CHAPTER

Cultural aspects of seabird conservation

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Introduction

"Biocultural diversity" is a term to describe the many forms of relationships between humanity and nature (Chang et al., 2019) and thus provides an appropriate lens with which we can view an exploration into how various peoples engage in the management and conservation of seabird populations around the world. The oldest of these relationships are maintained by the Indigenous Peoples of the world (Box 11.1). Seabirds are significant for many Indigenous cultures throughout the coastal Arctic, temperate, subtropical, and tropical regions of the world, including the entirety of Oceania (Campbell, 2009; Falk and Durinck, 1992; Handy et al., 1972; Santana-Sagredo et al., 2021). These relationships will be explored within this chapter, but in order to more deeply understand the nature of the relationship between Indigenous Peoples and seabirds, we must look through the lens of Indigenous worldviews and perspectives of nature.

In this chapter, we use several nouns as generic proper nouns to acknowledge that the things we speak of in general terms do, in actuality, have their own names and unique histories that should be acknowledged. Examples of these generic proper nouns are "Place(s)," "People(s)," "Native," "Indigenous," and "Local." It is also important to acknowledge that several things that we speak of—"Place," "Indigenous People," and "Local Communities" in particular—are currently in the process of gaining legally recognized rights at both national and international levels; furthermore, the status of these rights as being legally recognized are in different stages across the globe. That said, in this chapter, we speak of each of these things in recognition of the agency that they possess and we operate on the assumption that each has the right to exist and should be protected from exploitation.

Conservation of Marine Birds. https://doi.org/10.1016/B978-0-323-88539-3.00008-X

Box 11.1 Indigenous Peoples and Local Communities

It is human nature to develop relationships to the Place and the biodiversity of Place. Putting discussions of race aside, "indigeneity" can—as shared by Indigenous philosophers, such as Dr. Manulani Aluli Meyer (2008, 2013)—be viewed as a function of longevity in and relationship to Place, along with its associated biodiversity. In this sense, some Places—particularly those that have several, if not tens, of millennia of human history and countless diasporas of Peoples across them—can have many layers of indigeneity. From a global perspective, given the history of imperialist settler colonialism across the planet of the past few centuries, the campaigns of genocide, and other tumultuous changes associated with that period, there tends to be a line drawn between those that were Native to Place and populations that arrived in the colonial period—collectively represented by not only the settler colonizers but the slaves they brought with them and immigrant laborers that they invited as well. However, in many Places, the descendants of the original settler colonizers, slaves, and immigrant laborers stayed for multiple generations, intermarried, lost all relationships to the Places their ancestors came from and developed existential relationships to their current Place and its associated biodiversity. These groups formed new populations of people in each respective Place—from genetic, cultural, and sometimes even linguistic perspectives. In terms of both research and policy, each of these groups of people who possess relationships to Place is recognized. These groups of people who collectively share a relationship to Place are broadly referred to in both international policy and scholarly literature as "Indigenous Peoples and Local Communities".

Indigenous worldviews and perspectives of nature

The forms of sciences and governing systems imposed on Indigenous Peoples and Places in the process of settler colonialism between the 16th and 20th centuries were all born out of a neoclassical worldview. The effects of colonization on Indigenous science and governing systems—especially in terms of Indigenous resource management—will be explored in this chapter, as will various endeavors to engage in decolonization. We will first explore Indigenous worldviews and perspectives of nature, which stand in sharp contrast to dominant views in conventional thinking. A founding social construct of neoclassical thinking is the notion that there is a separation between humanity and nature. This social construct is often held up in conservation biology as if it is a scientific fact, in spite of there being no scientific evidence to support it and of it being contradictory to what we know of evolutionary biology. This conceptual divide between humanity and nature is the epitome of the difference between Indigenous worldviews and the dominant worldviews in conventional thought. The lines that divide humanity and nature, as perceived in neoclassical thinking, are often not perceived by Indigenous Peoples. This difference in worldviews has led to countless conflicts around the world in the contemporary period between those who embrace neocolonial approaches to conservation and Indigenous Peoples (Kashwan et al., 2021), whose lifeways include a conservation ethic and who are sometimes allied with the Local Communities (Box 11.1) that have incorporated Indigenous practices and Indigenous thinking into their lifeways. Neocolonial conservationists often endeavor to protect the things that they perceive as separate from and threatened by humanity—things

such as "wilderness" and "wildlife." However, those words, which describe the divide between humanity and nature that is foundational to the neoclassical worldview, quite often do not even exist in the languages of Indigenous Peoples. Conflict arises when neocolonial conservationists endeavor—both literally and figuratively—to reinforce their perceived divide between humanity and nature in an attempt to protect the latter. However, from the perspective of Indigenous Peoples—and even some Local Communities—the efforts to reinforce perceived divides between humanity and nature are often viewed as the continued implementation of the same tools of colonization that were used to separate their ancestors from their ancestral Places, a process that goes to the very root of their intergenerational trauma. Understanding these differing perspectives could help to heal existing conflicts and prevent them in the future.

While, in general, Indigenous worldviews do not perceive divides between humanity and nature, to say that, Indigenous Peoples perceive a system with no dividing lines would be incorrect. If Indigenous Peoples, in general, do not perceive dividing lines between humanity and nature, where then do they see those lines? While it would be inappropriate to make blanket statements about Indigenous worldviews, in this chapter we speak in generalities and we use the Indigenous Peoples of Oceania as focal examples to answer the question above; for many of these islands, cultures have developed deep and profound relationships with seabirds. In particular, we highlight the perspectives of *Kānaka ʻŌiwi* and *Māori*—being the Indigenous Peoples of Hawaiʻi and Aotearoa-New Zealand (Aotearoa-NZ), respectively—as examples of Indigenous worldviews that are acutely linked to the topic of seabirds. While there are certainly differences between the worldviews of Indigenous Oceanians and the countless Indigenous Peoples who live on continents, there are—more often than not—enough similarities to make broad statements about Indigenous worldviews, so we will do so in this chapter.

From an ecological perspective, Indigenous People perceive and manage "social-ecological systems" that are otherwise referred to as "human-in-nature systems" (Berkes et al., 2000; Winter et al., 2020a). It is within this context that Indigenous Peoples view themselves—either literally and/or figuratively—as related to Place, the habitats of Place, and the many manifestations of biodiversity therein (Berkes, 2018). For example, many of the creation chants of *Kānaka ʻŌiwi* in Hawaiʻi recount that they genealogically descend from the union of the cosmogonic deities Wākea (Sky Father) and Papa (Earth Mother) who birthed many of the islands. It is within this genealogical line that the taro plant (*Colocasia esculenta*) was born as the older brother of first *Kānaka ʻŌiwi*. In Aotearoa-NZ, before the voyages of *waka* (canoes) that brought several of the *iwi* (tribes) from the ancestral homeland of Hawaiki (Hawaiʻi), the creation chants of the Tūhoe people speak of them descending from the union of Te Maunga (a sacred mountain, representing the masculine) and Hine-pūkohu-rangi (the mist that blankets the mountain, representing the feminine), and the Tūhoe see themselves as existentially linked to forests around them. Through these stories, we see that Indigenous People recognize geological features and ecological processes as physical manifestations of divine powers that are greater than and support the existence of humankind. So, while Indigenous worldviews tend

to not perceive lines that divide humanity and nature, they do often perceive divisions between humanity and the divine—with the latter being manifest as sacred Places, sacred habitats, and sacred species (Gon III et al., 2021). The perceived division between humanity and the manifestations of the divine, which nature collectively represents, is the foundation of the philosophies of how to engage with nature, as well as the associated practices of what is referred to in ecology as "Indigenous resource management" (Box 11.2).

Box 11.2 "Indigenous resource management" and "Indigenous science"

Indigenous resource management (IRM; e.g., Winter et al., 2020a) is the collective body of philosophies, strategies, practices, rituals, protocols, and laws that govern the relationships between people and biodiversity in social-ecological systems. IRM is informed by Indigenous knowledge systems, including Indigenous science. Indigenous science is the practice of engaging in the scientific method by Indigenous Peoples. Specifically, it is the practice of engaging in observation, the development of hypotheses, the manipulation of variables, the analysis of results to elucidate patterns and make predictions, and the reporting of conclusions. The manner in which Indigenous Peoples engage in the scientific process is a cultural practice and it is different in appearance from conventional scientific practice—particularly from the standpoint of methodology and the reporting of results—but it is science nonetheless. As we discuss Indigenous science, it is important to acknowledge that, in spite of countless examples around the world, its mere existence has been questioned by neocolonial scientists and conservationists. Although the discussion about and efforts to engage in decolonization have been shifting the conversation, the notion that precolonial Indigenous Peoples were incapable of engaging in scientific thinking has been used for generations as justification for treating neocolonial worldviews as superior to Indigenous worldviews. The perceived superiority of neoclassical thinking has led to the subsequent dismissal of the perspectives and practices of Indigenous Peoples when it comes to issues of conservation. This suppression of Indigenous perspectives and practices are examples of systemic and institutional racism in conventional science, and it is rife among neocolonial conservationist efforts. That said, the inclusion of a chapter about Indigenous perspectives in a book focused on seabird conservation is an example of the collective attempts to push the pendulum in the other direction.

Indigenous science can be understood through the lens of ecology. Just as in conventional ecology, taxonomy and classification are foundational to Indigenous science. The naming of and the understanding of the relationships between species has enabled Indigenous People to monitor biodiversity and understand reproductive biology, species connectivity, species abundance, and species richness within social-ecological systems (Winter et al., 2018, 2020a). This collective understanding of ecological dynamics informs IRM, which governs resource manipulation. Within the context of IRM, resource manipulation is not limited to resource extraction but rather—in many cases—involves manipulating systems to increase species abundance prior to resource extraction. The various practices of resource extraction are also governed by bodies of philosophies, protocols, and laws that are the collective embodiment of IRM. Discussions of IRM are best built on a foundational understanding of the relationships between cultures and the biodiversity that is at the core of their existence—collectively referred to as biocultural relationships. As such, any discussion about IRM as relates to seabirds needs to be founded in an understanding about the biocultural relationships between Indigenous Peoples and seabirds.

Biocultural relationships between Indigenous Peoples and seabirds

Many coastal and island societies have historical and current relationships with seabirds. The significance of biocultural diversity as relates to seabirds can be broadly recognized through the "*relational*" values (values centered around the human connection or relationship with seabirds that are considered not substitutable), "*intrinsic*" values (protecting nature for its own sake), and the "*instrumental*" values ("use" values, whereby cultures use seabirds for their own benefit) that Indigenous Peoples hold in relation to seabirds, and the complex interconnection between these sets of tangible and intangible values that contribute to defining a culture's social-ecological systems (Klain et al., 2017).

Relational values can be understood through the spiritual connections between Indigenous Peoples and seabirds. However, the relational values around spirituality have been strained as Indigenous religion was an early target in the process of colonization, perpetrated first by Christian missionaries and later enforced through colonial governing systems. As such, a detailed understanding of the role that seabirds once played in Indigenous religion eludes contemporary scholars, yet some aspects of this relationship have been documented. For example, in Indigenous cosmogony, there is a belief of a shared ancestry between human and nonhuman entities whereby living organisms on the land, in the sea and air, and the nonliving features, are held with genealogical frameworks and often perceived as sentient and transcending the physical realm (Kealiikanakaoleohaililani et al., 2018). Some of these perspectives have been documented in Pacific Islands, and they can act as a window into the role that seabird manifestations played in cosmogonic genealogies. For example, in Hawaiian lore, '*A*'*aia-nūkea-nui-a-Kāne* (Great supernatural seabird of the deity Kāne; White Albatross, *Diomedea immutabilis*; also referred to as '*A*'*aia-nui-nūkea-a-kū-lawaia*—"*Great supernatural seabird of Oceanic Kū*") appears as an intercessor and seduces, *Lalo-honua* (the first woman), to consume sacred apples from the garden of *Kāne* (who is a leading godhead). Upon consuming the apples, *Lalo-honua* loses her mind and becomes a seabird and is borne away by '*A*'*aia-nūkea-nui-a-Kāne* along with her husband, *Kumuhonua* (Beckwith, 1970). Respect, reciprocity, and the agency accorded to the biodiversity of Place, including seabirds, within these cosmogonies convey an obligatory relationship that shapes how people relate to and act toward, a particular species (Roberts, 2013). These ideological beliefs often do not prevent the harvest of that species, but rather sets the guidelines around how that species is engaged and protected. In Rakiura Māori lore, the call of the *Hākuai* (a *kaitiaki* or the guardian of *Tītī*) foretold the end of the season for bird harvesters (Garven et al., 1997). Changes in species abundance, productivity, and behavior can also be accorded to metaphysical mechanisms, explanations of causation, and responses (Lyver and Moller, 2010).

Other relational values view seabirds as guides and protectors. For learned and skilled practitioners of oceanic wayfinding, the knowledge of seabird diversity, migrations, and behaviors provides "facilitative" relationships to gauge locality and navigate back to land after fishing, exploration, or trading voyages, and to detect and lead fishers to aggregations of marine resources (e.g., shoals of fish or schools

of predatory fish; Kaua‘i Endangered Seabird Recovery Project, 2019; Le Bot et al., 2018; Veit and Harrison, 2017; Webber and O’Connor, 2019). Furthermore, some lineages in Pacific Islands still honor specific seabirds as the physical embodiment of deified ancestors who can act as guides, particularly in the practice of oceanic way-finding that is associated with deep-sea fishing and long-distance voyaging.

Relational values are often transmitted through Indigenous knowledge systems via traditional practices, legends, proverbs, and other expressions. These expressions highlight the ecological knowledge encoded within Indigenous languages. Various *Kanaka* ‘*Ōiwi* proverbs from Hawai‘i have recorded seabird behaviors that are associated with changing weather patterns and have been used by fishers and voyagers as a “rule of thumb” to forecast weather conditions (Pukui, 1983):

> *Lele ka ‘Iwa, mālie kai ko‘o – When the ‘iwa [frigate bird] flies [out to sea], the rough sea will be calm (Pukui, ‘Ōlelo No‘eau, No. 1979)*
>
> *‘Ōlelo ke kupa o ka ‘āina ua malie; ua au Koa‘e – The natives of the land declare that the weather is calm when the tropic bird travels afar (Pukui, ‘Ōlelo No‘eau, No. 2498)*
>
> *Ua ho‘i ka Noio ‘au kai i uka, ke ‘ino nei ka moana – When the noio bird returns from sea to land, the sea will be stormy (Pukui, ‘Ōlelo No‘eau, No. 2787)*

Such proverbs, which similarly exist in other Indigenous languages, also serve to convey the intrinsic value of seabirds as an integral component of oceanic systems.

For Rakiura Māori, living on offshore islands for up to 10 weeks each year and the harvesting of *Tītī* also facilitates other relational values central to individual and community well-being, such as community cohesiveness and collectiveness (*whakawhanaungatanga*) that enable the sharing of resource and labor between extended family groups; a regard and compassion for those within the community (*manaakitanga and matemate-ā-one*); and the maintenance, adaptation, and transfer of customary regulation, traditional knowledge, and language (*whāngai mokopuna or kōrero tawhito*).

The intrinsic value of seabirds—and the habitats upon which they depend—is connected to the relational values described earlier. Seabirds are genealogical elders in Indigenous cosmologies and, therefore, are believed to belong and have an inherent right to exist in Indigenous Places. They are perceived as both possessing *mauli* (*mauri*) in and of themselves and contributing to the *mauli* (*mauri*) of Place.

The instrumental value of seabirds within Indigenous cultures helps to paint the picture of this biocultural relationship more clearly. For example, the diverse range of seabird species[a] that have existed around North America and Greenland

[a] Little Auk, *Alle alle*; Razorbill, *Alca torda*; Great Auk, *Pinguinus impennis*; Rhinoceros Auklet, *Cerorhinca monocerata*; Crested Auklet, *Aethia cristatella*; Least Auklet, *A. pusilla*; Cassin’s Auklet, *Ptychoramphus aleuticus*; Common Murre, *Uria aalge*; Thick-billed Murre, *U. lomvia*; Ancient Murrelet, *Synthliboramphus antiquus*; Marbled Murrelet, *Brachyramphus marmoratus*; Black Guillemot, *Cepphus grylle*; Pigeon Guillemot, *C. columba*; Atlantic Puffin, *Fratercula arctica*; Tufted Puffin, *F. cirrhata*; Northern Fulmar, *Fulmarus glacialis*; Short-tailed Albatross, *Phoebastria albatrus*; and likely Laysan Albatross, *P. immutabilis*; and the Black-footed Albatross, *P. nigripes*; King Eider, *Somateria spectabilis*; Common Eider, *S. mollissima v-nigra*.

in recent times has enabled Indigenous cultures (e.g., Coast Salish, Haida, Tlingit, Inuit, Maliseet-Passamaquoddy, Mi'kmaq and Beothuk) to extensively utilize these resources for subsistence and material needs (Byers and Dickson, 2001; Falk and Durinck, 1992; Kuhnlein and Humphries, 2021; Moss, 2007; Young et al., 2014). Down and feathers have been used for symbols of peace, insulation (e.g., in apparel, capes, and housing), inner fill for bedding, adornments of ceremonial purposes and cultural expression (e.g., creation of feathered royal standards and personal adornments, attachments to stone and wood carving), and bone for musical instruments, fishing equipment, spear tips, and tools like tattoo needles (Campbell, 2009; Gilchrist et al., 2006; McLintock, 2021; Pallesen, 2008; Rose et al., 1993; Skira, 1990). In precolonial Hawai'i, the carcass of the *Ka'upu* (Black-footed Albatross; *Phoebastria nigripes*)—a notably lean bird in the Hawaiian archipelago—was hung from the banners of Lono in the Makahiki Season to signify the return of abundance (Handy et al., 1972), but the rarity of this seabird in contemporary times inhibits the modern applications of these rituals.

Other instrumental values relate to nutrient cycling between the land, the sea, and the people. Seabird guano plays an important role in nutrient cycling between marine and terrestrial environments (Fukami et al., 2006) and has also been used extensively for fertilizer to intensify agriculture in historic and contemporary societies (Santana-Sagredo et al., 2021; Schnug et al., 2018). These nutrients are then incorporated into human populations via Indigenous food systems. In more direct contributions to Indigenous food systems, seabirds—eggs, prefledgling chicks, and adults—provide important sources of protein, fats, and proventricular oil for sustenance. They also serve as bait for fishing and have been noted for their medicinal and aphrodisiacal qualities (Anderson, 2001; Beaton, 1990; Feare, 1984; Moller, 2006).

Biocultural relationships and Indigenous resource management guide conservation and sustainable harvest of seabirds

While seabirds play an important role in Indigenous food systems within coastal environments and island systems, the relational values and intrinsic values of seabirds (described earlier) influence the conservation strategies for seabirds within the context of Indigenous resource management. Indigenous values influence the actions made in the service of sustaining the life force (*mauri* or *mauli*) of seabird populations, the habitats upon which seabirds rely, as well as the people that are part of that natural system and amount to a give-before-you-take relationship that is embodied in the philosophies and practices of Indigenous resource management (IRM, see Box 11.1). The intrinsic value of, and kinship bonds with, seabirds within Indigenous philosophy does, however, often clash with conventional paradigms of neocolonial conservation, whereby strategies focus upon curtailing human engagement and/or interference with the environment (Klain et al., 2017). Specifically, perpetuating the ability to harvest seabirds—eggs, chicks, and adults—through the generations is a guiding value within IRM, which was shaped over millennia.

It is estimated that human occupation in Tasmania and its near offshore islands began approximately 30,000 years BP with subsequent generations of Indigenous Tasmanians evolving hunting strategies focused on the exploitation of high-fat and protein sources such as Seals (*Arctocephalus* spp.), Albatrosses (*Diomede* spp.), Petrels (*Puffinus* spp.), and Penguins (e.g., *Eudyptula minor*; Skira, 1990; Sutton and Marshall, 1980). Presently, however, the annual harvest of approximately 360,000 *tītī* (chicks of the Sooty Shearwater, *Puffinus ardenna*) by Rakiura Māori in southern Aotearoa-NZ, and 200,000 *yolla* (chicks of the Short-tailed Shearwater, *P. tenuirostris*) by mostly bird harvesters of Indigenous Tasmanian descent in southern Australia contribute food and revenue to these cultural economies (Newman et al., 2009; Skira et al., 1996; Szabo, 2013). Such was the social, cultural, and/or economic importance of muttonbirding in both Aotearoa-NZ and Australia, the lives and occupations of many bird harvesters were structured around the harvest season. In a lesser capacity, but no less important culturally, bird harvesters from a number of coastal Māori tribes in the north of Aotearoa-NZ, annually harvest *Oi* or *Kuia* (Grey-faced Petrel, *Pterodroma gouldi*) chicks from offshore islands and distribute to elders and families around their communities (Lyver et al., 2008). For these tribes, the *Oi* in itself is a special food that is a *rangatira* (a bird with chiefly status) which cannot be replaced with other poultry like chicken. It is a food that is craved. It is a special bird that nourishes not only the physical health of people but also their spiritual well-being. In its harvest and eating, the bird links people within the community to each other, but also to their ancestors and future generations. The ability to provide *Oi* for consumption at important gatherings is immensely important for those harvesting birds in these communities, as it denotes their genealogy (*whakapapa*) and identity, but also reflects the *mana* (prestige) of the people. There was also a level of expectation that certain subtribes (*hapū*) or families (*whānau*) will provide *Oi* for these occasions (Lyver et al., 2008). Similarly, in Hawai'i, seabirds played an integral role in *Kānaka* '*Ōiwi* culture and were accorded high regard. For example, in times of abundance, '*Ua*'*u* (Hawaiian Petrel, *Pterodroma sandwichensis*) chicks were harvested from their burrows as food and were prized as a delicacy. However, 'Ua'u are now critically endangered due to threats of artificial lights, power lines, and invasive mammals (Raine et al., 2017); they are no longer eaten by *Kānaka* '*Ōiwi*.

In precolonial times, IRM guided the sustainable harvest of seabirds. Customary strategies used by Indigenous Peoples to protect seabird populations are diverse (Table 11.1). Rules that are hereditary in nature focus on limiting the number of people that can access a resource, and therefore harvest pressure on a population. Limiting the period in which a harvest can occur, or the number of eggs, chicks, or adults harvested, or setting aside a portion of a breeding colony as refugia reduces the disturbance of breeding and demographic impact on a population (Table 11.1). These rules enable many adult birds to escape harvesting and aim to protect the future breeding capacity of a population. For some cultures, a prohibition on harvesting adults in a population protects breeding capacity of a population and greatly reduces the demographic impact of a harvest (Table 11.1). The protection and/or the enhancement of habitat upon which a seabird population relies have been identified

Table 11.1 Ecological concepts and associated customary strategies and rules used by Indigenous Peoples to protect and enhance seabird populations and habitat.

Concepts	Customary strategies	Reference
Resource evaluation	• Authority over decisions to harvest should come from respected elders or experienced harvesters (e.g., island supervisors) • Annual preharvest stock assessment to determine whether a harvest could occur • Annual preharvest stock assessment to determine harvest level	Kitson and Moller (2008), Lyver et al. (2008), Moller and Lyver (2010), and Geary et al. (2019)
Respect for resource and ancestors	• Prayer or offerings prior to the harvest demonstrates deference to, or the respect of harvesters for, the species • Narrative reinforces connection to ancestors and the desire to act accordingly and uphold the authority and prestige of ancestors • Threat of divine or supernatural retribution for transgressions against the species, or rules for engaging the species • Feathers, oils, or offal are not left lying at the entrance of burrows or on the harvesting grounds. Offal or feathers need to be buried or disposed of in the ocean • Eggs, chicks, or adults are not consumed on the harvesting grounds—"*You do not eat in your food cupboard*"	Kitson and Moller (2008), Lyver et al. (2008), Moller and Lyver (2010), and Lyver and Moller (2010)
Reducing the demographic impact	• The number of people and/or harvesters to seabird colonies is controlled and limited to those with hereditary or ancestral rights • Vital life history stages (e.g., adults) are not harvested • After egg incubation begins, harvesting is curtailed to allow birds to nest and raise young • To enhance recruitment rates, only chicks of average size and condition are harvested (i.e., do not harvest large and well-condition chicks that are most likely to recruit into the population in future) • Only harvest every second chick encountered • Harvests are kept small-scale with a limited numbers of chicks taken • Temporary access prohibition to minimize disturbance and the desertion by breeding adults • Use the appropriate harvest techniques to avoid capture of nontarget life stages • Recognizing the Christian "day of rest" by not harvesting on Sundays	Newman and Moller (2005), Gilchrist et al. (2005), Gaze and Raymond Smith (2009), Kitson and Moller (2008), Lyver et al. (2008), Moller and Lyver (2010), Naves and Zeller (2017), Naves (2018), Geary et al. (2019), and Winter et al. (2018)

Continued

Table 11.1 Ecological concepts and associated customary strategies and rules used by Indigenous Peoples to protect and enhance seabird populations and habitat. *Continued*

Concepts	Customary strategies	Reference
Allowing for escapement	• Harvest only occurs during a designated period • Cease harvesting before the end of the breeding season • Limit the length of the harvest season • Rotation or resting of islands harvested each season • Hunting any one colony once every 3 years • Condition of chicks used to determine whether harvest should proceed or not • Use the appropriate harvest techniques to avoid capture of excess (e.g., use only hand to extract a chick—no use of a hook or stick for extraction purposes) • Chicks are only caught while down burrows and never at night when they emerge later in the breeding season to fledge	US Wildlife Service (2007), Kitson and Moller (2008), Lyver et al. (2008), Moller and Lyver (2010), and Geary et al. (2019)
Protection of habitat	• Digging of burrows to capture chicks prohibited or minimized to avoid damage to burrows and habitat • Movement around islands or within colonies restricted to minimize damage and trampling and collapse of burrows • Damaged burrows are repaired or restored as best possible • Cutting of live trees or vegetation is limited or prohibited • Permanent settlement or long-term occupation of the islands prohibited	Newman and Moller (2005), Kitson and Moller (2008), Moller and Lyver (2010), and Geary et al. (2019)
Enhancement of habitat	• The excavation of new burrows can encourage breeding or colony expansion of petrels • The splitting of petrel burrows can maximize breeding space and reduce effects of density dependence	Lyver et al. (2008)
Provision of refugia	• Access to or harvest within specific parts of an island or breeding colony is prohibited • Whole islands are set aside from disturbance and harvesting as refugia • Protection of "sacred forest"	Kitson and Moller (2008), Lyver et al. (2008), Moller and Lyver (2010), US Wildlife Service (2007), Winter et al. (2018, 2020a)
Minimization of waste	• Do not harvest more of the resource than you can process effectively	Kitson and Moller (2008), Lyver et al. (2008), and Moller and Lyver (2010)

Adapted from Moller, H., Lyver, P.O'B., 2010. Using traditional ecological knowledge for improved sustainability: Case studies from four customary wildlife harvests by Māori in New Zealand. In: Walker-Painemilla, K., Woofter, A., Rylands, A., Hughes, C. (Eds.), Indigenous Peoples and Conservation: From Rights to Resource Management. Conservation International, Arlington, pp. 219–234.

as important for encouraging and sustaining breeding (Table 11.1). Rules can also be meta-physical in their context, often based around reciprocity that if the species is protected and nurtured then that resource will always be available for the people. A relationship with a species can be based upon respect for the genealogical seniority of species over humans within the natural world, or for the life force of a species (Table 11.1). A common belief within Indigenous cultures is that if a species is disrespected or there is transgression according to the rules associated with interacting with that species, then individuals of that species will be deterred or make themselves unavailable to the community. Only with the appropriate displays of deference can the effects of the transgression be alleviated or avoided. Customary strategies or rules are seldom used in isolation of each other with customary frameworks generally relying on an assemblage of these rules to protect population and maximize sustainability (e.g., Winter et al., 2018). Importantly, at the core of customary frameworks is the concept of "transgenerational equity" whereby the current harvesters of those seabird populations operate in a manner to ensure the same or better opportunities for generations to come.

Contemporary harvest of seabirds is guided by ancestral practices of IRM. For example, consistent participation in the harvest allows Rakiura Māori bird harvesters to use their knowledge of differences in harvest rates to predict the direction and strength of the El Niño Southern Oscillation 12 months in advance of the event occurring and being detected by scientific systems (Humphries and Moller, 2017; Lyver et al., 1999). For Rakiura, there are strict prohibitions or *rāhui* (access ban) to accessing the Tītī Islands prior to 15 March (prefledging stage) each year. Harvesters are required to leave the islands again by 31 May. These prohibitions are designed to protect the islands from human presence and reduce disturbance to the *Tītī* in their early breeding phases (Moller and Lyver, 2010). However, the influence of the market economy has altered the manner in which seabirds are harvested by some Indigenous Peoples (Chabot, 2003; Condon et al., 1995).

For Rakiura Māori, the subsistence and customary economic institution surrounding the *Tītī* harvest was historically based within reciprocal exchange with redistribution, barter, and gifting of *Tītī* used as social and political mechanisms and largely controlled by socially ranked individuals (*rangatira*; Rout et al., 2017). However, with the arrival of Europeans in Aotearoa-NZ and the introduction of market economies, the *Tītī* harvest became increasingly dominated by market exchange (Rout et al., 2017; Stevens, 2006). And as a result, the market exchange and customary management (*kaitiakitanga*) of Tītī and the Rakiura Islands have become integrally linked in Aotearoa-NZ. Duality associated with the harvesting and distribution of seabird eggs and meat is also prevalent in other cultures. In Inupiat communities of Little Diomede, men are primarily responsible for securing meat and would harvest between 240 and 350 Least and Crested Auklets (*Aethia pusilla* and *A. cristatella,* respectively) birds per household in a season (Campbell, 2009). Once the birds were brought home, women became the sole "owner" of that food and were responsible for its preparation, distribution, and storage (Campbell, 2009; Spencer, 1959). Extended kinship was also important in Inupiat communities for survival in a harsh oceanic

environment with close bonds and commitments developing between familial groups in the form of "trading partnerships" (Campbell, 2009). These partnerships included "the right to hunt in each other's territory and the obligation of providing support, including food, in a time of need, to a partner and descendants for two generations" (Campbell, 2009: 38).

Beyond market value, where customary harvests continue, the expression of cultural heritage of Indigenous Peoples is enabled through the participation in customary harvest activities. In Aotearoa-NZ, the legal right to access the Rakiura *Tītī* (Muttonbird) Islands and harvest *Tītī* by Rakiura Māori is accorded by *whakapapa* (genealogy). Only Rakiura Māori (and their spouses) with hereditary links to specific islands can participate in the customary harvest and management of Tītī on those islands. As this annual customary practice is one of the few remaining harvests of native birds left in Aotearoa-NZ by Māori, it has a significant role in shaping and expressing cultural identity and kinship for the Rakiura community, which reaffirms their connection to Place and continued usage (*ahikā*), their authority to make decisions for Place (*whakamana* and *kaitiakitanga*) and political and social autonomy (*rangatiratanga*). Similarly, for Indigenous Tasmanians, muttonbirding is a tradition strongly linked to their history, heritage, and identity subsequently forming an important part of their cultural survival (Beaton, 1990; Skira, 1987; Smith, 1965). The muttonbirding in Tasmania is equally an important social occasion providing the opportunity for families to reconnect, work hard, recount stories, and recreate in company of each other (Brown, 1992; Skira, 1990).

Indigenous Peoples have long histories of various relationships with seabirds have developed strategies for protecting those populations and supporting sustainability. In many situations, Indigenous Peoples have extensively relied upon customary frameworks for protecting, but also using seabird populations. These customary frameworks can be multifaceted, built around a comprehensive knowledge of the temporal and spatial complexity of a species' ecology, and intimately intertwined with a culture's value and belief system (Kitson and Moller, 2008; Lyver et al., 2015). Indigenous practitioners therefore rely extensively on cultural mechanisms for the application of customary frameworks—knowledge that is acquired and accumulated from generations of living within a community and simultaneously interacting with the local environment (Moller et al., 2009).

In response to the ongoing loss of global biodiversity (IPBES, 2019) and a greater recognition of Indigenous Peoples' rights and the need to decolonize conservation, the interest in customary frameworks for the basis of relationships with the environment and respectful resource use is growing. However, cultural awareness, care, and precautionary safeguards are needed for the engagement of Indigenous Peoples and their local institutions in conservation efforts. Customary frameworks are frequently implemented in particular ways, using both rules of thumb and cultural constructs that make sense to Indigenous Peoples (Table 11.1; Gadgil et al., 1993; Moller et al., 2004, Winter et al., 2020a). Subsequently, these frameworks cannot be replicated or delivered easily by conservation practitioners

from outside of a community. The customs and practices that Indigenous elders and hunters have toward learning about and accounting for ecological risk and uncertainty, from which they define safe opportunity, interventions, and stopping rules for interacting with seabird populations, need protection within current conservation systems (Hone, 2007; Moller et al., 2004). Customary frameworks have also needed to be adaptive in their response to direct and indirect pressures, such as environmental degradation linked to human exploitation (e.g., extractive fishing industries) and disturbance (e.g., urban development), the introduction of mammalian and avian predators, colonization, shifts in subsistence and market economies, and climate change (Duffy, 2010; Naves, 2018; Rout et al., 2017). Therefore, it is critical that the social mechanisms critical for transmitting this knowledge and adapting to new ecological and social changes are protected and given freedoms to operate within conservation systems of states (Berkes and Folke, 2002; Lyver et al., 2019). This approach will also raise the levels of trust for conservation efforts and commitment from Local Communities to ensure the ongoing protection of seabird populations.

Local Community perspectives of seabirds

Local economies of coastal and island communities, in rural settings, are often a hybrid between a subsistence economy and a market economy (Kruse et al., 2009; Wheeler, 1998). Within these Local economies, seabirds have traditionally provided a variety of ecosystem services (Wenny et al., 2011). Seabirds provide provisioning services (food, fertilizer, fuel, material, and medicine), supportive services (pest regulation, seed dispersal, and ecosystem engineering), and cultural services (related to inspiration, cultural identity, and tourism) (Kadin, 2014, and see above). Historically the largest role was as a subsistence resource, providing a source of protein; material for clothing, crafting, and decoration; tools, especially needles or awls; and fuel (Moss, 2007). These practices were closely tied to cultural values and spiritual experience (Sloan, 2014, and see above).

The overexploitation of seabirds observed in the 19th and 20th centuries (e.g., Olsson et al., 2000; Medway, 2002; see Chapter 7) resulted in notable seabird extinctions, especially of flightless island species like the Great Auk (*P. impennis*) (Thomas et al., 2019). However, it is notable that most of this overharvesting resulted from the arrival of new human populations and technologies, not from traditional practices of either Indigenous Peoples or Local Communities. That said, the transition to the modern world, with concomitant interconnectedness and ease of travel, has reduced the role of traditional subsistence in many Local Communities. The changes to the environment and Local economies, observed in the modern era, often result in lower reliance on subsistence resources (Chabot, 2003; Condon et al., 1995; Fall et al., 2013; Kerkvliet and Nebesky, 1997). This may result in declines in seabird use and a diminished perception of their importance to communities, as has been noted in the Unangan communities of the

Pribilof Islands, Alaska, USA (Huntington et al., 2009; Veltre and Veltre, 1981; Young et al., 2014).

While previously common, subsistence hunting is declining in most Local Communities and where remaining may be often more for cultural significance than for calories (Merkel, 2010; Young et al., 2014). The changing purpose of the hunt has meant that issues of overharvest are also declining, and in many cases are regulated by social custom (Natcher et al., 2012). Local regulations combined with cultural guidelines on seabird subsistence harvest have managed the Atlantic Puffin (*Fratercula arctica*) harvest on the Faroe Islands (Nørrevang, 1986) and the murre hunt of Newfoundland and Labrador, Canada. Murres (*Uria* spp.) are hunted from boats during winter months in the only legal non-Indigenous seabird hunt in North America, again largely for cultural reasons related to prior subsistence reliance (Gaston and Robertson, 2010). Management work needs to tread carefully in maintaining good relationships with communities and ensuring that all stakeholders have a voice in conservation and management decisions. It is important that conservation efforts work in concert with Local Communities, respect Local needs, and hold social and historical justice as goals as well.

Lastly, an emerging modern role for seabirds is as ecotourism sentinels. Seabird ecotourism has the potential to be a nonextractive ecosystem service provided by seabirds that could provide economic benefits and raise awareness of marine conservation more generally (Notzke, 1999). Seabirds are often perceived as charismatic and engaging, and this makes them ideal draws for coastal tourism. Seabird ecotourism also provides a way for Local Communities, especially remote marginalized ones to benefit and provides an economic argument in favor of conservation. Seabirds such as the Common Murre (*Uria aalge*) in Gotland, Sweden (Kadin, 2014); Blue-footed Boobies (*Sula nebouxii*) in the Galapagos, Ecuador; and penguin species in Patagonia, Argentina, (Yorio et al., 2001) and South Africa (Olivier, 2015) already provide strong contributions to Local economies. However, tourism activities can be damaging: human activity near the breeding colonies can be disturbing or directly damaging to nesting grounds (Albores-Barajas et al., 2009; Piatt et al., 1990) and boats near breeding cliffs can affect reproduction and foraging (Velando and Munilla, 2011). Increased human activity would need to be managed carefully (Mason, 1997), and there is a strong role for Local Communities here who have a vested interest in maintaining healthy populations.

Governance and comanagement

In many of the settler states established through imperial colonialism around the world, Indigenous Peoples face added difficulties to the application of their management from the acute and chronic effects of colonization. Colonial government conservation laws and regulation have subverted Indigenous Peoples' rights and responsibilities for the environment and isolated them from the management of their natural resources (Ruru et al., 2017).

Cultural redress to colonial loss by Indigenous Peoples in recent times has involved increased autonomy and decision-making via countless forms of self-governance within the context of the dominant forms of governance imposed by settler-colonist societies. There are also several forms of cogovernance and comanagement models (e.g., Tipa and Welch, 2006), with the most socially and environmentally equitable among these being formal collaborative agreements. The nexus between conservation and Indigenous governance is often manifest in "Indigenous and community conserved areas (ICCAs)" (Berkes, 2009). There are several examples of ICCAs in both Hawai'i (Winter et al., 2021) and Aotearoa-NZ (Stephenson et al., 2014). While as is consistent with Indigenous worldviews, these ICCAs are more akin to ecosystem-based management (e.g., Winter et al., 2020b), some of these do specifically recognize seabirds as a specific focus of conservation. Examples of this are the Hā'ena Community-based Subsistence Fishing Area (Delevaux et al., 2018) and the Papahānaumokuākea Marine National Monument (Office of Hawaiian Affairs et al., 2021).

However, Place-based initiatives alone are not enough to effectively engage in seabird conservation. For one, the ecology of seabirds—namely their massively expansive range, which include lands and seas that span several sovereign territories and extend into international waters (cite relevant chapter in this book)—presents challenges to Place-based efforts that only pertain to sections of the environment or a particular species and frequently hampered by a matrix of other national and territorial laws and regulations. For example, Rakiura Māori is largely limited to affecting the conservation of *Tītī* at the breeding colonies on the various Rakiura Tītī (Muttonbird) Islands, whether this is through the managing access to the islands, recently limiting the harvest on some islands, or safeguarding the island habitats (Adams et al., 2009). However, the influence of Rakiura Māori over *Tītī* and the oceanic habitat upon which the bird relies becomes limited after birds leave the islands. Similarly, the customary management of seabirds by Māori tribes in the north of Aotearoa-NZ is confined to specific islands and sometimes only to certain seabird species that live on those islands (e.g., *Oi* or *Kuia*, Grey-faced Petrels). In these situations, customary management frameworks are often contained within comanagement arrangements with the central or territorial government agencies, which curb their expression and power to affect change. More recently, regional management frameworks (e.g., Sea Change Plan; NZ Government, 2021) have given some northern coastal Māori greater influence over the conservation of inshore marine habitats; however, the influence of this management is limited for many of the seabird species, since they forage extensively outside the limits of these regional plans.

Given the complexities of seabird ecology, the scale of the problems that threaten seabird populations, and the misalignment of governance at the international scale, another form of Indigenous-led initiative is needed. Initiatives to engage Indigenous Peoples' biocultural multilateral agreement for seabirds to influence the governance and management of different components of seabird ecology across territorial and global spatial scales need to be explored. Indigenous Peoples' networks have the potential ability to link people with each other and people with the biophysical

environment, across time and space (Pert et al., 2015; Timoti et al., 2017; Walsh et al., 2013). These networks are represented in kinship constructs such as *whakapapa* (genealogy—Māori in Aotearoa-NZ) and dreaming and songlines (Aboriginal peoples in Australia). A multilateral agreement would enable the development of an Indigenous Peoples' international organization or instrument that could be built around these types of kinship constructs. It would facilitate the connection of Indigenous Peoples from different countries and regions across large spatial scales (e.g., Pacific region for transequatorial migratory species such as tītī) and provide a forum to develop a variety of biocultural responses to the management of seabirds and their marine and terrestrial environments, but also to influence the policy of governments. Therefore, recommendations postulated by the authors and listed in the following offer opportunities for how Indigenous Peoples' institutions and frameworks could play an important role in national and global conservation and restoration of both seabird and cultural diversities.

Recommendations

1. Signatory states and governments recognize and respond to principles and articles within the United Nations Declaration on the Rights of Indigenous Peoples to empower Indigenous Peoples;
2. Governance frameworks empower Indigenous Peoples' customary management and expression of chieftainship over seabirds and their marine and terrestrial habitats within a biocultural conservation framework;
3. Within this biocultural conservation framework for seabirds, national legislation, regulation, policy and plans are reconciled with Indigenous Peoples' customary management and expression of worldviews and values for seabirds and their marine and terrestrial habitats;
4. Also, this biocultural conservation framework for seabirds emphasizes a "systems" approach that is focused on linkages and reciprocity between humans with nature, and delivering on initiatives that underpin the relationships and economies that Indigenous Peoples have with seabirds and their marine and terrestrial habitats;
5. A biocultural conservation framework for seabirds prioritizes protecting and restoring seabird populations alongside Indigenous Peoples' cultural heritage associated with those seabirds;
6. A biocultural conservation framework for seabirds provides Indigenous Peoples with the mandate and decision-making authority to manage and protect natural resources (e.g., prey stocks) upon which seabirds rely for self-maintenance and breeding, including an oceanic range free of pollution (e.g., micro-plastics);
7. A biocultural conservation framework supports the sustainable use of seabirds providing the mandate and decision-making authority to Indigenous Peoples for the adaptive management of those harvests;

8. A biocultural conservation framework for seabirds supports the complementarity and coproduction of Indigenous knowledge with scientific approaches to inform decision-making and adaptive management approaches (e.g., learning by doing; cultural practices associated with a species or habitat);
9. Development of a multilateral agreement enables the establishment of an Indigenous Peoples' international organization that connects Indigenous Peoples from different countries across international borders and global commons for the collaborative management of seabirds and the environmental domains upon which those seabird species rely.

Social and environmental justice in seabird conservation

Systemic racism is the leveraging of power differentials within systems against minority demographics, such that the rights, opinions, beliefs, and practices of minorities are suppressed in favor of those of the dominant demographic. Systemic racism in conservation has been highlighted following the social movements of 2020 (e.g., Kashwan, 2020), and many around the world are seeking ways to engage in social and environmental justice in conservation. However, Indigenous communities around the world have—for generations—been asserting their Indigenous agency (e.g., Winter et al., 2021) to shift systemic power differentials. In this pursuit, some Indigenous cultures have sought the personification or juristic personhood of land- or seascapes (e.g., river systems; forested mountain ranges) that these systems be accorded protections, obligations, and rights to exist, persist, and regenerate vital cycles, structure, processes and functions as a legal subject (Bataille et al., 2020; Ruru, 2014). And in situations where degradation has occurred, they should be "left alone to heal themselves," although this did not preclude respectful future use (Gratani et al., 2016). On the flip side of the same coin, "biocultural restoration" efforts that seek to mend the severed or compromised relationships between humanity and the rest of nature (e.g., Chang et al., 2019) provides a remedy for injustices inflicted on Indigenous Peoples. Such approaches integrate cultural aspects of seabird management with current "top-down" governmental approaches, in the interests of stakeholder buy-in and justice for Indigenous Peoples. The biocultural restoration efforts highlighted in this chapter provide models for doing this in Indigenous Places. Collaborative biocultural restoration at the international scale is the next frontier.

Conclusions

The motivations for conservation and the impetus for resource management tend to be different for Indigenous Peoples and Local Communities (IPLC) than it is for neocolonial conservationists. The former group tends to focus on maintaining transgenerational relationships with Place and associated biodiversity in the context of social-ecological systems, whereas the latter group tends to focus on saving

ecosystems from humans. These differing cultural perspectives have led to conflicts around the world between IPLC and neocolonial conservationists, which are fueled by intergenerational trauma stemming from historical injustices on the side of IPLC and by a sense of urgency due to the global extinction crisis on the side of neocolonial conservationists. The irony is that both of these groups ultimately want the same thing—species abundance—but there is disagreement on the path to get there. Disagreements about approaches to the conservation and management of seabirds specifically have not escaped this general global trend. Those of us who are engaged in seabird conservation, regardless of cultural identity, have an opportunity to show the world that it is possible for different cultural groups to come together in a shared vision of species abundance. We can get there by bringing all stakeholders together to work in a framework of collaborative management that achieves species abundance while addressing social and environmental justice issues of IPLC in ways that help to heal intergenerational trauma associated with colonization by foreign powers.

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