

Field Environmental Philosophy and Biocultural Conservation: The Omora Ethnobotanical Park Educational Program

Ricardo Rozzi, Ximena Arango, Francisca Massardo,
Christopher Anderson, Kurt Heidinger, and Kelli Moses*

Habitats (where we live), habits (how we live), and inhabitants (who we are) constitute an ecosystem unit. The biosphere is composed by a reticulate mosaic of these habitat-habit-inhabitant units, where humans (with their indigenous languages, ecological knowledge and practices) have coevolved. Today, these diverse ecosystem units are being violently destroyed by the imposition of a single global colonial cultural model. In Cape Horn at the southern end of the Americas, educators, authorities, and decision makers do not know about the native habitats, language, and flora, and do not distinguish between Cape Horn's flora and the flora that grows in other parts of the country or the world. In contrast, indigenous people and old residents have a detailed knowledge, but they do not participate in education, and decision making. It is not *Homo sapiens* in general, but bioculturally biased educators, authorities, and decision makers who need to be transformed into (educated and responsible) members and citizen of biocultural communities. The Omora Ethnobotanical Park educational program was launched to contribute to a biocultural citizenship involving three critical steps: (1) the disclosing of biocultural diversity with a "fine filter" approach that permits understanding of the cultural and ecological diversity hidden by general universal labels; (2) direct "face-to-face" encounters with human and nonhuman co-inhabitants; and (3) actions for protection of habitats and implementation of interpretative spaces that facilitate direct encounters and conservation of biocultural diversity. These steps have been implemented at local and regional scales through the creation of the Omora Ethnobotanical Park and the UNESCO Cape Horn Biosphere Reserve.

HABITATS—HABITS—INHABITANTS

In its most archaic form, the Greek word *ethos* means den, the dwelling of an animal.¹ Through an extension of the word's use, its meaning came to include the dwellings of humans. Later, this noun also became the verb "to dwell." This dual noun-verb meaning of the Greek "ethos," is mirrored by the Latin words "habitat"

* Ricardo Rozzi, Department of Philosophy, University of North Texas, P.O. Box 310920, Denton, TX 76203-0920, and Omora Ethnobotanical Park (University of Magallanes [UMAG] and Institute of Ecology and Biodiversity [IEB]), Puerto Williams Chile; Ximena Arango, Francisca Massardo, and Christopher B. Anderson Omora Ethnobotanical Park (UMAG and IEB), Puerto Williams, Chile; Kurt Heidinger, 1 Stage Road, Westhampton, MA 01027-9655; and Kelli Moses, Department of Biology, UNT Chile Program, University of North Texas, P.O. Box 310920, Denton, TX 76203-0920. The authors thank Gene Hargrove for valuable comments for the preparation of the manuscript, Patrick Sewell and Jen Meyers for work on an earlier version of this manuscript, and acknowledge support from the National Science Foundation (Project No. 06524220), the Hispanic Global Initiative, University of North Texas, and two IEB grants: ICM, PO2-051-FICM and CONICYT PFB23-2008.

¹ H. G. Liddell, R. Scott, *A Greek-English Lexicon*, 9th ed. (New York: Oxford Press, 1996). See also J. Gonzalez, *El Ethos, Destino del Hombre*. (Mexico City: Fondo de Cultura Económica, 1996), pp. 9–12.

and “to inhabit.” Moreover, from the action of inhabiting a habitat, habitual ways of inhabiting emerge configuring “habits” or recurrently performed behaviors; i.e., the *ethos* of animal or human inhabitants. In this etymological drift, our understanding of the concept of *ethos* moves from its meaning as a vital physical space (the habitat) toward its meaning as the act of dwelling in the habitat; in turn, it arrives at a meaning that defines the identity of living beings (inhabitants). *Ethos* is also the Greek root of the word ethics. However, most modern ethics have been developed without consideration to the habitat, as if individuals and their identities would exist in isolation from their environment. In turn, this “conceptual gap” of modern ethics generates a second problem. Since the colonial period, modern moral theories developed in Europe are applied to moral situations in the colonies without consideration to native *ethos*, as if indigenous ethics and their intricate interconnections with local habitats would not exist. To overcome this colonialist gap of modern ethics, we propose to develop ethical approaches rooted in specific habitat-habit-inhabitant ecosystem units. These units also provide a conceptual foundation for environmental ethics embedded in transdisciplinary collaborations, such as the ones explored in this special issue of *Environmental Ethics*. Habitats are mostly studied by ecologists, and habits are mostly studied by philosophers, with little interaction among these disciplines. A greater integration of their methods, concepts and findings would generate a more integral understanding of human and nonhuman inhabitants' ecologies, behaviors, and rights, and human's identities, and ethical duties.

The integration between habitat and inhabitant found in the Greco-Roman roots of the meaning of *ethos* in Western civilization, is also deeply rooted in Amerindian worldviews. For instance, the names of the indigenous communities of the largest ethnic group of southern South America, the *Mapuche*, are defined by the habitats where they live. Overall the *Mapuche* people define themselves as people (=che) of the land (=mapu), and the three main communities define themselves more specifically according to the habitat types they inhabit: in the monkey-puzzle tree (*Araucaria araucana*) forests of the volcanic Andean mountain range of central-southern Chile and Argentina live the *Pewenche*, i.e., people of the monkey-puzzle tree (=pewen), who are dependent on the fruit of this tree (fig. 1); in the coastal forests of central-southern Chile live the *Lafkenche*, i.e., people of the coast or sea (=lafken), who are dependent on marine resources (algae, mussels, fish); in the evergreen rain forests of southern Chile live the *Williche*, i.e. people of the south (=willi), who are dependent on the plants and animals of the southern rain forests.² Not only the names of humans, but also the names of other animals are linked to their habitats and habits by indigenous languages. For example, at the southern end of the Americas, in the Cape Horn

² Habitat types and ethnic groups of southern South America are characterized in R. Rozzi, F. Mas-sardo, C. B. Anderson, S. McGehee, G. Egli, E. Ramilo, U. Calderón, C. Calderon, L. Aillapan, and C. Zárraga, *Multi-Ethnic Bird Guide of the Austral Forests of South America* (Punta Arenas, Chile: Editorial Fantástico Sur and Universidad de Magallanes, 2003).

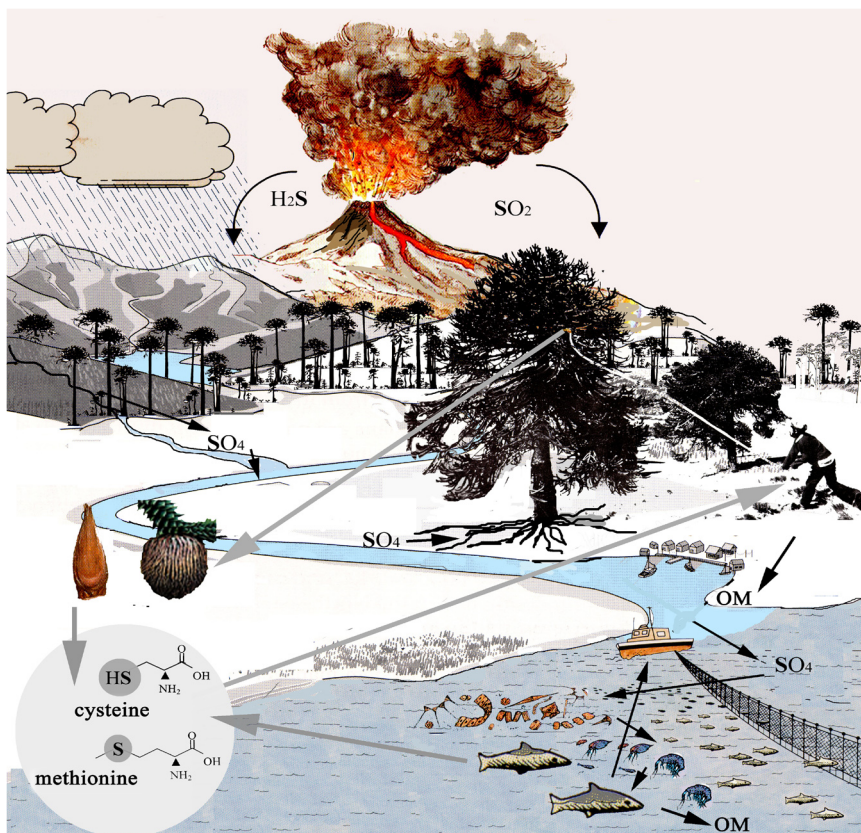


Figure 1. The integration between habitats, habits, and inhabitant identities is deeply rooted in the life of the largest indigenous group of southern South America, the Mapuche people. Their language is called Mapudungun, the language (=dungun) of the land (=mapu), and they define themselves as people (=che) of the land. One of the three main Mapuche sub-groups is the Pewenche people. Their habitat is the forest of monkey-puzzle tree (*Araucaria araucana*) or pewen in Mapudungun. An essential habit of the Pewenche is the gathering of pewen fruits, which provide the basis for their alimentation. These fruits contain cysteine and methionine, an essential amino acid that cannot be synthesized by the human body. By eating these fruits, Pewenche actually are the people of the pewen. Interestingly, a scientific biogeochemical perspective offers an eco-systemic view of these habitats, habits, and inhabitants that concurs with the Mapuche worldview. These amino acids contain sulphur in their molecules. Sulphur input to the biogeochemical cycle from volcanoes is transported by the wind and the water of the streams to the soil, where the microflora carry out processes of oxidation and reduction, permitting sulphur to be absorbed by the roots of the pewen. Therefore, when Pewenche eat the fruits of the pewen, they also eat the sulfurous rocks and ashes of the volcano. Hence, not only are they people of the pewen, but also Mapuche, people of the land.

archipelago, the Magellanic woodpecker (*Campephilus magellanicus*) is called by the indigenous Yahgan people: *lana*. This name derives from the Yahgan word *lan*, which means tongue. It alludes to the habit of this woodpecker of extending its long tongue to extract larvae from the holes it pecks in the trunk of old growth trees in the sub-Antarctic forests of the Magellanic archipelago. The Latin scientific name defines the bird as “caterpillar-lover” (*Campephilus*), inhabiting the Magellanic forests (*magellanicus*). Its English common name, Magellanic woodpecker, also characterizes the identity of this bird by its habit of pecking wood in the austral woodlands. Hence, the intimate connection between the habitats, habits, and the identity of the woodpecker is expressed by the three languages.

In South American academic philosophy, a pioneer effort to understand the deep links between regional landscapes and Amerindian cultures was initiated by the Argentinean philosopher Rodolfo Kusch. He realized that no genuine philosophy in the Americas can be conceived without incorporating the Amerindian cultures. Kusch’s perspective contrasted with the fact that indigenous languages and lives have remained almost completely unknown, forgotten or even denied in academic philosophy. Against this trend, in the 1960s, Kusch initiated a comparative ethno-philosophy practice while working in Northern Argentina at the University of Salta. He coined the concept of *geoculture* through which South American geography ceased to be seen through “colonial lenses” as a virgin territory to be conquered and used.³ Instead, it was understood as the land where cultural meanings were rooted. Kusch disclosed how the South American ethos of each is embedded in the environment, “always situated, always grounded.”

In this paper, we build on an ethno-ecological interpretation of the concept of *ethos*, as grounded in southern South America, which reintegrates the identity of the animal or human inhabitant with its ways of inhabiting in a particular habitat. This ethno-ecological perspective differs from the disembodied, anthropocentric, and individualistic perspective on human habits or consumer preferences used by market economy.⁴ The social and environmental detachment of individual consumers espoused by current global market economy seems to represent an exception, not the rule among South American cultures. Instead, a biocultural world view, which integrates habitats, habits, and the identities of the inhabitants, prevails in both Western and indigenous roots of South American cultures. However, the Greco-Roman and Amerindian meanings of *ethos* are ignored by current hegemonic educational practices. To confront alienation of global society from the environment, and reconnect societies and their local habitats and habits, environmental philosophers and ethno-ecologists can provide a valuable contribution to fostering the cultural and educational reintegration of these ancient meanings of *ethos*. To introduce this approach, we begin with a biocultural field experience.

³ See R. Kusch, *Geocultura del Hombre Americano* [Geoculture of the American Man], Philosophical Studies Collection (San Antonio de Padua, Argentina: Editorial Castañeda, 1976).

⁴ See S. Castro-Gomez, “Traditional Theory and Critical Theory,” *Critique* 49 (2001): 139–54.

RE-ENCOUNTERING BIOCULTURAL DIVERSITY AT CAPE HORN

Accompanied by Ursula and Cristina Calderón, the last two fluent speakers of Yahgan, in March 2000 we embarked on one of the first educational journeys at the Omora Ethnobotanical Park with students from the Puerto Williams public school.⁵ When we arrived at what would later be the entrance to the park, we paused and remarked about the great abundance of wild currant shrubs growing in the area. The sisters, Ursula and Cristina, told us that the indigenous name for this shrub is *upush*. Knowing that the Yahgans traditionally named places after the predominant bird and plants species in the area,⁶ we suggested that Puerto Williams might have originally been called *Upushwaia*, the bay (*waia*) of *upush* shrubs. Ursula and Cristina welcomed the suggestion, and the name has since then been adopted and used by the local community.

In order to better understand how this plant was recognized and named by members of different cultures inhabiting or exploring Cape Horn, with the students, we researched the origin of the Spanish, English and scientific names for the *upush* shrub. We concluded that the Spanish Conquistadors, upon observing the bush growing in such abundance in the southern regions of Chile, associated it with the behavior of a weed (*zarza*). The shape of its leaves reminded them of a small grapevine (*parrilla*), and the Spaniards chose to call the shrub *zarza-parrilla*. The Anglican missionaries, in contrast, called this species *wild-currant*, because its fruit reminded them of the currants of their native country which in Cape Horn were growing in the "wild." Scientists determined that the bush belongs to the botanical genus *Ribes*, which has a worldwide distribution and includes 200 species. Because this species is characteristic of the Magellanic region of southern Chile, it was classified by European botanists with the Latin scientific name *Ribes magellanicum*.⁷

Names of each culture's familiar plants were projected onto the new species they encountered in southern South America. Upon seeing the bush, the Spaniards, who came to Cape Horn from a Mediterranean country, were reminded of grapevines predominant in their homeland. To the British, arriving from a temperate region dominated by hedges and morelands, the fruit resembled berries they cultivated. Similarly, European botanists followed the Aristotelian and Linnaean formula of

⁵ The Yahgan people are the original inhabitants of the Cape Horn region. See C. McEwan, L. Borrero, and A. Prieto, *Patagonia: Natural History and Ethnography at Uttermost End of the Earth* (London: British Museum Press, 1998). For location of Omora Ethnobotanical Park, Puerto Williams and Cape Horn see map in p. 231 in this volume.

⁶ Cf. P. Stambuk, *Rosa Yagán: El Último Eslabón* (Santiago: Editorial Andres Bello, 1986), p. 17.

⁷ *Ribes magellanicum* was originally classified by Sydney Parkinson as *Ribes antarcticum* during Captain Cook's first expedition in 1769. Poiret changed the classification to *Ribes magellanicum* in 1812. R. Rozzi and K. Heidinger, *The Route of Darwin through the Cape Horn Archipelago* (Punta Arenas, Chile: Gobierno Regional de Magallanes y Antártica Chilena and Universidad de Magallanes, 2006), p. 28.

scientific names composed of a substantive (essence) and an adjective (accident) when classifying the plant. In this way, the students realized that the names of *upush*, *zarzaparrilla*, *wild currant*, and *Ribes magellanicum* express as much about features of the shrub as they do about the cultures that named it. This is one of the reasons we refer to Omora's research-educational approach to conservation as bio-cultural.⁸ By preserving the shrub populations and the various names given to this species, we preserve both the biological and cultural diversity and the intricate relationships between them.

On our excursion in the field that day, we also discovered that place names are expressions of the ways we understand and relate to the habitats we inhabit. For example, at the end of the nineteenth century, Anglican missionary Frederick Lawrence named the site we visited Puerto (Port) Luisa, after his daughter Luisa was born. In the mid-twentieth century, after the arrival of the Chilean Navy to the area, this toponymy was changed to Puerto Williams in memory of Captain Juan Williams, who helped maintain Chilean sovereignty in the region before territorial disputes arose with Argentina.⁹ In the names of Puerto Luisa and Puerto Williams, the original inhabitants of Cape Horn—humans and non-humans—are absent; we remember instead the colonizers who took possession of the region. By reincorporating a Yahgan name like *Upushwaia* at the beginning of the twenty-first century, we recover the profound sense of living together with the plants and features of the landscape which are expressed by the indigenous language. By preserving an explicit reference to the bio-cultural diversity of the place, the Yahgan name helps to continue cultivating an indigenous environmental ethic that regards the place as belonging to the whole biotic community and not only to humans.

BIOCULTURAL HOMOGENIZATION

The field experience with Ursula and Cristina, and the students seems to be a simple experience, and it is. What is not simple is that the habit of going out to encounter the everyday habitats—its person, its plants, its languages, its names—constitutes, with each day, an increasingly rare experience within the schools, the universities, the government institutions, and decision-making centers. In order to better understand the current perceptions of Cape Horn's habitats by descendants of the Yahgans, European colonizers, and navy people, as well as today's authorities, teachers, and students in Cape Horn, we interviewed members of each of these

⁸ For a definition of biocultural diversity, see R. Rozzi and A. Poole, "Biocultural and Linguistic Diversity," in J. B. Callicott, R. Frodeman, eds., *Encyclopedia of Environmental Ethics and Philosophy*. Farmington Hills, Michigan: Gale, Cengage Learning, 2008); for the biocultural approach of Omorapark see R. Rozzi, F. Massardo, J. Silander Jr., C. Anderson, and A. Marin, "Conservación Biocultural y Ética Ambiental en el Extremo Austral de América: Oportunidades y Dificultades para el Bienestar Ecosocial," in *Biodiversidad y Globalización*, ed. E. Figueroa and J. Simonetti (Santiago, Chile: Editorial Universitaria, 2003), pp. 51–85.

⁹ Captain Juan Williams took possession of the Strait of Magellan for Chile on 21 September 1843.

socio-cultural groups in Puerto Williams.¹⁰ We started the interviews with a very simple question: "Name the first five plant species that come to your mind." Surprisingly, the abundant *upush* shrubs were not mentioned by most respondents. Instead, the answers given by most people included exotic, cosmopolitan plants: seventy-five percent of the named species were foreign to Cape Horn.

Roses and apple trees were the most frequently named plants.¹¹ The rose was central to the culture of the Romans, for whom flowers and rose water were an indispensable aesthetic element, which later in the Middle Age gave origin to the perfumes and oils of roses.¹² Roses have also contrasting Christian symbolisms that go from condemnation for their sensual character to a high appreciation for their role in various miracles, such as the desert roses in the cloak of the Virgin of Guadalupe, or the apparition of the Virgin Mary that gave origin to the rosary.¹³ In contemporary global-market society, roses are the most popular flowers, representing more than two-thirds of the flowers sold worldwide. Apple trees also have a clear biblical connotation, and occupy a prominent place in fruit markets. Today,

¹⁰ See methodology in X. Arango, R. Rozzi, F. Massardo, C.B. Anderson, and J. T. Ibarra, "Descubrimiento e Implementación del Pájaro Carpintero Gigante (*Campephilus magellanicus*) como Especie Carismática: Una Aproximación Biocultural a la Conservación en la Reserva de Biosfera Cabo de Hornos," *Magallania* 35, no. 2 (2007): 71-88.

¹¹ See R. Rozzi, C. B. Anderson, F. Massardo, and J. Silander Jr., "Diversidad Biocultural Subantártica: Una Mirada desde el Parque Etnobotánico Omora," *Chloris Chilensis* 4, no. 2 (2001), at <http://www.chlorischile.cl/rozzi/fig2.htm>.

¹² M. Touw, "Roses in the Middle Ages," *Economic Botany* 36 (1982): 71-83.

¹³ The Virgin of Guadalupe is rooted in the folk culture of Mexico. Her image shrine at Tepeyac is surrounded by an origin myth, which says that: "the Virgin Mary appeared to Juan Diego, a Christianized Indian of commoner status, and addressed him in Nahuatl. The encounter took place on the Hill of Tepeyac in 1531, ten years after the Spanish Conquest of Tenochtitlan. The Virgin commanded Juan Diego to seek out the arch-bishop of Mexico and to inform him of her desire to see a church built in her honor on Tepeyac Hill. After Juan Diego was twice unsuccessful in his efforts to carry out her order, the Virgin wrought a miracle. She bade Juan Diego pick roses in a sterile spot where normally only desert plants could grow, gathered the roses into the Indian's cloak, and told him to present cloak and roses to the incredulous archbishop. When Juan Diego unfolded his cloak before the bishop, the image of the Virgin was miraculously stamped upon it. The bishop acknowledged the miracle, and ordered a shrine built where Mary had appeared to her humble servant." Quoted in Eric R. Wolf, "The Virgin of Guadalupe: A Mexican National Symbol," *The Journal of American Folklore* 71 (1958): 34-35. The name "Rosary" is explained in the collections of the "Miracles of Our Lady," which were very popular in the Middle Age. "A youth was accustomed to make a wreath of roses or other flowers every day, and to place it upon the head of Our Lady's statue. He became a monk, and in the cloister his occupation no longer permitted him to observe this pious practice. Being much distressed, he asked counsel of an aged priest, who advised him to say fifty Aves every evening. . . . This the young man faithfully observed, until one day, being upon a journey, he has to pass through a lonely wood where robbers were lying in wait. They were employed in watching him, feeling sure of their prey, when he, unsuspecting of their presence, remembered that his Aves were not yet said, and forthwith stopped to say them. Then to their surprise, the robbers saw a most glorious lady stand before him and take one after another from the lips of the kneeling monk, fifty beautiful roses, which she wove into a garland and placed upon her head. The robbers, so the legend tells, conscience-stricken at the vision, were all converted to a better life, and themselves soon after entered the monastery." Quoted in Winifred S. Blackman, "The Rosary in Magic and Religion," *Folklore* 29 (1918): 275-76.

sixty-five percent of Chilean people identify themselves as Roman Catholic, and the country ranks fifth in apple exportation worldwide. Consequently, the overarching presence of roses and apple trees in the imagery of Cape Horn's inhabitants, seem to express the central roles that global market and European Christian cultures play at these high latitudes. The strong presence of roses and apples in the minds of most inhabitants prevented their awareness of the sub-Antarctic flora, despite that Puerto Williams is embedded in the luxurious forested landscapes of Cape Horn.

Given that the floristic imageries of the Puerto Williams inhabitants had a strong influence from European and market economy cultures, we assessed whether the absence of native flora in the imageries was equal among all socio-cultural groups. Yahgan people and old residents were born in Cape Horn, while navy people and authorities, and most students and teachers, spend only two years in Cape Horn. We reanalyzed the responses of each socio-cultural group, and found that the bias toward exotic flora was not homogeneous among the inhabitants of Cape Horn.

Among Yaghans and old residents, native plants were most frequently mentioned, representing eighty percent and sixty percent of their answers, respectively. In contrast, among navy people, authorities, students, and teachers, native plants were only present in approximately twenty percent of their responses. In addition, for these plants only Spanish names were given, indigenous names were completely absent. Was this absence in their responses due to a lack of knowledge, or rather to a selective preference against native plants and their indigenous names? To answer this question, we assessed the degree of knowledge about the flora of Cape Horn, by asking the following question to the interviewed persons of each socio-cultural group: "Name fifteen plants that you know grow in Cape Horn."

Almost all Yahgan people and old residents named fifteen plants in their answers. In contrast, authorities, teachers and students were able to name, on average, only ten plants; navy personnel named on average less than ten plant species. In addition, most of the ten plants mentioned were exotic species and almost half of those exotic plants do not grow in Cape Horn. Therefore, not only did they know very few plants, but were also confused about or were not aware of which plants actually grow in Cape Horn. For example, palms were mentioned by several members of the navy, despite the fact that these tropical trees do not grow at this high latitude. Pine trees were also frequently mentioned by authorities, navy personnel, teachers, and students, despite the fact that these trees are native to the temperate and boreal latitudes of the Northern Hemisphere. The frequent presence of pine trees in their answers could be due to widespread distribution of commercial plantations of Monterey Pine in central southern Chile, where many of the members of these transitory groups were born. They also frequently mentioned the emblematic monkey-puzzle tree and the national flower of Chile (copihue, *Lapageria rosea*), which are native to central-southern Chile, but do not reach Cape Horn. In summary, authorities, navy personnel and the school community knew little about the plants of Cape Horn, and did not distinguish between this flora and the flora that grows in other parts of the country or the world. In conclusion, the absence of

plants native to Cape Horn in the imagery of transitory residents seems to be due to a lack of knowledge rather than to an informed preference for exotic species.

Under the governance of bioculturally uneducated decision makers and educators, the Yahgan students attending the school were alienated from their habitats, and language. The *upush* shrub and other native plants along with their indigenous names were absent in the answers of the teachers, as well as in the school's textbooks. Gathering *upush* leaves for medicinal tea, rushes for basketry, and mussels for food, as well as other Yahgan practices, which can take place only in native habitats, are interrupted. Consequently, a process of acculturation is generated by a school education that radically changes the habits and habitats where learning and everyday life take place; formal education ignores the Yahgan territory, culture and biota. Under this conflict between Cape Horn's biocultural identity and school culture, Yahgan children suffer in their school performance. In 2000, on average Yahgan students were two years older than their classmates. The lack of biocultural education of teachers, authorities, and decision makers not only stimulates processes of biocultural homogenization, but it also generates problems of environmental and social injustice.

The *upush* shrubs are beautiful. In addition, their grape-shaped leaves make an enjoyable medicinal tea, and the sweet fruits of these wild currants are rich in vitamin C. Yahgan people are those who know the most about the *upush* and other plants of Cape Horn. Why do they have to change their nomadic habits, and suffer within the school? Academic textbooks say that we are living in a post-colonial period, but paradoxically the evidence presented above shows that we are immersed in a wave of ultra-colonialism. Today the austral region of Cape Horn represents a last frontier, where a global cultural-economic model is taking over a set of local habits and habitats, thereby oppressing cultural traditions, subsistence economies, native biota and landscapes. Moreover, Spanish has nearly totally supplanted the indigenous Yahgan language. Similar global-local borderland situations are taking place in a plethora of indigenous, peasant, and fishermen communities in South America, and worldwide.¹⁴ When a human population colonizes a new environment, people must learn from the beginning about its flora, fauna, the relationships among species, and how to talk about them. As shown in the results of the interviews, recently arrived people to Cape Horn do not know the local flora nor the indigenous names and traditional forms of relations with the plants and habitats. However, recently arrived people who know less about the habitats and habits of Cape Horn have the largest impact on decision making and education in Cape Horn. Indigenous people and old residents who know most about native habitats and habits have almost no participation in decision making and education. These results suggest a mechanism for biocultural homogenization processes taking place in Cape Horn, and at other global-local borderlands.¹⁵

At another archipelago region, Peter Mühlhäusler has shown how drastic envi-

¹⁴ For worldwide cases, see L. Maffi, ed., *On Biocultural Diversity: Linking Language, Knowledge, and the Environment* (Washington D.C.: Smithsonian Institution Press, 2001).

ronmental degradation on Polynesian islands often takes place at the beginning of human colonization processes.¹⁶ Negative environmental impacts continue over time until an attunement is achieved between the “contours of language and knowledge and the contours of the environment.” Mühlhäusler’s perspective might help us to understand twenty-first century patterns of linguistic, cultural, and ecological degradation associated with rapid, intensive, and abrupt processes of colonization by the homogenous global urban-industrial society. A single cultural, linguistic model—Global Colonialism, as it might be called—is imposed (not co-evolved) on the diverse environments of the planet.

The southernmost forested region of the world does not escape this global biocultural homogenization process. Today, the temperate-sub-Antarctic region of southwestern South America¹⁷ is subjected to an economy and culture based on exotic species, which consequently generates an increasingly bioculturally homogeneous landscape. During the 1990s, Monterrey pines accounted for more than ninety percent of the milled wood exported by Chile. Textbooks used in Chilean schools between 1975 and 2005 focused on examples of flora and habitats from distant regions, mainly Europe and North America, and fewer than twenty percent of the illustrated or described examples were native. Furthermore, the textbooks made no references to indigenous botanical or ecological knowledge, and decorations in the classrooms of southern Chile were based on exotic plants and habitats, such as roses and Northern hemisphere pine forests.¹⁸ In this way, formal education separates the children’s everyday lives and imageries from their regional ecological and cultural environments.

THE OMORA ETHNOBOTANICAL PARK EDUCATIONAL PROGRAM

Focusing on a specific “habitat” (southwestern South America), and examining the “habits” (floristic imageries and knowledge) of different “inhabitants” (Yah-gans, regional authorities, navy people, teachers, students) lead to a first relevant achievement: the detection of levels of biocultural diversity that often remain hidden behind general universal labels, such as Amerindian or Eurocentric, local or global, ecological knowledge. Additionally, since the end of the 1990s an interdisciplinary team led by ecologists, anthropologists, botanists, and philosophers have simultaneously studied the habitats and habits of the people in Cape Horn. These simultaneous studies lead to a second achievement: the detection of mismatches between decision-makers and educators’ perceptions, and ethno-botanical

¹⁵ Ibid.

¹⁶ P. Mühlhäusler, *Linguistic Ecology: Language Change and Linguistic Imperialism in the Pacific Rim* (London: Routledge, 1995).

¹⁷ For location of the temperate sub-Antarctic region of southern South America, see fig. 1, in Rozzi, Armesto, and Frodeman, “Integrating Ecological Sciences and Environmental Ethics into Biocultural Conservation,” p. 231 in this volume.

¹⁸ See R. Rozzi, J. Silander, Jr., J. J. Armesto, P. Feinsinger, and F. Massardo, “Three Levels of Integrating Ecology with the Conservation of Southern American Temperate Forests: the Initiative of the Institute of Ecological Research Chiloé, Chile,” *Biodiversity and Conservation* 9 (2000): 1199–17.

surveys. The lack of perception of the shrub *upush* is just the tip of the iceberg; it is a symptom that expresses authorities' general lack of awareness about the native flora, its ecological services, and traditional ecological knowledge. Moreover, the former two achievements motivated researchers to become involved not only as researcher but as inhabitant of Cape Horn, interacting with the indigenous community, government authorities and institutions, and educators. These "in situ" and "in tempo" interactions lead to a third significant result: the translation of the biocultural insights into conservation actions. Authorities, members of the Yahgan community, navy people, teachers, and researchers were motivated to implement conservation of habitats at local, and regional scales, creating the Omora Ethnobotanical Park in 1999, and the UNESCO Cape Horn Biosphere in 2005, respectively. In turn, this stimulated new development policies, ecotourism activities, and the creation of biocultural educational programs at preschool, school, and university levels.

The translation of biocultural understanding into conservation and sustainable development actions has promoted "an attunement between the contours of language and knowledge of authorities, decision-makers, and educators and the contours of Cape Horn's environment." Hence the studies of the habitat have been translated into a change in the habits, i.e., an ethical change in the inhabitants. These ethical changes do not purely derive from normative ethical codes or international and national laws, but mostly from a change in biocultural understanding, and concern for the well-being of the biocultural community. In this way, the ancient and integral meaning of *ethos* was reintegrated in Cape Horn, due to normative aspects derived from biocultural knowledge, and an experience of co-inhabitation in this habitat-habit-inhabitant ecosystem unit.

For all the participants, the experience of direct "face to face" encounters (or re-encounters) with actual living beings co-inhabiting Cape Horn was essential to achieve biocultural understanding. These direct encounters generate instances, such as the silent moment of awareness at Omora Park when the Yahgan women Ursula and Cristina, the Puerto Williams' students, and the *upush* shrub were breathing together in the same habitat. It was not reading about the *upush*, or merely learning about the indigenous name and story of the *upush*; it was mainly an instance of living together. At moments like this, biocultural diversity ceases to be merely a concept and begins to be an experience and awareness of co-inhabitation with diverse living beings and life histories, which regularly remain outside the experiential domain of formal education.

In 1999, the University of Magallanes and the OEP inaugurated a series of "field environmental philosophy" workshops and courses, which permitted authorities, and decision makers to recurrently have these experiences that fostered both biocultural understanding and concern for the well-being of human and non-human co-inhabitants. In Yahgan, *omora* refers to the Green-backed firecrown hummingbird (*Sephanoides sephaniodes*); however, in the indigenous narratives it is seen as a bird, and at the same time a small person, a spirit who maintains social and ecological order. Birds are perceived as distant relatives of humans, inhabitants of

common habitats, and this co-inhabitation has strict social and ecological rules. For example, in order to sustain long-term flows of fresh drinkable water in Cape Horn, the Yahgan narratives underline the need of conserving the diverse communities of birds, and other animals that maintain the integrity of the vegetation, and watershed habitats.¹⁹ The little hummingbird was appealing to the diverse parties living in Puerto Williams, and permitted them to understand how Yahgan names, such as *omora*, are carriers of cognitive and ethical dimensions of indigenous worldviews and forms of inhabitation.

To address twenty-first century biocultural conservation challenges at local, regional, and international scales, in 2005 Omora park established partnerships the Institute of Ecology and Biodiversity—which includes research groups from several universities and study sites in Chile—and the University of North Texas—which has a leading interdisciplinary program in environmental philosophy. Through these collaborations an international research and educational program of biocultural conservation and field environmental philosophy has been consolidated.²⁰ Field courses foster the experience of co-inhabitation with members of all social groups of Puerto Williams community, and include students from Latin American, the US, and other regions. The sense of co-inhabitation demands not only experiences of direct encounters with people, plants, and other living beings in their habitats, but importantly also participating in conservation, education or other service activities. Participants have the opportunity and duty to give back to the habitat, and only through these reciprocity actions, participants can experience an integral relation of co-inhabitation.

We thank the team of renowned ecologists and philosophers that participated in the navigation through the sub-Antarctic Magellanic archipelago, and in the workshop that originated this volume. This is a critical step to build on partnerships actions which articulate habitat-habit-inhabitant ecosystem units at local, regional, global scales. Through direct encounters and a sense of reciprocity these partnership relations go beyond “case studies” looking forward to sustainable living together.

¹⁹ For an account of Omora Park and the Yahgan story, see R. Rozzi, F. Massardo, C. Anderson, K. Heidinger, and J. Silander, Jr., “Ten Principles for Biocultural Conservation at the Southern Tip of the Americas: The Approach of the Omora Ethnobotanical Park,” *Ecology and Society* 11 (2006): 43 at <http://www.ecologyandsociety.org/vol11/iss1/art43>.

²⁰ See www.chile.unt.edu.