Chapter 1
Biocultural Communication: Arts and Sciences for Conserving Biological and Cultural Diversity

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Abstract In this introductory chapter, we propose a re-evaluation of the arts' role in biological conservation and ecological restoration by introducing the concept of *biocultural communication*. Traditionally dominated by scientific methodologies, conservation and restoration have often sidelined the epistemic, ethical, and communicative potential inherent in the arts and humanities. In response to this limitation, we develop a transdisciplinary framework that integrates science, art, and cultural diversity to promote more inclusive and context-sensitive conservation and restoration efforts. Biocultural communication enhances and transforms scientific and ecological communication by embracing transdisciplinary, intercultural, and interspecies dialogues. In this way, it fosters pluralistic engagements among both human and other-than-human communities. In contrast to the deficit model of science communication—which assumes public ignorance—the biocultural perspective acknowledges the significance of local knowledge, symbolic connections to the environment, and the agency of other-than-human beings. Through case studies from Latin America, Asia, and Europe, included in *Linking Arts with Biocultural Conservation, Restoration, and Communication*, we present artistic expressions—from installations and exhibitions to traditional practices and oral narratives—that contribute to processes of biocultural communication as well as of conservation and restoration. These processes stimulate cultural revitalization and environmental education. The arts offer a threefold contribution: (i) they enable us to visualize

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relationships often overlooked by global society; (ii) they recover collective memories; and (iii) they foster a biocultural ethic of co-inhabitation in biocultural diversity. We assert that systematically incorporating the arts into conservation and restoration not only broadens its scope but also provides conceptual and practical tools to address disciplinary fragmentation and counter biocultural homogenization. This chapter sets forth the central objective of the book: to encourage us to understand and envision models of biocultural conservation and conservation that stimulate the regeneration of complex networks of meanings, affections, and both symbolic and material relationships linking human communities with the diversity of co-inhabitants with whom we share our habitats, territories, and the whole biosphere.

Keywords Science communication · Transdisciplinarity · Intercultural dialogues · Interspecies communication · Biocultural ethics

1.1 Introduction

Like practical trades such as agriculture or medicine, biological conservation and ecological restoration are both science and art. However, in the latter context, approaches have often exhibited significant bias toward scientific disciplines. In this eighth volume of the Ecology and Ethics series, we address this scientific bias by highlighting historical and contemporary perspectives that underscore the essential role the arts play in these transdisciplinary fields of conservation and restoration.

The integration of the arts reveals that the journey of conservation encompasses not only biological and ecological aspects, but also cultural dimensions. In doing so, the arts foster the development of biocultural approaches. These "art-informed" concepts and practices broaden the spectrum of biocultural approaches that have previously emerged from the medical and anthropological sciences (Armelagos et al. 1992).

In *Linking Arts with Biocultural Conservation, Restoration, and Communication*, we illustrate how the arts contribute valuable concepts and methodologies, and how diverse cultural traditions enrich them. Consequently, by emphasizing the significance of the arts, our book offers three key contributions to the theory and practice of biocultural conservation.

1. The arts play a pivotal role in shaping the social fabric that underpins biocultural conservation practices, serving as a catalyst for communication—specifically, biocultural communication—within community movements.
2. By integrating the humanities and philosophy, the arts weave together biocultural approaches that illuminate the epistemological, ontological, political, and ethical dimensions necessary for understanding and appreciating both biological and cultural diversity, along with their interconnections.
3. The arts further enhance biocultural conservation by incorporating a wide array of cultural traditions. Different chapters in our book explore the role of various artistic practices in promoting biocultural conservation within diverse cultural

and geographical contexts. Through a biocultural comparative lens, the research investigates artistic expressions grounded in diverse philosophical traditions—such as Buddhism, Taoism, Confucianism, Indigenous philosophies, and Latin American thought—and how these traditions are integrated into conservation efforts across Asia, Europe, and the Americas. This inclusion of contrasting philosophical perspectives is crucial, given the predominance of Anglo-Saxon viewpoints in environmental philosophy. By embracing non-Eurocentric perspectives, we enrich environmental philosophy and cultivate more inclusive conservation strategies. Highlighting culturally diverse artistic practices showcases their potential to enhance community engagement and support sustainable environmental stewardship, as evidenced by biocultural conservation initiatives spearheaded by artists, philosophers, biologists, educators, and community leaders.

The arts serve as catalysts of biocultural communication. At the early stage of Western civilization, Plato defined art as mimesis, or imitation, of the physical world. For Plato, artworks are copies of copies and imitations of imitations. Ontologically, artworks are inferior to the physical world, and the physical world and objects in it are inferior to the realm of forms and every form in the realm. Later, the etymological origin of the word "art" and its plural form "arts" leads us to the old Latin word *ars*, which indicates practical knowledge relevant to a specific "skill," "craft," or "technique." This Western reconceptualization of art brings the concept closer to its understanding in Chinese classical thought. In Chinese classical tradition, the term Six Arts (六艺) refers to *Li* (禮, rites), *Yue* (樂, music), *She* (射, archery), *Yu* (御, chariot riding), *Shu* (書, calligraphy), and *Shu* (數, mathematics), as well as practical knowledge. These classical arts demand intellectual, physical, aesthetic, and communicational skills.

Ultimately, *Linking Arts with Biocultural Conservation, Restoration, and Communication* emphasizes the critical role of artistic and philosophical diversity in shaping innovative biocultural conservation, restoration, and communication initiatives. Below, we begin by examining our proposed new concept, biocultural communication, and its interrelationship with biocultural restoration and conservation.

1.2 From Ecological to Biocultural Communication

Biocultural communication integrates transdisciplinary, intercultural, and interspecies communication. Consequently, it extends and transforms the Eurocentric, but globally influential, concept of ecological communication.

The conceptual framework of ecological communication was forged by the German sociologist Niklas Luhmann (1927–1998), who developed a complex analysis of the relationship between society and the environment. In his book *Ecological Communication* (1989), Luhmann examined the spheres of economics, law, science, politics, religion, and education to illustrate how these areas interact

with environmental issues. This book is a foundational work in which Luhmann critically examines the notions of modernity and rationality. However, from a biocultural perspective, Luhmann's approach has two limitations that we must address. To illustrate them concisely, we will quote two excerpts from the opening of his book:

> On 15 May 1985, at the invitation of the Rhenish-Westfallian Academy of Science, I addressed their yearly assembly on the theme, Can Modern Society Adjust Itself to the Exposure to Ecological Dangers? … The main argument of the address, namely that modern society creates too little as well as too much resonance because of its structural differentiation into different function systems, was presented only in its main outline. Only from this insight does it follow that the solution to this problem can be found in new ideas about values, a new morality or an academic elaboration of an environmental ethics. (Luhman 1989, p. xvii)

Later, in Chap. 1, "Sociological Abstinence," Luhmann states that:

> Originally, sociology had been concerned with the internal aspects of society… Nature, on the other hand, could and indeed had to be left to the natural sciences. What the new discipline called sociology could discover and claim as its own field of study was either society or, if this concept was unsatisfactory, social facts. … Thus the delimitation of the discipline had to be interpreted as a demarcation of a section of reality… The problematic is reduced to structures of the social system or its subsystems. … The external sources of the problems are not even considered. And although every problem of the system is ultimately reducible to the difference between system and environment, this is not even considered. Even for the earlier theory of *societas civilis* this was no different, and the same is true for practical philosophy: what is social was viewed as civitas, as communitas perfecta or as political society, even if this included all of humanity. (Luhmann 1989, pp. 1–2)

These two quotes from the book *Ecological Communication* allow us to address both the contribution of Luhmann's proposal and its limitations. On the one hand, these two passages from his book announce a significant contribution Luhmann made by extending the concept of "ecology" to refer to the connections between social systems and the natural environment. To this end, Luhmann criticized the schizophrenia between disciplines and social functions. Furthermore, he traces the historical development of the notion of "environment," culminating in the modern definition that ultimately separated social systems from the external environment.

On the other hand, in the two previous quotes, we can detect the two significant limitations of Luhmann's analysis. First, he limits himself to examining European culture, which fails to account for the great diversity of symbolic, linguistic, and material relationships between other cultures and natural systems. Consequently, Luhmann overlooks records and analyses of intercultural communication. Second, at no point does it open the agency of other-than-human beings. Consequently, Luhmann dismisses records and analyses of interspecies communication. The chapters in our book present artistic and philosophical concepts and practices embedded in case studies of biocultural restoration and conservation, which include forms of intercultural communication and interspecies communication, thus laying the empirical groundwork for the development of a new concept: *biocultural communication*.

An examination of the essential elements of science communication indicates that many global systems operate under a "deficit model" (Simis et al. 2016). This model

is based on the premise that enhancing communication can increase public support for modern science, technology, and relevant policies (Dickson 2005). Consequently, enhanced science communication would reduce skepticism, which is primarily due to a lack of adequate scientific or environmental knowledge (Schiller et al. 2001). Discourses advocating for improving environmental literacy (Simmons 1995), ecological literacy (Risser 1986; Odum 2013; Jordan et al. 2009), and eco-literacy (Orr 1992; Wooltorton 2006) are also expressions of an inherent belief in the deficit model.

By framing the public as ignorant, the deficit model overlooks the competencies and experiences that diverse communities bring to discussions about ecological issues. This limitation highlights the need for a more comprehensive communication framework that values and incorporates diverse perspectives, fostering richer conservation and restoration practices. To address this limitation, biocultural communication incorporates intercultural dialogues, which reveal a rich diversity of knowledge forms. Hence, the assumption that the public is ignorant is not generally applicable. Indigenous and other local communities, minorities, and ethnic groups contribute a diversity of knowledge forms, which do not undermine their credibility in understanding and articulating the socio-ecological issues that are vital to them. Through the integration of transdisciplinary and intercultural dialogues, biocultural communication presents itself as an invitation, a gesture, and a welcoming of plurilateral sharing, exchanging, and imparting of information relevant to nurturing the conservation and restoration of local/regional/global biocultural diversity.

Biocultural communication also encompasses interspecies communication, which is the exchange of information among different species of animals, plants, fungi, or microorganisms (Gavin 2024). This emerging field of research uncovers structural and semantic principles that challenge traditional notions of communication as a uniquely human trait (Oyewole et al. 2025). Studies on primates, cetaceans, birds, and insects have revealed underlying structural and semantic principles of animal communication (Zuberbuhler 2000; Fichtel 2004). Additionally, interspecies communication embraces interactions between humans and other-than-human species (Meijer 2019).

Biocultural communication is based on three fundamental principles:

- Promote collaborative work and the exchange of transdisciplinary knowledge about the complex interconnections between co-inhabitants, their life habits, and their shared habitats. This includes the inclusion of disciplines less considered than the natural sciences and economics, such as the arts, Indigenous and other forms of local knowledge, ethnobiology, ethology, psychology, ecotheology, formal and non-formal education, the humanities, environmental humanities, anthropology, biocultural diversity studies, philosophy, and biocultural ethics.
- Catalyze intercultural dialogues, particularly the exchange of different forms of ecological knowledge, practices, and wisdom. A key focus of these intercultural dialogues is to forge visions and actions that contribute to the well-being of humans and other-than-human communities. Inspired by the conceptual

framework of the biocultural ethic, intercultural dialogues and biocultural communication take into account the biophysical, cultural (symbolic, linguistic, and material), and institutional (social, political, economic, and technological) particularities of each biogeographical and cultural region.

- Orient forms of interspecies co-inhabitation, with special attention to the worldviews, rituals, and behavioral coordination that emerge from forms of communication between humans and other-than-human co-inhabitants. This communication explores nonverbal forms of communication, focusing on information between individuals and communities, including both human and other-than-human beings. These include, among others, behavioral coordination and information exchanges through visual, auditory, chemical, and tactile signals. Forms of interspecies communication are explored, among others, through artistic practices, ecopsychology, trans-species psychology, ethology, Indigenous and local knowledge, more-than-human anthropology, and biocultural ethics.

These transdisciplinary, intercultural, and interspecies fundamental elements underscore the need for profound philosophical, political-ecological, and practical responses to crucial themes like anthropocentrism and human exceptionalism (Haraway 2008), cognitive and interspecies injustice (Barrett et al. 2021), and ecological democracy (Romero and Dryzek 2021). Additionally, issues such as speciesism (Bradshaw and Watkins 2006; Adams 2025), interspecies justice (Healy and Pepper 2021), socioenvironmental justice (Fioret 2023; Hanazaki 2024), and biocultural ethics (Rozzi 2013) must also be considered.

Notable examples of biocultural communication that align with its principles include a multi-ethnic bird guide that integrates both Indigenous and scientific ornithology knowledge in southern South America (Rozzi 2010, 2014), the study of vegetal, animal and cultural semiosis (Kull 2009), and the reinterpretation of hydrological infrastructure and natural landscape feature (Klaver 2013). Furthermore, ethnographic and liberation theological analyses of relationships of co-inhabitation among Aymara communities, llamas, potatoes, and mountains (Mamani-Bernabé 2015; May 2015, 2017), and the interaction between honeyguides and honey hunters in Tanzania and Mozambique (Spottiswoode and Wood 2023) exemplify these interspecies connections.

Several chapters in our book further illustrate the multifaceted nature of biocultural communication through artistic interactions between humans and other species (Chiarini 2026; Hu and Yang 2026; McIntosh 2026; Meng 2026; Zhang and Xu 2026; Zuo and Zhang 2026) as well as with the land (Khular 2026; Wang 2026). These explorations present a rich tapestry of how biocultural communication can lead to deeper understandings and actions regarding the intercultural and interspecies co-inhabitation.

1.3 From Ecological to Biocultural Restoration

Biocultural communication enhances biocultural restoration. To understand the concept of biocultural restoration, it is essential to trace the origins of ecological restoration. The founding member of the Society of Ecological Restoration (SER) William Jordan and environmental historian George Lubick define ecological restoration as:

> the literal re-creation of a previously existing ecosystem, including not just some but all its parts and processes. This entails everything we do to an ecosystem or a landscape in an ongoing attempt to compensate for novel or "outside" influences on it in such a way that it continues to behave or can resume behaving as if these influences were not present. (Jordan and Lubick 2011, p. 2)

The definition of ecological restoration by Jordan and Lubick (2011) assumes that the unique, distinctive, and environmental value of an ecosystem is attached to a particular historical state. Consequently, restoration focuses on measures such as reforestation, removal of invasive species, erosion control, and reintroduction of native flora and fauna. A broader perspective was previously stated by Aldo Leopold (1887–1948), a pioneer of ecological restoration. Leopold (1949) integrated ecology, aesthetics, and ethics in restoration approaches, as expressed in his well-known maxim:

> A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise. (Leopold 1949, p. 211)

Over the years, ecological restoration has been defined and delineated by the community of ecologists, philosophers, and other scholars (Higgs 1994; Higgs et al. 2014; Davis and Slobokin 2004; United Nations Convention on Biological Diversity 2016; Martin 2017). Through these various efforts, the community of ecological restoration gradually crystallizes four principles regarding ecological integrity, long-term sustainability, historical knowledge, and social well-being (Suding et al. 2015).

Compared to ecological restoration, which focuses on the intrinsic value of ecosystems, biocultural restoration encompasses a broader spectrum of intrinsic, relational, and instrumental values of ecosystems. Ecologist Daniel Janzen was among the first to theorize and practice biocultural restoration. In the 1980s, given the increasingly fragmented state of the world's wilderness areas, especially in tropical regions, he suggested a distinction between ecological restoration and biocultural restoration. Based on his work in the dry tropical forests of Costa Rica, he stated that:

> Restriction of conservation to the few remaining relatively intact habitat patches automatically excludes more than 90% of tropical humanity from its direct benefits; restoration is most needed where people live. Intact habitats within successful agroecosystems are usually fragments of a small size (10 to 10,000 hectares) associated with idiosyncratic ownership, local conflicts, political wars, and displaced cultures. Restoration at the margins of such habitats is essential for their long-term survival. (Janzen 1988, p. 243)

His observations and practice in tropical regions made him realize that "[t]ropical humans are experiencing nearly total loss of this integral part of their mental lives," which is "their predecessors' contract with the natural world or the cultural offerings of the large cities that are supported by their parents' agriculture" (Janzen 1988, p. 244). In this sense, targeted restoration areas both contain wilderness or remote ecosystems, as ecological restoration primarily focuses on human-inhabited areas. Furthermore, Janzen considers it an obligation that local people be intellectually and practically involved in the restoration and management process. Biocultural restoration integrates the scientific principles that guide the restoration process with humans' cultural, mental, and spiritual relationships to their place. This biocultural integration revitalizes the contract they have signed with the local natural environment and habitat from generation to generation. Janzen's pioneering effort on biocultural restoration in Costa Rica's Guanacaste National Park integrates ecological restoration with local cultural recovery, transforming the park into a living classroom for local schools, universities, and visitors (Allen 1988).

Scientists and other professionals working on ecological restoration have increasingly recognized the importance of local cultural practices (Wehi and Lord 2017), the contribution of Indigenous and other local communities (Armesto et al. (2001) Reyes-García et al. 2019), traditional ecological knowledge (Kimmerer 2002; Uprety et al. 2012; Robinson et al. 2021), place-based values (Wickham et al. 2022), cultural landscapes (Toma and Buisson 2022), and revitalization of language and cultures (Kimmerer 2011). This recognition has led to a shift from ecological restoration practices toward biocultural restoration ones that are more sustainable in the long term, by accounting for cultural diversity, place-based knowledge, and local involvement.

1.4 From Biological to Biocultural Conservation

Biocultural communication also enhances biocultural conservation. The term conservation biology (or biological conservation) and its conception as a new professional field originated with the convening of the "First International Conference on Conservation Biology Research," held at the University of California, San Diego, California, in 1978. This conference, led by American biologists Bruce A. Wilcox and Michael E. Soulé, arose from concerns about tropical deforestation, species disappearance, and the erosion of genetic diversity within species (Soulé 1985). In an influential article, Soulé (1985) announced the emergence of a new biological science, conservation biology, which differed in two essential aspects from other applied biological sciences such as forestry, fisheries, and wildlife management. First, these traditional disciplines address problems associated with individual species and the use of particular natural resources. In contrast, conservation biology "tends to be holistic" (Soulé 1985, p. 728). Second, conservation biology embraces normative postulates "that make up the basis of an ethic of appropriate attitudes toward other forms of life" (Soulé 1985, p. 730). These postulates state:

(i) Diversity of organisms is good;
(ii) Ecological complexity is good;
(iii) Evolution is good;
(iv) Biotic diversity has intrinsic value, irrespective of its instrumental or utilitarian value. (Soulé 1985, p. 731)

However, conservation biology has been closely linked to ecology, as it investigates the population ecology (dispersal, migration, demography, effective population size, inbreeding depression, and minimum population viability) of rare or endangered species and addresses the phenomena that affect the maintenance, loss, and restoration of biodiversity, as well as the science underlying the evolutionary processes that generate genetic, population, species, and ecosystem diversity. Although conservation biologists work in the field, in natural areas, and in offices, in government, universities, nonprofit organizations, and industry, their research and education focus are on the ecological sciences, which has limited the consideration of cultural diversity and its interrelationships with biological diversity. This necessitated a new approach: the biocultural approach.

The biocultural approach emerged at the intersection of nature (human biology) and culture. In the 1950s, biocultural anthropology emerged, interested in unraveling the role that culture plays in shaping human biology and vice versa (Livingston 1958). In the 1960s, the biocultural concept was increasingly adopted by the sciences of human evolution (Bowles 1966; Baker 1969; Fischler 1979; Katz 1980), psychology, and health anthropology (Moore et al. 1980; Pepitone 1976).

In the 1970s and 1980s, scientists in the fields of ecology (Bennett et al. 1975), ethnobiology (Posey 1985), and restoration ecology (Allen 1988) explicitly adopted the biocultural concept. In addition, at the institutional level, in 1972, the World Heritage Convention (UNESCO 1972) highlighted transgenerational connections with nature, based on a cultural landscape approach. In the 1990s, the interrelationships between biological and cultural diversity were adopted by international political agendas (Bridgewater and Rotherham 2019). During the Convention on Biological Diversity (CBD) in 1992, traditional ecological knowledge (TEK) and the role of Indigenous peoples were integrated into biodiversity conservation. During the 1990s, several authors contributed new perspectives to these advances, highlighting the importance of traditional environmental knowledge types and values rooted in traditional ecological knowledge (Berkes et al. 1998). In addition, anthropologists drew attention to the role of linguistic diversity in the expression of biocultural diversity (Maffi 2001, 2005) and the crisis of language loss (Krauss 1992). To counter the extinction of native languages, it must be emphasized that it is crucial to incorporate the biocultural memory of ancestral wisdom from Indigenous peasant peoples (Toledo and Barrera-Bassols 2008). Biocultural diversity is a conceptual and methodological tool for gaining a deeper understanding of the interrelationships between cultural dynamics and ecological processes, drawing on different types of knowledge and worldviews (Nemogá 2016).

In the early 2000s, Chilean ecologist and philosopher Ricardo Rozzi coined the term “biocultural conservation” to emphasize the importance of valuing and protecting the connections between biological and cultural diversity, as well as

their implications for human well-being and socio-environmental justice (Rozzi 2001, 2003). Thus, the concept of biocultural diversity became integrated into practice. Subsequently, a methodological approach to implementing biocultural conservation was developed (Rozzi et al. 2006). Biocultural diversity offered a path to sustainability through the conservation of biodiversity, culture, and languages (Caillon et al. 2017; Gavin et al. 2015; Sterling et al. 2017).

Uniting biological conservation with biocultural conservation reinforces the struggle for diversity as a source of heterogeneity in a world that tends to become more homogenous, even in remote regions (Rozzi et al. 2008a). Specifically, biocultural homogenization entails interrelated losses of native biological and cultural diversity at local, regional, and global scales. Biocultural homogenization is both a driver and a product of complex and widespread losses of biological and cultural diversity; however, its full magnitude is not yet widely recognized (Rozzi 2013, 2018). A particular and rapidly expanding problem is biotic homogenization, where non-native species can also become part of biocultures and even replace native ones to form new biocultures (Simberloff 2013). As alternatives to homogenizing practices, many resilient communities are promoting initiatives to restore or conserve biocultural relationships in rural and urban areas (Albó 2018; Hedge and James 2018; Klaver 2018; Kono 2018; Montoya-Greenheck 2018; Tang and Gavin 2018; Taylor 2018; Toyoda 2018; Zanotti 2018; Prescott et al. 2022).

1.5 About the Book

1.5.1 Part I. Theoretical Inquiries

The theoretical framework and methodology used to initiate this book are based on the framework of biocultural ethics and the method of field environmental philosophy, as proposed by Ricardo Rozzi and his collaborators (2006, 2008a, 2023a; Tauro et al. 2021; Contador et al. 2023; Crego et al. 2023; Méndez-Herranz et al. 2023; Ojeda et al. 2023). For field environmental philosophy, the arts have been essential components in the theoretical and practical endeavors in biocultural conservation and education (Rozzi 2023). In the first chapter of Part I, environmental philosopher Eugene Hargrove considers that arts and aesthetics were primary motivations for nature conservation in the United States in the nineteenth century (Hargrove 1989). Rozzi (2026) presents Hargrove's contributions to launching environmental philosophy as a new interdisciplinary academic field in the 1970s and discusses his ideas from a biocultural perspective. It is noteworthy that, in Chile and China, field environmental philosophy methods have incorporated the arts to enhance appreciation for often-overlooked organisms, such as mosses (Rozzi et al. 2008b; Zhu 2023).

Arts in our book encompass a wide range of artificial and human practices. In Part I, "theoretical inquiries," various authors examine philosophically the complex interrelationships between the arts and biocultural conservation, restoration, and communication (biocultural CRC). These theoretical inquiries introduce readers to

philosophical examinations of how the arts are integrated into biocultural CRC and present novel concepts about the arts and environmental aesthetics (Zeng 2019; Zhu et al. 2026).

Philosophical inquiries comprehend a variety of perspectives, including history of ideas and environmental philosophy (Rozzi 2026), ontology (Tsuji and Johnson 2026), cross-cultural studies and intercultural dialogues (Song 2026; Hu and Yang 2026; Chiarini 2026), phenomenology and interspecies interactions (McIntosh 2026) to introduce core concepts and practices of linking arts with biocultural CRC. Tsuji and Johnson (2026) raise ontological questions to argue for the co-constitutive relationality as an alternative to fixed-object conceptions of the arts. Chapters in Part I, as well as throughout the book, address the arts as biocultural expressions grounded in localities (e.g., Yu et al. 2026a, b; Zuo and Zhang 2026; Li et al. 2026; Franquesa-Soler and Mesa-Jurado 2026).

Locality is vital to biocultural CRC because it recognizes the inextricable link among particular ecosystems or habitats, unique cultural practices or life habits, knowledge, and language that have co-evolved within them in close interactions with diverse human and other-than-human co-inhabitants. Several chapters refer to the concept of locality developed by Native American philosopher Brian Burkhart (2019) that introduces a decolonizing framework that emphasizes cultural resurgence and resistance to colonialism, particularly through his concepts of being-from-the-land and knowing-from-the-land. Complementarily, various chapters adopt the 3Hs model (Habits, co-in-Habitants, Habitats) of the biocultural ethic developed by Chilean environmental philosopher and ecologist Ricardo Rozzi. The 3Hs model has been increasingly used (Simion 2023; Prajapati and Nath 2025), since it tackles biocultural conservation as not just about conserving species or habitats in isolation, but as supporting the place-based interconnectedness among human and other-than-human co-inhabitants in their shared habitats (Rozzi 2012). The 3Hs model offers a valuable framework for guiding transdisciplinary collaborations and policy development aimed at sustaining biocultural diversity. By examining *habitats* (ecological and cultural environments), *co-inhabitants* (individuals and entities), and their *habits* (lifeways), a holistic understanding of local contexts is disclosed, which is essential for effective biocultural conservation and restoration (Tauro and Rozzi 2025). Communities of residents and Indigenous people often possess valuable and nuanced understandings of their environments that have been accumulated over generations and are deeply rooted in their languages, stories, and life habits, which involve close communication and interactions with other-than-human beings (Rozzi 2013; Kohn 2015). Biocultural communication is, therefore, contextual and sensitive to cultural differences, and involves interspecies communication that empowers local voices in pursuit of the well-being of human and other-than-human co-inhabitants.

1.5.2 *Part II. Practical Knowledge Embedded in Biocultural Diversity*

Practical knowledge rooted in biocultural diversity offers valuable pathways to sustainability, grounded in the skills possessed by human communities in particular biogeographic regions. This practical knowledge is formed from experiences of living sustainably, cultivating local habits and rituals, developing a linguistic approach in close relationship with other-than-human beings, establishing reciprocal relationships with the land, rivers, and sea, and co-inhabiting daily with other species in the realms of symbolic and material culture (Mbilinyi et al. 2005; Hwang and Huang 2019; Rozzi et al. 2023b). In these practical knowledge systems, the arts play a central role in their creation and transmission, often integrated into local cultural ceremonies, vernacular languages, seasonal practices, techniques, and spiritual beliefs. For example, Kuhlar (2026) presents her experience in her home community in northeast India. Kuhlar's case echoes other studies, such as the research on traditional weaving techniques practiced by the Seediq people of Taiwan, which are rooted in the cultural ecosystem and provide valuable practical knowledge about ancestral beliefs, rituals, and behaviors that support social interactions. These techniques convert ramie plants into fiber, as well as skills related to dyeing (Hwang and Huang 2019).

Biocultural homogenization, however, poses a threat to biocultural systems. Contributors in Part II explore the potential of the arts in restoring and transmitting practical knowledge embedded in various local biocultural systems to address biocultural homogenization and enhance biocultural resilience in specific regions. The artistic endeavors of independent artist Meng (2026), through her moss-themed glass artworks, demonstrate how interactions among artists, scientists, and environmental philosophers can yield artworks rich in biocultural messages and foster artistic creativity. Meng's artistic creations draw on field environmental philosophy approaches developed in southern Chile (Zhu 2023) and today inspire novel artistic practices in China, conveying the idea of biocultural co-inhabitation with other species (*sensu* Rozzi 2012).

Readers will notice that Part II exhibits a strong tendency to explore interspecies relationships, particularly those between humans and overlooked small organisms, such as bryophytes (Mackenzie et al. 2026, Chap. 17; Meng 2026; Zhu and Caviness 2026; Zuo and Zhang 2026). To achieve this aim, the concepts of cultural and biocultural keystone species are powerful "biocultural messengers" to stimulate conservation and restoration practices (Garibaldi and Turner 2004; Rozzi et al. 2023b). Zuo and Zhang (2026) explain how these concepts are integrated into a bryophyte-centered initiative that combines sciences, traditional aesthetics, field expeditions, artistic creation, science communication, and nature education. Through a novel biocultural approach, Zuo and Zhang (2026) lead *ex-situ* and *in-situ* bryophyte conservation programs at the Shenzhen Fairy Lake Botanical Garden.

In Chap. 13, Chilean sculptor Paola Vezzani (2026) calls attention to the fragility of biological and cultural diversity as well as of intercultural and interspecies encounters." Vezzani affirms that art can help us cultivate integral ways of life based on socially and environmentally just forms of biocultural co-inhabitation. Chinese educator and artist Lipeng Jin (2026, Chap. 14) uses "gardeners" as a powerful metaphor for both human and other-than-human participants that together build urban biodiversity, community cohesion, and networks of healthy multispecies relations. Based at Sichuan Fine Art Institute, Jin and collaborators have developed a transdisciplinary project that integrates art, science, ecological restoration, eco-pedagogy, activism, community engagement, and embraces the notions of systems thinking and permaculture. This eco-art and pedagogical project addresses complex issues, including climate change, biocultural homogenization, and the loss of biocultural diversity. To cope with them, Jin (2026, Chap. 14) creates a new imagery of reciprocal and cooperative partnerships through holistic "gardening" and a variety of eco-art activities that inspire caring relationships among humans and other-than-human co-inhabitants. American environmental philosopher Michael Thompson (2026) integrates field environmental philosophy methods with Kantian concepts to develop an epistemological and aesthetic approach to value and protect the miniature forests of mosses, insects, and other small organisms. Kant's description of sublimity can be visualized in the underrepresented diversity and beauty of bryophytes and lichens and helps to overcome global society's blindness and taxonomic chauvinism that exclude and oppress them (Rozzi 2019).

1.5.3 Part III. Biocultural Communication and Conservation Across Urban, Rural, and Remote Ecosystems

Part III focuses on innovative biocultural communication and conservation initiatives conducted in urban, rural, and remote ecosystems. These initiatives encompass a range of diverse practices, including the use of painting, art exhibitions, experimental dance, rural revitalization, and Indigenous botanical healing, to maintain local socio-ecological connections and conserve biocultural diversity. Chapters in Part III emphasize the role of the arts as an active agent in integrating multiple disciplines, involving local empirical knowledge and practices, bridging cross-cultural communication, and interspecies relationships. On the one hand, these roles indicate the great potential of artistic activities rooted in a specific territory for biocultural education and communication. On the other hand, they exemplify renewed meanings given to arts themselves in practices related to biocultural conservation, restoration, and communication.

Today, the arts are integrated into local biocultural contexts where they play key roles in biocultural conservation and communication initiatives by presenting biocultural connectedness in novel and appealing ways. For example, eco-themed

art exhibitions (Li et al. 2026) highlight the complex interconnectedness between local communities and endemic ecosystems, biomes, or keystone cultural species. In this way, in massive urban settings, eco-themed art exhibitions reconnect people to their regional biocultural diversity and inspire them to take conservation actions across metropolitan, rural, and remote areas. Zhang and Xu (2026) describe a transdisciplinary approach to investigating and conserving biodiversity in Tengchong, Yunnan, China. Zhang and Xu employ Rozzi's field environmental philosophy methodology, combining the concept of cultural keystone species with watercolor techniques to create artworks. These artworks convey the perception of "one root of medicine and food," encapsulated in the concept of local biocultural diversity, and foster future biocultural education and communication.

Rural areas are ideal venues for fostering socio-ecological connectedness and conserving biocultural diversity. *Wangshan Life* in eastern China is a good example. In the face of multiple pressures, including rural decline and demographic loss, the Wangshan model offers a holistic framework for rural revitalization, where the arts play a crucial role. Nature-based solutions to the conservation of rural natural-cultural landscapes involve the transmission of ancestral practical knowledge, which also gives rise to an aesthetic rooted in local culture for future communication (Yu et al. 2026a, b).

The integration of arts and sciences is also critical for biocultural conservation and communication in rural and remote areas in Mexico and India. Mexican ecologists Montserrat Franquesa-Soler and Azahara Mesa-Jurado (2026) describe a participatory arts-based method, "photovoice," which they have effectively adopted and adapted to motivate young people to engage in biocultural conservation. In a remote region of northeast India, based on her personal experience and ethnographic studies, linguist Sumshot Kuhlar (2026) examines the knowledge and practices associated with the use of medicinal plants and the cultivation of land by the Indigenous Lamkaang people. Lamkaang Naga traditional healing systems are deeply intertwined with the land. Before anything can be done on the land, the Lamkaangs seek the blessing and permission from the land. *Ardii Kthung*, a land blessing ritual is performed by a priestess or priest, who require the community to listen to the land, and act of utmost importance as this can mean a life-or-death situation for villagers, who may suffer dire consequences if the listening goes wrong or the communication is not successful. Listening to dreams and interpreting these ritual signs requires a special connection to the land.

This Indigenous ritual embodies a worldview centered on collective interdependence, intricately weaving an expansive network of relationships that encompass the self, fellow humans and neighbors, ancestors, future generations, their habitat, co-inhabitants, and the cosmos. Kuhlar (2026) offers a biocultural perspective on the *Lamkaang Naga* traditional healing system aiding in the understanding and appreciation of the depth and complexities inherent to the ecological knowledge systems of Indigenous communities.

1.6 Concluding Remarks

In summary, the emphasis on transdisciplinary on-site practices involving a community of philosophers, scientists, artists, educators, and students has allowed us to explore both innovative and established sustainable and equitable forms of intercultural and interspecific co-inhabitation.

The chapters in this book present both theoretical and empirical insights regarding the significant contributions of the arts to biocultural conservation, restoration, and communication. Through the exploration of various artworks, art exhibitions, artistic initiatives, and art education, we develop an understanding of how the arts enhance appreciation for local and regional biocultural diversity. Multiple chapters illustrate how the arts act as a transformative force, reconnecting individuals with their environment, revitalizing ties to local biocultural richness, reshaping the unique interconnections of life across different biogeographic areas, and boosting regional resilience. Moreover, the arts articulate a locally rooted ethical response to the challenges of biocultural homogenization and global climate change.

It is our hope that this book will amplify the importance of local perspectives in shaping biocultural conservation, restoration, and communication efforts, while inspiring optimism for a better future through the pursuit of respectful and peaceful intercultural and interspecies co-inhabitation.

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