Chapter 12
Introduction to Part II. Practical Knowledges Embedded in Biocultural Diversity

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Abstract In the current era, the loss of biodiversity is not only an ecological crisis but also a profound cultural one. As species disappear, so too do the cultural practices, stories, and traditional knowledge systems tied to them. This section explores the concept of biocultural diversity, the intertwined richness of biological and cultural life—and the critical role of practical knowledge within it. Drawing from environmental humanities, the philosophy of John Dewey, and the biocultural ethics framework developed by Ricardo Rozzi, it highlights the significance of embodied, place-based, and experiential knowledge systems in fostering ecological conservation and public awareness. Through practices such as ecological art education projects, traditional art and crafts, and land-based Indigenous learning, practical knowledge becomes vital for both biodiversity and cultural diversity.

Keywords Biocultural diversity · Practical knowledge · Indigenous knowledge · Knowledge growth · Action

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12.1 Introduction

Nowadays, humanity faces an unprecedented ecological crisis. As human activity continues to reshape the planet, the accelerated loss of biodiversity has become a defining challenge of our time (Leakey 1996). However, despite the imminent crisis of biodiversity loss, there is a serious lack of public awareness, concern, and participation in solving those issues (Gaston and Spicer 2013). To address this gap, it is essential to enhance public awareness and understanding of the importance of conserving biodiversity (Ives et al. 2018; Richardson et al. 2020; Whitburn et al. 2020). First, at a social level, there is a close and complex link between public opinion, scientific productions and conservation policies (Martín-López et al. 2012; Troudet et al. 2017). Second, at an individual level, conservation behavior can be influenced by multiple factors, such as knowledge, interest, attitudes, emotions, and affinity with nature (Turpie 2003; López-del-Toro et al. 2009; Barbett et al. 2020; Liu and Chen 2021; Barrows et al. 2022).

As documented in part I of our volume *Linking Arts with Biocultural Conservation*, *Restoration*, *and Communication* (Zhu 2026), to address social and individual levels of human-nature relationships, the arts and aesthetic experiences can play a major role in fostering biodiversity conservation, and more broadly biocultural conservation (Castro-Jorquera 2026; Chiarini 2026; Hu and Yang 2026; McIntosh 2026; Rozzi 2026; Song 2026; Tsuji and Johnson 2026).

In part II, we draw attention to different concepts and examples of interdisciplinary projects linking art, biological sciences, environmental education and biocultural conservation. Toward this aim we address theoretical and practical dimensions at the interfaces of interdisciplinary work conducted by artists, scientists, philosophers, and community members.

First, the impact of biodiversity losses extends far beyond the ecological domain and poses profound challenges to the humanities. The conceptual framework of biocultural ethics elucidates that other-than-human species carry not only biological significance but are woven into the intellectual, cultural, and spiritual fabric of communities around the world (Rozzi 2012, 2018). When a species becomes extinct, so do the traditional knowledge, stories, rituals, and practices closely associated with it. This entails losses of cultural diversity, disruption of life habits, and homogenization of diverse worldviews that have developed in close relationship with the local natural environment. Consequently, species extinction is not only a biological or ecological concern, but also a humanistic one, since losses of biodiversity in a biophysical sense entails losses of biocultural heritage and memory (Hokowhitu et al. 2020; Ojeda et al. 2022; Monterrubio-Solís et al. 2023; Rozzi et al. 2023b). This, in turn, weakens public support for biodiversity and/or biocultural conservation (Rozzi 2013; Jarić et al. 2022).

Second, to raise public awareness and participation in biocultural conservation, a community of philosophers, ecologists, artists, and scholars, based on the methodology of field environmental philosophy (FEP), have embarked on a two-fold integration in various areas across the world: on the one hand, to generate knowledge

and conservation actions, and on the other hand, to help people come to appreciate the biocultural values that may have been overlooked (Rozzi et al. 2023a).

In part II of this book, we broaden FEP concepts with other approaches and expand this exploratory journey of growing knowledge and discovery of nature values by presenting diverse initiatives across Asia, Latin America, and North America. These initiatives and programs can be considered as echoes to the FEP to varying degrees, either directly or indirectly. At the same time, these practices show us how different forms of knowledge, contemporary and ancestral, creatively inform ways in which local people interact with their local environments. Presenting these case studies, we aim to communicate to readers practices deeply rooted in the interconnectedness between biodiversity and cultural diversity. We also hope to foster a sense of responsibility that values not only the conservation of biodiversity (local, regional, and global biospheres and the other-than-human organisms that co-inhabit these spheres with humans), but also the conservation of various biocultural knowledge systems, cultural expressions, and their relevant practices.

12.2 Biocultural Conservation and John Dewy's Philosophy

Designed in response to the global socio-ecological crisis and biocultural homogenization, the concept of biocultural conservation represents a quantum shift in the understanding of the complex relationship between human beings and the natural world, with the recognition of the close links between the diversity of biophysical, cultural-linguistic symbolic, and social systems (Rozzi 2013). This concept suggests people consider biodiversity on earth to include not only numerous organisms and ecosystems, but also cultural diversity shaped by local/regional cultures, languages, traditional knowledge systems, as well as practices regarding how people interact with their local environment and other-than-human species in the local ecosystem (Rozzi 2023). This term also challenges the long-standing dichotomy of nature/culture, environment/humans, and urges that effective conservation must simultaneously address ecological problems and socio-cultural injustice.

We build on almost three decades of work on biocultural research, education, and conservation at the Omora Ethnobotanical Park in Puerto Williams, Chile (Rozzi et al. 2008, 2010; Tauro et al. 2021). Launched in 1999 at the southern tip of South America, Omora Park researchers focused on biocultural theoretical frameworks, philosophical argumentations, research questions, methodologies, and overall conservation goals related to appreciate, respect, and co-inhabit biocultural diversity (Rozzi 2023). Grounded on this long-term place-based research initiative the Omora Park research team identified the following ten principles for conserving biocultural diversity:

1. Inter-institutional cooperation
2. Participatory approach
3. Interdisciplinary conservation approach (bridging humanities and sciences)

4. Networking and international cooperation
5. Communication through the media
6. Flagship species
7. Outdoor education
8. Economic sustainability and ecotourism
9. Administrative sustainability
10. Research and conceptual sustainability for conservation (the continuously evolving process for perceiving, understanding and co-existing with biocultural diversity) (Rozzi et al. 2006).

As stated by Bridgewater and Rotherham (2019), the former principles were forged at a particular place, but they have wider application and can guide biocultural conservation initiatives in other regions of the world. To philosophically understand biocultural conservation concepts and to examine what local practical knowledge means for the whole landscape of knowledge, the philosophical discourse of the American pragmatist philosopher John Dewey (1859–1952) offers valuable insights, particularly, to understand the role of "practical knowledge" in environmental and biocultural education. Rejecting the rigid division between theory and practice, Dewey reframed knowledge, not as a fixed possession, but as a dynamic, evolving process that emerges through active engagement with real-life situations (Dewey 2008). His philosophy emphasized the unbreakable bond between knowing and doing—we do not arrive at knowledge instantly, but rather develop it through interaction, experimentation, and reflective experience. Particularly,

> … knowing, as judged from the actual procedures of scientific inquiry, has completely abandoned in fact the traditional separation of knowing and doing, that the experimental procedure is one that installs doing as the heart of knowing … (Dewey 2008, p. 29)

Learning, for Dewey, is not merely cognitive but embodied and participatory, rooted in the lived experience of the learner. This view closely aligns with Aristotle's concept of "phronesis," or practical wisdom, and finds renewed relevance today in biocultural conservation and education initiatives that aim to bridge universal scientific models with local, place-based knowledge systems (Prajapati and Nath 2025).

Dewey's emphasis on experiential learning supports the notion of practical knowledge, which forms the basis of numerous cultural and ecological practices of biocultural conservation (Rozzi 2013). Dewey's theory underscores the importance of "learning through doing" (Dewey 1997)—a model that supports cognitive growth, emotional development, and ethical engagement with the natural world. His instrumentalist approach views knowledge as a tool for solving real-world problems, making it particularly useful in addressing socio-ecological challenges. Through practical knowledge, communities can renew meaningful relationships with their environments, cultivate stewardship, and enact sustainable practices.

Dewey's insights help ground biocultural conservation efforts in educational practices that are inclusive, transformative, and action oriented. For example, art education projects rooted in local places and embodied experiences offer participants novel ways of interacting with local biocultural systems. Dewey (1997) provides philosophical concepts that align with the 3Hs of the biocultural ethics (Rozzi 2013):

both encourage people to reestablish ethical, aesthetic, and emotional connections with (human and other-than-human) co-inhabitants, their life habits in their local habitats. The arts provide a powerful way of acquiring and expressing practical knowledge, involve situational immersion, experiential learning, action-oriented practices, everyday skills, crafts, and embodied cognition. In this way, the arts catalyze pragmatist and biocultural practices to link arts with biocultural conservation, restoration, and communication.

Artistic concepts and practices can amplify Dewey's approach of learning by doing, for the sake of experientially understanding and valuing the intricate interrelations among Rozzi's 3Hs. Thus, through arts our understanding of the world becomes refreshing, encouraging, and promising in embracing otherness, such as other systems of knowledge, other ways of knowing, other ways of living together with other-than-human species, and other ways of greeting other cultures. The goal of Part II is to illustrate this refreshed biocultural perspective that connects intellectual inquiry with embodied practice, which repositions the image of knowledge as a living, evolving relationship with the world around us that guides us toward knowledgeable and respectful forms of co-inhabitation.

12.3 An Overview of Part II

Part II begins with Chilean sculptor Paola Vezzani, whose work overcomes abstract and disembodied approaches by embracing lived, embodied practices. In Chap. 13, "The Fragility of Encounter," Vezzani (2026) explores the theme of fragility through her experiences in the outdoor laboratory of the Omora Ethnobotanical Park, particularly through Field Environmental Philosophy (FEP) courses offered by the park. These courses provided her with "biocultural lenses" that deepen her appreciation for living beings, alongside "philosophical lenses" that broaden her understanding of biological and cultural diversity. Through her collaboration with environmental philosopher Ricardo Rozzi and engagement with diverse knowledge systems, Vezzani (2026) argues that art must take on an ethical role. Artistic and creative practices are rooted in ethical responsibility. She draws on her own watercolor, photographic, and sculptural works to develop an understanding of "fragility of encounters" within subantarctic biocultural diversity. Through the analysis of her artworks, Vezzani suggests that arts can cultivate integral ways of life based on socially and environmentally just forms of biocultural co-inhabitation. Her works bridge Indigenous knowledge and scientific inquiry, reflecting the importance of these heritages while also pointing toward the possibility of healing through respectful, interdisciplinary encounters.

In Chap. 15, two Chinese botanists, Qin Zuo and Li Zhang (2026), focus on the conservation of bryophytes and accessible science education at the Fairy Lake Botanical Garden, Shenzhen, China. Toward this aim, they have integrated their sciences with arts, exhibitions, and other programs to actively engage with citizens for environmental education and aesthetic appreciation of mosses and other

bryophytes. These tiny plants are often overlooked by the public, educators, and environmental policies (Zhu 2023). To solve this knowledge gap, Zuo and Zhang have developed creative pedagogical approaches and innovative usages of arts, new media, and field activities. As a result, at the Fairy Lake Botanical Garden, bryophytes are captivating citizens' attention. The strategies and practical wisdom revealed here could offer valuable experience for the conservation of other overlooked taxa, such as freshwater invertebrates (Contador et al. 2023).

Inspired by the close collaboration between botanists and artists at the Fairy Lake Botanical Garden, Chap. 18, Chinese glass artist Shu Meng (2026) presents her novel artworks of the series of "Moss: The Trailblazer on Ruins." Meng explains how her work has involved learning about the biology and ecology of mosses as well as incorporating her long-standing glass artistry. She examines the ways of looking at urban development and ecological restoration with an approach of divergent thinking about the connections between nature and humanity, wilderness and civilization. Meng weaves her spiritual, academic, and artistic inspirations together to create moss glass artworks that carry explicit biocultural meanings. She underscores the importance of "direct knowledge," echoing the FEP's concept of face-to-face encounters with mosses (Rozzi 2023), to achieve deeper understanding of the relationships between humans and the natural environment.

Two other chapters in Part II also echo the theme of small but essential organisms on Earth. In Chap. 16, "Sublimity in Miniature: Aesthetic Viewing and the Miniature Forests of Cape Horn," Thompson (2026) argues for a shift from ordinary perception to an aesthetic lens, integrating biophysical studies with linguistic-cultural-philosophical conceptualization to attain the conservation of biodiversity and cultural diversities. Kant's description of sublimity can be instructive in appreciating the beauty of the miniature forests in the Cape Horn Biosphere Reserve, illustrating how immensity can be perceived in miniature and challenging the typical notions of the sublime. The "Miniature Forests of Cape Horn" program at Omora Ethnobotanical Park, a biocultural conservation initiative launched in 2000, is vital for knowledge relating to biocultural ethics and conservation. Thompson shows "changing lenses" and applying one particular, underrepresented lens: the aesthetic lens can dramatically alter how we perceive ourselves, our place in the world, our engagements with other-than-human beings, and our ways of valuing.

Mackenzie and his co-authors (2026) also reflected on work in the Cape Horn Biosphere Reserve (Chap. 17), to be specific, photographic work. Drawing on the 3Hs framework, photography becomes biocultural activities of collecting photos rather than simply taking or producing pictures. While photography has historically played a role in creating protected areas and promoting conservation ethics, the concept of "collecting photos" emphasizes an ethical approach to nature and conservation photography, the approach that documents meaningful details about life forms and their habitats. The authors introduce the 3Hs theory as a "heuristic lens" through which photographers can capture comprehensive records of species, highlighting their beauty, behaviors, habitats, and the ecological communities they co-inhabit. In other words, through *collecting* photos, photographers cultivate an awareness of co-inhabitation with other-than-human organisms to promote an

"ethical, affective, and practical" relationship with regional biodiversity, particularly bryophytes and lichens in their photographic activities.

Practical knowledge can also be integrated into formal education. Jin's Healing Garden (2026) transforms art education into "eco-social practice", through which participants engage in composting, permaculture, and biocultural restoration, not as symbolic gestures but as hands-on acts of care. These practices exemplify how practical knowledge, when rooted in place and embodied activity, becomes a powerful agent for "biocultural healing." Specifically, Jin's project, Healing Garden, moves beyond isolated representational art to adopt direct actions rooted in permaculture principles and system thinking for real social and ecological changes. Healing Garden as a living classroom for hands-on engagement cultivates place-based and experiential learning, making it an ideal place for the transmission of practical knowledge to the healing of the local biocultural community in a different way. By integrating arts, ecological science, restoration, and eco-pedagogy, Jin (2026) challenges the dominance of anthropocentric views, redefines education, and creates cooperative partnerships among all co-inhabitants through art education and sharing of practical knowledge.

In "Biocultural Co-inhabitancy: An Examination on Scientific and Indigenous Nomenclature of Bryophytes" (Chap. 19), Zhu and Caviness (2026) examine various ways of knowing through investigating how names were given to bryophytes (mosses, liverworts, and hornworts) in various nomenclature systems, such as through common names, scientific names, and Indigenous names. They argue that naming is not a neutral act but a form of "knowledge-making" grounded in situated biocultural relationships. Their advocacy for a "polyculture of naming" bridges scientific classification with Indigenous understanding, and commences philosophical dialogues between linguistic, relational, and situated practical knowledge and scientific knowledge. They propose a synergy approach to gain a more holistic way of knowing both bryophytes and appreciating human-bryophyte relationship, as well as advocate for a long-range perspective of biocultural co-inhabitancy with small organisms.

Part II ends with a creative writing "Communion" in which Caviness (2026) describes a significant journey to Cranberry Lake with fellow botanists to visit the "Big Pine." During this visit, he sought guidance on a major personal decision: the path to parenthood through adoption. Viewing plants as trusted friends and teachers who could profoundly influence his life and career, Caviness recognizes that plants are "sentient beings and essential consultants" for life decisions. The critical importance of maintaining this "whisper" or communion with the plants suggests that communion is vital for meaningful survival and appreciation of co-inhabitation.

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