



Guest Editorial, part of a Special Feature on [Collaborative Management, Environmental Caretaking, and Sustainable Livelihoods](#)

# Collaborative care in environmental governance: restoring reciprocal relations and community self-determination

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**ABSTRACT.** From communities rooted in place to transnational coalitions, this special feature applies concepts of collaborative care rooted in Indigenous knowledge systems to the field of environmental governance. We highlight restorative, liberatory practices rooted in caretaking ethics and reciprocal human-nature relations. Our approach also centers decision making by those most connected to a given resource and the sustenance it provides. Despite global extraction, dispossession, and other colonial legacies, these efforts build toward collective action and community self-determination, both through formal policy change and informal practices. Three facets of collaborative care in environmental governance are threaded through the special feature: (1) care in place, (2) care in power, and (3) care in commoning. These themes connect both Indigenous-led and allied scholarship from the United States to the Netherlands, Japan to Madagascar, and Aotearoa to Canada. Though diverse in their interests and challenges, the authors and communities featured in this research build toward collective action and community self-determination in caring for the places that are the source of collective abundance.

**Key Words:** *collaborative care; collaborative management; commoning; community-based natural resource management; decolonizing methodologies; eco-cultural restoration; environmental justice; human-nature relations; Indigenous knowledge systems; knowledge co-production; participatory action research; self-determination; sovereignty*

## Opening: Reciprocal Care

As low tide turns high  
and sun rises to set  
as lives are set  
to sun and tides  
calling sun from sea  
meeting fish  
who feed on rising tides

As cattle need uplands to graze  
in dry seasons  
as herders coax cattle  
back to the lowlands for salt  
with the rains return

As rain follows forests  
who need fire to breathe  
set by farmers who breathe in  
exhale of forest  
planting millet, beans, squash,  
ground nuts, yams, maize,  
together

As offerings to the spirits  
bring abundant harvests  
offered to spirits  
shared to feed all  
who share in the work

As youth need work  
paths cleared by elders  
who need youth to carry the work  
And grandparents fill with joy and life  
with grandchildren they fill with food and stories

As everyone needs someone  
who needs someone  
cared for by someone else

As words need readers  
and perhaps you  
reader  
need  
these  
words

## INTRODUCTION

In this special feature we engage a community of scholars to expand our understanding of collaborative care in environmental governance. Through the lens of collaborative care, we focus on restorative, liberatory practices rooted in caretaking ethics and reciprocal human-nature relations. We highlight environmental governance approaches that center decision making by those most connected to a given resource and the material and spiritual sustenance it provides. Drawing on diverse forms of community leadership, expertise, and experience, this compilation is a thriving reef of voices from different corners of our earth. We build toward collective action and community self-determination in caring for the places that are the source of collective abundance.

The COVID-19 pandemic forced humanity to shrink the scale of our physical interactions, while also widening our virtual reach, partnerships, and ability to learn from the stories of others. In rethinking the ethics of collaborative care, we witnessed how we impact our planet in a new way. With the downturn in global travel, for example, dolphins swam back into Venetian canals (Machemer 2021), fish returned to Waikiki, along with the sharks skirting their schools (e.g., Wenget al. 2023), and the rise in Earth's

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temperature paused for a breath (e.g., Liu et al. 2020). Both locally and globally, we adjusted to boundaries and limits on where we could go, who we could interact with, and what materials we could source. Some of us were forced outdoors to reconnect with our geographic surroundings, while others found new ways to shop, exercise and eat, sometimes within the bounds of a high-rise apartment in a crowded city. The places we live continue to form us as we in turn shape them. As we learn from these experiences, we see that adapting to change in a bounded system requires knowledge grown from the particular places that teach us. Knowledge of how to care for the lands and waters that we are connected to is also essential for guiding future leaders and decisions.

In this feature, we move beyond dominant frameworks of collaborative management focused on resolving natural resource conflicts over extractive use. Instead, we seek to inspire new strategies for collective action based on reciprocal human-environment relations. We especially look to Indigenous scholars, who remind us that relationships between people and place extend beyond transactional benefits (Kimmerer 2013, Whyte and Cuomo 2017, Laursen et al. 2018, Vaughan 2018, Diver et al. 2019, Fisk 2022).

#### **Contributors to collaborative care**

The co-editors of this feature include Indigenous and non-Indigenous scholars who have been practicing and learning from community-engaged research methodologies over the past 15 years, and who are connected to one another as friends and colleagues. Our respective areas of scholarship draw upon Indigenous studies, community-based natural resource management, environmental governance, environmental justice, place-based education, and feminist political ecology. This project began in a women's graduate research group facilitated by a shared mentor, Professor Louise Fortmann at UC Berkeley. Dr. Fortmann created a space for rigorous scholarship and laughter, high quality feedback, support and connection—all enjoyed over generous offerings of tea and friendship. Her work and teachings are foundational to our work. Other scholars who have paved the way for this special feature include Nancy Turner, Evelyn Pinkerton, Noenoe Silva, Noe Ka'ōpua Goodyear, Kim TallBear, Vandana Shiva, Robin Wall Kimmerer, Puanani Burgess, Wangari Maathai, Linda Tuhiwai Smith, and many others. We have also been inspired by colleagues and mentors working through the International Association for the Study of the Commons, who embrace collective action approaches to environmental governance by working in solidarity across local communities, academics, NGOs, and practitioners toward life sustaining management practices in the global commons.

From research that highlights communities rooted in place to the work of transnational coalitions, this feature emphasizes the breadth of opportunities for connecting moments and movements of accountability, reciprocity, and community self-determination to advance collaborative caretaking in environmental governance. Contributions stretch across time and space, from Iran to the Netherlands, Japan to Madagascar, Aotearoa to Canada. Authors include both Indigenous and allied scholars from a wide array of geographies, career stages, and positionalities. These include cultural practitioners, community leaders, and younger scholars. In this special feature, new voices

enter ongoing discussions of how we can reshape management agencies, institutions, and decision-making processes to advance a vision for collaborative care and decolonial futures.

Contributing authors not only study reciprocal relationships, but also cultivate relationships with the communities and places they research. Some authors focus on the same places throughout their careers. Others come from the places and communities where they work. All develop their research focus, questions, and approach in close collaboration with community members, and draw upon an array of methods, including mapping, ecological studies and monitoring, interviews, surveys, and auto-ethnographies. Place-based relationships lay the groundwork for scholarship that challenges epistemic and material injustices in research and natural resource management. Recognizing the importance of self-representation, 15 of the papers are authored by Indigenous scholars (working both within and outside the academy), and many are writing with non-Indigenous allies.

Many papers illuminate strategies for moving away from extractive research and toward Indigenous sovereignty, in part by demonstrating practices of vested solidarity through allied partnership (IAM 2014, Whyte and Cuomo 2017). Among these contributions, Baker-Médard et al. (2023) use conversational methods and auto-ethnography to include the lived experience and expertise of Malagasy women leaders, thereby co-authoring this work through a collaborative, dialogic, and reflexive approach. Oberholzer Dent et al. (2023) explain how their research with cultural practitioners is “not an exchange but a coalition.” In doing so, their project “reverses the flow of knowledge typical of academic research; rather than information being sought for an extraneous purpose, here practitioners carry knowledge to new spaces on their terms.” Similarly, Clark et al. (2022) emphasize collective knowledge sharing with culture bearers, where “all gatherers were provided manuscript drafts and 20 gatherers provided revisions; all gatherers, or their living relatives, consented to publication.” Chen et al. (2023) convene a diverse research collective that includes researchers from academia and federal agencies together with Indigenous representatives from tribal agencies and tribal community members. This collective is connected by Indigenous Research Methodologies and mutually held relationships with cultural food plants. As Indigenous and non-Indigenous co-authors, Reed and Diver (2023) use first-person and third-person perspective writing to connect Reed's expertise and voice as a culture bearer to critical analysis leveraging theories of Indigenous-led healing. And Quiocho et al. (2023) center Indigenous knowledge systems and ancestors by bringing Hawaiian cosmologies into their research methodology and marine management policy planning.

#### **Contributions: care in place, care in power, and care in commoning**

As an emergent contribution of this feature, we trace three main themes of collaborative care in environmental governance: (1) care in place, (2) care in power, and (3) care in commoning (Table 1). These categories are not intended to be mutually exclusive or all encompassing, but are rather offered as a starting place for rethinking how environmental governance systems can privilege relationality, embodied care ethics, and social equity, in part, by deconstructing social hierarchies. We use these categories to engage with collaborative care as a platform and a mechanism for transformation in environmental governance.

**Table 1.** Themes for collaborative care in environmental governance emerging from this special feature.

Themes for Collaborative Care in Environmental Governance
Care in place - Caring for the health of our lands and water as kin, thereby caring for the health of our families.
Care in power - Unsettling dominant power structures through relational approaches that move knowledge to action.
Care in commoning - Engaging everyday practices of care to help communities create networks of solidarity and accountability.

“Care in place” considers how communities are revitalizing relationships with the places they come from, or where they have made their home, by caring for the lands and waters that in turn provide them with physical and spiritual sustenance. “Care in power” examines how communities that are most affected by or connected to a given resource are engaging in decision making over that resource, and also how communities join in increasingly complex cross-border and polycentric environmental governance efforts. “Care in commoning” explores creative pathways for collective action and provides insights into “commoning” practices that bring people together in new ways—transcending models of human behavior that assume exploitation to be inevitable, and instead celebrating collective capacities for building creative connections across boundaries.

As discussed below, we develop these concepts of collaborative care by bringing Indigenous scholarship and feminist scholarship into environmental governance, in part, by emphasizing relationality and the deconstruction of social hierarchies. Through such interdisciplinary engagement with care ethics and environmental governance, these articles share stories of adaptation that is grounded in ancestral relationships held between people and the place, thereby facilitating the transmission of knowledge and responsibility across generations.

### (1) Care in place

Our respective lands and waters shape our communities by providing food, solace, learning, shelter, and many other forms of physical and spiritual sustenance (e.g., Andrade et al. 2014, Vaughan 2018, Diver et al. 2019). In caring for the health of our lands and waters—our kin—we care for the health of our families. Drawing from Indigenous knowledge systems, the lens of collaborative care views community-led cultivation of reciprocal relations to be a key factor enabling the ongoing sustainability of our cultures, societies, and Earth (Diver et al. 2019).

Care in place is embedded in multiple forms of Indigenous knowledge systems, worldviews, and practices (Little Bear 2000, 2009, Craft 2017, Vaughan 2018). As one example, in Hawaiian cultures, ethics of care are rooted in *kuleana*, meaning the rights and responsibilities that stem from long-standing relationships with resources and specific parcels of land (also referred to as *kuleana*) within a family’s care. Restoring such relationships between place-based communities and place is essential to restoring the land itself (Kimmerer 2013). This is, in part, because such relationship building can facilitate the remaking of injured places that are recovering from long histories of resource extraction (Diver et al. 2019).

Indigenous epistemologies emphasize how experiences and learning are tied to place, and how cultural and life-sustaining processes unfold among peoples and the natural and spiritual worlds (Cajete 2004). Place provides for individuals who know

how to interact with it and who respect it. In the Hawaiian context, *‘āina*, or land, can be defined as “that which feeds.” This expresses a vital relationship between people and place that has genealogical and spiritual dimensions (Pearce and Louis 2008). As further expressed by community leaders at the land protection organization Kīpuka Kuleana:

*‘Āina encompasses all that feeds us, from heavens to earth to ocean, especially relationships between places and the people who call them home, who have fed their families here across generations. Traditionally in Hawai‘i, ‘āina, an embodiment of our Gods and ancestors, could never be bought, sold or owned, but was held in trust by the governing ali‘i of an area, who gave it to area ‘ohana as their responsibility without right of ownership. Under Hawaiian land tenure, families could stay and pass this land to their descendants, even as ruling ali‘i changed, as long as they cared for it well. (<https://www.kipukakuleana.org/whowere>)*

Care in place nourishes possibilities for kinship-making. For example, community-led initiatives to restore ceremonial trails or a gathering place can involve relearning what it means to be of that place, and all of the relationships held within it (e.g., Reed and Diver 2023). Thus, connections to place sustain kin-centric relations between human and non-human collaborators that are embedded in Indigenous belief systems (e.g., Deur and Turner 2005, Kimmerer 2013). Further, particular place relations can support diverse communities in learning how to live together, with all of our struggles (Larsen and Johnson 2017).

Practices of care in place further activate intrinsic responsibility held at the community level, at times replacing top-down state-based governance approaches that take a more extrinsic governance approach (Larsen and Johnson 2017). On the rural Hawaiian island of Kaua‘i, for example, Hawaiian communities face commodification and loss of access to coastal lands. For these families, care in place draws upon ancestral values to reassert community leadership and exercise responsibilities that come with being of a place. One mantra spoken by community members is, “Keeping ‘ohana lands in ‘ohana hands sustains communities.”

Guided by principles of mutual caretaking and reciprocity, families also perpetuate connections to areas where they no longer own land, by returning to harvest family areas, holding reunions, and serving as guardians to these places. Sometimes this involves negotiating stewardship agreements or creating new governance structures to ensure that community members can make decisions about the places that nourish them. Essential to community resilience, this work involves growing kīpuka (places of community caretaking and cultural restoration) grounded in *kuleana* (responsibility) in every ahupua‘a (traditional region) on Kaua‘i.

Research contributions to care in place are important not only for building new knowledge around collaborative environmental care, but also for encouraging community well-being. For example, as Hawai'i-based community advocates at Kīpuka Kuleana write, "Most who buy land on Kaua'i have no idea they are displacing long-time area families, have no way to learn about the 'āina they are becoming caretakers of, and have no connection to surrounding communities." Researcher-community partnerships in Hawai'i seek to make community leadership in revitalizing place connections visible: lifting up the vision and work of rebuilding relationships between people and 'āina through restoring land together.

As demonstrated by Indigenous research methodologies used by contributing authors, collective resilience is supported by research that is guided by and in partnership with the communities we work with, and with the land (Wilson 2008, Kovach 2009). Witnessing, documenting, and storytelling through research highlights community actions that nurture respectful relationships with resources: guarding and cultivating fishing spots, perpetuating and sharing collective harvests, maintaining connection to family lands, reasserting local governance rooted in ancestral values, and preparing future generations to carry on.

When engaging with care in place, authors in this feature align behind the leadership of local communities through collaborative environmental care. For example, this builds on the argument made by Harangody et al. (2022) that "Knowing and caring for the land is a responsibility, but also an expression of Indigenous agency." In this way, the concept of collaborative care draws on Indigenous leadership to extend beyond dominant ideas of sustainability that are often disconnected from Indigenous knowledge systems. In focusing on restoring human and more-than-human relations in toxic riskscapes around Lake Superior's Keweenaw Bay Indian Community, Gagnon and Ravindran (2023) underscore how place-based resilience is predicated on humans recognizing with humility that "landscapes give us life, and we must all learn from and care for each other." Authors note how Ojibwa knowledge systems are applied to restoration initiatives to highlight the importance of more-than-human living communities and attend to the "interdependence and cooperation between and among diverse communities of many species," thereby pushing sustainability concepts toward ethics of interdependency.

Documenting an additional place-based restoration strategy, Chen et al. (2023) consider the role of foods like *wasdi* or ramps (*Allium tricoccum*), a culturally important food plant for Cherokee peoples, in encouraging allied caretaking for the places that support tribal communities. They do so by facilitating relationship-based research and collaborations among tribal community members together with tribal natural resource managers, federal agency scientists, and academic researchers. Engaging with Indigenous caretaking of beargrass, an important basketry material, Hart-Fredeluces et al. (2022) emphasize the importance of restoring culturally important places, foods, and fibers to avoid the "loss of spiritual connection to the forest as gathering and caretaking are no longer required." Authors point out how adaptation measures are not always benign: when basketweavers are forced to "adapt" to decreased access to quality materials by substituting with different materials, or when replacing longstanding Indigenous management tools (like

cultural burning) with other approaches (such as pruning), communities can become disconnected from ceremony and place-based family management traditions.

Authors lay out strategies that base environmental decision making on deeper understandings of relationships held between Indigenous peoples and the places they come from. In one study featuring the Papahānaumokuākea Marine National Monument, a sacred place for Native Hawaiian peoples, Quiocho et al. (2023) analyze a culturally centered planning process using conceptual frameworks of Hawaiian cosmologies and worldviews to transform protected area management planning. This place-based approach to knowledge co-production provides a model for "centering Native Hawaiians and their cultural heritage" and getting "all co-management agencies and Native Hawaiians involved in caring for Papahānaumokuākea." Speaking to community leadership in climate disaster response, Harangody et al. (2022) conduct post-flood interviews with local residents to examine how local and Native Hawaiian community members, connected to place and to one another, have enabled more effective climate-disaster response and recovery. In doing so, they redefine resilience as "place-based capacity to adapt to and persist amid change" and honor interconnected cultural and ecological processes. And in an additional study advancing collaborative care for marine protected areas in Hawai'i, Tait et al. (2024) connect community and academic expertise to develop place-based governance principles and indicators for sociocultural well-being, essential elements of care in place that are often left out of ecological monitoring protocols.

In both rural and urban contexts, place-based relationships inform Indigenous and local leadership in land reclamation, reconciliation, and resilience. Examining the history and impact of the Sogorea Te' Land Trust (STLT), a women-led, Indigenous urban land trust in the San Francisco Bay Area, Middleton Manning et al. (2023) discuss the commitment of STLT leaders to creating a place for Indigenous communities to reclaim their connections to land, spiritual practices, ancestors, and one another in an urban center. Part of "care in place" is the healing process of land reclamation. As STLT co-founder Johnella LaRose explained, "We took the American aggression out, we let go of colonialism; the land teaches you how to behave... What does peace mean? Taking it back to the way the land might have been treated, and taken care of ..." (Johnella LaRose, 26 September 2014, as quoted in Middleton Manning et al. 2023). Through their research with rural small-grain farmers in Japan, Ogura and Forwell (2023) illustrate the importance of a deep and intimate connection to place as a pathway for rural communities to enact restoration, resilience, and interdependence. As one farmer observed, "while people are cultivating healthy land, the land is also cultivating healthy people, teaching life lessons and providing a life of fulfillment, purpose, and belonging," as quoted in Ogura and Forwell (2023).

## (2) Care in power

To revitalize place-based relationships, the communities most affected by resource use must be part of resource management decision making at local and global scales. This reminds us how communities continue to challenge uneven power relations that have historically excluded community voices from natural resource management (e.g., Klenk et al. 2013, von der Porten and de Loë 2013, von der Porten et al. 2016, Simpson 2017, Todd 2018,



Wilson and Inkster 2018). Collaborative care frameworks rooted in Indigenous knowledge systems offer insights into this resistance, restoration, and healing work, which involves making space for family, including nonhuman relatives, in environmental governance (e.g., Reed and Diver 2023). Through care in power, we emphasize how collaborative care centers Indigenous peoples as sovereign Nations in environmental stewardship decision making. This requires the transformation of environmental governance systems through meaningful power sharing, the dismantling of knowledge hierarchies, and the reallocation of land and resources. As motivation for this work, we recall a friend and collaborator Kristina Peterson, an Indigenous advocate at the Lowlander Center in Louisiana, U.S., challenging audience members at an academic conference through her central question, “Why should the struggle for Indigenous peoples to revitalize and reconnect people and the lands they come from be so hard?” (personal communication, August 2014, Rural Sociological Society Annual Meeting, New Orleans, Louisiana.)

Environmental governance researchers have written extensively about power asymmetries in Indigenous resource management (e.g., Notzke 1995, Nadasy 2003, Diver 2016). Through the lens of collaborative care, we add to this body of research and assert that governance transformation requires moving “from knowing to caring” (e.g., Piatote et al. 2020, Smith et al. 2020a, 2020b). This shift entails caring about the material effects of our research, teaching, and community collaborations, and ensuring that our work contributes to the well-being of Indigenous communities, Nations, scholars, and Indigenous lands. When speaking about Indigenous-led knowledge production in the academy, Wiradjuri scholar Corrinne Sullivan noted, for example, “Knowing is not enough. The caring is what is important. There is a lot of lip service, but the caring is not there. It is like, ‘We will only support you when you are our hobby, not as core business.’ One thing to watch is, where does Indigenous work get prioritized now with financial tightening? This work is a challenge to the structure of systems ...” (personal communication, 12 February 2020, “So You Care About Indigenous Scholars? Workshop, Stanford, California).

Care in power emphasizes that environmental governance requires a form of caretaking that engages with structural inequities in decision making. As asserted by environmental justice scholars Pellow (2007, 2018) and Mascarenhas (2021), these include a wide range of inequities contributing to environmental and racial injustice at local and global scales. Further, Deborah McGregor (2014) asserts that Indigenous environmental justice relies on engagement with deeply held reciprocal relationships between Indigenous peoples and the land and waters. Following McGregor (2014, et al. 2020) and others (e.g., Wilson 2008, Whyte 2011, 2013, 2017, Risling Baldy 2018, Yazzie and Risling Baldy 2018), Indigenous care ethics convey how to move knowledge to action for unsettling dominant power structures, challenging colonial legacies, and asserting Indigenous self-determination through a relational approach. Similarly, restoration and eco-cultural revitalization practices help to overcome colonial legacies of racialized dispossession and denied access to cultural resources, resources that are needed to maintain and relearn cultural identities through the making of baskets, regalia, medicines, traditional foods, and ceremony (Hart-Fredeluces et al. 2022, Oberholtzer Dent et al. 2023).

Because “care in power” is rooted in Indigenous sovereignty (e.g., Whyte 2011, Simpson 2017), this concept reminds us that Indigenous Nations make resource management decisions “as an order of

government” (McGregor et al. 2019:8). Landback movements contribute to broader understandings of Indigenous sovereignty, when Indigenous lands are transferred back to Indigenous governance authority, (e.g., Middleton Manning et al. 2023). As part of such renegotiations of governance authority over Indigenous lands, Kim TallBear has noted how some Indigenous Nations seek a leadership role in the science and management processes affecting their lands and peoples. As TallBear writes,

*Part of governance of science, and governing through science, is to build Indigenous-controlled institutions. Part of governance, if we choose to take it up, is to train our own peoples to do the science. If we decide to build governance authorities in these ways (and not all Indigenous peoples will), we also make an explicit statement that we are more than potentially exploitable resources (TallBear 2016:79).*

Although revitalization of Indigenous governance institutions is occurring in many places, it is not without struggle or value conflicts, especially when negotiating allied partnerships (e.g., Luat-Hū’eu et al. 2023, Reed and Diver 2023, Weir 2023). Care in power therefore encourages a critical coexistence approach that invites non-Indigenous peoples to learn about the cultural and situational divides inherent to environmental governance, and to attend to ongoing colonial legacies in their cross-cultural collaborations (Whyte 2013). In some cases, communities may negotiate for years to bring Indigenous leadership and knowledge into environmental decision making (e.g., Diver 2017, Quicho et al. 2023, Winter et al. 2023). Although collaborative processes are important, we explore how such negotiation processes can be improved through reciprocal relationships of care that require being on the land and in community. Through care in power, we recognize that political negotiations over authority and knowledge production must occur alongside the nurturing of place-based relationships across generations. Such negotiations must also distribute additional resources and decision-making authority to Indigenous Nations. Following Smith et al. (2023), we hope that bringing caretaking concepts to political negotiations over Indigenous land management and knowledge co-production may help people renew their commitments to place and to each other, and contribute to eco-cultural revitalization.

Through contributed articles, we see how care in power occurs through positive assertions of Indigenous agency and local leadership in environmental governance. This work includes responding to long histories of exclusion of Indigenous and local communities by centralized colonial and bureaucratic systems. For example, Winter et al. (2023) document collective actions taken by Indigenous peoples and local communities across Hawai’i to create Indigenous and community conserved areas (ICCAs) that emphasize Indigenous self-governance, shared values, and longstanding connections to place (and one another) through collaborative management with federal and state agencies. Researching community-based conservation in Iran (Qeshm Island), Ghayoumi et al. (2023) explore how governance regimes can uplift community decision making by understanding “the nature of communities, together with culture, rights, and economic interests.” Writing as a park manager and scholar working in Alaska, Bobowski and Fiege (2023) discuss the challenges in resource management decision-making processes

that are embedded in settler colonial conservation institutions. They argue for a management system that supports shared stewardship “from a perspective of tolerance and acceptance, or better yet of deep appreciation for different ways of knowing and understanding people and their relationships to each other, to nature, and to the world around us.”

Highlighting the need for greater inclusivity and care in environmental planning, Gagnon and Ravindran (2023) consider the history and experiences of the Lake Superior’s Keweenaw Bay Indian Community in Michigan. They underscore how “Tribes have endured immense struggles to have a seat at the official environmental protection table.” Their work conveys how existing environmental governance procedures do not account for Tribes as sovereign Nations, which “do not fit neatly into ‘public comment’ categories.” Similarly, in the context of sea otter management, Popken et al. (2023) examine barriers to collaborative caretaking of coastal ecosystems with Nuu-chah-nulth Nations on Vancouver Island, Canada. Given federal agencies’ failure to accommodate Indigenous knowledge and food sovereignty priorities, Nuu-chah-nulth and other Indigenous Nations have developed their own sea otter action plan that is “rooted in Nuu-chah-nulth knowledge, values, principles, and leadership.”

Authors in this feature demonstrate how collaborative care includes an Indigenous environmental justice approach, emphasizing Indigenous community leadership and the challenges of building cross-boundary relationships in environmental governance (e.g., McGregor et al. 2020). For example, Oberholzer Dent et al. (2023) examine frontline community actions taken by the California Indian Basketweavers Association to address environmental justice problems facing Indigenous weavers, including pesticide use, restrictions on cultural burning, and limited land access. Deepening our understanding of Indigenous environmental justice, authors convey how the disruption of mutually beneficial relationships among weavers and their gathering places is a central injustice, where “environmental catastrophe is seen as the corruption of proper relations between human and environment, and settler colonialism is understood as onto-epistemological violence that disrupts the practice of these relations.” Working in Australian Capital Territory (ACT), Weir (2023) analyzes how knowledge politics of collaborative cultural burning programs are being negotiated among Indigenous and non-Indigenous individuals working in public sector fire management. Weir demonstrates how and why cultural burning continues to be hampered by discrimination against types of Indigenous knowledge, and the importance of power sharing with Traditional Custodians.

Caretaking approaches can also be embedded in transnational negotiations of resource exchange and decision making, where global markets connect urban and rural communities. Illustrating global political-economic barriers to collaborative care, Corson and Campbell (2023) argue that immense financial and technological power held by mainstream international conservation organizations continues to undermine community control and place-based decision making in environmental governance. The authors further critique approaches of “seemingly neutral automated environmental governance and conservation by algorithm” that elide democratic engagement in the reconciliation of value conflicts. Considering how Indigenous

economic systems can inform global economies, Beamer et al. (2023) discuss collective caretaking traditions rooted in Ancestral Circular Economies (ACE) from Hawaiian traditions. Addressing key gaps in sustainability efforts, an ACE approach shows how social equity and social justice principles can be better included in global market reforms. Considering possibilities for bureaucratic governance reform to lift up community leadership, Reed and Diver (2023) examine family-based systems for caretaking for ceremonial trails, a “scaling down” approach to governance to guide the development of more relationship-based institutions within tribal governments. In this way, collaborative care counters bureaucratic models of governance that can replicate historical trauma and hamper community-led processes of repair and healing.

### (3) Care in commoning

Feminist scholars Berenice Fisher and Joan Tronto (1990) describe care ethics as “everything we do to maintain, contain, and repair our ‘world’ so that we can live in it as well as possible. That world includes our bodies, ourselves, and our environment, all of which we seek to interweave in a complex, life-sustaining web.” As such repair work unfolds, the act of care emerges as an act of commoning, or the “everyday practices, social relations and spaces of creativity and social reproduction where people come, share and act together” (Clement et al. 2019). Rather than gracefully unfolding, however, an ethic of care “contains different components that often clash with each other ... [which is] why caring can be both so rewarding and so exasperating” (Fisher and Tronto 1990:40). Responding to this challenge, this special feature explores how different communities navigate complex processes of repair and commoning, despite inevitable clashes and failures.

This concept of care in commoning draws on intersectional feminist scholarship that recognizes the need to resist intersecting and overlapping layers of oppression and domination that stem from “white supremacist capitalist patriarchy” (hooks 2000:51). This involves fighting against ongoing colonial and neocolonial processes that violently stratify and hierarchize communities and individuals by race, class, gender, and/or other social positionings that convey privilege (Crenshaw 1991, Maracle 1996, Mollett and Faria 2013, Whyte 2018). Core to such resistance movements are “allyship and solidarities in intentional anti-imperial and anti-colonial projects across peoples of occupied, post-colonial, and settler-colonial contexts” (Sultana 2023:64).

Contributing to this effort, authors in this special feature engage with core questions around care in commoning: how are life-sustaining connections and mutual accountability created and maintained within and across communities? Some communities are deeply rooted in place and have developed practices of care over centuries, yet other communities are heavily influenced by settler colonial and capitalist systems—leading them to become disconnected from each other, and the environmental care ethics that can sustain them (Harcourt 2019). Responding to the latter scenario, feminist commons scholar Silvia Federici writes, “the production of commons requires first a profound transformation in our everyday life, in order to recombine what the social division of labor in capitalism has separated” (Mies and Bennholdt-Thomsen 2001, Federici 2012). This involves reconnecting with one another and the conditions of daily life within industrialized societies, as well as repairing damages imposed on communities and the environment.

Through collaborative care and commoning, we seek to regain reciprocal socio-natural relationships, where individuals and communities restructure flows of consumption, production, waste, and information exchange for greater accountability and sustainability across social and ecological boundaries. By focusing not on the “commons” (a noun), but on the verb “commoning,” we see the possibility for restructuring ties between people and places. This work involves disassembling systems wrought by colonization, capitalism, and patriarchy, and instead, rebuilding deliberate connections of care. Commoning can be a process through which the strands that connect people and places are made visible, where connections span social, political, economic, and ecological boundaries across scales to form networks of place-based communities. These connected communities, in turn, form and support broader social movements fighting for survival, dignity, equality, and freedom.

This concept of commoning, intentionally building communities and collective action through collaborative care, highlights how people, species, and ecosystems are tied to one another across time and space, and also across difference (Mohanty 2003, Shiva 2016, Whyte 2017, Clement et al. 2019). Collaborative care work, therefore, includes resisting long histories of Eurocentric, male- and white-dominated natural resource management, as well as development paradigms that have advanced Western ideals of nature as separate from human, thereby ignoring Indigenous worldviews that center practices of embodied caretaking (Little Bear 2000, Craft 2017, Vaughan 2018, Diver et al. 2019).

Communities deeply rooted in place and human-nature interdependency serve as a critical foundation for building multispecies commoning networks (Nightingale 2019, Nirmal and Rocheleau 2019). And when we privilege mutually beneficial, reciprocal relations held between humans and nature, Indigenous scholars argue that less destructive patterns of social and ecological interactions can emerge, or re-emerge (Cajete 2000, Little Bear 2000, Deloria and Wildcat 2001, Kimmerer 2013, Simpson 2014, Craft 2017, Vaughan 2018, TallBear 2019). Similarly, a caretaking approach that uplifts accountability and increases knowledge exchange across communities and cultures can help dismantle Western hierarchical thinking. In “Caretaking Relations, Not American Dreaming,” Kim TallBear (2019:25) proposes,

*an explicitly spatial narrative of caretaking relations—both human and other-than-human—as an alternative to the temporally progressive settler-colonial American Dreaming that is ever co-constituted with deadly hierarchies of life. A relational web as spatial metaphor requires us to pay attention to our relations and obligations here and now. It is a narrative that can help us resist those dreams of progress toward a never-arriving future of tolerance and good that paradoxically requires ongoing genocidal and anti-Black violence, as well as violence toward many de-animated bodies.*

We view care in commoning as a meaningful way to cross boundaries and disrupt the Eurocentric and human-centric hierarchies that TallBear critiques, hierarchies used to justify individual and structural violence enacted against non-European and non-human beings. As an intersectional approach to cross-boundary care, a commoning approach offers a pathway to

kinship that lifts up Indigenous worldviews, landback, and solidarity building. This approach also resists the reproduction of social, political, and economic hierarchies inherent to capitalism, colonization/neo-colonialism, and neoliberal development. Of course, not all those at the frontlines of social and environmental problems have the same interests or face the same oppressions. Yet, understanding and interrupting power differentials in particular place-based communities, international resource negotiations, and our research circles provide intersectional points of focus in this collection of articles.

Building toward a more inclusive and multispecies ethic of care, authors draw on Indigenous knowledge systems to highlight the agency of non-human relations and the possibilities for collective action involving humans and non-humans. For example, Clark et al. (2022) describe how Anishinaabe people seek protection for *Giizhik* (Northern white cedar) as a relative, where “Giizhik are conscious spiritual beings, with agency in Anishinaabe life and harvesting relationships.” Through respectful community knowledge-sharing, research collaborators engage deeply with Anishinaabe forest relations with an eye toward educating forest managers. In this way, intimate kinship relationships lead to collective action and commoning practices that better include non-human relatives. Similarly, Wehi et al. (2023) consider a “collaborative duty of care” toward non-humans and the natural world that is expressed through longstanding Māori hosting traditions called *manaakitanga*. Care occurs through commoning actions taken by Māori communities: hosting large gatherings with gifted contributions of treasured food, while also recycling, managing food waste, and taking additional actions to ameliorate contemporary sustainability problems produced by Western food systems.

Collaborative care includes commoning practices that invite people to bring multiple, intersecting identities into environmental decision making in both international and local contexts. Speaking to the importance of gender inclusion in marine management, Baker-Médard et al. (2023) study fisherwomen’s leadership networks in Madagascar as a model of feminist movements for collaborative care. “Care in commoning” occurs through women-led networks that support fisherwomen to self-represent their knowledge and experiences in fisheries management decision making and advance the possibility for “whole-community accountability and care” in regional and international governance. As an additional form of “care in commoning,” Chew and Chief (2023) contribute helpful insights to building ethical research collaborations with Indigenous Nations. To support practical and culturally relevant environmental problem solving, authors establish a research partnership with the Pyramid Lake Paiute that prioritizes “Indigenous cosmologies and frameworks, and defers to Indigenous institutions regarding the protection of knowledge, sovereignty, and community well-being.”

Care in commoning also encourages collaborative management approaches that are rooted in mutual respect and understanding across cultures to broaden learning, adaptation, and resilience. For example, Luat-Hū’eu et al. (2023) engage with a challenging case of co-management for feral pigs as a culturally valued invasive species in Hawai’i. Their research uncovers the social-cultural values and practices of pig hunters, historically excluded



from decision making. Authors call for greater respect and understanding among hunters, state managers, and the public, so that knowledgeable hunters can better contribute to agency management of feral pigs. Further illustrating how boundary crossing strategies can facilitate collective action, Alblas and van Zeven (2023) show how agricultural collectives in the Netherlands act as “bridging organizations,” providing essential coordination functions to connect local and public actors for mutual benefit at local, provincial, and national scales. Finally, in researching Bhutan’s responses to the COVID-19 pandemic, Allison (2003) demonstrates how deeply held spiritual beliefs and care ethics, practiced across the entire nation’s population, contributed to one of the world’s most effective responses to the coronavirus. Specifically, in the first nine months of the pandemic, the collective caretaking actions of Bhutan’s citizens prevented any deaths in the country. Here, care ethics emphasize “the need for mutual support, deepening into a recognition of holistic eco-social interdependence” with our very survival being at stake.

### Concluding thoughts

This special feature explores the variety of ways in which communities around the globe have maintained, gained, or restored reciprocal relations with more-than-human worlds through collaborative care. Like the lei-making image (Fig. 1) and poem inviting readers to enjoy this diverse collection, this work emphasizes the care and love that goes into the complex work of effective collaboration in hopes of expanding collaborative care in environmental governance. Three key common themes emerged from author insights: (1) the importance of place-based knowledge and place-based organizing in the emergence of communities of care; (2) the need for power sharing and environmental governance reforms that draw from deeply seated ethics of collaborative care, navigating webs of political, economic, social, and cultural power relations to reshape who benefits from environmental decision making; and (3) the centrality of commoning strategies for the advancement of environmental caretaking across ecological, social, and geographic boundaries. Through building on these domains of collaborative care, communities (both human and more-than-human) can more successfully fight for self-determination, freedom, and survival.

In convening authors from around the world, we uplift the stories, strategies, and work of many different communities working to inform, motivate, and grow cross-border networks that advance a more just and sustainable world. Cases in this issue carve out informal spaces for local-level collaborative care. Other examples offer strategies for building global movements—making connections among those who are experiencing devastating and unjust social, cultural, and ecological upheaval to foster hope and scale out restoration impacts. By lifting up examples of communities enacting their own situated knowledges for the purpose of informed collective action, we seek to move beyond standard academic analysis. We embrace the roles of ally and accomplice, rather than bystander, to advance radical change.

Our collaborations through this special feature suggest the creation and cultivation of intersectional and reciprocal relationships—between and among species, as well as across

**Fig. 1.** Hawaiian traditions of making and sharing lei, or flower garlands, inspire “care in commoning.” Lei making is rooted in Indigenous practices from Hawai‘i, while also incorporating flowers and influences from many other parts of the world. This photo pictures co-editor Mehana Vaughan making a *lei haku* (a braided lei). Photo by Tara Rock, used with permission.



cultural, political economic, spatial boundaries—can build vibrant local and global movements to resist capitalism and its associated processes of enclosure, dispossession, subordination, and erasure. Yet, sweeping change is also embedded in everyday practices of care: a commitment to sharing knowledge and meals, gathering and advocating, giving attention and nurturing, speaking truth and repairing, reaching out and showing up. In this way, engaging deeply in collaborative care can provide a framework for reconfiguring socio-natural relations, and facilitating the transformation of complex systems toward more just, sustainable, and interdependent futures.

### *Closing: A Braided Beginning*

The process matters, it matters that we make the lei,  
Not just buy.

That the flowers are picked from trees we grew  
or our neighbors' yards,  
not global orchid farms  
Bought from a refrigerated soda case  
At Walmart.

It is not the lei  
But the hands that made it  
The older hands that taught theirs  
The watching for flowers to bloom  
So much later than last year  
The trimming the trees  
weeding each bush  
Long before bringing a grocery bag to gather.

The setting aside of time for it all  
The planting and watering and weeding  
And picking and washing and wrapping  
The making of space in the chill,



then sorting, cleaning, clipping  
And now braiding, wrapping, stringing  
Slowly, one flower at a time,  
Water and sap turning calluses brown  
Fingers curling, hands taut  
Gentle tension on fiber  
Fragrance filled kitchen  
Braided beginning  
Knotted end  
Water immersion  
wrapped in towels  
Set gently to cool last night  
Walked or driven this morning  
To ... you.

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#### LITERATURE CITED

- Alblas, E., and J. van Zeven. 2023. Collaborative agri-environmental governance in the Netherlands: a novel institutional arrangement to bridge social-ecological dynamics. *Ecology and Society* 28(1):28. <https://doi.org/10.5751/ES-13648-280128>
- Allison, E. 2023. Collective responsibility and environmental caretaking: toward an ecological care ethic with evidence from Bhutan. *Ecology and Society* 28(1):10. <https://doi.org/10.5751/ES-13776-280110>
- Andrade, K., C. Corbin, S. Diver, M. V. Eitzel, J. Williamson, J. Brashares, and L. Fortmann. 2014. Finding your way in the interdisciplinary forest: notes on educating future conservation practitioners. *Biodiversity and Conservation* 23:3405-3423. <https://doi.org/10.1007/s10531-014-0818-z>
- Baker-Médard, M., V. Rakotondrazafy, M. H. Randriamihaja, P. Ratsimbazafy, and I. Juarez-Serna. 2023. Gender equity and collaborative care in Madagascar's locally managed marine areas: reflections on the launch of a fisherwomen's network. *Ecology and Society* 28(2):26. <https://doi.org/10.5751/ES-13959-280226>
- Beamer, K., K. Elkington, P. Souza, A. Tuma, A. Thorenz, S. Köhler, K. Kukea-Shultz, K. Kotubetey, and K. B. Winter. 2023. Island and Indigenous systems of circularity: how Hawai'i can inform the development of universal circular economy policy goals. *Ecology and Society* 28(1):9. <https://doi.org/10.5751/ES-13656-280109>
- Bobowski, B., and M. Fiege. 2023. Elegant conservation: reimagining protected area stewardship in the 21st century. *Ecology and Society* 28(1):25. <https://doi.org/10.5751/ES-13788-280125>
- Cajete, G. 2000. Native science: natural laws of interdependence. Clear Light, Santa Fe, New Mexico, USA.
- Cajete, G. 2004. Philosophy of native science. Pages 45-57 in A. Waters, editor. *American Indian thought: philosophical essays*. Blackwell, Malden, Massachusetts, USA.
- Chen, S. L., M. J. Baumflek, T. Sampson, and T. Cabe. 2023. Doing research together: wasdi (*Allium tricoccum*) plants guide dynamic research collaborations in Cherokee landscapes. *Ecology and Society* 28(2):13. <https://doi.org/10.5751/ES-14000-280213>
- Chew, S., and K. Chief. 2023. Community-engaged participatory climate research with the Pyramid Lake Paiute Tribe. *Ecology and Society* 28(1):16. <https://doi.org/10.5751/ES-13725-280116>
- Clark, R. M., N. J. Reo, J. E. Hudson-Niigaanwewiidan, L. E. Waawaashkeshikwe Collins-Downwind, and C. R. Medicine. 2022. Gathering Giizhik in a changing landscape. *Ecology and Society* 27(4):29. <https://doi.org/10.5751/ES-13605-270429>
- Clement, F., W. Harcourt, D. Joshi, and C. Sato. 2019. Feminist political ecologies of the commons and commoning. *International Journal of the Commons* 13(1):1-15. <https://doi.org/10.18352/ijc.972>
- Craft, A. 2017. Giving and receiving life from Anishinaabe nibi inaakonigewin (our water law) research. Pages 105-119 in J. Thorpe, S. Rutherford, and L. A. Sandberg, editors. *Methodological challenges in nature-culture and environmental history research*. Routledge, New York, New York, USA.
- Crenshaw, K. 1991. Mapping the margins: intersectionality, identity politics, and violence against women of color. *Stanford Law Review* 43(6):1241-1299. <https://doi.org/10.2307/1229039>
- Corson, C., and L. M. Campbell. 2023. Conservation at a crossroads: governing by global targets, innovative financing, and techno-optimism or radical reform? *Ecology and Society* 28(2):3. <https://doi.org/10.5751/ES-13795-280203>
- Deloria, V., and D. R. Wildcat, editors. 2001. *Power and place: Indian education in America*. Fulcrum, Golden, Colorado, USA.
- Diver, S. 2016. Co-management as a catalyst: pathways to post-colonial forestry in the Klamath Basin, California. *Human Ecology* 44(5):533-546. <https://doi.org/10.1007/s10745-016-9851-8>
- Diver, S. 2017. Negotiating Indigenous knowledge at the science-policy interface: insights from the Xáxli'p Community Forest. *Environmental Science and Policy* 73:1-11. <https://doi.org/10.1016/j.envsci.2017.03.001>
- Diver, S., M. Vaughan, M. Baker-Médard, and H. Lukacs. 2019. Recognizing "reciprocal relations" to restore community access to land and water. *International Journal of the Commons* 13(1):400-429. <https://doi.org/10.18352/ijc.881>
- Deur, D., and N. J. Turner, editors. 2005. *Keeping it living: traditions of plant use and cultivation on the Northwest Coast*

of North America. University of Washington Press, Seattle, Washington, USA.

Federici, S. 2012. Feminism and the politics of the commons. In D. Bollier and S. Helfrich, editors. *The wealth of the commons: a world beyond market & state*. Commons Strategy Group and Levellers Press, Amherst, Massachusetts, USA.

Fisher, B., and J. Tronto. 1990. Toward a feminist theory of caring. Pages 35-62 in E. K. Abel and M. K. Nelson, editors. *Circles of care: work and identity in women's lives*. SUNY Press, Albany, New York, USA.

Fisk, J. 2022. Speaking of abundance: Taino ecolinguistic ontologies, pre-colonial biocultural systems, and decolonial pathways to food and material sovereignty in Puerto Rico. Dissertation. University of Hawai'i at Manoa, Hawai'i, USA. <https://scholarspace.manoa.hawaii.edu/items/6405e89a-1055-45-a5-91ce-218855791eae>

Gagnon, V. S., and E. H. Ravindran. 2023. Restoring human and more-than-human relations in toxic riskscapes: "in perpetuity" within Lake Superior's Keweenaw Bay Indian Community, Sand Point. *Ecology and Society* 28(1):2. <https://doi.org/10.5751/ES-13655-280102>

Ghayoumi, R., A. Charles, and S. M. Mousavi. 2023. A multi-level analysis of links between government institutions and community-based conservation: insights from Iran. *Ecology and Society* 28(2):33. <https://doi.org/10.5751/ES-14217-280233>

Harangody, M., M. Blaich Vaughan, L. S. Richmond, and K. Kilikina Luebke. 2022. Hālana ka mana'o: place-based connection as a source of long-term resilience. *Ecology and Society* 27(4):21. <https://doi.org/10.5751/ES-13555-270421>

Harcourt, W. 2019. Feminist political ecology practices of worlding: art, commoning and the politics of hope in the class room. *International Journal of the Commons* 13(1):153-174. <https://doi.org/10.18352/ijc.929>

Hart-Fredeluces, G. M., M. Burnham, M. Blaich Vaughan, G. Hart, J. A. Hart, E. St. Martin, J. Ward, and T. Ticktin. 2022. Indigenous caretaking of beargrass and the social and ecological consequences of adaptations to maintain beargrass weaving practices. *Ecology and Society* 27(4):22. <https://doi.org/10.5751/ES-13588-270422>

hooks, b. 2000. *Feminist theory: from margin to center*. Second edition. Pluto, London, UK. <https://doi.org/10.4324/9781315743172>

Indigenous Action Media (IAM). 2014. Accomplices not allies: abolishing the ally industrial complex. *Indigenous Action*, 4 May. <https://www.indigenousaction.org/accomplices-not-allies-abolishing-the-ally-industrial-complex/>

Kimmerer, R. W. 2013. *Braiding sweetgrass*. Indigenous wisdom, scientific knowledge and the teachings of plants. Milkweed Editions, Minneapolis, Minnesota, USA.

Klenk, N. L., M. G. Reed, G. Lidestav, and J. Carlsson. 2013. Models of representation and participation in model forests: dilemmas and implications for networked forms of environmental governance involving indigenous people. *Environmental Policy and Governance* 23(3):161-176. <https://doi.org/10.1002/eet.1611>

Kovach, M. 2009. *Indigenous methodologies: characteristics, conversations and contexts*. University of Toronto Press, Toronto, Ontario, Canada.

Larsen, S. C., and J. T. Johnson. 2017. *Being together in place: Indigenous coexistence in a more than human world*. University of Minnesota Press, Minneapolis, Minnesota, USA. <https://doi.org/10.5749/minnesota/9781517902216.001.0001>

Laursen, S., N. Puniwai, A. S. Genz, S. A. Nash, L. K. Canale, and S. Ziegler-Chong. 2018. Collaboration across worldviews: managers and scientists on Hawai'i Island utilize knowledge coproduction to facilitate climate change adaptation. *Environmental Management* 62:619-630. <https://doi.org/10.1007/s00267-018-1069-7>

Little Bear, L. 2000. Jagged worldviews colliding. Pages 77-85 in M. Battiste, editor. *Reclaiming Indigenous voice and vision*. UBC Press, Vancouver, British Columbia, Canada. <https://doi.org/10.59962/9780774853170-009>

Little Bear, L. 2009. *Naturalizing Indigenous knowledge synthesis paper*. University of Saskatchewan, Aboriginal Education Research Centre, Saskatoon, Saskatchewan and First Nations and Adult Higher Education Consortium, Calgary, Alberta, Canada. [https://scope.bccampus.ca/pluginfile.php/69371/mod\\_resource/content/1/naturalizeIndigenous%20knowledge%20Littlebear.pdf](https://scope.bccampus.ca/pluginfile.php/69371/mod_resource/content/1/naturalizeIndigenous%20knowledge%20Littlebear.pdf)

Liu, Z., P. Ciaais, Z. Deng, R. Lei, S. J. Davis, S. Feng, B. Zheng, D. Cui, X. Dou, B. Zhu, et al. 2020. Near-real-time monitoring of global CO<sub>2</sub> emissions reveals the effects of the COVID-19 pandemic. *Nature Communications* 11:5172. <https://doi.org/10.1038/s41467-020-18922-7>

Luat-Hū'eu, K. K., M. Blaich Vaughan, and M. R. Price. 2023. Understanding local pig hunter values and practices as a means toward co-management of feral pigs (*Sus scrofa*; pua'a) in the Hawaiian Islands. *Ecology and Society* 28(2):32. <https://doi.org/10.5751/ES-13679-280232>

Machemer, T. 2021. Dolphins spotted in Venice's Grand Canal—for real this time. *Smithsonian Magazine*, 5 April. <https://www.smithsonianmag.com/smart-news/dolphins-spotted-venices-grand-canal-real-time-180977403/>

Maracle, L. 1996. *I am a woman: a native perspective on sociology and feminism*. Press Gang, Vancouver, British Columbia, Canada.

Mascarenhas, M., editor. 2021. *Lessons in environmental justice: from Civil Rights to Black Lives Matter and Idle No More*. SAGE, Thousand Oaks, California, USA. <https://doi.org/10.4135/9781544321974>

McGregor, D. 2014. Traditional knowledge and water governance: the ethic of responsibility. *AlterNative: International Journal of Indigenous Peoples* 10(5):493-507. <https://doi.org/10.1177/117718011401000505>

McGregor, D., N. Latulippe, R. Whitlow, L. Gansworth, L. McGregor, M. Jeffrey, C. Recollect, S. Allen, and J. Chiblow. 2019. *Indigenous knowledge systems (IKS), reconciliation and research synthesis report*. Report to the Social Sciences and Humanities Research Council, Ottawa, Ontario, Canada. <https://tspace.library.utoronto.ca/bitstream/1807/105639/1/McGregorSSHRC-IKSmarch2019.pdf>

- McGregor, D., S. Whitaker, and M. Sritharan. 2020. Indigenous environmental justice and sustainability. *Current Opinion in Environmental Sustainability* 43:35-40. <https://doi.org/10.1016/j.cosust.2020.01.007>
- Middleton Manning, B. R., C. Gould, J. LaRose, M. K. Nelson, J. Barker, D. L. Houck, and M. G. Steinberg. 2023. A place to belong: creating an urban, Indian, women-led land trust in the San Francisco Bay Area. *Ecology and Society* 28(1):8. <https://doi.org/10.5751/ES-13707-280108>
- Mies, M., and V. Bennholdt-Thomsen. 2001. Defending, reclaiming, and reinventing the commons *Canadian Journal of Development Studies* 22:997-1023. <https://doi.org/10.1080/0225-5189.2001.9669952>
- Mohanty, C. T. 2003. *Feminism without borders: decolonizing theory, practicing solidarity*. Duke University Press, Durham, North Carolina, USA. <https://doi.org/10.1515/9780822384649>
- Mollett, S., and C. Faria. 2013. Messing with gender in feminist political ecology. *Geoforum* 45:116-125. <https://doi.org/10.1016/j.geoforum.2012.10.009>
- Nadasdy, P. 2003. *Hunters and bureaucrats: power, knowledge, and aboriginal-state relations in the southwest Yukon*. UBC Press, Vancouver, British Columbia, Canada. <https://doi.org/10.59962/9780774851886>
- Nightingale, A. J. 2019. Commoning for inclusion? Political communities, commons, exclusion, property and socio-natural becoming. *International Journal of the Commons* 13(1):16-35. <https://doi.org/10.18352/ijc.927>
- Nirmal, P., and D. Rocheleau. 2019. Decolonizing degrowth in the post-development convergence: questions, experiences, and proposals from two Indigenous territories. *Environment and Planning E: Nature and Space* 2(3):465-492. <https://doi.org/10.1177/2514848618819478>
- Notzke, C. 1995. A new perspective in aboriginal natural resource management: co-management. *Geoforum* 26(2):187-209. [https://doi.org/10.1016/0016-7185\(95\)00019-H](https://doi.org/10.1016/0016-7185(95)00019-H)
- Oberholzer Dent, J. R., C. Smith, M. C. Gonzales, and A. B. Lincoln-Cook. 2023. Getting back to that point of balance: Indigenous environmental justice and the California Indian Basketweavers' Association. *Ecology and Society* 28(1):14. <https://doi.org/10.5751/ES-13674-280114>
- Ogura, S., and S. J. Forwell. 2023. Responsibility as humans: meaning of traditional small grains cultivation in Japan. *Ecology and Society* 28(1):27. <https://doi.org/10.5751/ES-13798-280127>
- Pearce, M. W., and R. P. Louis. 2008. Mapping Indigenous depth of place. *American Indian Culture and Research Journal* 32(3):107-126. <https://escholarship.org/uc/item/3jw5k84m>
- Pellow, D. N. 2007. *Resisting global toxics: transnational movements for environmental justice*. MIT Press, Cambridge, Massachusetts, USA. <https://doi.org/10.7551/mitpress/7479.001.0001>
- Pellow, D. N. 2018. *What is critical environmental justice?* Polity, Cambridge, UK.
- Piatote, B., C. Sullivan, C. Smith, S. Diver, J. Weir, N. M. Burton, and H. Goldring. 2020. 'Pass the Ball', So you care about Indigenous scholars? poster series. Ad Astra Comix, Canada. <https://adastracomix.com/2020/10/22/comic-art-poster-series-so-you-care-about-indigenous-scholars/>
- Popken, L. R., P. J. Griffin, C. Coté, and E. Angel. 2023. Indigenous food sovereignty through resurgent self-governance: centering Nuu-chah-nulth principles in sea otter management in Canada. *Ecology and Society* 28(2):12. <https://doi.org/10.5751/ES-13702-280212>
- Quiocho, K., K. Kikiloi, K. Kuoha, A. Miller, B. Ka'aleleo Wong, H. Ka'aekuahiwi Pousima, P. Andrade, and 'A. Wilhelm. 2023. Mai Ka Pō Mai: applying Indigenous cosmology and worldview to empower and transform a management plan for Papahānaumokuākea Marine National Monument. *Ecology and Society* 28(3):21. <https://doi.org/10.5751/ES-14280-280321>
- Reed, R., and S. Diver. 2023. Pathways to healing: Indigenous revitalization through family-based land management in the Klamath Basin. *Ecology and Society* 28(1):35. <https://doi.org/10.5751/ES-13861-280135>
- Risling Baldy, C. 2018. *We are dancing for you: Native feminisms and the revitalization of women's coming of age ceremonies*. University of Washington Press, Seattle, Washington, USA.
- Shiva, V. 2016. *Staying alive: women, ecology, and development*. North Atlantic Books, Berkeley, California, USA.
- Simpson, L. B. 2014. *Land as pedagogy: Nishnaabeg intelligence and rebellious transformation*. decolonization. *Indigeneity, Education and Society* 3(3):1-25.
- Simpson, L. B. 2017. *As we have always done: Indigenous freedom through radical resistance*. University of Minnesota Press, Minneapolis, Minnesota, USA. <https://doi.org/10.5749/j.ctt1pwt77c>
- Smith, C., S. Diver, and R. Reed. 2023. Advancing Indigenous futures with two-eyed seeing: strategies for restoration and repair through collaborative research. *Environment and Planning F* 2(1-2):121-143. <https://doi.org/10.1177/26349825221142292>
- Smith, C., B. Piatote, C. Sullivan, J. Weir, S. Diver, N. M. Burton, and H. Goldring. 2020b. 'Extraction Zombies', So you care about Indigenous scholars? poster series. Ad Astra Comix, Canada. <https://adastracomix.com/2020/10/22/comic-art-poster-series-so-you-care-about-indigenous-scholars/>
- Smith, C., C. Sullivan, B. Piatote, S. Diver, J. Weir, N. M. Burton, and H. Goldring. 2020a. 'SS Academy', So you care about Indigenous scholars? poster series. Ad Astra Comix, Canada. <https://adastracomix.com/2020/10/22/comic-art-poster-series-so-you-care-about-indigenous-scholars/>
- Sultana, F. 2023. Decolonizing climate coloniality. Pages 58-65 in R. Solnit and T. Y. Lutunatabua, editors. *Not too late: changing the climate story from despair to possibility*. Haymarket Books, Chicago, Illinois, USA.
- Tait, M. K., K. M. Gaughen, A. Tsang, M. M. Walton, S. D. Marcoux, L. Kekoa, M. Kunz, and M. Blaich Vaughan. 2024. *Holomua Marine Initiative: community-generated socio-cultural*



principles and indicators for marine conservation and management in Hawai'i. *Ecology and Society* 29(1):4. <https://doi.org/10.5751/ES-13640-290104>

TallBear, K. 2016. Dear Indigenous studies, it's not me, it's you: why I left and what needs to change. Pages 69-82 in A. Moreton-Robinson, editor. *Critical Indigenous studies: engagement in First World locations*. University of Arizona Press, Tucson, Arizona, USA. <https://doi.org/10.2307/jj.423485.8>

TallBear, K. 2019. Caretaking relations, not American dreaming. *Kalfou: A Journal of Comparative and Relational Ethnic Studies* 6(1):24-41. <https://doi.org/10.15367/kf.v6i1.228>

Todd, Z. 2018. Refracting the state through human-fish relations: fishing, Indigenous legal orders and colonialism in North/Western Canada. *Decolonization: Indigeneity, Education, and Society* 7(1):60-75.

Vaughan, M. B. 2018. *Kaiāulu: gathering tides*. Oregon University Press, Corvallis, Oregon, USA. <https://doi.org/10.1353/book61441>

von der Porten, S., and R. C. de Loë. 2013. Collaborative approaches to governance for water and Indigenous peoples: a case study from British Columbia, Canada. *Geoforum* 50:149-160. <https://doi.org/10.1016/j.geoforum.2013.09.001>

von der Porten, S., R. C. de Loë and D. McGregor. 2016. Incorporating Indigenous knowledge systems into collaborative governance for water: challenges and opportunities. *Journal of Canadian Studies* 50(1):214-243. <https://doi.org/10.3138/jcs.2016.50.1.214>

Wehi, P. M., M. P. Cox, H. Whaanga, and T. Roa. 2023. Tradition and change: celebrating food systems resilience at two Indigenous Māori community events. *Ecology and Society* 28(1):19. <https://doi.org/10.5751/ES-13786-280119>

Weir, J. K. 2023. Expert knowledge, collaborative concepts, and universal nature: naming the place of Indigenous knowledge within a public-sector cultural burning program. *Ecology and Society* 28(1):17. <https://doi.org/10.5751/ES-13822-280117>

Weng, K. C., A. M. Friedlander, L. Gajdzik, W. Goodell, and R. T. Sparks. 2023. Decreased tourism during the COVID-19 pandemic positively affects reef fish in a high use marine protected area. *PLoS ONE* 18(4):e0283683. <https://doi.org/10.1371/journal.pone.0283683>

Whyte, K. P. 2011. The recognition dimensions of environmental justice in Indian Country. *Environmental Justice* 4(4):199-205. <https://doi.org/10.1089/env.2011.0036>

Whyte, K. P. 2013. On the role of traditional ecological knowledge as a collaborative concept: a philosophical study. *Ecological Processes* 2:7 <https://doi.org/10.1186/2192-1709-2-7>

Whyte, K. 2017. The Dakota Access pipeline, environmental injustice, and U.S. colonialism. *Red Ink: An International Journal of Indigenous Literature, Arts, and Humanities* 19(1):154-169.

Whyte, K. 2018. Settler colonialism, ecology, and environmental injustice. *Environment and Society* 9(1):125-144. <https://doi.org/10.3167/ares.2018.090109>

Whyte, K. P., and C. J. Cuomo. 2017. Ethics of caring in environmental ethics: Indigenous and feminist philosophies. Pages 234-247 in S. M. Gardiner and A. Thompson, editors. *The Oxford handbook of environmental ethics*. Oxford University Press, New York, New York, USA. <https://doi.org/10.1093/oxfordhb/9780199941339.013.22>

Wilson, N. J., and J. Inkster. 2018. Respecting water: Indigenous water governance, ontologies, and the politics of kinship on the ground. *Environment and Planning E: Nature and Space* 1(4):516-538. <https://doi.org/10.1177/2514848618789378>

Wilson, S. 2008. *Research is ceremony: Indigenous research methods*. Fernwood, Halifax, Nova Scotia, Canada.

Winter, K. B., M. Blaich Vaughan, N. Kurashima, L. Wann, E. Cadiz, A. H. Kawelo, M. Cypher, L. Kaluhiwa, and H. Springer. 2023. Indigenous stewardship through novel approaches to collaborative management in Hawai'i. *Ecology and Society* 28(1):26. <https://doi.org/10.5751/ES-13662-280126>

Yazzie, M., and C. Risling Baldy. 2018. Indigenous peoples and the politics of Water. *Decolonization: Indigeneity, Education and Society* 7(1):1-18.