

Introduction

Early in the morning on 1 November 1911, dozens of fishermen gather on a little hilltop, just outside of the coastal village of Same-ura. The sun has not yet reached the horizon, and the air is freezing cold. The men are all armed with improvised weapons – flensing knives, clubs, and spears – and reek of liquor. None of them has slept this night. When hundreds of more armed fishermen appear on the main path along the coast, the men on the hilltop descend as well. A few minutes later, the two groups merge, reaching together a group of factory buildings at the end of the pier: the Same-ura whaling station. In the past half year, whalers from western Japan had caught and slaughtered more than 180 whales at this station. Subsequently, several tons of coagulated blood and oil had spilled into the nearby ocean, killing the local wildlife. The fishermen are convinced that the poor sardine catches this year are directly related to the whaling activities.

As the angry crowd reaches the station, they are expected by a handful of police officers and employees of the factory. Some twenty fishermen try to negotiate with the defenders but to no avail. Angry shouts burst from the crowd: ‘Kill them! Burn the station down!’ As the fight begins, fire breaks out and with a giant blast the first of the roughly 300 whale oil barrels bursts. More and more barrels catch fire, their explosions like the rapid discharge of a machine gun. Rioters and employees alike struggle to escape from the flames. Two rioters catch fire; they try to escape the building, but their clothes are smeared with oil. Before they reach the safe embrace of the icy sea, they burn. As the smoke evaporates, seven policemen and fourteen factory workers have been severely injured. Meanwhile, the aggregated fishermen fall back to the town, besieging the residences of two fish fertiliser merchants who had collaborated with the whalers. Nearby, the local police station is also coming under assault, as well as other houses of whaling supporters. Finally, at eleven in the morning, the crowd disperses, leaving behind a scene of destruction.¹

¹ Adapted after eyewitness reports, see Satō, *Kujira kaisha yakiuchi jiken*, 54–65.

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In current popular and political discourse, Japan is often imagined by pro-and anti-whaling advocates alike as a ‘whaling nation’ that possesses a centuries-old homogenous ‘whaling culture’.² However, as the destruction of the Same-ura whaling station near Hachinohe in 1911 demonstrates, the historical reality was more complicated: for centuries some regions in early modern Japan did not engage in whaling but were actively opposed to it, even resorting to violence when whales were killed. As we will discuss throughout this book, resistance against whaling was widespread among the Japanese fishermen, as they worshipped whales as the incarnation of Ebisu-sama, the god of the sea, and believed that it was more beneficial to live side-by-side with whales instead of hunting them.

Today, these forms of non-lethal human–whale relationships have been largely forgotten. It is not without irony, that the invented tradition of a homogenous Japanese whaling culture is nowhere more present than in the collective memory of the Northeast, the same place, where protests against whaling had been the fiercest only one hundred years ago.³ When the Japanese government announced in December 2018 its plans to withdraw from the International Whaling Commission (IWC) and resume commercial whaling after a thirty-one-year hiatus, the news was taken up enthusiastically in Hachinohe. Kobayashi Makoto, Hachinohe’s mayor, immediately envisioned his port city as the centre of commercial whaling in this new era. Kobayashi invoked the image of a long history of whaling and whale eating in the region: ‘As far back as I can remember, Hachinohe has had a close relationship with whales, and there is even a local dish called whale soup, which is still made today.’⁴ Regarding the historical widespread anti-whaling protests in his city, Kobayashi only vaguely alluded to certain ‘incidents’ in the past.

This book aims at uncovering this forgotten history of whales and coastal communities in northeast Japan. It is argued that human interactions with whales were much more diverse than the basic hunter–prey relationship that the current whaling historiography describes, as cetaceans played a pivotal role in proto-industrial fisheries. As locals knew from observations, the killing of whales caused environmental pollution as free-floating whale blood diminished the coastal ecosystem on which the fishing communities depended. However, with the advent of

² See, for example, Hirata, ‘Beached Whales’; Ishii, *Kaitai shinsho ‘hogeji ronsō’*; Blok, ‘Contesting Global Norms’; Morikawa, *Whaling in Japan*; Komatsu and Misaki, *The Truth behind the Whaling Dispute*.

³ For a discussion on the ‘invention of tradition’, see Hobsbawm and Ranger, *The Invention of Tradition*; Morris-Suzuki, ‘The Invention and Reinvention of “Japanese Culture”’.

⁴ Hachinohe City, ‘Kisha kaikenrei (26.6.2019)’; Hachinohe City, ‘Kisha kaikenrei (21.5.2019)’.

industrial whaling in the early twentieth century, this centuries-long equilibrium between humans and cetaceans was destroyed over the span of a few years. In its stead, communities in northeastern Japan adapted elements from the western Japanese whaling cultures and invented a new whaling tradition, which has almost completely replaced older forms of human–whales interactions.

Living with the Gods of the Sea

In the historiography, the relationship between humans and whales is framed almost exclusively through the lens of the whaling (proto-) industry.⁵ Only recently have marine environmental historians tried to expand this framework. Nancy Shoemaker coined the term ‘living with whales’ to describe the history between whales and Native Americans from New England. She argues that Native Americans had a holistic relationship with the animals as marine mammals were not only hunted for sustenance but featured prominently in their stories, spiritual beliefs, and political practices: ‘Their long relationship with whales contributed to their survival as Native peoples, and it also explains why their history and identity as whaling people is so much in evidence today’.⁶ Joshua Reid expanded on Shoemaker’s concept and argued that for many ‘whale people’ living in the Pacific world, whaling meant more than just the killing and commodification of whales. Whales were kin to humans and played important roles in the social life of whale people. Coastal communities often believed that whales let themselves be caught by human hunters. The sacrifice of the whales had to be repaid by performing the proper ritual preparation prior and to show respect towards the animals.⁷ As Bathsheba Demuth argues on the example of whale people in the Bering Street, the whales would judge if the hunters had portrayed the necessary ceremonial care and moral worthiness before giving their meat and life to the humans: ‘Without these preparations, the whales would tell each other that the humans were not ready, morally or practically.

⁵ See, for example, Dolin, *Leviathan*; Burnett, *The Sounding of the Whale*; Tønnessen and Johnsen, *The History of Modern Whaling*; Ellis, *Men and Whales*; Newton, *A Savage History*. For more on the Japanese historiography of whaling, see Morita, *Kujira to hogeti no bunkashi*; Iwasaki-Goodman, *Ningen to kankyō to bunka*; Nakazono, *Kujiratori no keifu*; Kalland and Moeran, *Japanese Whaling*.

⁶ Shoemaker, *Living with Whales*. For a similar narrative regarding the relationship of the Makah people with whales, see Reid, *The Sea Is My Country*.

⁷ Reid, ‘Whale People and Pacific Worlds’. For case studies on whale cultures in the Pacific World, see Jones, ‘A Whale of a Difference’; Brabyn, *An Analysis of the New Zealand Whale Stranding Record*; Turner, ‘The Whale Decides’; Whitridge, ‘The Prehistory of Inuit and Yupik Whale Use’; Stevens and Wanhalla, ‘Māori Women in Southern New Zealand’s Shore-Whaling World’.

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Unwilling to die for the unworthy, they would keep to their own country.⁸ Thus, it was the decision of the whales – not of the humans – if a hunt was successful or not.

In this book, I introduce another category of ‘whale people’ that has so far largely been overlooked in the literature: Coastal communities that did consume whale meat from stranded whales, but at the same time not only refused to actively hunt whales themselves but also protected the animals against other would-be whalers. We can find examples of non-whaling whale people in pre-contact Polynesia, Australia, and Aotearoa (New Zealand).⁹ Some Māori groups, for example, believed that stranded whales were ‘gifts from the sea’ that had been made by Tangaroa, the god of the ocean.¹⁰ They interpreted whales as supernatural beings that protected travelling humans on boats and saved humans when they were in peril. Furthermore, the seasonal migration of whales helped humans orientate on the open sea as a form of biological navigation tool. Therefore, hunting a whale was seen as sacrilege and it was thought that those who did so would be punished by the gods.¹¹ These rules were not absolute, however, as even though whales were not actively pursued on the open sea, in some cases, for example when an injured whale was found in a bay, Māori hunters would sometimes ‘assist’ the animal in beaching on the shore.¹² Nevertheless, the co-existence of humans and whales was of great spiritual importance, which is why I would argue that the hunting of whales is not a necessary prerequisite to qualify as ‘whale people’, as coastal communities could develop a holistic relationship with whales based on ceremonial and moral care without regularly hunting them.

Such largely non-violent relationships with whales were not reserved to so-called ‘indigenous’ communities, however, but could also be found among proto-industrial fishing communities on the Japanese Archipelago. While the older literature has focused on the economic and social impact of whaling in Japan, the recent historiography has taken up some more nuanced discussions of ‘living with whales’, by describing the cultural and religious aspects of the early modern whaling cultures in western Japan.¹³ Kumi Kato and Mayumi Itoh assert that religious rituals of mourning killed whales were incremental in developing respect towards whales and an ethic of restraint among whalers that

⁸ Demuth, *Floating Coast*, 21. ⁹ Jones, ‘Running into Whales’, 359.

¹⁰ Cawthorn, *Meat Consumption from Stranded Whales and Marine Mammals in New Zealand*, 5–6.

¹¹ Gillespie, ‘The Bi-cultural Relationship with Whales’, 2–4.

¹² Rodgers, ‘The Connection of Māori to Whales’, 2–9.

¹³ See Arch, *Bringing Whales Ashore*, 2018; Ambros, *Bones of Contention*; Kato, ‘Prayers for the Whales’; Itoh, *The Japanese Culture of Mourning Whales*; Mori and Miyazaki, *Kujiratori no shakaishi*.

allowed for a sustainable relationship with the natural world.¹⁴ In her 2018 book ‘Bringing Whales Ashore’, Jakobina Arch argues, however, that early modern whaling was not inherently more sustainable than industrial whaling, calculating that between 1600 and 1800 around two hundred thousand whales might have been harvested by the more than ninety whaling communities in the western part of the country, leading to a substantial drop in the whale stocks even before the first American whalers appeared in the Pacific in the 1820s.¹⁵

What these historiographical accounts of Japanese whaling culture have in common, however, is their regional focus on the whaling communities in western and central Japan.¹⁶ Regions that did not actively hunt whales, such as communities at the Seto Inland Sea, the Hokuriku Coast, or the Sanriku Coast, are mentioned only in passing, if at all, despite communities in these regions having a wealth of religious and cultural practices regarding whales. Even when these practices are mentioned, authors usually pay little attention to regional differences in ceremonial whale worship. Itoh, for example, writes: ‘The existence of similar monuments and services in different regions is actually a testament to the fact that fishing communities in various parts of Japan shared the same sentiments toward whales and mourned in similar ways the deaths of the whales they had caught.’¹⁷ However, only a few pages later, Itoh acknowledges that the whale worship of non-whaling regions differed greatly from whaling communities: ‘because of their belief in whales as the Ebisu God, fishermen in some communities feared that the gods of the sea would punish them if they killed whales, and therefore they did not hunt them’.¹⁸ Similarly, Kato also writes ‘that in some regions fishermen regarded whales as a guardian *ebisu* because whales were known to bring schools of fish (e.g., cod and herrings) into the bay, thus creating a prosperous catch’.¹⁹

As the example of the Ebisu worship in northern Japan shows, whale worship in early modern Japan was far from homogenous. While whaling communities based their rites around practices that should appease the angry souls of the hunted whales, fearing retribution in the form of a ‘whale curse’, non-whaling communities celebrated stranded whales as

¹⁴ Kato, ‘Prayers for the Whales’, 287–8; Itoh, *The Japanese Culture of Mourning Whales*, 210–19.

¹⁵ Arch, *Bringing Whales Ashore*, 2018, 9. For a discussion on whether religious practices lead to an sustainable relationship with nature, see Eisenstadt, ‘The Japanese Attitude to Nature’; Bruun and Kalland, ‘Images of Nature’; Berkes, *Sacred Ecology*.

¹⁶ For historiographical accounts discussing indigenous Ainu whaling, see Wilson, ‘Whaling at the Margins’; Iwasaki, ‘Ainu minzoku kujira riyō bunka no ashiato wo tadoru’; Natori, *Funka-wan aimu no hogeiki*; Itabashi, *Kita no hogeiki*.

¹⁷ Itoh, *The Japanese Culture of Mourning Whales*, 6.

¹⁸ Itoh, *The Japanese Culture of Mourning Whales*, 17.

¹⁹ Kato, ‘Prayers for the Whales’, 290.

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incarnations of Ebisu and thanked them for bringing fish to the shore, while refraining from actively hunting whales.

Similar to other whale people in the Pacific world, these Japanese non-whaling communities also based their holistic relationship with whales – and in extension nature as a whole – on a moral framework that was reflected in their local ecological knowledge.²⁰ An enlightening point of departure to understand these moral values is Karl Jacoby concept of ‘moral ecology’. First introduced in his 2001 book ‘Crimes Against Nature’ Jacoby extended E. P. Thompson’s ‘moral economy’ framework by arguing that rural folk had often a different moral understanding of what constituted as ecological conservation than the elite.²¹ Jacoby aimed to ‘recreate the moral universe that shaped local transgressions of conservations laws, enabling us to glimpse the pattern of beliefs, practices, and traditions that governed how ordinary rural folk interacted with the environment’.²² Since then the concept of moral ecology, as it was named by Jacoby, has been used in a number of environmental historical studies to describe the vernacular beliefs and customs of how the poor connected natural conservation with socio-economic norms in defiance to elite discourses. Ecologist Fikret Berkes makes a similar argument in his book ‘Sacred Ecology’, where he argues that many traditional knowledge systems did not differentiate between nature and culture but rather saw these two aspects as intertwined and imbued with sacredness. Ecological thinking is thus not necessarily restricted to scientific interpretations of the world but can also be found in the moral and ethnic knowledge systems of vernacular communities.²³

In the case of fisheries, the problem of managing a constantly changing and unknown number of marine resources has early on been discussed by Arthur McEvoy’s ‘The Fisherman’s Problem’ and more recently by the literature about the ‘shifting baseline syndrome’.²⁴ In Japanese marine environmental history, similar notions of a sustainable usage of coastal resources are discussed under the term ‘*satoumi*’ (sea near the village).²⁵ Coastal communities often fought against the introduction of

²⁰ The term ‘local ecological knowledge’ or simply ‘ecological knowledge’ will be used to describe the beliefs, practices and common wisdoms that a community accumulated over generations in their interactions with the environment. See Lauer and Aswani, ‘Indigenous Ecological Knowledge as Situated Practices’; McCarter and Gavin, ‘In Situ Maintenance of Traditional Ecological Knowledge on Malekula Island, Vanuatu’; Ruddle and Davis, ‘What Is “Ecological” in Local Ecological Knowledge?’.

²¹ Thompson, ‘The Moral Economy of the English Crowd in the Eighteenth Century’.

²² Jacoby, *Crimes against Nature*, 246. ²³ Berkes, *Sacred Ecology*, 12.

²⁴ McEvoy, *The Fisherman’s Problem*; Jackson, Alexander, and Sala, *Shifting Baselines*; Klein and Thurstan, ‘Of Seascapes and People’.

²⁵ Cetinkaya, ‘Challenges for the Maintenance of Traditional Knowledge in the Satoyama and Satoumi Ecosystems, Noto Peninsula, Japan’; Knight, ‘The Discourse of “Encultured Nature” in Japan’; Yanagi, *Sato-Umi*.

industrial fishing methods, not because they were protecting their traditional way of life out of conservatism, but rather because they wanted to secure their access to marine resources and prevent the fish stocks from collapsing from overharvesting. The moral obligation to protect fish stocks was born out of a desire to secure the socio-economic future of the community, not due to their intrinsic value or even concern for the well-being of the animals.²⁶ This brings us to an interesting question, however: Why then did non-whaling communities come in conflict with whalers, when these groups did not compete for the same marine resource?

On a first glance, besides the occasionally stranded whale, non-whaling communities had little economic incentive to prevent whalers from hunting whales, as they themselves had specialised in the harvest of other marine resources. However, these communities had a more holistic approach towards their environment than only the flora and fauna directly tied to the production of sustenance and commodities. As I will argue in this book, in the worldview of the non-whaling communities, whales were an integral component of the coastal environment, as they were believed to be responsible for driving fish towards the shore. Killing whales on the open sea was seen as morally wrong, as it could not only mean poor fish catches, but also causing environmental pollution through whale blood pestering the ocean, destroying local flora and fauna on which the community depended. Morally correct behaviour extended, therefore, not only towards other humans inside and outside the community but also towards a responsible interaction with the environment, even to those parts that were not directly harvested. If the proper moral care was not portrayed, whales – as religious symbols of the personified nature – might punish the community, causing hardship for all involved.

Finally, the book's focus on the heterogeneity of coastal whale and fishing cultures in Japanese fishing villages highlights the importance of microhistory in the context of Japanese Studies.²⁷ As Nathan Hopson and Hidemichi Kawanishi have pointed in their respective studies, Japan's Northeast (*tōhoku*) regional culture has long been overlooked by the mainstream historiography and was often perceived as not particularly interesting or different from other regions.²⁸ However, since the 2011 tsunami, which destroyed large parts of the Northeast's coast, interest in the region has been

²⁶ Payne, 'Local Economic Stewards'; Judd, 'Grass-Roots Conservation in Eastern Coastal Maine'; Griffin and Robertson, 'Elvers and Salmon'.

²⁷ Dusinger, *Hard Times in the Hometown*; Roberts, *Mercantilism in a Japanese Domain*.

²⁸ Hopson, *Ennobling Japan's Savage Northeast*; Kawanishi, *Tōhoku*.

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rekindled in disaster science.²⁹ This book reassesses the importance of the region's history by discussing its place as one of the main producers of marine fertiliser products in the early modern period and how this is connected to anti-whaling protests in the region. Furthermore, it is demonstrated how events like the 2011 tsunami directly influenced the future of Japanese whaling practices.

The Age of the Cetosphere

Historising oceans is often challenging as we perceive them as vast unending bodies of water that are seemingly unchanging over the aeons.³⁰ However, while whales have become a rare sight today, not too long ago, the oceans were sprawling with millions of cetaceans, which dominated as megafauna all oceanic ecosystems. In the early modern world, humans and whales shared this planet together. In the Bering Strait people also spoke of the 'whale country' when talked about the open sea, while in northwestern Japan, whales were called 'the lords of the open sea' (*oki no tonosama*).³¹ As I will argue here, the world's oceans were until recently the domain of the whales and not of humans. This book attempts to reconstruct some of the interwoven relationships between humans and whales, by 'diving beneath the waves' as propagated by Ryan Jones.³² Examining the lifecycles of cetaceans and how they interact with their environment, including humans and other marine fauna, forces us to readjust our sense of scale and time, revealing that the history of commercial whaling is a mere 'blip' in the whale-human history.³³ This book will take, therefore, a *longue durée* perspective and will, whenever possible, also consider the possible agency of cetaceans as the lords of the open sea.

But how and to what degree did whales shape the oceans? A look at our own history might provide some answers. In recent years, we have become more aware that our collective actions as a species have profound

²⁹ See, for example, Kajiwara, *Surviving with Companion Animals in Japan Life after a Tsunami and Nuclear Disaster*; Starrs, *Japanese Cultural Nationalism*; Birmingham and McNeill, *Strong in the Rain Surviving Japan's Earthquake, Tsunami, and Fukushima Nuclear Disaster*.

³⁰ Due to the difficulties of reconstructing past marine ecosystems, the history of oceans are often described as 'black boxes', see Taylor, 'Knowing the Black Box'.

³¹ Demuth, *Floating Coast*; Akimichi, *Kujira wa dare no mono ka*, 111.

³² Jones, 'Running into Whales'.

³³ Jones and Wanhalla, 'Introduction'. No direct evidence of early whale hunting has survived the rising and falling of sea levels following the end of the last ice age; however, tacit evidence in the form of whale bones found in archaeological sites in Scandinavia, the North Pacific, and Japan suggests at least a passive use of whales as early as 9,000 years ago, see Savelle and Kishigami, 'Anthropological Research on Whaling', 2–4.

influence on the whole biosphere that will likely result in a changed global climate, the mass extinction of fauna and flora, and the degradations of countless marine and terrestrial ecosystems. As these changes will be traceable in geological sediments, many scientists believe that we have entered a new geological age, called the ‘Anthropocene’.³⁴ Dipesh Chakrabarty has thus argued that the human species has transcended from a biological agent to a geological agent.³⁵ Historically speaking, however, the impact of humans on the biosphere has not been progressing uniformly. For example, in the past 50,000 years about half of the megafauna species have gone extinct in terrestrial ecosystems, most of them due to human influences, however, in the same time frame, only three marine megafauna species have been lost.³⁶ While humans have in the past millennia intentionally or unintentionally altered almost all terrestrial ecosystems on a fundamental level – making them part of a ‘terrestrial anthroposphere’ – oceanic environments have resisted these anthropogenic pressures much longer.³⁷ It is not, I would argue, until the advancement of American and European whaling in the nineteenth and eventually industrial fishing and whaling practices in the early twentieth century, that we can speak of a marine anthroposphere outside of coastal areas.

However, if oceans have remained largely unperturbed by human influence for so long, did other nonhumans exist that had similar ecological impacts on the marine ecosystem than humans have today? In this book, I argue that until the twentieth-century cetaceans, which comprise ninety species of whales, dolphins, and porpoises, collectively influenced the feedback loops of marine ecosystems in a similar manner as humans have on terrestrial ecosystems. It was them and not humans that shaped the nutritional composition of the oceans, enriched and devastated

³⁴ Crutzen, ‘The “Anthropocene”’; Lewis and Maslin, *The Human Planet*. For critical assessments on the Anthropocene, see LeCain, ‘Against the Anthropocene’; Latour, ‘Agency at the Time of the Anthropocene’; Chakrabarty, ‘Anthropocene Time’; Haraway, ‘Anthropocene, Capitalocene, Plantationocene, Chthulucene’.

³⁵ Chakrabarty, ‘The Climate of History’.

³⁶ These three species are the Caribbean monk seal who died out in 1952, the Japanese sealion (1970s), and the Steller’s sea cow (1768), see Estes et al., ‘Megafaunal Impacts on Structure and Function of Ocean Ecosystems’, 85–6. For more on the possible impact of humans on defaunation, see Svenning, ‘Future Megafaunas’; Malhi et al., ‘Megafauna and Ecosystem Function from the Pleistocene to the Anthropocene’; Lorenzen et al., ‘Species-Specific Responses of Late Quaternary Megafauna to Climate and Humans’; Alroy, ‘A Multispecies Overkill Simulation of the End-Pleistocene Megafaunal Mass Extinction’.

³⁷ The term anthroposphere is here understood as an anthropogenically modified ecosystem in which humans function as the primary keystone species, see Worm and Paine, ‘Humans as a Hyperkeystone Species’; Cottee-Jones and Whittaker, ‘Perspective’; Baccini and Brunner, *Metabolism of the Anthroposphere*.

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biodiversity in marine ecosystems, and influenced as biomass containers carbon and CO₂ concentrations on a large scale.³⁸ While it would go too far to describe cetaceans as geological agents, their impact on the early modern marine world was so profound that, as I argue, the oceans were until the rise of industrial whaling practices not part of the marine anthroposphere but rather of the ‘cetosphere’.³⁹

Today, the oceans have been depleted of cetaceans, and the cetosphere has – for the most part – ceased to exist. Currently, only 14 per cent of the former great whales’ biomass remains in the oceans.⁴⁰ The decline and eventual destruction of the cetosphere to a less diversified marine anthroposphere did not happen overnight nor was it solely caused by industrial whaling but had been in the making for at least three centuries. American whaling in the middle of the nineteenth century alone caused the death of up to 10,000 whales per year.⁴¹ Between 1900 and 1999, at least three million great whales lost their lives to industrial whaling, effectively emptying the ocean of cetaceans.⁴² A low reproduction rate and many new anthropogenic pressures, such as oceanic pollution, climate change, entanglement in fishing gear, ship collisions, and ocean noise have stalled the recovery of many whale species after the end of industrial whaling in 1986.⁴³ We are yet to understand how the removal of 86 per cent of the great whale’s biomass has affected oceanic life, including human communities living at the coast. However, there is little doubt that the sudden disappearance of the oceans’ greatest mammals has had cascading effects on countless marine ecosystems.⁴⁴

Even though we have only very recently begun to grasp the ecological impact whales had on the marine biosphere before industrial whaling destroyed the cetosphere, human coastal communities had for centuries relied on the presence of whales in their coastal waters. The most direct form of making use of whales, and the only one so far researched in detail, is of course the hunting and killing of whales. But there were also many more subtle ways of how humans profited from the cetosphere; some of which are reflected in the coastal communities’ customs and culture. We

³⁸ Roman et al., ‘Whales as Marine Ecosystem Engineers’. This will be explored in more detail in Chapter 1.

³⁹ My focus here on the cetosphere should not indicate that cetaceans were the only major non-human actors that influenced the ocean environment. One could also argue that certain species on the bottom of the trophic structure, for example cyanobacteria, had an even greater impact on the biosphere, see Mazard et al., ‘Tiny Microbes with a Big Impact’.

⁴⁰ Springer et al., ‘Sequential Megafaunal Collapse in the North Pacific Ocean’, 12225.

⁴¹ Townsend, ‘The Distribution of Certain Whales as Shown by Logbook Records of American Whaleships’.

⁴² Rocha, Clapham, and Ivashchenko, ‘Emptying the Oceans’.

⁴³ Clapham, ‘Managing Leviathan’. ⁴⁴ McCauley et al., ‘Marine Defaunation’.