockets of environments. In their study of the commodification of endangered species conservation, Brock Bersaglio and Jared Margulies define absence-presence as a concept that 'draws attention to the ways in which the absent deceased exert agency in the physical world through spatial practices of the living'.[15] Not only does an absence have a presence; it is a presence that can have a direct influence on the habitat to which the species belonged. In this way, the species 'live on' through its absent-presence in the landscape. This concept is especially relevant to islands, environments that have endured high levels of extinction over the past centuries. Biologist Lindsey Gillson writes: 'islands remained haunted by their ghosts: trees with elaborate herbivore defences and seeds that are too big to be dispersed, and flowers

[10] J. Derrida, *Specters of Marx: The State of the Debt, the Work of Mourning, the New International* (New York and London: Routledge, 1994).

[11] T. Whyman, 'The Ghosts of Our Lives', *New Statesman*, 31 July 2019: https://www.newstatesman.com/politics/2019/07/the-ghosts-of-our-lives (accessed 6 May 2022).

[12] D. Jørgensen, 'Extinction and the End of Futures', *History and Theory* (2022) (OpenAccess Online); F. Nayrat, 'Ghosts of Extinction: An Essay in Spectral Ecopolitics', *The Oxford Literary Review* **41** (1) (2019): 88–106.; S. McCorristine and W.M. Adams, 'Ghost Species: Spectral Geographies of Biodiversity Conservation', *Cultural Geographies* **27** (1) (2020): 101–15; and B. Bersaglio and J. Margulies, 'Extinctionscapes: Spatializing the Commodification of Animal Lives and Afterlives in Conservation Landscape', *Social & Cultural Geography* **23** (1) (2022): 10–28.

[13] U.K. Heise, *Imagining Extinction: The Cultural Meanings of Endangered Species* (Chicago and London: The University of Chicago Press, 2016), p. 38.

[14] N. Langston, *Climate Ghosts: Migratory Species in the Anthropocene* (Waltham, Massachusetts: Brandeis University Press, 2021), pp. 1–11.

[15] Bersaglio and Margulies, 'Extinctionscapes', 17.

with no pollinators'.[16] Even when a species is lost from an ecosystem it remains present in its absence.

There is often an underlying unease and insecurity about labelling a species as extinct and thereby creating a ghostly presence. Environmental historian Dolly Jørgensen argues that extinction is an 'elongated nonlinear transition between extant to extinct. Extinction can be contested; extinction status can flip back and forth if a species is rediscovered or recreated.'[17] The species can exist in a limbo between alive and dead, where no individuals are observed or captured in nature, but the species are not declared extinct. Cultural historian Shane McCorristine and geographer William M. Adams further explain that a species can continue to exist 'in that it leaves traces, signs and clues, and can provoke recurring reappearances'[18] that preserve an open-endedness concerning the continued existence of the species. When a species is in a transition from extant to extinct, it is *no longer* and *not yet*.[19] It makes possible alternative futures—futures in which the species could still exist.

In her book *Climate Ghosts*, historian Nancy Langston shows how the ghostly presences of declining species populations maintains a desire to restore them. Organised searches for the species may continue, as well as the preservation of their habitats, based on limited evidence and the hope that they still exist unbeknownst to us. If a species has disappeared completely, and we cannot recollect it, Langston argues that the will to restore it equally disappears.[20] An example of this is the disappearance of the ivory-billed woodpecker in south-eastern United States.[21] It continues to exist, even though only one of a number of intermittent sightings since 1944 has been officially confirmed.[22] When in 2021 the US Fish and Wildlife Service proposed to remove the ivory-billed woodpecker from the List of Endangered and Threatened Wildlife, a final determination as to its status could not be reached due to disagreement over whether it

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[16] L. Gillson, *Biodiversity Conservation and Environmental Change: Using Paleaoecology to Manage Dynamic Landscapes in the Anthropocene* (Oxford: Oxford University Press, 2015), p. 48.

[17] Jørgensen, 'Extinction and the End of Futures', 6.

[18] McCorristine and Adams, 'Ghost Species,' 105.

[19] M. Fisher, 'What is Hauntology?', *Film Quarterly* **66** (1) (2012): 16–24, at 19.

[20] Langston, *Climate Ghosts*.

[21] M. Saikku, '"Home in the Big Forest". Decline of the Ivory-Billed Woodpecker and Its Habitat in the United States', in *Encountering the Past in Nature*, ed. by T. Myllyntaus and M. Saikku (Athens, Ohio: Ohio University Press, 2001), pp. 94–141.

[22] J.W. Fitzpatrick, M. Lammertink, M.D. Luneau Jr, T.W. Gallagher, B.R. Harrison, G.M. Sparling, K.V. Rosenberg, R.W. Rohrbaugh, E.C.H. Swarthout, P.H. Wrege, S.B. Swarthout, M.S. Dantzker, R.A. Charif, T.R. Barksdale, J.V. Remsen Jr, S.D. Simon and D. Zollner, 'Ivory-billed Woodpecker (*Campephilus principalis)* Persists in Continental North America', *Science* **308** (2005).

is extinct or not.[23] If the ivory-billed woodpecker was delisted, then conservationists would have a hard time arguing for the continuation of its preservation. The case of the Culebra giant lizard is similar in that it lives in people's imaginations more than it, at least verifiably, inhabits the natural landscape.

Belief in the continuing existence of presumably extinct species relies on their ghostly presence. As ghost species, they do not just haunt the landscape: they also protect the landscape. 'Ghostliness both reflect the precarious and vulnerable status of the disappeared body and provide that body with the power of making itself and its history known through haunting and/or reappearance.'[24] The absence of something can thus have a larger impact than its actual presence. But species that continue to exist beyond the threshold of death are often also entangled in politics in which their absence-presence can be used as a tool of power to maintain or change existing structures in society.[25] To overcome the present environmental crisis, philosopher Frédéric Neyrat has therefore articulated the need for a *spectral ecopolitics*, where we 'listen to what our own ghosts – the ghosts of ourselves, the spectre of humankind swept away from Earth – have to tell us'.[26] Where extinction is simply just happening, the ghosts of extinction are not just accepting their own extinction. In their non-existence, they haunt from a potential future that is *not yet* and demand justice for what is *no longer*. According to Neyrat, it is therefore important that they be included as actors when it comes to formulating ecopolitics.

Even the remnants of species that are stored on museum shelves can be classified as ghost species that continue to haunt the habitat from which they have been disconnected. As their body, or parts of it, have been preserved beyond death, species are in a liminal state – between life and death.[27] Inside the museum, their lives have not yet ended. Historian of science Samuel Alberti refers to specimens as 'the afterlives' of a species and literary scholar Rachel Poliquin

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[23] FWS (US Fish and Wildlife Service), 'Endangered and Threatened Wildlife and Plants; 6-Month Extension of Final Determination on the Proposed Removal of the Ivory-Billed Woodpecker from the List of Endangered and Threatened Wildlife', *Federal Register: The Daily Journal of the United States Government*, 7 July 2022: https://www.federalregister.gov/documents/2022/07/07/2022-14336/endangered-and-threatened-wildlife-and-plants-6-month-extension-of-final-determination-on-the (accessed 28 Sept. 2022).

[24] McCorristine and Adams, 'Ghost Species', 106.

[25] Bersaglio and Margulies, 'Extinctionscapes', 24.

[26] Neyrat, 'Ghosts of Extinction', 89.

[27] G. Westergaard and D. Jørgensen, 'Making Specimens Sacred. Putting the Bodies of Solitario Jorge and Cụ Rùa on Display', in *Animal Remains*, ed. by S. Bezan and R. McKay (New York and London: Routledge, 2021), pp. 68–86, at 80.

to the museum as a 'breathless zoo' that points to the in-between space within which museum specimens are trapped.[28] Natural history museums contain wide collections of specimens from islands in particular because islands were considered ideal places for scientists to study the evolutionary development of life.[29] It was islands' high number of endemic species and their vulnerability to dramatic changes in their environments that enabled Charles Darwin and Alfred Russel Wallace to formulate their theories on evolution. It was from their observations and collection of species from the Galápagos Islands and the Malay Archipelago that they put forward theories concerning the development of the natural world.[30] At the same time, natural history museums in Europe were blossoming, establishing collections of specimens from a global natural world. Island specimens were collected, studied and shipped to museums from around the world to enhance understanding of natural evolution.

The specimens of island species can still be connected to their original habitats both to understand the environment better and to detect the enormous environmental losses suffered by islands from anthropogenic activities.[31] The following is an example of how the ghosts of the Culebra giant lizards, preserved within museums, have had a direct role in renegotiating the preservation of the natural environment of Culebra Island.

Creating a ghost: A naval wildlife refuge

Culebra Island was under Spanish control in the nineteenth century before Spain ceded Puerto Rico, including Culebra, to the United States as part of the Treaty of Paris (1898) that officially ended the Spanish-American war.[32] Puerto Rico became a non-incorporated territory of the US. As social anthropologist Carlo A. Cubero writes, 'any plots of land that were unclaimed or whose claimants could not provide documentation, were to become the property of the U.S. government'.[33] All public land of Puerto Rico came under the jurisdiction of the Navy

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[28] Samuel J. M. M. Alberti, *The Afterlives of Animals: A Museum Menagerie* (Charlotteville, Virginia: University of Virginia Press, 2011) and R. Poliquin, *The Breathless Zoo: Taxidermy and the Cultures of Longing* (University Park, Pennsylvania: Penn State University Press, 2012).

[29] M.V. Barrow Jr, *Nature's Ghosts: Confronting Extinction from the Age of Jefferson to the Age of Ecology* (Chicago & London: The University Press of Chicago, 2009), pp. 47–78.

[30] Ibid., p. 66.

[31] Poliquin, *The Breathless Zoo*.

[32] US Congress, 'A Treaty of Peace Between the United States and Spain', *Lillian Goldman Law Library*, 10 Dec. 1898: https://avalon.law.yale.edu/19th_century/sp1898.asp (accessed 24 April 2022).

[33] C.A. Cubero, *Caribbean Island Movements: Culebra's Transinsularities* (London & New York: Rowman & Littlefield International, 2017), p. 40.

Department when in 1903 President Theodore Roosevelt signed a proclamation determining that 'public lands and buildings belonging to the United States in the Islands of Puerto Rico' should be subject to 'military, naval, light-house, marine hospital, post offices, custom houses, United States Courts and other public uses'.[34] This turned Culebra into a military base aligned with the United States' strategy of building a military network that could control the sea traffic across the Atlantic and Pacific Ocean.[35] But at the same time, Roosevelt also signed an executive order stating that the islands of the Culebra archipelago, except Culebra Island itself, should be 'set apart for the use of the Department of Agriculture as a reserve and breeding ground for native birds'.[36] Roosevelt was the first US president to pass executive orders for the protection of wildlife reservations. During his mandate, he supported many conservation initiatives and had a personal interest in both bird watching and collecting.[37] Culebra became one of the first wildlife refuges in the United States where it became unlawful for 'any person to hunt, trap, capture, wilfully disturb, or kill any bird of any kind whatsoever, or take the eggs of such birds within the limits of this reservation'.[38]

US policy framed Culebra in two potentially conflicting ways. On the one hand, it was recognised as an important nesting ground for colonies of different residential and migratory birds that annually came to the island to nest.[39] Islands in general provide good nesting grounds for birds because there are often fewer predators to disturb their nests. On the other hand, the Culebra archipelago was also used for US military purposes because of its strategic location in the Caribbean. Already in 1901, the Navy established the military base, Lower Camp, which forced the Culebrenses to relocate their town San Ildefonso to where the main city of the island, Dewey, is located today. The US Naval Fleet then began using the island for amphibious landings and ground manoeuvre training.[40] It meant that huge numbers of US Marines

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[34] T. Roosevelt, 'Proclamation 502 – Reservation of Lands in Puerto Rico for Naval Purposes', *American Presidency Project* 26 June 1903: https://www.presidency.ucsb.edu/documents/proclamation-502-reservation-lands-puerto-rico-for-naval-purposes (accessed 24 April 2022).

[35] Cubero, *Caribbean Island Movements*, p. 46.

[36] T. Roosevelt, 'Executive Order 1042', *Wikisource*, 27 Feb. 1909: https://en.wikisource.org/wiki/Executive_Order_1042 (accessed 24 April 2022).

[37] Barrow, *Nature's Ghosts*', p. 106.

[38] Roosevelt, 'Executive Order 1042'.

[39] Caribbean Birding Trail, 'Culebra National Wildlife Refuge', *Caribbean Birding Trail*: https://caribbeanbirdingtrail.org/sites/puerto-rico/culebra-nwr/ (accessed 19 June 2022).

[40] USACE (US Army Corps of Engineers), 'Deference Environmental Restoration Program for Formerly Used Defence Sites Ordnance and Explosive Waste, Archives Search Report, Finding for Culebra Island National Wildlife Refuge' (Rock Island Illinois: US Army Corps of Engineers, 1995), 12-13.

populated the island, which at first created a boom in the local economy.[41] But in 1936, the Navy started to use some of the cays and the Flamenco Peninsula on the main island for naval bombardment (see Figure 2). Culebra and the cays were now used for aerial strafing, bombing and naval gunnery training which only intensified with the Vietnam War in the 1960s. The sea three miles around Culebra was militarised and could no longer be used as fishing grounds, which was one of the main livelihoods on the island. Carlo Cubero describes how life on the island became increasingly more difficult and dangerous: the Culebrenses lived in constant fear of the missiles and were forced to relocate from the north side of the island during the bombing season, only to find their land and crops destroyed on their return.[42]

When the anti-Navy movement broke out on the island and gained international attention, it was especially its destructive effect on the environment that led to the closing of the Navy facilities on 1 July 1975. Richard D. Copaken, a Washington-based lawyer involved in the eviction of the US Navy from Culebra, 'found reports that showed the bombing destroying maritime environments that were crucial for the reproduction of endangered species'.[43] Most of the land that had been acquired by the Navy was transferred to the US Department of the Interior under the management of the Fish and Wildlife Service (FWS). It is therefore possible to argue that Culebra returned to being a National Wildlife Refuge. It was, however, only 1,500 acres of the total land area of 7,300 acres that came under the custody of the FWS. The rest was handed over to the government of Puerto Rico, primarily the Department of Natural Resources, or was in the possession of private landowners.[44] Carlo Cubero writes that 'the challenge these post-Navy agencies have faced is to contend with the vertiginous rise in tourist visits while keeping their remit to conserve the island's natural resources'.[45] What is interesting here is how the FWS managed to secure more land for natural preservation at a time when the island was also being developed to accommodate the high demand for tourism.

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[41] Cubero, *Caribbean Island Movements*, pp. 42–43.

[42] Cubero, *Caribbean Island Movements*, pp. 46–48.

[43] Cubero, *Caribbean Island Movements*, p. 56. See also R.D. Copaken, *Target Culebra: How 743 Islanders Took on the Entire U.S. Navy and Won* (San Juan: University of Puerto Rico Press, 2009).

[44] USACE, 'Archives Search Report Findings', 3.

[45] Cubero, *Caribbean Island Movements*, p. 61.

Figure 2. Map of Isle de Culebra (Culebra Island) that shows the areas used for Naval bombardment and the area designated for wildlife protection (photo credit: OpenStreetMap).

Before the Navy's bombardments of Flamenco Peninsula, which is still closed for public entry to this day for safety reasons, a local boy, Dimas Villanueva, found a rare specimen of a lizard. The remoteness of the island had created environmental conditions for an unusual evolutionary development seen in the increased body size of this lizard – also referred to as island gigantism.[46] He sold it to US Army Major and practicing herpetologist, Chapman Grant, in 1931. Grant had a background in the natural sciences from William College. Before he began his military career, he had also worked as an assistant curator of entomology at the Children's Museum of the Brooklyn Institute of Arts and Sciences. He continued his scientific studies in the military and completed several expeditions in the 1930s for American natural history museums to collect and study Caribbean herpetofauna.[47] In an interview from 1986, Villanueva 'told [Ava Gaa Ojeda Kessler] that Grant paid fifty cents, a significant amount then, for each

[46] See A. Runemark, K. Sagonas and E. I. Svensson, 'Ecological Explanations to Island Gigantism: Dietary Niche Divergence, Predation, and Size in an Endemic Lizard', *Ecology* **98** (8) (2015): 2077–92.

[47] Military Wiki, 'Chapman Grant', *Military Wiki*: https://military-history.fandom.com/wiki/Chapman_Grant (accessed 26 April 2022).

lizard or snake delivered to him… [Villanueva] vividly recalled having caught the 'strange' large brownish-grey lizard with a big bulky head. He said that was the first and last time he ever saw this type of lizard or any other one similar to it.'[48]

Chapman Grant had also never seen such a specimen and based on this one individual he identified it as belonging to a new taxonomic group of anoles. He named it *Anolis roosevelti* after the governor of Puerto Rico at the time and son of US President Theodore Roosevelt, Theodore Roosevelt Jr.[49] The name of the species demonstrates the role Culebra Island played in the relationship between Puerto Rico and the United States: the presence of the US Navy on Culebra was a necessity for Puerto Rico to maintain its social and economic benefits as a territory of the US. At the same time, it points to a problem common in scientific naming of species. The naming of species has been critiqued for how it reinforces inequalities. Paul Rummy and Jessica Thevamalar Rummy write that 'there have been instances where Indigenous species found by western scientists have been named after prominent western Presidents, or white males that are considered to be of a priviledge [sic] position, an act that we call as parachute science'.[50] Instead of recognising local names or local collectors of natural species, the species become associated with structural power dynamics that linger in the classification of natural flora and fauna, and overshadow the cultural significance of the island itself. In this case, it is the colonial governor rather than the local boy who is heralded with the naming.

A year after Villanueva had collected the first anole, Grant received another specimen from another local, J.M. Ortiz.[51] This specimen turned out to be the last and one of only two recorded specimens of the Culebra giant lizard. They are preserved within the Museum of Comparative Zoology, Harvard University, and the Museum of Zoology, University of Michigan. No other specimens have been found since. Despite having only two unremarkable specimens of the species, the giant lizards' ghosts have played a significant role in ensuring the survival of 'the

[48] A.G.O. Kessler, 'Status of the Culebra Island Giant Anole (*Anolis Roosevelti*)', *Herpetological Conservation and Biology* **5** (2) (2009): 223–32.

[49] C. Grant, 'A New Species and Two New Sub-Species of the Genus *Anolis*', *Journal of the Department of Agriculture of Puerto Rico* **15** (1) (1931): 219–24, at 219-222.

[50] P. Rummy and J. T. Rummy, 'Recontextualising the Style of Naming in Nomenclature', *Humanities & Social Sciences Communications* **8** (283) (2021): 1–6, at 3.

[51] C. Grant, 'Herpetological Notes from the Puerto Rico Area', *Journal of the Department of Agriculture of Puerto Rice* **16** (2) (1932): 161–165, at 163.

remaining patches of the virgin forest habitat'[52] after the Navy ceased their military operations on Culebra.

Caring for ghosts: Saving the 'virgin' vegetation

Even before the Navy withdrew from the island, the Culebra Conservation and Development Act (Law 66, 10 June 1975) had been passed to 'preserve and maintain the ecological integrity of Culebra'.[53] The FWS now recommended the giant lizards, that had not been seen since the original sighting in 1932, to be listed as an endangered species under the Endangered Species Act of 1973, and its critical habitat to be designated for preservation.

Culebra had lost eighty per cent of its original forest vegetation to deforestation, agriculture and other uses of the island.[54] The FWS proposed to preserve the patches of forest that remained on Mount Resaca. As the lizards' habitat was 'an area extremely difficult to penetrate', the FWS believed that 'it may still exist on Mt. Resaca in small numbers'.[55] Simultaneously, locals maintained that the species was still alive and occasionally reported having seen it. Scholars of extinction studies have claimed that what counts as acceptable evidence for knowing and seeing a species depends on how we culturally perceive it. In other words, just because the species cannot be observed does not necessarily mean that the species is extinct.[56]

In the case of the giant lizards, their absence in the wild was not a reason to declare them extinct, instead being rationalised as humans' inability to locate them in an area that was impossible to infiltrate. In that way, the FWS could argue for the existence of the giant lizards – even though no new specimens had been collected for over forty years. In listing the giant

[52] FWS, *Culebra Island: Giant Anole Recovery Plan* (Atlanta Georgia: US Fish and Wildlife Service, 1982), p. 2.

[53] Puerto Rico Office of Management and Budget, 'Culebra Conservation and Development Act' June 22, 1975: https://presupuesto.pr.gov/Budget_2012_2013/Aprobado2013Ingles/suppdocs/baselegal_ingles/186/186.pdf (accessed 26 April 2022), p. 2.

[54] OGPB (Office of the Governor Planning Board). *A Master Plan for Culebra*, 1975: https://www.govinfo.gov/content/pkg/CZIC-ht395-p8-p84-1975/html/CZIC-ht395-p8-p84-1975.htm (accessed 26 April 2022), p. 7.

[55] FWS, 'Proposed Endangered Status and Critical Habitat for Giant Anole (*Anolis roosevelti*)' (1977), 2101.

[56] Jørgensen, 'Presence of Absence, Absence of Presence'; A. Mitchell, 'Beyond Biodiversity and Species: Problematizing Extinction', *Theory, Culture & Society* **33** (5) (2016): 23–42.

lizards as an endangered species, the FWS argued that the only way to ensure the survival of the rare lizards was to safeguard the remaining forest vegetation:

The giant anole is a rare lizard which may survive only in the canopy of mountain forest on Mt. Resaca. The fan-leaved palm is the tallest tree in such forest, and, as with the semi-moist forest in general, is quickly disappearing because of man's activities. Unless the remaining forest on the slopes of Mt. Resaca is preserved the specialised habitat of this lizard is threatened with destruction.[57]

The giant anole was accepted as an endangered species in 1977 on the assumption that the 'lizard could become extinct within the foreseeable future' unless its critical habitat was preserved.[58] This habitat amounted to around 950 acres, where 547 acres was federally owned, and 375 acres were incorporated into the National Wildlife Refuge.[59] But the development and conservation of the natural environment has been a subject of constant debate. The Department of Interior issued an environmental impact statement in 1981 as part of a potential property transfer of the FWS holdings on Culebra to Puerto Rico. This report assessed the consequences of using some of the critical habitat designated for the giant lizards to enhance the local economic and social conditions of the population, as Culebra was considered 'one of the more economically depressed areas within the commonwealth of Puerto Rico'.[60]

It is therefore not surprising that the FWS issued a recovery plan for the Culebra giant anole in 1982, the main purpose of which was to confirm the existence of the species by conducting field surveys of the area. Howard W. Campbell from Denver Wildlife Research Center, and Kenneth Dodd from the Office of Endangered Species write in their concluding remarks of Culebra Island Giant Anole Recovery Plan that 'we should make every effort to protect the few remaining patches of fig forest on Culebra until such time that we can be assured that the species is extinct or until it is rediscovered, and its precise habitat requirements are determined'.[61] Several attempts to locate the lizards have since been conducted: first by the FWS in 1984 and again in 1985 by Dr Richard Thomas of the University of Puerto Rico, but

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[57] FWS, 'Proposed Endangered Status', 2101.

[58] FWS, 'Final Determination of Endangered Status and Critical Habitat for Giant Anole; (*Anolis roosevelti*)' (1977), 37371.

[59] DOI (US Department of the Interior), *Final Environmental Impact Statement: Proposed Disposition and Administration of Lands Declared Excess by the U.S. Navy on the Islands of Culebra and Culebrita in Puerto Rico* (Atlanta, Georgia: US Fish and Wildlife Service, 1981), Appendix E, p. 2.

[60] DOI, *Final Environmental Impact Statement*, p. 40.

[61] FWS, *Recovery Plan*, p. 1.

no specimens were found.[62] An extensive search for the giant lizards was last conducted by biologist Ava Gaa Ojeda Kessler in 1986. Her field surveys of forest areas also did not show any indications of the existence of giant lizards; interviews with residents older than sixty years provided no evidence of sightings of the species since the 1930s and seminars with teenagers at public high schools confirmed that present 'sightings' of the giant lizards were confused with the introduced exotic lizard species, *Iguana iguana*. In her article from 2010, Kessler therefore recommended declaring *Anolis roosevelti* extinct on Culebra.[63]

However, in 1986 four 'new' specimens of the species were rediscovered at the Zoological Museum in Copenhagen. They had been misidentified as *Anolis velifer* when the specimens were described by Reinhardt and Lüthen in the 1860s. The specimens had originally been collected by a Danish pharmacist, Albert H. Riise, who had established a pharmacy in Charlotte Amalie on St Thomas – an island that belonged to the Danish West Indies. He had a great interest in botany and zoology and, although he did not carry out research on the specimens that he collected himself, he did contribute many specimens to museums, school collections and researchers alike. He both collected the specimens himself and organised expeditions to collect fauna on various other Caribbean islands.[64] Two of the giant lizards were collected from the island of Vieques, one from Tortola and yet another from St John. [65]

The two specimens of the Culebra lizards were suddenly not the only individuals of the species to exist inside museums, nor the first to have been found in nature. Furthermore, they extended the geographical distribution of the *Anolis roosevelti* to other neighbouring islands, breaking the perception of Culebra as an isolated island group. Yet again, the discovery of new museum specimens came to the rescue of the species. In the listing of the giant lizards on the IUCN Red List of Threatened Species, the rediscovery of the museum specimens was used as one of the main reasons not to declare the species extinct. The reappearance of the lizards allowed the leading scientists who evaluated the giant lizard for the Red List to claim that 'a gap of some 70 years in collections of the species between the 1860s and the 1930s gives some hope that

[62] A.G.O. Kessler, 'Status of the Culebra Island Giant Anole (*Anolis Roosevelti*)', *Herpetological Conservation and Biology* **5** (2) (2009): 223–32, at 225

[63] Ibid., 231.

[64] Loldrup, *A.H. Riises Apotek på St Thomas og i Vejle*, pp. 71–86.

[65] Reinhardt and Lüthen, 'Bidrag til det Vestindiske Ørige', 260–61.

the current long gap since the last collection might not indicate the species is extinct'.[66] And so, the giant lizard continues to figure on the FWS list of endangered species that still exist on the island.[67] It also means that the forest remains protected as its critical habitat, which hinders recreation and development of the area for other purposes.

Ghostly presences and imaging island futures

When two specimens of a previously unknown species of giant lizards were found on Culebra Island in the 1930s, it was unforeseen that they would obtain such a significant role in saving the last remaining patches of the forest on the island. At first, the findings of the specimens went almost completely unnoticed on the island. It was only following local protests against the environmental destruction caused by the US Army's practices, and only after government agencies, both federal and Puerto Rican, took over the land ownership from the military, that the idea of conserving the natural environment – and the elusive lizards – gained currency on Culebra. The lizards' preserved bodies were reconnected to the island after they had been disconnected from their original habitat for decades. Their absence started to obtain an agency in a landscape from which it had previously been excluded.

For the past ninety years, there has been no sighting of the Culebra giant lizard. Even if one specimen of the lizard was found today, the population could be so small that the species would be functionally extinct, unable to sustain a healthy population. But in the case of the Culebra giant lizards, the question is not so much about whether the species is extinct or not. The significance of the debate over its extinction is the normative claim of land use that prioritises the protection of forest over the development of the land and the way in which an invisible non-human has affected the decision. By not declaring the lizards extinct, it opens for alternative futures – in this case, an imagined future that returns to an island before military presence. Within the last few decades, this imagery of Culebra as a 'virginal tropical landscape'[68] has attracted many foreigners to visit the island and led to an increase in tourism

[66] R. Platenberg, K. de Queiroz and D. L. Mahler, '*Anolis roosevelti*, Culebra Giant Anole', p. 4, *The IUCN Red List of Threatened Species*, 2020: https://dx.doi.org/10.2305/IUCN.UK.2020- 3.RLTS.T1319A18967413.en (accessed 3 May 2022).

[67] FWS, 'Peer Review Plan for the 5-year Status Reviews – Multiple Species', *Fish & Wild Service Catalog,* 2021: https://ecos.fws.gov/ServCat/DownloadFile/201634 (accessed 13 June 2022).

[68] Cubero, *Caribbean Island Movements*, p. 69. See also E. Hernandez, P. Méndez-Lázaro, C.E. Ramos-Scharron and J. Melendez-Diaz, 'Long-Term Impacts of Non-Sustainable Tourism and Urban Development in Small Tropical Islands Coastal Habitats in a Changing Climate: Lessons Learn…', in *Visions from Global*

development that ironically put the natural environment at risk today. The preserved bodies of the lizards thus influence the island space with their continuing ghostly presence.

This chapter claims that extinct species can, despite their absence, maintain a presence. They exist only as historically collected specimens preserved in jars inside museums, yet their ghosts are connected to their previous habitat, in spite of the fact that they have not been seen in decades. The ghostly existence of the lizards is an imagination of a past environment that it might still be possible to restore, and the preserved lizards were incorporated into a 'new' narrative about the island and what it is and should be. In that sense, it is not just about the lizards in the jars, it is about the imagination of the living lizards and an environment in which they could still exist.

As islands have been desired sites of collecting nature, museums contain a significant number of island specimens in their collections. Many of these species are extinct today as a consequence of the use and exploitation of islands in the past. They represent a time where islands were richer in endemic flora and fauna and their ghostly appearances can be used to renegotiate the conservation of the 'original' island environments which maintains a vision of islands as 'unspoiled' utopias. The story of the giant lizard on Culebra serves as a reminder of islands as both hotspots of extinction and havens of conservation.

Tourism Industry-Creating and Sustaining Competitive Strategies, ed by M. Kasimoglu (Rijeka: Intech, 2012), pp. 357–98, at 377–79.

Bibliography

Alberti, S.J.M.M. 2011. *The Afterlives of Animals: A Museum Menagerie*. Charlottesville, Virginia: University of Virginia Press.

Barrow, M. V. Jr. 2009. *Nature's Ghosts: Confronting Extinction from the Age of Jefferson to the Age of Ecology*. Chicago & London: The University Press of Chicago.

Bersaglio, B. and J. Margulies. 2022. 'Extinctionscapes: Spatializing the Commodification of Animal Lives and Afterlives in Conservation Landscape'. *Social & Cultural Geography* **23** (1): 10–28.

Caribbean Birding Trail, 'Culebra National Wildlife Refuge', *Caribbean Birding Trail*: https://caribbeanbirdingtrail.org/sites/puerto-rico/culebra-nwr/ (accessed 19 June 2022).

Copaken, R.D. 2009. *Target Culebra: How 743 Islanders Took on the Entire U.S. Navy and Won*. San Juan: University of Puerto Rico Press.

Cubero, C.A. 2017. *Caribbean Island Movements: Culebra's Transinsularities*. London & New York: Rowman & Littlefield International.

Davis, J. 2021. 'Dinosaurs and Meteorites: Museum Scientists Described 552 new Species in 2021', *Natural History Museum*, 30 December: https://www.nhm.ac.uk/discover/news/2021/december/natural-history-museum-scientists-describe-552-new-species-in-2021.html (accessed 27 May 2022).

DeLoughrey, E.M. 2001. '"The Litany of Islands, the Rosary of Archipelagoes": Caribbean and Pacific Archipelagraphy', *ARIEL: A Review of International English Literature* **32** (1): 21–51.

Derrida, J. 1994. *Specters of Marx: The State of the Debt, the Work of Mounning, the New International*. New York and London: Routledge.

DOI (US Department of the Interior). 1981. *Final Environmental Impact Statement: Proposed Disposition and Administration of Lands Declared Excess by the U.S. Navy on the Islands of Culebra and Culebrita in Puerto Rico.* Atlanta, Georgia: U.S. Fish and Wildlife Service.

Fisher, M. 2012. 'What is Hauntology?' *Film Quarterly* **66** (1): 16–24.

Fitzpatrick, J.W., M. Lammertink, M.D. Luneau Jr, T.W. Gallagher, B.R. Harrison, G.M. Sparling, K.V. Rosenberg, R.W. Rohrbaugh, E.C.H. Swarthout, P.H. Wrege, S.B. Swarthout,

M.S. Dantzker, R.A. Charif, T.R. Barksdale, J.V. Remsen Jr, S.D. Simon and D. Zollner. 2005. 'Ivory-billed Woodpecker (*Campephilus principalis)* Persists in Continental North America'. *Science* **308**.

Gillson, L. 2015. *Biodiversity Conservation and Environmental Change: Using Palaeoecology to Manage Dynamic Landscapes in the Anthropocene*. Oxford: Oxford University Press.

Grant, C. 1931. 'A New Species and Two New Sub-Species of the Genus *Anolis*'. *Journal of the Department of Agriculture of Puerto Rico* **15** (1): 219–24.

Grant, C. 1932. 'Herpetological Notes from the Puerto Rico Area'. *Journal of the Department of Agriculture of Puerto Rice* **16** (2): 161–65.

Heise, U.K. 2016. *Imagining Extinction: The Cultural Meanings of Endangered Species*. Chicago and London: The University of Chicago Press.

Hernandez, E., P. Méndez-Lázaro, C.E. Ramos-Scharron and J. Melendez-Diaz. 2012. 'Long-Term Impacts of Non-Sustainable Tourism and Urban Development in Small Tropical Islands Coastal Habitats in a Changing Climate: Lessons Learn…' In *Visions from Global Tourism Industry-Creating and Sustaining Competitive Strategies*, ed. by M. Kasimoglu. Rijeka: Intech. pp. 357–98.

Jørgensen, D. 2016. 'Presence of Absence, Absence of Presence, and Extinction Narratives'. In *Nature, Temporality and Environmental Management: Scandinavian and Australian Perspectives on Peoples and Landscapes*, ed. by L. Head, K. Saltzman, G. Setten and M. Stensek. London: Routledge. pp. 45–58.

Jørgensen, D. 2022. 'Extinction and the End of Futures'. *History and Theory* (OpenAccess Online).

Kemp, C. 2020. *The Lost Species: Great Expeditions in the Collections of Natural History Museums*. SD Books.

Kessler, A.G.O. 2009. 'Status of the Culebra Island Giant Anole (*Anolis Roosevelti*)'. *Herpetological Conservation and Biology* **5** (2): 223–32.

Langston, N. 2021. *Climate Ghosts: Migratory Species in the Anthropocene*. Waltham, Massachusetts: Brandeis University Press.

Loldrup, H.-O. 2017. *A.H. Riises Apotek på St Thomas og I Vejle*. Loldrup Forlag.

Mayer, G.C. 1989. 'Deterministic Aspect of Community Structure in West Indian Amphibians and Reptiles'. Ph.D. Dissertation, Cambridge, Massachusetts: Harvard University.

McCorristine, S. and W.M. Adams. 2020. 'Ghost Species: Spectral Geographies of Biodiversity Conservation'. *Cultural Geographies* **27** (1): 101–15.

Military Wiki. 'Chapman Grant', *Military Wiki*: https://military-history.fandom.com/wiki/Chapman_Grant (accessed 26 April 2022).

Mitchell, A. 2016. 'Beyond Biodiversity and Species: Problematizing Extinction'. *Theory, Culture & Society* **33** (5): 23–42.

Neyrat, F. 2019. 'Ghosts of Extinction: An Essay in Spectral Ecopolitics'. *The Oxford Literary Review* **41** (1): 88–106.

OGPB (Office of the Governor Planning Board). 1975. *A Master Plan for Culebra*: https://www.govinfo.gov/content/pkg/CZIC-ht395-p8-p84-1975/html/CZIC-ht395-p8-p84-1975.htm (accessed 26 April 2022).

Platenberg, R., K. de Queiroz and D.L. Mahler. 2020. '*Anolis roosevelti*, Culebra Giant Anole'. *The IUCN Red List of Threatened Species*: https://dx.doi.org/10.2305/IUCN.UK.2020- 3.RLTS.T1319A18967413.en (accessed 3 May 2022).

Poliquin, R. 2012. *The Breathless Zoo: Taxidermy and the Cultures of Longing*. University Park, Pennsylvania: Penn State University Press.

Puerto Rico Office of Management and Budget. 1975. 'Culebra Conservation and Development': https://presupuesto.pr.gov/Budget_2012_2013/Aprobado2013Ingles/suppdocs/baselegal_ingles/186/186.pdf (accessed 26 April 2022).

Reinhardt, J. and C.F. Luthen. 1862. 'Bidrag til det Vestindiske Øriges og navnligen til de dansk-vestindiske Øers Herpetologie'. *Videnskabelige meddelser fra den Naturhistoriske Forening i Kjøbenhavn*: 260–61.

Roosevelt, T. 1903. 'Proclamation 502 – Reservation of Lands in Puerto Rico for Naval Purposes', *American Presidency Project* 26 June: https://www.presidency.ucsb.edu/documents/proclamation-502-reservation-lands-puerto-rico-for-naval-purposes (accessd 24 April 2022).

Roosevelt, T. 1909. 'Executive Order 1042'. *Wikisource*, 27 February: https://en.wikisource.org/wiki/Executive_Order_1042 (accessed 24 April 2022).

Rummy, P. and J.T. Rummy. 2021. 'Recontextualising the Style of Naming in Nomenclature'. *Humanities & Social Sciences Communications* **8** (283): 1–6.

Runemark, A., K. Sagonas and E.I. Svensson. 2015. 'Ecological Explanations to Island Gigantism: Dietary Niche Divergence, Predation, and Size in an Endemic Lizard'. *Ecology* **98** (8): 2077–92.

Saikku, M. 2001. '"Home in the Big Forest". Decline of the Ivory-Billed Woodpecker and Its Habitat in the United States'. In *Encountering the Past in Nature*, ed. by T. Myllyntaus and M. Saikku. Athens, Ohio: Ohio University Press. pp. 94–141.

Thershy, B.R., K.-W. Shen, K.M. Newton, N.D. Holmes and D.A. Croll. 2015. 'The Importance of Islands for the Protection of Biological and Linguistic Diversity'. *BioScience.*

USACE (US Army Corps of Engineers). 1995. 'Deference Environmental Restoration Program for Formerly Used Defence Sites Ordnance and Explosive Waste, Archives Search Report, Finding for Culebra Island National Wildlife Refuge'. Rock Island Illinois: US Army Corps of Engineers.

US Congress. 1898.'A Treaty of Peace Between the United States and Spain'. *Lillian Goldman Law Library*, 10 December: https://avalon.law.yale.edu/19th_century/sp1898.asp (accessed 24 April 2022).

FWS (US Fish and Wildlife Service). 1966. 'National Wildlife Refuge System Administration Act', *U.S. Fish and Wildlife Service*: USCODE-2017-title16-chap5A-subchapIII-sec668dd.pdf (govinfo.gov) (accessed 28 April 2022).

FWS (US Fish and Wildlife Service). 1977. 'Proposed Endangered Status and Critical Habitat for Giant Anole (*Anolis roosevelti*)'.

FWS (US Fish and Wildlife Service). 1977. 'Final Determination of Endangered Status and Critical Habitat for Giant Anole; (*Anolis roosevelti*)'.

FWS (US Fish and Wildlife Service). 1982. *Culebra Island: Giant Anole Recovery Plan*. Atlanta Georgia: US Fish and Wildlife Service.

FWS (US Fish and Wildlife Service). 2021.'Peer Review Plan for the 5-year Status Reviews – Multiple Species', *Fish & Wild Service Catalog*: https://ecos.fws.gov/ServCat/DownloadFile/201634 (accessed 13 June 2022).

FWS (US Fish and Wildlife Service). 2022. 'Endangered and Threatened Wildlife and Plants; 6-Month Extension of Final Determination on the Proposed Removal of the Ivory-Billed Woodpecker from the List of Endangered and Threatened Wildlife', *Federal Register: The Daily Journal of the United States Government*, 7 July: https://www.federalregister.gov/documents/2022/07/07/2022-14336/endangered-and-threatened-wildlife-and-plants-6-month-extension-of-final-determination-on-the (accessed 28 Sept. 2022).

Westergaard, G. and D. Jørgensen. 2021. 'Making Specimens Sacred. Putting the Bodies of Solitario Jorge and Cụ Rùa on Display'. In *Animal Remains*, ed. by S. Bezan and R. McKay. New York and London: Routledge. pp. 68–86.

Whyman, T. 2019. 'The Ghosts of Our Lives'. *New Statesman*, 31 July: https://www.newstatesman.com/politics/2019/07/the-ghosts-of-our-lives (accessed 6 May 2022)

Article IV: Hidden Stories of Extinction: Hawaiian ‘Ahu‘ula Feather Capes as Biocultural Artefacts

Whereas the first three articles have a clear focus on the still life of species, whether the whole body or the skin, my fourth article, ‘Hidden Stories of Extinction: Hawaiian ‘Ahu‘ula Feather Capes as Biocultural Artefacts’, is more of an attempt to challenge the way in which extinction is traditionally narrated through taxidermy specimens in natural history museums. When extinction is understood only though scientific specimens of species located in natural history museums, there is a risk of missing out on other valuable stories concerning extinction. I therefore began to search for other artefacts inside museums that could offer different perspectives on the extinction crisis.

Within the Hawaiian Islands, there is a tradition of covering objects of the highest importance in feathers, a tradition that the first human settlement brought with them from other Polynesian islands. Feathers were plucked from endemic forest birds and sewed onto objects such as capes, cloaks, helmets and god images. Today, these objects represent some of the only remnants of the endemic forest birds—many of which have disappeared from the Hawaiian Islands. Since the feathers were collected from individual birds over decades, the feather objects draw attention away from individual specimens and focus rather on inter-generational relationships. At the same time, the feather objects represent a relationship between humans and non-humans different from the western taxidermy practice of preserving animals for science. As shown in article I and article II, the taxidermy practice is not a neutral practice of preserving an animal (even though it is often seen as such). The way in which an animal has been preserved also reveals a human gaze upon that animal. Stressing the importance of not only seeing remnants of extinction as natural but also cultural, it is important that more than only one perspective on animals is represented inside museums. Looking at

Hawaiian feather work, we are in no doubt as to their cultural significance, but sometimes the birds within these objects are less recognisable. Selecting Hawaiian feather work as a case study was an attempt to see these objects as *biocultural* in bringing out the story of the birds and their extinction.

I saw a Hawaiian ‘ahu‘ula (feather capes or cloaks) and mahiole (feather helmet) on display for the first time at the Musée du Quai Branly in Paris. At first, I must admit, it was hard to even see that the cape was made of feathers. It is not until you get up close that you can see that the objects are in fact made up of thousands upon thousands of tiny feathers bundled together and sewed onto a fine netting of plant fibre. When I honed my attention on their materiality and realised that these objects were purely organic, my view on them also changed and questions concerning the birds and humans’ relationship to the birds started to form in my head. I knew that these objects often also contained feathers from now extinct birds, but it was not the story that was presented when I read the display label. The birds’ name was not even mentioned, just that the cape was made of feathers. Instead, I could read that this cape was brough to England by a Hawaiian royal couple in 1824, who tragically died of measles during their stay. This story became the entry point for me to understand the complex relationship between foreigners arriving in the islands, the loss of nature and how the Hawaiian relationship to the endemic forest bird changed substantially as a result of European contact.[163]

In contrast to other Pacific islands, Hawai’i remained independent and free from colonisation until the United States annexed Hawai’i in 1898. However, the islands were often visited by foreigners in need of provisions and wishing, understandably, to spend the winter in the

[163] I have never been able to confirm that this ‘Ahu‘ula in fact belonged to the capes that the Hawaiian Royal couple brought with them to England in 1824 and decided not to include this cape in the article, but seeing this cape in Paris was when I first became familiar with this story.

islands. There was also an influx of fur traders, missionaries and whalers to the islands because of their geographic position in the central Pacific Ocean. The traditional Hawaiian culture changed significantly during the time of European contact, including the feather tradition. The kapu system that had protected the birds from being killed was abolished in favour of Christianity, and the introduction of western products also changed the value of the feathers. The Hawaiian feather work to some extent lost its cultural value, and whereas the capes had been used to protect the leading chiefs in times of war fares, the capes were now used as diplomatic gifts to establish new relationships and treaties with other nations—also far from home.

When the Hawaiian royal couple thus travelled to England to meet with King George IV, they brought with them a selection of ʻahuʻula to be used as gifts on their journey. I chose to trace some of these capes to see what stories they tell today inside the museums that acquired them. With the display of cultural artefacts inside ethnographic museums, questions concerning provenance often arise, whether the artefacts have been gifted or stolen and to whom these artefacts rightly belong. I wished to avoid this discussion by choosing objects whose provenance was well known. But just because the feather capes were gifted, it is still important to discuss what it signifies when Hawaiian feather objects remain in European collections and are displayed inside these institutions today, as well as how and who should narrate the stories they tell. I hope this article can be part of initiating this discussion by showing how the feather work tradition has changed meaning over time and acquired new meanings, as well as why it is important to consult indigenous knowledge in how they are displayed today.

Adrienne Kaeppler, an American anthropologist who worked at the Bishop Museum in Honolulu in the 1970s, has done extensive research on the provenance of ʻahuʻula spread around the world, including the ʻahuʻula that can be related to the Hawaiian Royal couple's travels to

London in 1824.[164] She has compiled a list of which museums hold ʻahuʻula in their collections. I chose to focus on ʻahuʻula that were also on physical display, because I wanted to know if the extinction story of the birds was included in any of the displays of the ʻahuʻula, or whether this story potentially could be related to the display of the Hawaiian feather work inside these different museums.

Since this part of the research fell in the middle of the pandemic, I was unable to see all of the displays in person. But I was in contact with the different museums that provided me with information about the ʻahuʻula in their collections as well as images and written material on the ones on display. The only ʻahuʻula that I managed to see was displayed at the National Museum of Scotland in Edinburgh. This museum is a national museum that houses both 'natural' and 'cultural' artefacts. Within the museum, they have maintained this division and rarely combine objects from one with the other. In all the displays I inspected, the feather work was mainly presented as cultural artefacts and rarely connected to the birds. There was almost no description of the Hawaiians' intimate relationship to the birds and what role they played in Hawaiian cosmology. I remarked upon how many opportunities the museums had to tell the birds' histories; how rarely, however, had such opportunities been taken to include the bird in narratives of Hawaiian feather work.

In January 2022, I had the opportunity to go to Oʻahu to visit the Bishop Museum. This museum houses the biggest collection of Hawaiian feather work. Before I went to Hawai'i, I arranged for a meeting with Cultural Resource Specialist, Kamalu du Preez and Cultural Advisor, Marques Marzan, who are both Native Hawaiian cultural practitioners working at the Bishop Museum. They both agreed to share their knowledge about the Hawaiian feather work tradition and the display of feather work at the Bishop Museum. Before the meeting, I visited the museum on my

[164] A.L. Kaeppler, *Hawaiian Featherwork Catalogue Raisonné of pre-1900 Feathered-God Images, Cloaks, Capes, Helmets,* Willem de Rooij and Benjamin Meyer-Krahner (eds) (Beerlin: Nationalgalerie Staatliche Museen zu Berlin, 2010).

own. I was especially interested in the Hawaiian Hall that displays Hawai'i's natural and cultural heritage. In the Hawaiian Hall, it became apparent how the feather work tradition expresses a connectivity with the surrounding nature. But what surprised me was that the endangerment and extinction of the birds were not mentioned in the Hawaiian Hall. It was only when I visited the Science Centre that the extinction and decline of the species became present. Before coming to Hawai'i, I was expecting the division of culture and nature to be less prominent, so it surprised me that this division was also maintained in this museum, and I learnt that the Bishop Museum had a colonial history of its own. It is only within recent years that the museum has started to work through this in being a more community-driven place.

The conversation with du Preez and Marzan was therefore centred around these questions. They were both sceptical of the concept of extinction. In their view, the birds were not necessarily extinct. In the Hawaiian Hall, then, the focus was on the living and what remains 'enabling the return of what has been lost'.[165] After the conversation with Preez and Marzan, I started to look differently on the very notion of extinction. I realised that telling extinction stories through biocultural artefacts was not merely an excise in adapting the extinction narrative of the birds into the museum narratives of the feather work. It was also about understanding the birds' role in Hawaiian cosmology, engaging indigenous knowledge connected to extinction in contrast to the dominating scientific narrative of extinction. Several days later, I met Mele Kahalepuna Chun, a third-generation cultural practitioner of Hawaiian feather work in her workshop in Honolulu. Watching her as she was sewing the small bundles of feathers of coloured goose feathers on to a plastic netting, I understood that the act of continuing to make feather work was also a way to keep the birds alive. On my visit to Maui, I saw one of the bird species, whose feathers have been used in the

[165] G. Westergaard, 'Hidden Stories of Extinction: Hawaiian 'Ahu'ula Feather Capes as Biocultural Artefacts', *Museum and Society* 20(1) (2022), 111.

Hawaiian feather word tradition, still alive at high elevations today. It was inspiring for me to see one of the animals I have been working with to be alive, and it reminded me that the museums can make extinction come alive through the stories they tell as well.

In the writing of this article, I rely on Audra Mitchell's scholarship on extinction studies and some of her main critiques of western dominating narratives of extinction.[166] In including indigenous knowledge, I have been aware of not idealising it, as the feather work tradition was not always a manner of just plucking the feather and releasing the birds. Closer assessment of the feather capes sometimes shows entire birds stitched onto the capes and historical sources also testify to the killing and eating of the birds.[167] But it has also been important for me to make clear that the feather work tradition is not the primary reason for the birds' extinction. This has instead been related to invasive species.

This article contributes to new ways of telling extinction stories that consult indigenous knowledge. The rethinking that I was forced to do as to the meaning of extinction is a reminder of the importance of listening to a diversity of voices when dealing with such issues inside museums. This article was published in a special issue on 'Exhibiting Extinction' in *Museum & Society Journal*. It offers practical advice as to how museum workers can be more aware of hidden stories of extinction by looking at the material of their objects and connecting the animal stories back to human communities and their relation of the animal world.

[166] Mitchell, Beyond Biodiversity and Species and A. Mitchell, 'Revitalizing laws, (Re)-making Treaties, Dismantling Violence: Indigenous Resurgence Against "the Sixth Mass Extinction"', *Social & Cultural Geography* 21(7) (2018): 909–924.
[167] F.L. Pérez, 'The Silent Forest: Impact of Bird Hunting by Prehistoric Polynesians on the Decline and Disappearance of Native Avifauna in Hawai'i', *Geographies* 1(3) (2021): 192–216.

Hidden Stories of Extinction: Hawaiian ʻAhuʻula Feather Capes as Biocultural Artefacts

Gitte Westergaard

Abstract

Natural history museums have been the natural place to find remnants of extinction, but extinction can also be hidden in cultural artefacts. This article identifies certain possibilities and challenges in telling extinction stories through cultural artefacts. Principally, they can reveal different anthropogenic connections to lost biodiversity and challenge our perceptions of extinction and how to restore relationships with what is lost. I illustrate this through the Hawaiian ʻahuʻula (cloaks or capes) that were made from feathers of endemic forest birds now extinct or threatened on the islands. By approaching the ʻahuʻula as a biocultural artefact, this article points to new ways of telling stories of extinction beyond natural history museums.

Key words: Ethnographic collections, biocultural artefacts, feather objects, extinction, Hawai'i.

The current massive loss of species has awakened an urgent need to bring new stories of extinction into the public sphere of museums. For Robert R. Janes (2009: 30), museums house an unused potential to respond to a 'troubled world' where the problems facing humanity are a result of our 'failing relationship with nature'. Museums have been appointed as important agents to address ecological crises, such as climate changes and mass extinction (Newell *et al*. 2017), even if scholars have recognized various obstacles to fulfilling such a role (Cameron and Neilson 2015). One of the challenges addressed in this article is the division of 'natural history' and 'human culture' that followed the museums' specialization into subject areas (Gordon-Walker 2019: 248). When extinction stories are limited to scientific contexts, it can, as Anna Guasco (2021: 1059) remarks, create an 'incomplete understanding of the ways in which the ecological and the social are always, already entangled'.

Extinction scholars have mainly looked at natural history collections as remnants of extinction, from the display of 'endlings' (Jørgensen 2017a) to analysis of natural galleries of extinction (Guasco 2021) to critical exhibitions of extinction inside natural history museums (O'Key 2020). But as O'Key (2020: 644) rightly points out, 'no matter how taxidermy specimens are reframed, they still stand as signs of anthropocentric mastery'. It imposes a challenge for museums to even talk about extinction through these very artefacts. Taxidermy is a particular western-oriented practice of preserving animal skins for science that developed in the sixteenth century. These specimens represent an often violent mastery over nature where humans intentionally killed animals to 'save' them from complete disappearance (Ashby and Machin 2021; Jørgensen 2021). Taxidermy has further been criticized for being 'crushed beneath the weight of its own metonymic function' (Bezan 2019: 214), as well as too narrowly focused on an individual animal that cannot represent an entire species' intergenerational disappearance (van Dooren 2014: 11-12).

But natural history collections are not the only place where extinction features; cultural artefacts are also remnants of extinction. In this article, I argue for the importance of telling extinction stories through artefacts other than taxidermy capable of helping us see different (and alternative) anthropogenic connections to lost biodiversity. I exemplify this through the Hawaiian ʻahuʻula (cloak or cape) often classified as an ethnographic or aesthetic object inside

museums. Historically, they were crafted for the ali'i (chiefs) of the Hawaiian Islands from the feathers of forest birds now extinct or threatened by extinction. This cultural practice is still maintained using other materials. As such, 'ahu'ula bear witness to strong ties between Hawaiians and the natural world.

This article challenges dominant narratives of extinction in museums. By focusing on the correlation between the disappearance of cultural practices and the steady loss of biodiversity, it shows how stories of extinction can be told beyond natural history collections. Artefacts especially suited to highlighting this correlation belong to biocultural collections (Salick *et al*. 2014; Gilbert 2022). They are made from animal by-products including reptile and animal skins, ivory, coral, turtle and mollusc shells as well as feathers that have been used as decoration and in ornaments since the coexistence of humans and non-humans (Alves and Albuquerque 2017: 263). They are neither solely natural nor solely cultural even though they have often been classified as such. The Victoria and Albert Museum successfully explored these complex relationships in their *Fashion from Nature* exhibition (2018). The exhibit demonstrated how animals and animal by-products infuse cultural artefacts.

My approach aligns with Deborah Bird Rose, Thom Van Dooren and Matthew Chrulew's (2017: 2-6) call for a 'biocultural response' that recognizes the complexity of extinction that museums can engage. 'Biocultural diversity', coined by Luisa Maffi (2010), encapsulates the understanding that cultural diversity is interconnected with biodiversity. Fernando Vidal and Nélia Dias (2016) further argue through the concept of 'endangerment sensibility' that records of the endangered, and what has already been lost, play a significant role in how we value the soon-to-be-extinct. In an extensive study of the correlation between indigenous lands and conservation of biodiversity, O'Bryan *et al.* (2020: 6) concluded that 'Indigenous Peoples' lands are vital to any policies and programs aiming to further global biodiversity conservation'. Investigating extinction stories beyond natural history museums could bring new stories of lost biodiversity and human connections to the forefront inside museums.

In this article, I first describe the importance of feathers in Hawaiian culture by examining the connection between gods, birds, and humans and how this relationship was weakened with European contact. I move on to discuss how the 'ahu'ula that came to Europe with the Hawaiian royal couple's visit to England in 1824 became cultural artefacts. The third section describes the extinct birds as natural artefacts through examples of mounted birds collected from Hawai'i by European naturalists. Then, I visit the Bishop Museum in Honolulu to examine the indigenous understanding of the 'ahu'ula within its cultural and biological context. Finally, I ask whether considering the 'ahu'ula as a biocultural artefact might be instructing for bringing out extinction stories.

The Hawaiian Context: Gods, Birds and Feathers

The first human settlement of Hawai'i was by Polynesians between A.D. 940 and 1130 (Athens *et al*. 2014). They believed 'spirits alone peopled first the sea and then the land, which was born of the gods and thrust up out of the sea' (Beckwith 1970: 5). It is from these akua (deities) that all species originate. Man appeared last at the same time as the personal gods (Valeri 1985: 8). The Hawaiian ali'i are considered descendants of the gods. They belonged to the highest class and ruled over the subdivision of lands, as well as all living beings, who lived on those lands. Wars frequently arose among the ruling ali'i until the Hawaiian Islands (Hawai'i, Maui, Moloka'i, Lāna'i, Kaho'olawe, O'ahu, Kaua'i and Ni'ihau) were united under the Hawaiian Kingdom by Kamehameha the Great in 1810 (Malo 1903).

Birds were 'kindred and servants of gods'; some were even gods themselves manifest 'on earth in bird form' (Beckwith 1970: 92). Objects of the highest importance in ancient Hawai'i were therefore covered with feathers (Kaeppler 2010: 11): kahili (royal standards), ki'i hulu manu (god images), leis (garlands or wreaths), mahiole (helmets), and 'ahu'ula (cloaks or capes). The 'ahu'ula and mahiole were made specifically for the Hawaiian ali'i. 'Through the feather adornment, the *mana* [power] of gods was extended to the chief' (Marzan and 'Ohukani'ōhi'a Gon 2015: 31) to visualize their connection to the gods (Valeri 1985: 147).

At first, the capes were made in a rectangular shape with white, brown and black feathers from either seabirds or domestic fowls, but with time both the shape and the colour changed to the more notable circular red and yellow feathered 'ahu'ula. The red feathers of certain native forest birds attracted the Hawaiians' attention as red was considered the chiefly colour. This colour change gave rise to the term 'ahu'ula, which means 'red garment' (Rangihīroa 1944: 9-10). Other colours, primarily yellow but occasionally also black and green, were introduced to create different geometric designs of triangles, circles and crescents that represented individual ali'i.

The red feathers came mainly from 'i'iwi (*Vestiaria coccinea),* occasionally from 'apapane (*Himatione sanguinea*); the yellow feathers from the 'ō'ō (*Moho*) and mamo (*Drepanis pacifica*) (Brigham 1899 [1974]). The 'i'iwi, mostly scarlet with black wings and tail and the 'apapane, bright crimson with white undertail-coverts, are both endemic to all the main Hawaiian Islands. The four species of the 'ō'ō genus *Moho* were endemic to O'ahu, Moloka'i, Hawai'i and Kaua'i. They were all black, with different patches of yellow feathers on the thighs, cheeks, under the wings or the undertail coverts. The mamo belonged to the same genus as the 'i'iwi but was black with yellow rumps and thighs. Their yellow feathers were more highly prized than the 'ō'ō 'because of their deeper golden colour and their greater rarity' (Rangihīroa 1944: 10). The fact that the 'ō'ō and the mamo birds supplied so few numbers of feathers per individual bird made the yellow feathers more valuable: 'Yellow displaced red as the colour of royalty' (Rangihīroa 1944: 10).

The birds were captured by kia manu (bird catchers) that would spend long periods out in the forest to learn the habitats of the birds (Emerson 1895: 102). 'The kia manu's knowledge of and experience with forest birds and their habitat was extraordinary' (Amante-Helweg and Conant 2009: 70). The methods for catching the birds varied in different districts, high- or lowland, on different islands and in different flowering seasons. One method used was a long pole with a fork at the end covered in a sticky gum that the bird would mistake for a branch. The bird catcher would collect the living birds in his bag. It was not permitted to kill the forest birds. 'The plumage-birds, like everything else in Hawai'i, were the property of the ali'i of the land, and as such were protected by the *tabu*' (Emerson 1895: 110). However, this seems only to have applied to the 'ō'ō and mamo; these were released into nature again after the few yellow feathers were plucked. The 'i'iwi and 'apapane were skinned and the birds often also served as a food source for the bird hunters (Gomes 2016). Kamehameha I remained critical towards the bird catchers' killing of the birds, stating 'feathers belong to me but the birds themselves belong to my heirs' (Emerson 1895: 111). The collected feathers were an offering to the gods with which land taxes were paid to the ruling ali'i. One 'ahu'ula could consist of millions of feathers collected from thousands of birds.

The first European contact with Hawai'i occurred with the arrival of Captain James Cook in 1778. Soon afterward, more foreigners started arriving in the islands. Hawai'i's geographic position two thousand miles from the west coast of North America with no islands in between made it a strategic place to gather provisions and to overwinter (Kuykendall 1938: 1-28). Hawai'i formulated a defensive alliance with Great Britain but stayed independent (Gonschor 2019). The Hawaiian Kingdom was increasingly challenged by the appearance of Europeans and interests in the islands by foreign nations followed the influx of fur traders, missionaries, and whalers.

The Hawaiian feather tradition changed significantly during this time, both with the introduction of firearms that were now used to hunt the endemic forest birds for their prestigious feathers, also by the bird catchers themselves (Pérez 2021: 196), and Kamehameha II's abolition of the old religion (the kapu system) in favour of Christianity (Kaeppler 2010: 9). 'The value and utility of the forest birds and feather work were replaced by gems and other material possessions … and the spiritual significance of feather work faded with time', according to Verna L.U. Amante-Helweg and Sheila Conant (2009: 77), and so did the forest birds. The colonization of Hawai'i was not kind to many of its endemic birds. Hawaiian forest birds came under pressure from invasive species, avian diseases, deforestation, and over-hunting. Today, the birds that provided the precious yellow feathers are now all extinct: the O'ahu 'ō'ō in 1837, mamo (1898), Hawai'i 'ō'ō (1934), Moloka'i 'ō'ō (1981) and Kaua'i 'ō'ō (1987).

‘Ahu‘ula as a Cultural Artefact in European Museums

The ‘ahu‘ula started to serve a new function as diplomatic gifts in establishing global relationships (Kaeppler 2010: 28).[1] When Kamehameha II and Kamamalu visited England in 1824, they brought along with them several ‘ahu‘ula on their voyage to give to King George IV as part of their request for formal protection of the islands. In gratitude for safe passage, one of these ‘ahu‘ula was gifted to the shipowner, George Hill, whose ship had carried them to England. As would happen to many ‘ahu‘ula, it was traded several times among art brokers and museums. This one ended up in the collection of the ‘Rautenstrauch-Joest Museum – Cultures of the World’ in Cologne, Germany (Kaeppler 2010: 41). The ‘ahu‘ula was incorporated into their permanent exhibition ‘People in their Worlds’[2] when the museum reopened in 2010. The ‘ahu‘ula is displayed vertically with an angle of about 30 degrees on a curved cone next to a walrus tusk and a scale drawing of a Hawaiian ali‘i in the section ‘The Body as a Stage: Clothing and Adornment’. The precious feather material is recognized as a symbol of power that marked the leading chief’s high-ranking status in society (Engelhard and Schneider 2010: 162-3). But the story does not explain how the feathers connected the ali‘i with the gods that manifested themselves on earth as birds. Nor does it reveal how the birds, whose feathers were so valuable, no longer exist today.

The appearance of the royal Hawaiian couple in London in 1824 came as a surprise for many. ‘Neither the owners of the ship nor the British authorities had any warning about the strange cargo Starbuck [the ship captain] would discharge at Portsmouth wharf on May 17’ (Frankenstein 1963: 9). As it became known to the Foreign Office that the Hawaiian king and queen had arrived in England, the royal couple were assigned a guide, Frederick Byng, to accompany them around London. The royal couple also greeted him with an ‘ahu‘ula. This ‘ahu‘ula is today in the collection of the National Museum of Scotland. It was most recently on display in the gallery ‘Facing the Sea’ (2011-2019). In the cabinet, the ‘ahu‘ula is presented among artefacts from Easter Island, Fiji, New Zealand and Tonga. It is displayed along with the story of the Hawaiian royal couple under the headline ‘wrapped in feathers’. The story tells that ‘only people of the highest social rank could wear such cloaks’ and that the ‘ahu‘ula are ‘made from thousands of bundles of feathers attached to a fibre base’. These feathers ‘come from the tiny honeycreeper bird which is unique to the Hawaiian Islands’.[3] Although visitors get a hint of the birds whose feathers make up the object before them, they remain unidentified by names and their status in nature is unrecognized. The National Museum of Scotland has deliberately decided to separate their biological collections from the cultural ones (Guasco 2021: 1058), although their Pacific collections contain by-products from plants and animals that could diversify their stories about extinction in the ‘Survival Gallery’. The Museum has two ‘ahu‘ula in its collection, which it rotates regularly to prevent damage to the light-sensitive feathers (figure 1).[4]

As the royal couple were waiting to meet King George IV to discuss their desire to place the islands under the protection of Great Britain, they visited not only the theatre and the opera but also the Royal Military Asylum, an orphanage for children of military parents. It is assumed that the couple and their entourage contracted measles from this visit, ‘a fairly innocuous disease of childhood among Europeans, but a serious business for Pacific Islanders in whose homeland it was unknown’ (Frankenstein 1963: 14). The scheduled audience with George IV was cancelled and within a month both King Kamehameha II and Kamamalu died from the disease. The remaining entourage were invited to meet George IV at Windsor Castle. On this occasion, the king was presented with at least eight ‘ahu‘ula, six of which remain in the Royal Trust Collection that looks after the Royal Collection.[5] These six ‘ahu‘ula, two cloaks and four capes, were afterwards displayed in King George IV’s Armoury at Carlton House, a collection that filled the walls and ceilings of five rooms with over three thousand military weapons and uniforms from around the world (Peat 2019: 240). One of the ‘ahu‘ula has most recently been displayed in the exhibition ‘George IV: Art & Spectacle’ at the Queen’s Gallery (2020), an exhibition presenting George IV’s life through his renowned art collection.[6] Among swords, pistols, parade breastplate, and rifles, the ‘ahu‘ula is recognized for its function to protect the sacred bodies of the ruling Hawaiian ali‘i in a time of warfare, even though the protective status of the feathers is not mentioned in the exhibition.

Figure 1.

Another ʻahuʻula that can be associated with the visit of the royal couple to England is at the Field Museum in Chicago. It is unknown how the item came into the museum's collection, but it was also gifted to George IV by the entourage. The ʻahuʻula is registered in the division of birds in the zoology collection rather than in an anthropological collection. This is an example where the material of the ʻahuʻula has played a role in how the object has been categorized. The text accompanying the object reads: ʻiʻiwi feathers were a hot commodity for Hawaiian *aliʻi* (nobility). Thousands of them would be used to create *ʻahuʻula* (feathered capes) like this one from the Field Museum Collections. These items were rare and symbolized power and prestige.'[7]

As has become evident, the ʻahuʻula were gifted to rulers, shipowners, prominent people and others who accompanied the couple on their trip to and around England. The ʻahuʻula have shifted hands many times before they ended up within different museum collections, and even then, traded between different museums. They were traded for their significance and the rarity of the birds (König as quoted in Kaeppler 2010), whose feathers were used to

make the ʻahuʻula and protect the aliʻi, but rarely does the extinct status of the birds appear on exhibition labels. Since the feathers are what drive the narratives inside these museums, it would be possible, and perhaps necessary, to make more prominent the birds themselves.

Birds Brought Back to Europe

When the deceased bodies of the Hawaiian royal couple were transported back to Hawai'i in 1825 (Kaeppler 1978), Andrew Bloxam, a naturalist, joined them on this voyage. He acquired three living Oʻahu ʻōʻō from native Hawaiians and took them on the ship back to England. This was only a decade before the species was last sighted. The birds were rare to see and expensive to acquire. He explains in his diary:

> 'They [the ʻōʻō birds] are now very scarce in all the islands. I did not see even one on the different excursions I made, & the natives asked a high price for the very few they brought to me & almost the whole of these were destitute of feathers. I preserved only one tolerable specimen the whole time I was upon the islands – & even from that some of the yellow feathers had been plucked out' (Bloxam as quoted in Hume 2017: 286).

This specimen is one of eight specimens of the Oʻahu ʻōʻō to exist in the world.[8] It is now in the collection of the Natural History Museum at Tring in the UK.

Another mounted Oʻahu ʻōʻō is on display in the 'Room of Endangered and Extinct Species' at the Muséum National d'histoire Naturelle in Paris. The museum tells the extinction story of the ʻōʻō birds by including the Hawaiian feather work tradition. The display label reads: 'Four species of moho once inhabited Hawai'i, each endemic to the large islands of the archipelago. The natives captured the mohos to decorate ceremonial clothes with their yellow feathers. Deforestation has also played an important role in these extinctions' ['Quatre espèces de moho habitaient autrefois Hawai'i, chacune endémique de l'une des grandes îles de l'archipel. Les indigènes capturaient les mohos pour orner de leurs plumes jaunes des vêtements de cérémonie. Mais la déforestation a également joué un rôle important dans ces extinctions…'] The Hawaiian feather work tradition is included in this extinction narrative but without any further details and description of what role birds played in Hawaiian cosmology or what the Hawaiian bird-catching tradition entailed. Nor does it describe how this tradition changed when the birds were not only caught but shot. Their extinction therefore must be seen in relation to European contact that brought both firearms, invasive species and avian diseases into the islands.

The museums could position themselves more critically towards the influence the arrival of Europeans had on the extinction of avifauna in Hawai'i. They could also contrast the mounting of tropical birds and their entry into their collection to the original Hawaiian bird-catching tradition. As Emerson points out,

> the days of the bird-catchers of ancient Hawai'i are over. Their place has been taken by those who know not Ku-huluhulumanu [the god of kia manu and feather workers] and the other gods of the craft. In their hands, instead of the snare and the pole, with its gum, its flowers and decoy, there is the deadly shot-gun (Emerson 1895: 111).

With the disappearance of the bird-catching tradition an intimate relationship and knowledge about the birds and their habitats simultaneously disappeared.

The Bishop Museum: Continuation Despite Extinction

The previous two sections dealt with the acquisition and display of ʻahuʻula and ʻōʻō birds in Europe. In the next section, I turn to the Bishop Museum in Honolulu to understand how the ʻahuʻula and the birds related to them are displayed in Hawai'i today.

I alight the bus after I hear Bishop Museum announced. I walk a few blocks in the historic Kalihi district before I stand in front of the entrance. I learned from Noelle Kahanu's 'A Bishop Museum Love Story' (2019a: 165) that 'you have to want to find this place' far from

the tourist radar of Waikīkī Beach in Honolulu. Yet the Bishop Museum has been on my radar for years and I am excited to finally step foot inside the museum. I pass through the entrance building out onto the Great Lawn. The Bishop Museum was established in 1889 at Kaiwi'ula (an ancient battleground). It was built in memory of the last descendant of the Kamehameha dynasty, Princess Bernice Pauahi Bishop, and houses the world's largest collection of Hawaiian feather work. The Hawaiian Hall and the Pacific Hall are still to be found inside the original building, but the museum has expanded and now also comprises the Richard T. Mamiya Science Adventure Center, Nā Ulu Kaiwi'ula Hawaiian Garden, and Castle Memorial Building. Today, it is Hawai'i*'s* State Museum of Natural and Cultural History.

The Hawaiian Hall was restored in close collaboration with the community in 2009. It was, according to Noelle Kahanu (2019a: 168), 'a long overdue project … ending practices such as speaking *about* Hawaiians rather than *with* them'. The mele oli welcoming the visitor into the Hawaiian Hall highlights this:

> …'Pulu pē iho i ka lā'au
>
> Lā'au kupu mālamalama
>
> Ka lamakū e ulu a'e nei
>
> I ka malu kukui kaiwi'ula' …
>
> … 'Nurtured are the people
>
> The carriers of culture
>
> Passion sparks the seed of life
>
> Sheltered by this House'…[9]

The Hawaiian Hall displays the history and culture of Hawai'i through different realms on three floors: on the first floor is *Kai Ākea* (the wide expanse of the sea), on the second floor *Wao Kanaka* (a lowland region where people live) and on the third floor *Wao Lani* (a distant mountain region inhabited by the gods).[10] Even though the Hawaiian Hall has been divided into these three realms, it is primarily to show how they are related and connected. 'All are founded upon interconnection, upon the belief that all living things are related – from the gods, chiefs and people to the land and ocean; from the insects and birds to the sea creatures, plants and animals.'[11]

This interconnectivity is also apparent in the display of Hawaiian feather work on the ground floor. In a glass cabinet is an 'ahu'ula displayed next to a woodcarving replica of two Hawai'i 'ō'ō birds and pā'a (bundles) of 'ō'ō feathers under the headline 'Ano Lani, 'Ano Honua (a Heavenly Nature, an Earthly Nature)' (figure 2). The 'ō'ō bird is associated with the god Kū who sometimes manifested himself as the bird (Valeri 1985: 12). The ali'i are connected to the gods as their closest descendants on earth. The feathers of the 'ō'ō birds belonged to them. Kia Manu (bird catchers) would venture into Wao Lani (the distant mountain region inhabited by the gods) to capture the birds and present their feathers to the ruling ali'i as an offering to the gods. When weaved together into an 'ahu'ula the ali'i's godly connection became visible. In this display of a Hawaiian feather cape, a 'heavenly nature' is connected to an 'earthly nature'.

I move up to the third floor, where I encounter the 'ahu'ula associated with the ali'i from the Kamehameha dynasty. The 'ahu'ula embody the mana (authority and power) of the ali'i, which puts the visitor in close contact with the heavenly. Kamehameha I's 'ahu'ula, primarily made of feathers from the mamo bird, is labelled as '… made almost entirely out of the rare yellow feathers of the mamo bird, over 60,000 birds yielded six to eight feathers each to comprise the half million yellow feathers needed for this cloak …'.[12] This number immediately gives a sense of the magnitude of an *'*ahu'ula, which represents not merely one

Figure 2.

or a few birds, but thousands of birds. The display label further describes from which birds the feathers originate: ''ahu'ula, feather cape, feathers of mamo (*Drepanis pacifica*) and 'i'iwi (*Vestiaria coccinea*), netting of olonā (*Touchardia latifolia*) fibre' along with a historic drawing of two mamo birds by F.W. Frohawk from 1891. By illustrating the birds and specifying their names, the display effectively draws attention to the once-living sources of the 'ahu'ula. It connects the feather material to the birds that previously inhabited the Hawaiian Islands.

As I work my way through the three floors in the Hawaiian Hall, I am surprised to find no mention of the endangerment and extinction of these culturally important birds. I ask Cultural Resource Specialist, Kamalu du Preez, and Cultural Advisor, Marques Marzan, about this when we meet the following day. They work at the Bishop Museum and are both Native Hawaiian cultural practitioners. Through our conversation, it becomes apparent that extinction was not a focal point for much of the interpretation because the exhibition focuses on what Native Hawaiian people had at the time that the Hawaiian Hall was refurbished in the 2000s, which was not an extinction crisis but an abundance in cultural biodiversity. Their focus is not so much on what is lost, but more on creating the conditions that ensure the survival of what remains and enabling the return of what has been lost. 'Native Hawaiians didn't lament the loss of extinction', Kamalu du Preez explains, because extinction was not possible 'when people lived in balance as part of the world'. Du Preez instead mentions the Hawaiian concept of ho'i, which means 'to return again' or 'come back'. Instead of focusing on what has been lost, it is more essential to pass on ancestral knowledge and make it relevant to people today. 'As long as there is memory of it, it is never lost', Marques Marzan continues. Even if the 'ahu'ula is made of different materials and no longer serves the same function in society, what is maintained is the knowledge of how to make it.

In addition, Marzan asks whether we can be sure that something is indeed extinct, 'just because we cannot see it doesn't mean that it doesn't exist',[13] a question that Dolly Jørgensen has also raised in her investigation of how the 'presence of an absence' over time becomes the 'absence of presence' (Jørgensen 2017b). That the birds are no longer visible doesn't necessarily mean that they are extinct. Audra Mitchell (2020: 914) has pointed out that extinction is often framed as 'unintended, indirect, or unwitting disruptions of "natural processes"' in Western scientific theories of extinction, which makes extinction something passive, without agency. It overlooks indigenous stories of how more-than-humans can refuse to participate 'in processes that harm them, their communities, and their continuities' (Mitchell 2020: 917). In those situations, they can withdraw but also return when the relationship is restored. Here extinction is not an absolute closure, because their spirits live on through stories about them even though their physical bodies are gone.

After visiting the Hawaiian Hall, I go on to visit the Science Adventure Center. Here extinction is very present. The display case on 'Forest Birds of *Hawai*'*i*' is divided into three clear distinct categories: present, past, and future (figure 3). In the 'past' category, there is a picture of the O'ahu 'ō'ō since the species has not been seen since 1837. The present birds are all bird specimens of introduced forest birds as there are now more non-native avian species in Hawaii than native species.[14] None of the extinct native forest birds are on display. According to Molly Hagemann, the vertebrate zoology collections manager at Bishop Museum, the specimens of extinct species are old and rare and cannot be on display for long periods of time.[15] Instead they display realistic woodcarvings of endangered bird species (also seen in the Hawaiian Hall). The ones on display here are carved by the Japanese artist Haruo Uchiyama. The woodcarving of the birds allows for more tangible encounters with both living and extinct forest birds that can serve as an educational tool for the museum to create awareness about bird conservation. The art of woodcarving draws back the forms of the missing birds but without their precious feathers. The only organic remains of the extinct forest birds on display are therefore Hawaiian feather work in the public areas, but many more examples of these remains are preserved in the storage areas of both the Ethnology and Vertebrate Zoology collections.

Figure 3.

Scientific knowledge and Hawaiian cosmological understandings of origins are in tension in the Science Adventure Center. Hawaiian cosmology is incorporated in the 'Upper and Lower Tunnel of Hawaiian Origins', a collaboration between zoologist Samuel M. 'Ohukani'ōhi'a Gon III; Kahikūkalā Hoe, Keliko Hoe and students of Hakipu'u Learning Center; and Hinaleimoana Wong and students of Hālau Lōkahi, but it is otherwise not worked into the science exhibitions. One temporary exhibition that did do this was Lele O Nā Manu: Hawaiian Forest Birds, displayed at the Bishop Museum in 2016. Lele O Nā Manu displayed 'the diverse natural history of endemic Hawaiian forest birds' along with 'their preeminence in traditional Hawaiian culture'.16 The Bishop Museum has further created educational resources under the title 'Wings: Birds & Feathers of Hawai'i' as part of their online learning centre.17 They combine materials about Hawaiian feather work tradition as well as the science of the Hawaiian forest birds. The educational resources connect Hawaiian feather work with both the birds and their threatened status. The Bishop Museum has in the past also organized 'Living Culture Workshops' where visitors learned how to make feather kahili.18

To learn more about contemporary Hawaiian feather work today, I visited Mele Kahalepuna Chun, a third-generation cultural practitioner of Hawaiian feather work in her workshop Na Lima Mili Hulu No'eau. She learned feather work from her grandmother and now carries on the tradition by teaching it to anyone who would like to learn it (including people outside Hawai'i). She sees it as her kuleana (responsibility). The feather work employs traditional techniques, but the art form has been modified accordingly to a changing society. The feathers are no longer hand-plucked by bird catchers but ordered from the US mainland. They do not originate from Hawaiian native forest birds, but from geese whose feathers have been dyed to imitate the bright colours of the endemic forest birds. Watching her cut the fabric and feathers, make the patterns, and stitch the feathers onto it, it is evident that the Hawaiian feather work tradition remains very much alive.[19]

Displaying Extinction through Biocultural Artefacts

Hawaiians had a meaningful connection to the endemic forest birds, which obtained a spiritual significance in Hawaiian cosmology. They were caught by kia manu (bird catchers) who either plucked or killed them for their feathers as an offering to the gods. Some feathers were finely netted together into an 'ahu'ula (cloaks or capes) to visualize the ruling ali'i's (chief) connection to the gods. These feathered objects are preserved in different museums today. One 'ahu'ula consists of millions of feathers from thousands of birds. They offer an insight into the interconnectivity Hawaiians felt with all living things. But the 'ahu'ula has also acquired a new meaning as its feather material is the only thing that remains of some Hawaiian forest bird species today. The 'ahu'ula is therefore an example of a biocultural artefact through which museums can engage with a present extinction crisis. This is important for two reasons: 1) To reveal different anthropocentric relationships to lost biodiversity than the one presented inside natural history museums; 2) To challenge our perception of extinction and how to restore relationships with what is lost.

Yet extinction is rarely mentioned in connection with the 'ahu'ula inside museums today. One reason is the tendency inside Western museums to distinguish between cultural and natural artefacts. In a European context, the 'ahu'ula is recognized for its cultural significance, and even though the rarity of the forest birds made them valuable trading objects, the display of them today does not connect the 'ahu'ula to the birds. Another reason could be that when extinction pertains to science, it can be challenging to blend extinction with cosmological understandings of origin. This might explain why extinction is not mentioned alongside the 'ahu'ula in the Hawaiian Hall, even though here the birds are both specified by names and represented in drawings and woodcarvings. This means that to learn about the present ecological situation of the Hawaiian forest birds, one needs to visit the Science Adventure Center at the Bishop Museum, or, in the case of Europe, a natural history museum where 'ō'ō birds are occasionally on display. What is problematic about this is that extinction is only presented from a scientific point of view. As both Kamalu du Preez and Marques Marzan explain, extinction means gone forever, but in Hawai'i, there is a belief that something lost can return. Telling extinction stories through biocultural artefacts is therefore not a question

of simply incorporating Western scientific understandings of extinction into the display, but of understanding how biodiversity and cultural diversity are intertwined.

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Endnotes

1 The act of 'freely gifting' will not be discussed in this article. See instead Kahanu 2019b.

2 Dr Oliver Lueb, Deputy Director and Curator of Oceania, Rautenstrauch-Joest Museum, personal communication, 17 November 2020.

3 Quote from the display label 'wrapped in feathers' in the Facing the Sea gallery at the National Museum of Scotland.

4 Dr Ali Clark, senior curator of Oceania and the Americas, National Museum of Scotland, personal communication, 16 November 2020.

5 Six in the Royal Trust Collection (RCIN 69990, 69991, 69992, 69993, 69994, 69995), one at the National Museum of Scotland (A.1948.274) and one at the Chicago Field Museum.

6 The exhibition *George IV: Art & Spectacle* can be viewed as a virtual exhibition. https://www.rct.uk/collection/themes/exhibitions/george-iv-art-spectacle/the-queens-gallery-buckingham-palace/view-the-exhibition, accessed 5 January 2021.

7 The Field Museum, ''Ahu'ula Feathered Cape from Hawaii'. https://birds.fieldmuseum.org/media-gallery/detail/376/1271, accessed 13 November 2020.

8 The Natural History Museum, 'VEL.26.19a'. https://data.nhm.ac.uk/dataset/56e711e6-c847-4f99-915a-6894bb5c5dea/resource/05ff2255-c38a-40c9-b657-4ccb55ab2feb/record/3931289, accessed 9 March 2021.

9 Quote from the mele oli 'welina (welcome)', composed in March 2009 by Bishop Museum staff members Marques Marzan, Aaron Ho, Rona Rodenhurst, and Kealoha Kelekolio. The two parts are not equivalent. My focus is on the intention put forward in the English version.

10 From the exhibition text 'Nā Wao no ka Poʻe Hawai'i (the realms of the Hawaiian people)' in the Hawaiian Hall at the Bishop Museum.

11 Quote from the display label 'I Ka Wā Mamua (In the Time Before)' in the Hawaiian Hall at the Bishop Museum.

12 Quote from the display label 'Mamo Cloak of Ke Ali'i Lani' in the Hawaiian Hall at the Bishop Museum.

[13] Kamalu du Preez, Cultural Resource Specialist, and Marques Marzan, Cultural Advisor, Bishop Museum, interview by author, 25 January 2022, Honolulu, Bishop Museum.

[14] From display label 'Extinction: Losing a Legacy' in the Science Adventure Center at the Bishop Museum.

[15] Molly Hagemann, Vertebrate Zoology Collections Manager, Bishop Museum, personal communication, 11 November 2020.

[16] The Journal of Bernice Pauahi Bishop Museum, '*Lele O Nā Manu: Hawaiian Forest Birds', 2016.* https://www.bishopmuseum.org/wp-content/uploads/2019/09/2016-1-SPRING-Ka-Elele.pdf*, accessed 7 February 2021.*

[17] The Bernice Pauahi Bishop Museum, 'Wings: Birds & Feathers of Hawai'i', 2016. https://www.bishopmuseum.org/online-learning-center/wings/#culture, accessed 10 November 2020.

[18] The Bernice Pauahi Bishop Museum, 'Living Culture Workshop: Kāhili Pa'a Lima (Hand-held Kāhili)', 2019. https://www.bishopmuseum.org/calendar/living-culture-workshop-kahili-pa%CA%BBa-lima-hand-held-kahili/, accessed 8 March 2021.

[19] Mele Kahalepuna Chun, third-generation cultural practitioner of Hawaiian feather work, interview by author, 2 February 2022, Honolulu, Na Lima Mili Hulu No'eau.

References

Alves, R.R.N. and Albuquerque, U.P. (2017) *Ethnozoology: Animals in Our Lives*, London: Elsevier Science & Technology.

Amante-Helweg, V.L.U. and Conant, S. (2009) 'Hawaiian Culture and Forest Birds', in Thane K. Pratt, Carter T. Atkinson, Paul C. Banko, James D. Jacobi and Bethany L. Woodworth (eds) *Conservation Biology of Hawaiian Forest Birds: Implications for Island Avifauna*, 59-79, New Haven: Yale University Press.

Ashby, J and Machin, R (2021) 'Legacies of Colonial Violence in Natural History Collections', *Journal of Natural Science Collections*, 8 44-54.

Athens, J., Rieth, T. and Dye, T. (2014) 'Paleoenvironmental and Archaeological Model-Based Age Estimate for the Colonization of Hawai'i', *American Antiquity*, 79 (1) 144-55.

Beckwith, M. (1970) *Hawaiian Mythology*, New Haven: Yale University Press.

Bezan, S. (2019) '*The Endling Taxidermy of Lonesome George: Iconographies of Extinction at the End of the Line', Configurations, 27 (2) 211-38.*

Brigham, W. T. (1899 [1974]) 'Hawaiian Feather Work', in Bishop Museum Press (ed) *Memoirs of the Bernice Pauahi Bishop Museum of Polynesian Ethnology and Natural History Vol. I*, New York: Kraus Reprint Co.

Cameron, R. and Neilson, B. (2015) *Climate Change and Museum Futures*, New York & London: Routledge.

Emerson, N.B. (1895) 'The Bird-hunters of Ancient Hawaii', in Thomas G. Thrum (ed) *Hawaiian Almanac and Annual for 1895*, 101-11, Honolulu: Black & Auld Printers.

Engelhard, J. and Schneider, K. (2010) *People in Their Worlds: The New Rautenstrauch-Joest Museum Cultures of the World*, Cologne: Wienand Verlag.

Frankenstein, A. (1963) 'The Royal Visitors', *Oregon Historical Quarterly*, 64 (1) 4-32.

Gilbert, D. L. (2022) 'Possessing Natural Worlds: Life and Death in Biocultural Collections', *Locus*, 5 (10) https://locus.ou.nl/locus-dossier-doorwerkingen-van-natuurhistorische-kolonialiteit/possessing-natural-worlds-danielle-l-gilbert/

Gomes, N. (2016) 'Some Traditional Native Hawaiian Bird Hunting Practices on Hawai'i Island', *The Hawaiian Journal of History*, 50 33-51.

Gonschor, L. (2019) *A Power in the World: The Hawaiian Kingdom in Oceania*, Honolulu: University of Hawai'i Press.

Gordon-Walker, C. (2019) 'Unsettling Nature, Culture and History: Layers of Meaning and Conversation at the Royal BC Museum', *Museum & Society*, 17 (2) 248-60.

Guasco, A. (2021) '"As Dead as a Dodo": Extinction Narratives and Multispecies Justice in the Museum', *Environment and Planning E: Nature and Space*, 4 (3) 1055-76.

Hume J.P. (2017) *Extinct Birds*, second edition, London & New York: Bloomsbury.

Janes, R.R. (2009) *Museums in a Troubled World: Renewal, Irrelevance or Collapse?*, New York: Routledge.

Jørgensen, D. (2017a) 'Endling, the Power of the Last in an Extinction-prone World', *Environmental Philosophy*, 14 (1) 119-38.

(2017b) 'Presence of Absence, Absence of Presence, and Extinction Narratives', in Lesley Head, Katarina Saltzman, Gunhild Setten, and Marie Stensek (eds) *Nature, Temporality and Environmental Management*, 45-58, London: Routledge.

(2021) 'Erasing the Extinct: The Hunt for the Caribbean Monk Seals and Museum Collection Practices', *História, Ciências, Saúde-Manguinhos*, 28 161-83.

Kaeppler A.L. (1978) 'L'Aigle and HMS Blonde: The Use of History in the Study of Ethnography', *The Hawaiian Journal of History*, 12 28-44.

(2010) *Hawaiian Featherwork Catalogue Raisonné of pre-1900 Feathered-God Images, Cloaks, Capes, Helmets*, Willem de Rooij and Benjamin Meyer-Krahmer (eds) Berlin: Nationalgalerie Staatliche Museen zu Berlin.

Kahanu, N.M.K.Y. (2019a) 'Ka Hale Ho'ike'ike a Pihopa: A Bishop Museum Love Story', in Hokulani K. Aikau and Vernadette Vicuña Gonzalez (eds) *Detour: A Decolonial Guide to* Hawai'i*, 164-73, Durham: Duke University Press.*

(2019b) 'Evidencing Encounters and (Re)imagining Relations', in Peter Brunt and Nicholas Thomas (eds) *Oceania*, 64-71, London: The Royal Academy of Arts.

Kuykendall, R. (1938) *The Hawaiian Kingdom 1778-1854: Foundation and Transformation vol. 1*, Honolulu: The University of Hawai'i.

Maffi, L. (2010) 'What is Biocultural Diversity?', in Luisa Maffi and Ellen Woodley (eds) *Biocultural Diversity Conservation: A Global Source*, 3-11, London & New York: Earthscan.

Malo D. (1903) *Hawaiian Antiquities (Moolelo Hawaii)*, Honolulu: Hawaiian Gazette Co.

Marzan, M.H. and ʻOhukani'ōhi'a *Gon III, S.M. (2015) 'The Aesthetics, Materials and Construction of Hawaiian Featherwork', in Leah Caldeira, Christina Hellmich, Adrienne L. Kaeppler, Betty Lou Kam and Roger G. Rose (eds) Royal Hawaiian Featherwork (Na Hulu Aliʻi)*, 26-37, Honolulu: University of Hawai'i Press.

Mitchell, A (2020) 'Revitalizing Laws, (Re)-making Treaties, Dismantling Violence: Indigenous Resurgence Against "The Sixth Mass Extinction"', *Social & Cultural Geography*, 21 (7) 909-24.

Newell J., Robin, L. and Wehner, K. (2017) *Curating the Future: Museums, Communities and Climate Change*, New York and London: Routledge.

O'Bryan, C.J. *et al*. (2020) 'The Importance of Indigenous Peoples' Lands for the Conservation of Terrestrial Mammals', *Conservation Biology*, 35 (3) 1-7.

O'Key, D. (2020) 'Why Look at Taxidermy Animals? Exhibiting, Curating and Mourning the Sixth Mass Extinction Event', *International Journal of Heritage Studies*, 27 (6) 635-53.

Peat, R. (2019) 'George IV and the Wider World', in Kate Heard and Kathryn Jones (eds) *George IV: Art & Spectacle*, 239-45, London: Royal Collection Trust.

Pérez, F.L. (2021) 'The Silent Forest: Impact of Bird Hunting by Prehistoric Polynesians on the Decline and Disappearance of Native Avifauna in Hawai'i', *Geographies*, *1* (3) 192-216.

Rangihīroa, T. (1944) 'The Local Evolution of Hawaiian Feather Capes and Cloaks', *The Journal of the Polynesian Society*, 53 (1) 1-16.

Rose, D.B., Van Dooren, T. and Chrulew, M. (2017) *Extinction Studies: Stories of Time, Death and Generations*, New York: Columbia University Press.

Salick, J., Konchar, K. and Nesbitt, M. (2014) *Curating Biocultural Collections: A Handbook*, Kew: Royal Botanic Gardens.

Valeri, V. (1985) *Kingship and Sacrifice: Ritual and Society in Ancient Hawaii,* Chicago and London: The University of Chicago Press.

Van Dooren, T. (2014) *Flight Ways: Life and Loss at the Edge of Extinction*, New York: Columbia University Press.

Vidal, F. and Dias, N. (2016) *Endangerment, Biodiversity and Culture*, London & New York: Routledge.

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Conclusion

There are many specimens inside western museums that testify to human-induced extinction, and it is reasonable to assume that in the near future many more species will only exist through traces found in museums. Museums should thus continue to play a crucial role in the preservation and display of extinction. After viewing a collection of shells from extinct snails at the Bishop Museum in Honolulu, Thom van Dooren remarked that 'a visit to these cabinets requires a great deal of imagination, more and more as the years go by, to think these creatures back into their worlds'.[168] I can relate to van Dooren's experience. I have also struggled to imagine the 'real animal' behind a static, motionless representation that imitates life, but which can never be equal to the once living and breathing creature. Within Extinction Studies, and especially as advocated by the Extinction Studies Working Group, there has been a demand for new and more lively stories about endangered species that show how the loss of a species is entangled in multispecies networks. Their storytelling is largely ethnographic and displays an openness to different human responses to endangered species. We see a similar approach to animal representations inside museums in how animal remains are connected to humans, other animals and the different contexts inhabited by animals in the course of their mortal and immortal lives. This is often characterised as a desire to bring the 'animal' out of its glass cabinet in relating the animal to the world beyond its museum context.

But after countless encounters with extinction, I have come to the view that we should resist the temptation to focus on the 'animal behind animal remains' and instead *train our attention on the humans*. This shift has the potential to reveal the complex interrelationships that humans continue to have with nature, interrelationships that have played such a

[168] T. van Dooren, *A World in a Shell*, 6.

major role in the massive biodiversity loss that we are witnessing today. The wealth of resources to which museums enjoy a privileged access makes them particularly suited to this task of illuminating these human-animal interrelationships. It is their greatest strength in contributing to public understandings of the crisis of mass extinction.

The founding of the museums has a long colonial history and their collections have often been referred to as 'empirical archives'—this is also the case with specimens from the natural world preserved inside natural history museums. There is an inherit power structure inbuilt in the museum that leads back to its origins of acquiring objects from countries over which western nations held colonial power. Indeed, the museum became a place where this unequal power dynamic was made visible to the public. This is still present through the historical objects held by museums in their collections, even though the objects disseminate very different stories than what was originally intended. Island specimens are often used inside museums to tell stories of extinction, especially the better-known specimens such as the dodo, the great auk and the thylacine. But they often mask the humans behind extinction; instead, the specimens are presented as rare, their evolutionary developments as unusual, and their extinctions as thereby expected. David Quammen even writes that 'Islands are where species go to die'.[169] Throughout history, islands have aroused the human imagination, albeit a stereotypical and romanticised one based on the idea that islands are remote and isolated places. The reality is rather different. Islands are anything but disconnected places. They are not microcosmos as is often described. They differ in size, shape, climate and culture, and they are made both in and against the image of their mainland counterparts. In addition to concentrating on human-animal interrelationships, I have therefore honed my attention on the complex

[169] D: Quammen, *The Song of the Dodo*, 258.

interrelationships that make islands particularly valuable sites for bringing new insights into the representation of extinction in museums.

The different approaches to extinction found within the humanities demonstrate that extinction is a cultural phenomenon influenced by the stories we tell and the species we centre our stories around. Scientific investigation of species extinction is also based on what species we have sufficient data about. But museum ethnography differs in one important respect in that the focus tends to be on a specific specimen (individual), rather than on a broader investigation of a species. This focus on specimens rather than species has been criticised for overlooking the fact that the extinction of a species is more than the loss of an individual. According to this criticism, there is a risk that the focus on an individual specimen will disregard everything that the species has been and could have been. I argue that museum specimens of extinction are no less able to tell this wider range of stories. By examining museum specimens of extinction, I have attempted to show that their life stories contain a multiplicity of narratives concerning their development, the different humans with whom they came into contact and the other species alongside which they coexisted. The stories told by specimens of extinct species are never singular—each has its own life story. By arguing that we should train our attention on the humans in the story, I am of course suggesting that these life stories intersect with a diversity of human stories that, when illuminated, make known interrelationships that have played a major role in the current extinction crisis.

My thesis presents a selection of four island animal species that are displayed in museums in considerably different ways, from the taxidermy body of the last of its kind, to bone remains collected centuries after the species was declared extinct, to how extinction is represented in cultural artefacts such as feather work. All these representations of an animal species influence the way in which we come to understand it and remember it. It is therefore important to pay attention to how these

different representations of island extinctions are presented to us inside museums.

My first research question was concerned with the *ways in which island narratives are embedded in material evidence of extinct animal remains*. Here I argued that animal remains never concern the animal solely, but also the history of its island. As the last of its kind, Solitario Jorge carries a cultural meaning that inspired his preservation and display. He is entangled in the narrative of the Galápagos Islands as a sacred site for science and a showcase of evolution. A similar narrative occurred with the ghostly presences of giant lizards on Culebra Island in Puerto Rico. The lizards were not preserved because of the meaning that they embodied; rather, the lizards were preserved because they were the only specimens able to confirm the existence of their species. They were re-connected to the islands to save the remaining 'virgin' patches of forest—an area too large to penetrate to confirm their complete extinction. In both cases, the animal remains were deployed to justify the preservation of a certain island natural environment that attempted to recapture the islands in a past (and never quite real) perception of them.

It became clear in the course of my research that stories of extinction are not always prominent in the display of island animal remains. The second research question concerned *the extent to which displays of island animal remains hide or elucidate stories of extinction*. The overrepresentation of specimens of island extinction inside museums indicates that the extinction crisis has occurred unevenly. In my first article, I therefore stress the importance of connecting extinction to the causes of disappearance. Where the Antillean rice rats on display in the Room of Endangered and Extinct Species do disseminate a story of extinction, it neglects to mention that the species' extinction was caused by the European colonisation of the islands. On the other hand, I argue through objects of Hawaiian feather work (consisting of feathers from extinct and endangered forest birds) that artefacts we have labelled as 'cultural' are

in fact *biocultural* and can elucidate new stories of extinction that challenge dominating western narratives of extinction.

The articles also investigate whether *museums can contribute to the decolonisation of islands through present and future engagements with animal remains*. Museums are today ethically obliged to engage environmental issues, since it is undeniable that they in some ways embody the very essence of the environmental crisis with which we and future generations are faced.[170] Fortunately, museums have shown on multiple occasions that they are capable of change. Museums should continue to use what they have—because it is all we have—but they should do so by making explicit the hidden stories of colonialism that are present even in the way they describe the geographical distribution of biodiversity loss. Museums should also consider whether there are other objects in their collections that could bring to light new stories of extinction, ones that challenge a western perception of extinction by making space for other voices in the display of their collections. This requires museums to see their natural artefacts as cultural and their cultural artefacts as natural. Through my studies on the representation of island extinction inside museums, it has become apparent that the representation of an extinct species extends far beyond the museum. The research has shown that a focus on individual specimens rather than species can reveal human attitudes towards animals that sit at the heart of the current extinction crisis, and that consequently have a rightful place at the centre of the stories of extinction displayed in museums.

[170] I. Gladstone and P. Pearl, 'Extinction Voices, Extinction Silences: Reflecting on a Decolonial Role for Natural History Exhibits in Promoting Thinking about Global Ecological Crisis, Using a Case Study from Bristol Museums', *Museum and Society* 20(1) (2022), 63.

Bibliography

Alberti, S.J.M.M. *The Afterlives of Animals: A Museum Menagerie*. Charlottesville and London: University of Virginia Press, 2011.

Alberti, S.J.M.M. 'Museum Nature'. In H.A. Curry, N. Jardine, J.A. Secord and C. Spary (eds), *Worlds of Natural History*, 348–63. Cambridge: Cambridge University Press, 2018.

Andrei, M.A. *Nature's Mirror: How Taxidermists Shaped America's Natural History Museums and Saved Endangered Species*. Chicago and London: The University of Chicago, 2020.

Appadurai, A. *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge: Cambridge University Press, 1986.

Ashby, J. 'The Political Platypus and Colonial Koala – Decolonising the Way We Talk about Australian Animals'. *Journal of Natural Sciences Collections* 9 (2021): 35–45.

Ashby, J. *Platypus Matters: The Extraordinary Story of Australian Mammals*. London: William Collins, 2022.

Ashby, J. and R. Machin. 'Legacies of Colonial Violence in Natural History Collections'. *Journal of Natural Science Collections* 8 (2021): 44–54.

Avery, M. *A Message from Martha: The Extinction of the Passenger Pigeon and Its Relevance Today.* London: Bloomsbury, 2014.

Baldacchino, G. (ed). *The Routledge International Handbook of Island Studies: A World of* Islands. New York: Routledge, 2018.

Baldacchino, G. 'The Lure of the Island: A Spatial Analysis of Power Relations'. *Journal of Marine and Island Culture* 1 (2020): 55–62.

Barnett, J.T. *Mourning in the Anthropocene*. Michigan: Michigan State University Press, 2022.

Barrow, M.V. *Nature's Ghosts: Confronting Extinction from the Age of Jefferson to the Age of Ecology*. Chicago and London: The University of Chicago Press, 2009.

Bastian, M. 'Whale Falls, Suspended Ground, and Extinction Never Known'. *Environmental Humanities* 12(2) (2020): 454–74.

Bennett, T. *The Birth of the Museum*. London: Routledge, 1995.

Benson, E. 'Animal Writes: Historiography, Disciplinarity, and the Animal Trace'. In Linda Kalof and Georgina M. Montgomery (eds), *Making Animal Meaning*, 3–16. Michigan: Michigan State University Press, 2011.

Bersaglio, B. and J. Margulies. 'Extinctionscapes: Spatializing the Commodification of Animal Lives and Afterlives in Conservation Landscape'. *Social & Cultural Geography* 23(1) (2022): 10–28.

Bertens, L.M.F. and A.M. Wilson, 'Wonder, Empire, science: The Quagga and Other Extinctions on Display at Naturalis'. *Museum & Society* 20(1) (2022): 33–49.

Bezan, S. 'The Endling Taxidermy of Lonesome George, The Last Pinta Island Tortoise'. *Configurations* 27(2) (2019): 227–32.

Bezan, S and R. McKay (eds). *Animal Remains*, 1–13. New York and London: Routledge, 2022.

Bienvenue, V. and N. Chare (eds). *Animals, Plants and Afterimages: The Art and Science of Representing Extinction*. New York and Oxford: Berghahn, 2022.

Bonnell, J. and S. Kheraj (eds). *Traces of the Animal Past: Methodological Challenges in Animal History*, 1–16. Calgary, Alberta: University of Calgary Press, 2022.

Brenna, B. 'The Frames of Specimens: Glass Cases in Bergen Museum Around 1900'. In Liv Emma Thorsen, Karen A. Rader and Adam Dodd (eds), *Animals on Display: The Creaturely in Museums, Zoos, and*

Natural History, 37–57. (University Park, Pennsylvania: Pennsylvania State University Press, 2013), 39.

Cameron, F.R. and B. Neilson (eds). *Climate Change and Museum Futures*. New York: Routledge, 2015.

Cameron, F.R. 'Posthuman Museum Practices'. In Rosi Braidotti and Maria Hlavajova (eds), *Posthuman Glossary*, 349–352. London and New York: Bloomsbury, 2018.

Ceballos, G., P.R. Ehrlich, A.D. Barnosky, A. García, R.M. Pringle and T.M. Palmer. 'Accelerated Modern Human-induced Species Losses: Entering the Sixth Mass Extinction'. *Science Advances* 1(5) (2015): 1–5.

Cooke, S.B., L.M. Dávalos, A.M. Mychajliw, S.T. Turvey and N.S. Upham. 'Anthropogenic Extinction Dominates Holocene Declines of West Indian Mammals'. *Annual Review of Ecology, Evolution, and Systematics* 48 (2017): 301–27.

Crosby, A. *Ecological Imperialism: The Biological Expansion of Europe 900-1900* (Cambridge: Cambridge University Press, 1986).

Darwin, C. *Journal of Researches into the Natural History and Geology of the Countries Visited during the Voyage of H.M.S Beagle round the World, under the Command of Capt. Fitz Roy, R.N.* London: John Murray, 1845.

Darwin, C. *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*. London: John Murray, 1859.

Das, S. and M. Lowe. 'Nature Read in Black and White: Decolonial Approaches to Natural History Collections'. *Journal of Natural Sciences Collections* 6 (2018): 4–14.

Dawson, A. *Extinction: A Radical History*. New York and London: OR Books, 2022.

Dehler, G.J. *The Most Defiant Devil: Willian Temple Hornaday & his Controversial Crusade to Save American Wildlife*. Charlottesville and London: University of Virginia Press, 2013.

DeLoughrey, E., J. Didur and A. Carrigan. 'Introduction: A Postcolonial Environmental Humanities'. In Elizabeth DeLoughrey, Jill Didur and Anthony Carrigan (eds). *Global Ecologies and the Environmental Humanities: Postcolonial Approaches*, 1-32. New York and London, Routledge, 2015.

Gillis, J. R. 'Not Continents in Miniature: Islands as Ecotones'. *Island Studies Journal* 9(1) (2014): 155–66.

Gladstone, I. and P. Pearl. 'Extinction Voices, Extinction Silences: Reflecting on a Decolonial Role for Natural History Exhibits in Promoting Thinking about Global Ecological Crisis, Using a Case Study from Bristol Museums'. *Museum and Society* 20(1) (2022): 50–70.

Global Islands Network. 'Global Island Database', *GIN*, May 2010, http://www.globalislands.net/about/gid_functions.php (accessed November 16, 2023).

Grancher, R. 'Hybrid Islands: Some Reflection on the Intersection between Island Studies and Environmental History'. *Coastal Studies & Society* 2(2) (2023): 155–70.

Grove, R. *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origin of Environmentalism, 1600-1860*. Cambridge and New York: Cambridge University Press, 1995.

Grydehøj, A. 'A Future of Island Studies'. *Island Studies Journal* 12(1) (2017): 3–16.

Guasco, A. '"As Dead as a Dodo": Extinction Narratives and Multispecies Justice in the Museum'. *Environment and Planning E: Nature and Space* 4(3) (2021): 1055–76.

Haraway, D. 'Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York, 1908-1936'. *Social Text* 11 (1984): 20–64.

Hau'Ofa, E. 'Our Sea of Islands'. In Eric Waddell, Vijay Naidu and Epeli Hau'Ofa (eds), *A New Oceania: Rediscovering Our Sea of Islands*, 2–16. Suva, Fiji: Beake House, 1993.

Hay, P. 'What the Sea Portends: A Reconderation of Contested Island Tropes'. *Island Studies Journal* 16(2) (2013): 3–17.

Hayward, P. 'Aquapelagoes and Aquapelagic Assemblages: Towards an Integrated Study of Island Societies and Marine Environments'. *Shima: The International Journal of Research in Island Cultures* 6(1) (2012): 1–11.

Heise, U.K. *Imagining Extinction: The Cultural Meanings of Endangered Species*. Chicago and London: University of Chicago Press, 2016.

Henare, A., M. Hobraad and S. Wastell (eds) *Thinking through Things: Theorising Artefacts Ethnographically.* London: Routledge, 2006.

Hennessy, E. *On the Back of Tortoises: Darwin, the Galágos, and the Fate of an Evolutionary Eden* (New Haven and London: Yale University Press, 2019).

Hofmann, R. and U. Lübken. 'Shrinking, sinking, resurfacing: Small Islands and Natural Hazards in Historical and Current perspective'. *Global Environment Journal* (2015): 4-15.

Huggan, G. and H. Tiffin. *Postcolonial Ecocriticism: Literature, Animals, Environment*. London and New York: Routledge, 2015.

Hulme, M. 'Why We *Should* Disagree about Climate Change'. In Fiona R. Cameron and Brett Nielson (eds), *Climate Change and Museum Futures*, 9–15. New York: Routledge, 2015.

E.S. Brondizio, J. Settele, S. Díaz and H.T. Ngo (eds). *IPBES Summary for Policymakers of the Global Assessment Report on Biodiversity and*

Ecosystem of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Service. Bonn: IPBES Secretariat, 2019.

Janet, R.R. *Museums in a Troubled World: Renewal, Irrelevance or Collapse?* London and New York: Routledge, 2009.

Jones, T.R. *Empire of Extinction: Russians and the North Pacific's Strange Beasts of the Sea, 1741-1867.* Oxford and New York: Oxford University Press, 2014.

Jørgensen, D. 'Presence of Absence, Absence of Presence, and Extinction Narratives'. In Lesley Head, Katarina Saltzman, Gunhild Setten, and Marie Stensek (eds), *Nature, Temporality and Environmental Management*, 45–58. London: Routledge, 2016.

Jørgensen, D. 'Endling, the Power of the Last in an Extinction-prone World'. *Environmental Philosophy* 14 (1) (2017): 119–38.

Jørgensen, D. 'After None: Memorialising Animal Species Extinction through Monuments'. In Nancy Cushing and Jodi Frawley (eds), *Animal Count: How Population Size Matters in Animal-Human Relations*, 183–19. London: Routledge, 2018.

Jørgensen, D. 'Erasing the Extinct: The Hunt for Caribbean Monk Seal and Museum Collection Practices'. *História, Ciências, Saúde – Manguinhos* 28 (2021): 161-83.

Jørgensen, D. 'Extinction and the End of Futures'. *History and Theory* 61(2) (2022): 209–218.

Jørgensen, D., L. Robin and M.-T. Fojuth. 'Slowing Time in the Museum in a Period of Rapid Extinction'. *Museum and Society* 20(1) (2022): 1–12.

Kaeppler, L. *Hawaiian Featherwork Catalogue Raisonné of pre-1900 Feathered-God Images, Cloaks, Capes, Helmets,* Willem de Rooij and Benjamin Meyer-Krahner (eds). Beerlin: Nationalgalerie Staatliche Museen zu Berlin, 2010.

Kaiser, K. 'Duplicate Networks: The Berlin Botanical Institutions as a "Clearing House" for Colonial Plant Material, 1891-1920', *The British Journal for History of Science* 55(3) (2022): 1–18.

Keir, G., H. Kraft, T.M. Lee, W. Jetz, P.L. Ibisch, C. Nowicki, J. Mutke and W. Barthlott. 'A Global Assessment of Endemism and Species Richness across Island and Mainland Regions'. *PNAS* 106(23) (2009): 9322–7.

Kitchener, A.C. 'On the External Appearance of the Dodo, *Raphus cucullatus* (L., 1750)'. *Archives of Natural History* 20(2) (1993): 279–301.

Langston, N. *Climate Ghosts: Migratory Species in the Anthropocene*. Waltham, Massachusetts: Brandeis University Press, 2021.

Lin, M. 'About the Project', *What is Missing*, https://www.whatismissing.org/about (accessed December 5, 2023).

Lucas, J.S. 'Reconstructing a Dodo'. *Breakthrough Magazine* 86 (2007): 82–87.

Mackenzie, J.M. *Museums and Empire: Natural History, Human Cultures and Colonial Identities*. Manchester: Manchester University Press, 2009.

Marstine, J. *New Museum Theory and Practice: An Introduction*. Oxford: Blackwell Publishing, 2006.

McCall, G. 'Nissology: A Proposal for Consideration'. *Journal of the Pacific Society* 17(1-2) (1994): 1–14.

McCorristine, S. and W.M. Adams. 'Ghost species: spectral geographies of biodiversity conservation'. *Cultural Geographies* 27(1) (2020): 101–15.

McNeill, J.R. 'Of Rats and Men: A Synoptic Environmental History of the Island Pacific'. *Journal of World History* 5(2) (1994): 299–349.

Middleton, J. 'The Harrison Collection: Addressing Colonialism in the Collections of a Victorian Big Game Hunter'. *Journal of Natural Science Collections* 9 (2021): 29–34.

Mitchell, A. 'Beyond Biodiversity and Species: Problematizing Extinction'. *Theory, Culture & Society* 33(5) (2015): 23–42.

Mitchell, A. 'Revitalizing laws, (Re)-making Treaties, Dismantling Violence: Indigenous Resugence Against "the Sixth Mass Extinction"'. *Social & Cultural Geography* 21(7) (2018): 909-24.

Nadarajah, Y. and A. Grydehøj. 'Island Studies as a Decolonial Project (Guest Editorial Introduction)'. *Island Studies Journal* 11(2) (2016): 437–446.

Neyrat, F. 'Ghosts of Extinction: An Essay in Spectral Ecopolitics'. *The Oxford Literary Review* 41(1) (2019): 88–106.

Newell, J., L. Robin and K. Wehner (eds). *Curating the Future: Museums, Communities and Climate Change*. New York: Routledge, 2017.

Nicholls, H. *Lonesome George: The Life and Loves of a Conservation Icon*. Hampshire and New York: Macmillan, 2006.

Nimführ, S. and G. N. Meloni. 'Decolonial thinking: A Critical Perspective on Positionality and Representations in Island Studies'. *Island Studies Journal* 16(2) (2021): 3–17.

O'Key, D. 'Why Look at Taxidermy Animals? Exhibiting, Curating and Mourning the Sixth Mass Extinction Event'. *International Journal of Heritage Studies*, 27 (6) (2020): 635–53.

O'Key, D. 'Extinction in Public: Thinking through the Sixth Mass Extinction, Environmental Humanities, and Extinction Studies'. *Environmental Humanities* 15(1) (2023): 168–186.

Paddle, R. *The Last Tasmanian Tiger: The History and Extinction of the Thylacine*. Cambridge: Cambridge University Press, 2002.

Pérez, F.L. 'The Silent Forest: Impact of Bird Hunting by Prehistoric Polynesians on the Decline and Disappearance of Native Avifauna in Hawai'i'. *Geographies* 1(3) (2021): 192–216.

People's Trust for Endangered Species. 'Galapagos Giant Tortoises'. *PTES*, https://ptes.org/grants/worldwide-projects/galapagos-giant-tortoises/ (accessed December 5, 2023).

Platenberg, R.K. de Queiriz and D.L. Mahler. 'Anolis Roosevelti, Culebra Giant Anole'. *The IUCN Red List of Threatened Species*, 2020, file:///C:/Users/2920501/Downloads/10.2305_IUCN.UK.2020-3.RLTS.T1319A18967413.en%20(1).pdf (accessed December 10, 2023).

Poliquin, R. 'The Matter and Meaning of Museum Taxidermy'. *Museum and Society* 6(2) (2008): 123–34.

Poliquin, R. *The Breathless Zoo: Taxidermy and the Cultures of Longing*. University Park, Pennsylvania: The Pennsylvania State University Press, 2012.

Þórsson, B. 'Introduction: Curating Climate – Museums as Contact Zones of Climate Research, Education and Activism'. *The Journal of Nordic Museology* 3 (2020): 4–13.

Powell, M.A. *Vanishing America: Species Extinction, Racial Peril, and the Origins of Conservation*. Cambridge: Harvard University Press, 2016.

Prokic, M. and P. Šimková (eds). *Entire of Itself? Towards an Environmental History of Islands*. Cambridgeshire: White Horse Press, 2024.

Quammen, D. *The Song of the Dodo: Island Biogeography in an Age of Extinction*. New York: Scribner, 1996.

Quijano, A. 'Coloniality and Modernity/Rationality'. *Cultural Studies* 21(2-3) (2007): 168–178.

Quinn, S.C. *Windows on Nature: The Great Habitat Dioramas of the American Museum of Natural History*. New York: Abrams, 2006.

Rader, K.A. and VE.M. Cain. *Life on Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century*. Chicago: University of Chicago Press, 2014.

Randall, J. *An Introduction to Island Studies*. New York and London: The Rowman & Littlefield, 2021.

Rose, D.B. *Wild Dog Dreaming*. Charlotteville: University of Virginia Press, 2011.

Rose, D.B. and T. van Dooren. 'Introduction'. *Australian Humanities Review* 50 (2011): 1–4.

Rose, D.B., T. van Dooren and M. Chrulew (eds). *Extinction Studies: Stories of Time, Death and Generations*. New York: Columbia University Press, 2017.

Royle, S.A. *Islands: Nature and Culture*. London: Reaktion Books, 2014.

Salick, J., Konchar, K. and M. Nesbitt. *Curating Biocultural Collections: A Handbook*, Kew: Royal Botanic Gardens, 2014.

Searle, A. 'Exhibiting Extinction, Recovery Memory, and Contesting Uncertain Futures in the Museum'. *Museum & Society* 20(1) (2022): 13–32.

Sepkoski, D. *Catastrophic Thinking: Extinction and the Value of Diversity from Darwin to the Anthropocene*. Chicago: University of Chicago Press, 2020.

Smith, M. 'Dis(appearance): Earth, Ethics, and Apparently (In)Significant Others'. *Australian Humanities Review* 50 (2011): 23–44.

Stark, H. *Extinction and Memorial Culture: Reckoning with Species Loss in the Anthropocene*. London and New York: Routledge, 2023.

Strickland, H.E. and A.G. Melville. *The Dodo and Its Kindred; or the History, Affinities, and Osteology of the Dodo, Solitaire, and Other Extinct Birds of the Islands Mauritius, Rodriguez, and Bourbon*. London: Reeve, Benham, and Reeve, 1848.

Swinney, G.N. 'An Afterword on Afterlife'. In Samuel J.M.M. Alberti (ed) *The Afterlives of Animals: A Museum Menagerie*, 219–33. Charlottesville and London: University of Virginia Press, 2011.

Thorsen, L.E. *Elephants are not Picked from Trees: Animal Biographies in Gothenburg Natural History Museum*. Aarhus: Aarhus University Press, 2016.

Thorsen, L.E., K. A. Rader and A. Dodd (eds). *Animals on Display: The Creaturely in Museums, Zoos, and Natural History*. University Park, Pennsylvania: The Pennsylvania State University Press, 2013.

Tershy, B.R., K.-W. Shen, K.M. Newton, N.D. Holmes and D.A. Croll, 'The Importance of Islands for the Protection of Biological and Linguistic Diversity'. *BioScience* 65(6) (2015): 592–7.

Turvey, S.T., M. Weksler, E.L. Morris, M. Nokkert. 'Taxonomy, Phylogeny, and Diversity of the Extinct Lesser Antillean Rice Rats'. *Zoological Journal of the Linnean Society* 160(4) (2010): 748–72.

UNESCO. 'Galápagos Islands', *UNESCO*, 1976, https://whc.unesco.org/en/list/1/ (accessed December 5, 2023).

van Dooren, T. *Flight Ways: Life and Loss at the Edge of Extinction*. New York: Columbia University Press, 2014.

van Dooren, T. *A Would in a Shell: Snail Stories for a Time of Extinctions*. Cambridge, Massachusetts: MIT Press, 2022.

van Dooren, T. and D.B. Rose. 'Lively Ethnography: Storying Animist Worlds'. *Environmental Humanities* 8(1) (2016): 77–94.

Wallace, A.R. *Island Life, or the Phenomena and Causes of Insular Faunas and Floras, Including a Revision and Attempted Solution to the Problem of Geological Climates*. London: Macmillan, 1911.

Vidal, F and N. Dias. *Endangerment, Biodiversity and Culture.* New York and London: Routledge, 2017.

Mignolo, W.D. and C.E. Walsh, *On Decoloniality: Concepts, Analytics and Praxis*. Durham: Duke University Press, 2018.

Weatherill, C.K. 'Sinking Paradise? Climate Change Vulnerability and Pacific Island Extinction Narratives'. *Geoforum* 145 (2023): 1–12.

Westergaard, G. and D. Jørgensen. 'Making Specimens Sacred: Putting the Bodies of Solitario Jorge and Cụ Rùa on Display'. In Sarah Bezan and Robert McKay (eds), *Animal Remains*, 68–86. London: Routledge, 2021.

Westergaard, G. 'Hidden Stories of Extinction: Hawaiian 'Ahu'ula Feather Capes as Biocultural Artefacts'. *Museum and Society* 20(1) (2022): 104–117.

Wignall, P.B. *Extinction: A Very Short Introduction*. Oxford: Oxford University Press, 2019.