

Chapter 17

Collecting Photos in the Miniature Forest: A Biocultural Approach for Bryophyte Conservation in the Cape Horn Biosphere Reserve



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Abstract The relationship between nature and conservation has significantly changed, and photography's aesthetic appreciation of wildlife is crucial to conservation efforts. In response to biodiversity loss, photographers are increasingly using high-definition (HD) photography as a communication tool for conservation, focusing on vulnerable species, unique habitat, and specific biocultural contexts to raise citizen's awareness. The photographic work in Cape Horn Biosphere Reserve, Chile presents as a salient case, where photographers have documented the diversity of endemic bryophytes and other life forms. By documenting the endemic biodiversity of protected areas and working with scientists, nature photographers are able to enhance the citizen's understanding and appreciation of unique ecological areas, expose citizens to species that are often overlooked, and encourage people's deeper understanding of ecological processes. While citizens are appreciating the beauty of the natural world as shown in HD photography, it is also important to understand the work ethic of nature photographers. In this chapter, we attempt to analyze the work ethics of HD photography related to nature conservation within the framework of biocultural ethics. First and foremost, photographers are captivated by the beauty of the natural world, photographing its magnificence and diversity, which enhances the emotional connection with wildlife that is conveyed to the audience through their

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work. The practice of “collecting photographs” rather than simply “shooting” or “taking” pictures reflects photographers’ incorporation of biocultural ethical concerns into their work. Not only do they document life forms in unique habitats that bear biocultural significance and carry biocultural information, but they also adhere to the principle of minimal interference in the photographic process, embracing all other-than-human beings in nature as co-inhabitants.

Keywords Wildlife conservation · Biocultural ethics · Macro photography · Bryophytes · Small organisms

17.1 Introduction

The biological and experiential tendency to be drawn to natural environment and other-than-human wildlife is essential for the well-being of humans (Wilson 1984). Artists and scientists alike draw inspiration from nature as a source of knowledge and aesthetic appreciation. Since the nineteenth century, aesthetic appreciation of the natural environment has been reinforced by the massification of photography (Matthews 2003). Wildlife photographers are drawn to the aesthetics of the natural world, the beauty of the diversity and morphology of wildlife, colors and patterns in their habitats, the ecological process in conservation areas, etc. Nature photography for the purposes of wildlife conservation often aims to highlight the splendor and diversity of wildlife. Excellent photography can enhance people’s emotional attachment to wildlife (Hanisch et al. 2019).

In recent decades, the fast rate of biodiversity loss caused by planetary socio-ecological crises and biocultural homogenization has motivated professionals to support conservation efforts, using high definition (HD) photography as a primary tool for communication regarding wildlife conservation (Goffinet et al. 2012; Rozzi et al. 2018). Vulnerable or near-extinct species are ideal candidates for conveying information regarding biocultural conservation, which transforms from a purely artistic satisfaction to a full experience that considers the current conservation status of relevant organisms. The latter requires a deeper understanding of the ecological processes and biocultural interactions behind the photographs, which depends not only on photographers’ capacity to understand the subject and convey biocultural messages through images, but also on photographers’ understanding of the biocultural ethos and how to approach the photographic work with that understanding.

17.2 Biocultural Framework and Nature Photography

Biocultural ethics emphasizes the interconnectedness of biological and cultural diversity, through which people can recognize the mutual relationships between humans, other-than-human beings, their life habits, and their shared habitats (Rozzi

2012). This approach, developed from the southern hemisphere, challenges traditional anthropocentric ethics by acknowledging the intrinsic value of all life forms, their ecological interactions, and cultural contexts in which these complex interactions are situated (Rozzi and Tauro 2023). Begun in the nineteenth century as a tool for scientific documentation, nature photography has evolved from early scientific illustration to a powerful way for fostering conservation and public engagement (Seppänen and Väliverronen 2003). Like scientific illustrations that selectively emphasize morphological features of natural objects and convey biocultural messages (Chiarini 2026), high-definition nature photography guided by biocultural ethic provides unprecedented authenticity and accessibility while shaping people's appreciation of wildlife, thereby positively adding to conservation endeavors.

Here, we propose nature photography can be an ethical practice for “face to face” encounters with flora, fungi and fauna by integrating biocultural ethics into photographic activities. It calls for responsible, ethical, respectful image-making that considers the well-being of both natural subjects (as other-than-human co-inhabitants) and human communities, especially Indigenous communities. This approach values collaboration with local residents, cultural sensitivity, and minimizing the environmental impacts of photographic activities. Biocultural photography also leverages modern technology while adhering to biocultural ethics, ensuring that images serve the objectives of biocultural conservation and cultural exchanges. Ultimately, biocultural photography can serve as a bridge to foster understanding and reverence of the deep connections among people, cultures, and the natural environment, as well as promoting the conservation of both biodiversity and biocultural heritage that have endured centuries. The connotations of biocultural photography are evident in nature photography related to miniature forests in the Cape Horn Biosphere Reserve in Chile.

Cape Horn Biosphere Reserve is located at the southernmost tip of America, around 55° south latitude, comprising a complex archipelagic system of islands and fjords. The terrestrial ecosystem mosaic includes peatlands, subantarctic tundra and forests, glaciers and alpine landscapes, many of which are dominated by bryophytes (Rozzi et al. 2008). It contains an impressive total of 450 mosses, 368 liverworts, and 2 hornworts, representing a larger number of species (820 species of bryophytes) than vascular plants (773 vascular species) (Rozzi et al. 2008; Villagrán 2020). The unique Subantarctic bioregion and the exceptional bryophyte diversity it presents make it a frontier for integrating wildlife conservation with sustainable development.

Furthermore, as a part of Man and the Biosphere Programme by UNESCO for the development of biosphere reserves in all continents and countries of the planet, the relevance of Cape Horn Biosphere Reserve stems from the unique mission that integrates conservation, sustainable development, and research (www.unesco.org/). Unlike traditional protected areas that focus solely on conservation, biosphere reserves actively promote solutions that reconcile biodiversity conservation with sustainable use of the natural environment. This approach makes biosphere reserves particularly valuable as learning places for sustainable development, where innovative approaches to environmental stewardship can be tested and ready for being replicated in other places on the globe (Price et al. 2024).

17.3 The Aesthetic Perspective and Relevance of Photography

Over the years, conservation in Cape Horn has integrated an aesthetic perspective, powerfully contributing to the value of the biosphere reserve and providing further reasons for the preservation of the beings within the biosphere. However, a purely aesthetic perspective can also lead to the neglect of landscapes associated with important ecosystem functions, simply because these landscapes appear mundane from a conventional aesthetical angle (Matthews 2003). This is the case in Magalanes. The beauty of the sub-Antarctic region can be usually observed in the colors of its landscapes, forged mainly by towering native flora. But this is not always the case. For example, the sub-Antarctic tundra above the treeline is covered in a variety of mottled colors, attributed to the diversity of unobtrusive bryophytes and lichens (Goffinet et al. 2012), as illustrated by the case of remarkable mimicry of the seedsnipe (*Attagis malouinus*). In the photo (Fig. 17.1), cushion of *Bolax gummifera* are interspersed with prominent whitish masses of lichens from the genera



Fig. 17.1 Photo of a White-bellied seedsnipe, *perdicita cordillerana* (*Attagis malouinus*) and its chickens, all exhibiting remarkable cryptic coloration for camouflage within the high-mountain tundra. This characteristic landscape of the CHBR, characterized by low temperatures and persistent winds, consists mainly of bryophytes and lichens, largely constituting the unique chromatic complexity of the habitat. (Photograph by Roy Mackenzie)

Pseudocyphellaria, *Ochrolechia*, and *Thamnolia*. Additionally, dark green and black lichens from the genera *Pseudophoebe*, *Cetraria*, and *Usnea* create contrasting patches on the ground.

These various color patterns of the sub-Antarctic tundra are reflected in the plumage of the bird, and the photographer expects this photograph to accentuate the intricate relationship between the tundra's flora, fungi, and birds. Within the traditional perspective, although in most cases one does not need scientific knowledge to enjoy beauty in nature, more biocultural information about the co-inhabitants, habits, and habitat can help people incorporate ethical judgments into aesthetic appreciation. In the above case, without an understanding of the unique ecological and inter-species relationships in the sub-Antarctic, it may be difficult for viewers to appreciate the beauty of this photograph.

Accurate ecologically relevant information and its biocultural connotations may also alter people's appreciation of certain natural phenomena. For example, people may be less likely to appreciate an introduced species once they are aware of the impact it has on the native environment. This is the case with the Canadian beaver (*Castor canadensis*), which acclimated perfectly in the Patagonian ecosystem. Despite the impressive engineering capacities of these rodents, people no longer consider these introduced animals aesthetically pleasing when they realize the devastation they caused to the surrounding forests.

Indeed, when nature photographers are well-informed about the ecosystems and biocultural diversity of a region, they can create HD photography that plays an important role in the creation of protected areas (Soga and Gaston 2024) as well as the dissemination of a biocultural ethic to further stimulate discussions that enrich perspectives on conservation. Through photography, we have access to astonishing insights into unperceived organisms and their environments, from tiny invertebrates and plants to distant birds and whales. The following two boxes display how biocultural perspective can shape photographers' work (Boxes 17.1 and 17.2).

Box 17.1: Cristian Valle Celedón, Wolf Productions

Cristian Valle Celedón is an audiovisual producer and photographer based in Punta Arenas, the capital city of sub-Antarctic Magallanes. His work is situated in art, science, and memory, exploring the relationship between humans and nature from an ethical, poetic, informative and educational perspective. Through projects such as *Musgus VR*, he has contributed to biocultural conservation by presenting habitats, local knowledge, and forgotten species. His approach, which combines immersive technologies, documentary, and photography, advocates for good living, respect for biocultural diversity, and conscious living, inspired by thinkers such as Humberto Maturana, Ricardo Rozzi, Gudynas and the culture of the native peoples of the sub-Antarctic region, among others (Fig. 17.2).



Fig. 17.2 Left: MUSGUS VR snapshot of immersive biocultural experience. Virtual reality (VR) technology has extraordinary potential in cultivating students' environmental awareness and compassion, as well as providing multidisciplinary learning experiences (Hsu 2024). As a project that has been developed for more than 12 years, Musgus VR offers virtual reality experience in exploring the miniature forest of the Navarino Island in Tierra del Fuego. It aims at combining techno-creativity to foster environmental education regarding the conservation of the macro world in the natural environment. For more information visit musgusvr on Instagram. Right: Other co-inhabitants moss mites (*Acaro oribatida*) in a miniature forest. (Photos prepared by Cristian Valle Celedón)

Box 17.2: Gonzalo Arriagada, Professional Photographer

Together with his partner and their two children, for the past 15 years, Gonzalo Arriagada has developed photographic and audiovisual projects related to biocultural conservation in the space they inhabit: Navarino Island and its geographical connections. Through digital, analog or handmade photography such as Dibujar con Luz project (Drawing with light project), as well as its reflections in sound and music, they have created books, videos, exhibitions, installations, and community workshops in Puerto Williams, Punta Arenas, King George Island, and other locations in southern Chile, combining sciences and art to open spaces for the re-creation of knowledge and collective sensibilities based on mutual recognition and respect (Figs. 17.3 and 17.4).

When photographing miniature forests, these photographers have adhered to the basic concepts of biocultural ethics regarding co-inhabitation, and have followed the relevant protocols in various procedures, such as preparatory, photography, and post-editing processes.

• Preparatory Process

Absorbing scientific knowledge that is relevant to biocultural conservation is preparation for a Nature photographer working under the framework of biocultural ethics. In the field, an identification guide, a map, or just a species list can be more than enough to dive into biocultural complexity and the world of wildlife. A study made in the US showed that nature photography provoked higher emotional



Fig. 17.3 Left: Detail of cyanotype on canvas, part of the Drawing with Light Project, showing the biocultural perspective of inhabiting the sub-Antarctic Patagonia. Right: An ancient tree covered with moss in the Sub-Antarctic forest. (Photograph by Gonzalo Arriagada)



Fig. 17.4 *Palpibracus chilensis* / *Tayloria mirabilis*. *Tayloria mirabilis*, a species of moss belonging to the family Splachnaceae, utilize flies such as *Palpibracus chilensis* for spore dispersal to dung. This photograph demonstrates how life habits of multiple species can create a complex web of interactions. (Photograph, by Gonzalo Arriagada)

attachment and concern with diversity, compared with people just observing nature (Hanisch et al. 2019). These results suggest that nature photography can be a useful technique to close the gap generated by the “extinction of the experience” (Soga and Gaston 2016), allowing people to have conscious face to face encounters through the lens and promote protection.

A study made in Japan (Ohara et al. 2019) showed that nature photographers are proactive in absorbing scientific knowledge of wildlife to achieve objectives such as

- helping scientists find and obtain good quality photographs by learning about the habits and distributions of wildlife;
- gaining scientific credibility in nature photography audiences; and
- deepening their understanding of their targets and the context by conducting both scientific and first-hand field observations.

- **Photography process**

Nature photography is also about what photographers choose to capture, and therefore what the audience sees in a photograph is the product of the photographer’s aesthetic concept. In the current digital age, people often “capture” relevant natural events with their cell phones or cameras without much consideration. Moreover, the technology and speed required to post pictures in social media are changing the ways we understand and remember things and places, as well as how our actions can impact wildlife or ecosystems we intend to protect. The “taking pictures” or “captures” becomes a somewhat invasive approach to wildlife, one superficial approach that focuses on documenting lists of species rather than appreciating their life habits, habitats, and relations to other wildlife that can lead to *in-situ* conservation. In this scenario, nature photographers can differentiate themselves from picture-takers by integrating their work into a deep understanding of the complex interrelationships among co-inhabitants, their living habits, and habitats.

- **Post-editing process**

Intentions are often added to images not only by photographers but also by editors and subsequent users. Nature photographers actively seek to contribute to scientific knowledge. When they encounter organisms or natural phenomena that are not documented in scientific literature, they communicate with researchers and academic societies to build up understanding. They establish working relationships with wildlife researchers for bilateral communications that enrich scientific knowledge base. These photographers, while acquiring knowledge from the natural sciences, also engage in activities beyond photography. Many nature photographers are involved in conservation efforts, serving as local interpreters, guides, and consultants. Some also advocate for wildlife and ecosystem conservation, presenting themselves as specialists on local wildlife.

Through the above analysis of the working process of our photographers, it is clear that biocultural concept of the “3H” (Habit, Habitat, Cohabitants) developed by Ricardo Rozzi et al. (2018) and a “heuristic lens” (Rozzi and Tauro 2023) can be utmost valuable for photographers who wish to contribute to the conservation of

wildlife diversity, including small organisms such as bryophytes and their aesthetic, ecological, cultural, economic as well as ethical values. By exploring with the “3H biocultural lenses,” nature photographers can document the full range of tiny and perceptible species in their natural environment, revealing not only the beauty of these organisms, but also providing a holistic understanding of their living habits, recorded in their habitats, and of the community of ecological beings with which they cohabit. This biocultural approach favors synergy between scientists, artists, educators and diverse citizens. In this synergy, scientists contribute knowledge and data on local species and threats, while artists create narratives and images that convey local values and information that appeal to the public in a more accessible and emotional way by including ethical dimensions.

17.4 Discussion

Based on the bryophyte conservation work carried out by the Sub-Antarctic Biocultural Conservation Program since 2000, we can observe that, scientific research has contributed to a better understanding of the diversity and ecological functions of bryophytes, which reach enormous diversification in subpolar regions; and, on the other, how much of this appreciation has yet to be communicated to global society through an artistic perspective broader than the academic environment, such as through HD photography discussed in this chapter. Based on our photographic practice, we believe there are several issues that deserve further reflection.

17.4.1 *Cognitive Dimension*

When photography is incorporated into sciences, it plays a unique role in academia as an essential tool for communicating discoveries and research advances. While conventional photography seeks aesthetics and personal expression, photography for sciences is governed by a set of highly functional criteria, aimed at clearly and accurately conveying the evidence contained in the sample. The primary function of scientific photography is to provide an effective visual medium to support and complement the information presented in scientific publications.

The target audience for these images is not the general public, but other scientists or amateurs immersed in the same field of study. In this context, the criterion for taking scientific photographs departs from conventional aesthetics. Instead of looking for intriguing angles or visually striking compositions, the focus is on highlighting the structure and relevant details of the specimen. To this end, techniques such as photo-stacking have been developed, which allows a series of frames with different focus points to be compiled into a single photograph, resulting in a razor-sharp, high-quality image of the specimen. To further highlight the



Fig. 17.5 Immature sporophytes of the endemic dung moss *Tayloria mirabilis*, showing the capsule with and without calyptra for phenology studies, using the macro technique. The black background obtained by this technique is encouraged, replacing the natural environment to make the individual stand out in the photograph. (Photograph by Roy Mackenzie)

morphological characteristics, it is common to use a single homogeneous color as the background of the image (Fig. 17.5), eliminating the environment where the individual lives. This is critical, as the habitat and co-inhabitants of the moss are lost in the communication effort.

Throughout history, scientific photography has followed a path guided by objectivity and the search for an accurate representation of wildlife. According to Wilder,

The heroes of observation ... of the eighteenth century set the standard for observing in the nineteenth. These cultures of observation left a clear signature on photography, and photography in return revolutionised the observations made by scientists, by extending the range of what could be ocularly observed, and by raising up those capable of only rather average observational capability to an acceptable level by correcting for their inadequacies. (Wilder 2009, p. 164)

The impact of photography on scientific observation reflects both the complex connection between science and arts but also how photography shapes human perception. This cognitive shift suggests that as new scientific theories emerge, so do photographic perspectives and their expression.

Therefore, highlighting the subject by eliminating the background is valuable in accentuating the scientific message. However, when new demands emerge, or more directly, when one wants to present the biocultural characteristics of a species, i.e., a species that always inhabits a particular environment and possesses its own distinctive life habits, the removal of the background is no longer appropriate.

Photographers need to present both the morphological characteristics of the species, the community, and some information about the habitat. Photographs in the *Miniature Forest of Cape Horn* (Goffinet et al. 2012) basically display these biocultural characteristics to reflect the perception that a change of lens (both physical and cognitive) can help people to access the high diversity of sub-Antarctic bryophytes and lichens (Rozzi 2012).

Inspired by these photographs, one of our authors has utilized contemporary revolutionary platforms such as iNaturalist for data collection and visual documentation of bryophyte biodiversity (Fig. 17.6). To present bryophytes as also

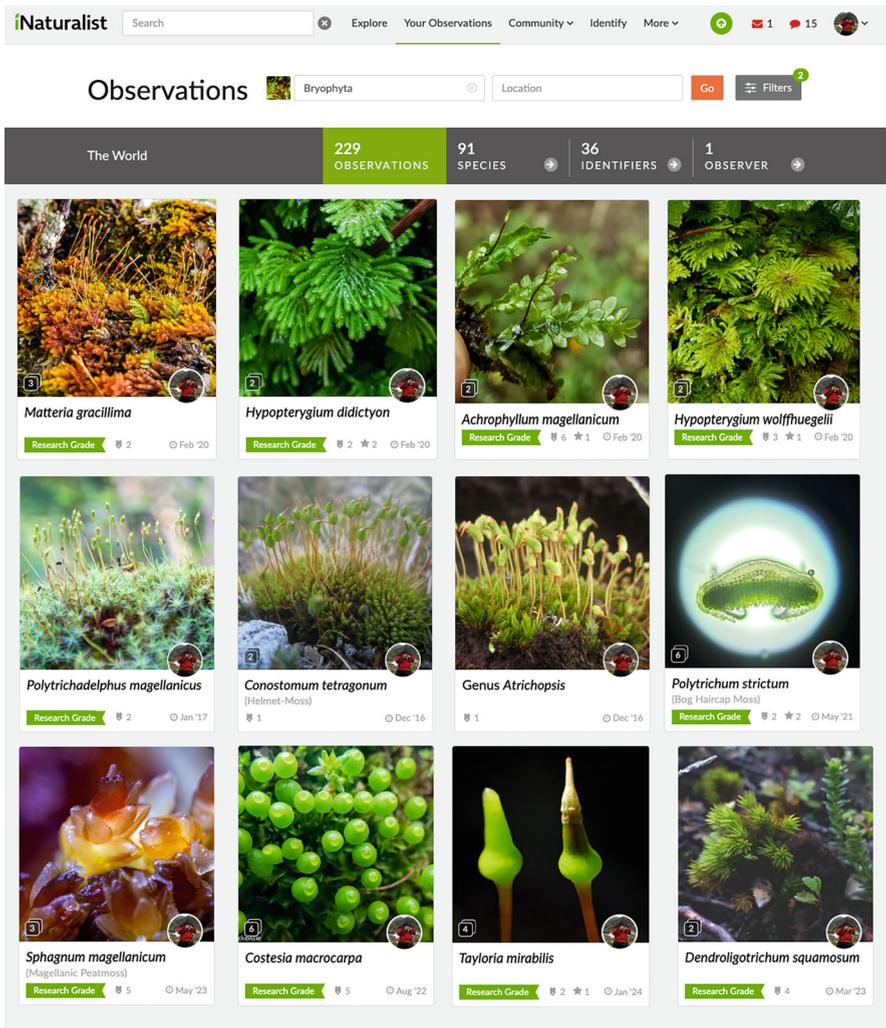


Fig. 17.6 Collection of photographs of species from user @RoyMackenzie on the iNaturalist platform. Close-up photos are the most abundant on the platform. (Photograph by Roy Mackenzie)

co-inhabitants of humans, rather than isolated samples or visual trophies, photographers ought to keep the interconnectedness of the 3Hs in their perception and also convey the perception of co-inhabitation through displaying population of a species, a community, and a landscape, etc. This demonstrates the significance of the cognitive dimension of photography for bryophyte conservation.

Conservation related photography can also transform environmental education, foster cognitive development, and encourage collaboration (Farnsworth 2011). In Cape Horn, photography is essential in fostering transformative learning about bryophyte conservation and general biocultural conservation. Photographers' sensitivity extends beyond aesthetic considerations to include traditional knowledge that local people possess about native and exotic species. Their understanding can guide artists' approach to create meaningful images for the audience. Engaging in transdisciplinary research encouraged by biocultural ethics, photographers collaborated with scientists and local elders and cultivated an appreciation of the interconnections among local communities, their co-inhabitants, habits, and their shared habitats. For instance, the use of junquillo (*Marsippospermum grandiflora*) for basketry or old man's beard (*Protousnea sp.*) for medicinal purposes by indigenous peoples highlights the rich biocultural connections between subantarctic species and humans, echoing modern society's appreciation for genes and extracts from native species in extreme cold habitats.

Furthermore, to generate transforming learning in the public toward conservation of biodiversity, the sensitivity as a filmmaker needs to go beyond aesthetics. Detailed knowledge of other-than-human co-inhabitants in regions like the sub-Antarctic ecoregion is vital for the creative process. Information on the location and habits of species can guide the photographic approach to capture meaningful images. The research for such information needs to be as diverse as possible by consulting scientists (such as reading Glime (2017a, 2017b)), locals with experience, and any other source of information. By collaborating during the research, the visual work contributes to a collective perception of local inhabitants, its habits, and habitats.

17.4.2 Ethical Dimension

The ethical principles of wildlife photography have received widespread attention and discussion (Groo 2019). Adhering to the ethical ethos of biocultural cohabitation, three main considerations show the uniqueness of the bryophyte photography activities in Cape Horn region when considered from an ethical dimension: the photographic subjects, the presentation of the photographs, and the deployment of the photographic activities.

In exploring the relationship between photography and environmental issues, it is often observed that the subject matter of photography is often ambitious and extensive, such as wildfire-burning forests, endangered and large species, awe-inspiring landscapes, and exotic places. An examination of illustrated stories in *The Times* regarding visualizing biodiversity reveals that

... most nature photographs concentrate on introducing readers to different species clearly underlines the extinction aspect of biodiversity: this helps to concretize a complex scientific problem and to make it more familiar. ... Like metaphors, photographs too are selective in constructing an image of reality. In the case of endangered species they operate with metonyms, using parts to represent the broader whole. On the reverse side of the coin, concretization and simplification tend to mean that the problem itself is simplified. The two other aspects of biodiversity, i.e. genetic diversity and ecosystem diversity, are considerably harder to capture by means of photography. (Seppänen and Väliverronen 2003, p. 81)

Their reflections on nature photography show that the subject of the photographs are crucial in presenting biodiversity. In Cape Horn, small organisms such as bryophytes and lichens became one main group of organisms to present the endemic biodiversity in the region. This is in contrast to photographic initiatives that focus on large charismatic flagship species. In a sense, this challenges taxonomic chauvinism in the mainstream conservation activities (Rozzi 2019), and raises awareness of the important value of bryophytes in socio-ecological systems (Zhu 2023; Zuo and Zhang 2026).

Regarding the presentation of photographs, we must consider the age of the visualization of information in which we live. Given the amount of visual information people are exposed to everyday, nature photographers, as producers of pictorial information, need to consider the impacts of their photographs on the audiences in this ocean of information. In this scenario, the significance of conservation photography, which goes “beyond documenting nature as an art form” and “responds to the mission of protecting nature” (Mittermeier 2005) can be applied to bryophyte photography in Cape Horn, as it not only documenting bryophyte diversity but also calls on biocultural conservation through offering opportunities of access the miniature world of bryophytes and lichens.

Every technology is a projection of an intention, and, therefore, an extension of certain original possibilities: the stick is an extension of the arm, the camera is an extension of the eye. In the globalizing era of the Cyborg, in which people’s perception of the world and “re-encounter” with Nature are mediated by technology, ethical considerations of what photographers present to the audience is relevant. The human eye is neither objective nor innocent. Culture has its own mainstream aesthetics, shaped by millions of images we’ve already seen, which, if not subjected to critique and reflection, influence people’s interpretation of visual stimuli. Regarding biodiversity conservation, conventional mainstream strategy should consider a decolonial approach to focus on locally rooted, plural, socially just, and convivial forms of conservation (Corbera et al. 2021). Conservation photography under these considerations, such as bryophyte photography in Cape Horn, and the presentation of the miniature forest, is beyond a documentation of the vast bryophyte diversity in Cape Horn Biosphere Reserve, an ethical calling of co-inhabit with these tiny but essential organisms.

The biocultural ethical perspective on co-inhabitants compels us to imagine ourselves as small as a *Cladonia* and prompts reflection on our relationship with these organisms as well as their ecological roles. Inspired by observations of mosses and lichens, a virtual reality experience allows interaction with *Nothofagus* forests

on Navarino Island through digital environments created with Unreal Engine. This immersion at the scale of Cape Horn's Miniature Forests emphasizes the importance of multi-species interactions. Photographers' activities in the field also need to be informed by ethical considerations of interspecies relationships, e.g., how photographers interact with their co-inhabitants such as bryophytes and lichens when they take photographs. Based on this ethical consideration and discernment, we propose the metaphor of "collecting photographs."

With the metaphor "Collecting photographs in the miniature forest," we propose close-up photography as a biocultural and ethical activity within "Ecotourism with a hand-lens" (Rozzi et al. 2020, 2014). Instead of impulsively taking photos or capturing images, "collecting photographs" implies a more conscious process, suggesting an effort to gather meaningful records of life forms and their habitats. "Collecting" signals an ethical and selective approach, whereby each photograph is carefully selected to be interesting and meaningful with as little disturbance to the environment as possible so that the least intrusive collecting can be sustained. Respecting their intrinsic value by minimizing the impact of our presence in their habitat, such as minimizing stepping on, moving rocks and logs and exposing their hidden micro-habitats to the sunlight or predators. The metaphor, therefore, encourages a shift in perspective from simply accumulating images of species to a more deliberate and thoughtful documentation of photographers' experiences with organisms in their shared habitats.

The idea of "collecting" photographs instead of "taking" them points to a virtuous relationship between the authorship of the image and the image itself, sustained by knowledge and, in many cases, reciprocity. People who have a constant and conscious link with their ecosystem, the product of a resident's traditional knowledge and/or scientific knowledge, can take photographs that express that knowledge. The metaphor of "collecting images" invites us—already far from the Functional Value of biodiversity and its ecosystem services—to move from the relational value based on experience, to an "ecological" knowledge and action in our context of Holobionts and interdependence to nature.

17.5 Conclusion

Bryophyte photography in the Cape Horn Biosphere Reserve stands on the shoulders of historical nature photography, building on pioneers while embracing holistic approaches that honor Indigenous knowledge and challenge colonial practices. This methodology connects contemporary conservation with deep historical relationships, inspired by the Yaghan people and their ancestral territories. The photographer's personal experience of documenting the miniature forest transforms both technical approach and philosophical understanding, shifting from shooting and capturing, to face to face communion with miniature organisms and the shared habitats. Focusing hours within small areas rather than covering vast distances creates a meditative practice that dissolves observer-observed boundaries,

demonstrating photography's potential as both conservation tool and pathway to ecological consciousness.

Photography is not simply a visual capture; it is a narrative that can shape perceptions and foster empathy, the same way nature illustration does. In the context of biodiversity and conservation, photographers can play a crucial role by embracing biocultural ethics. This approach proposes to go beyond the isolated representation of species (by passing habitats and co-inhabitants) and advocate for a more complete narrative that includes both the main protagonist and its environment and way of life. The Habitat-Habit-Inhabitants approach in the photographic act implies a particular experience that is reflected in the respective photograph, thus a biocultural photographer. Photos can be presented either as an isolated image, or as a photographic story, or as any of them together with a complementary communication strategy or artistic proposal, offering the observer relevant information for a comprehensive understanding of life in any of its forms.

The first step in this proposal implies a change of perspective. Rather than simply photographing the species in the foreground, photographers are encouraged to explore the broader biocultural context. This allows them to capture images that not only show the plant or animal in question, but also reveal its natural habitat. This not only enriches the visual representation, but contextualizes the species in its environment, highlighting the interdependence and complex webs of relationships with the other species with which it co-inhabits. By portraying these relationships, the photographs not only document biodiversity, but also underscore the vital interconnectedness between different species and their shared habitat. Embracing biocultural ethics in the act of bryophyte photography in Cape Horn is not only an aesthetic approach, but also a cognitive and ethical commitment to biodiversity conservation.

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