

Preface

Confronted with global environmental change, the academic community still labors under a tradition of strong disciplinary dissociation that hinders the integration of ecological understanding and ethical values to comprehensively address the complexities of current socio-ecological problems. The Rio+20 Earth Summit held in Brazil in 2012 showed that since the Rio 1992 Earth Summit the rate of environmental degradation had increased rather than decreased (Viola et al. 2012). To reorient this trend, it is essential to overcome the narrow economic and technical-scientific approach that dominates much of the discussion in academic research, education, and decision making.

The need to strengthen the linkage between understanding human values and ecological science has been pointed out by the Ecological Society of America (ESA) and a growing number of scientists for at least half a century. In the 1980s, ecologist and former ESA president, Frank Golley concluded that the ecosystem concept has provided a basis for “a dialogue about how humans value nature,” and for “moving beyond strictly scientific questions to deeper questions of how humans should live with each other and the environment” (Golley 1993, p. 205). In the 1990s, another former ESA president, marine biologist Jane Lubchenco (1998) emphasized in a position paper for *Science* that many of the choices faced by society are ethical ones, for which ecological sciences provide essential understanding to inform responsible societal decisions. During the 1990s and 2000s, a transdisciplinary integration of ecology with social disciplines, especially economics, has been institutionalized via interdisciplinary societies, research programs, and mainstream journals. Work at this interface has produced novel techniques and protocols for assessing monetary values of biodiversity and ecosystem services, as illustrated by the Millennium Ecosystem Assessment (MA 2005). At the beginning of the 2010s, however, an equivalent integration between ecology and philosophy still remains elusive (Pickett et al. 2007; Rozzi et al. 2012). This book undertakes the task to develop crucial theoretical and practical linkages between ecology and ethics through interdisciplinary, international, collaborative teamwork among ecologists and philosophers. It aims to establish a new forum and research platform to work on

this vital, but until now insufficiently researched intersection between the descriptive and normative domains. In particular, it seeks to go well beyond the predominance of economic thinking that has characterized environmental decision frameworks at the turn of the twenty-first century.

Linking Ecology and Ethics for a Changing World: Values, Philosophy, and Action resulted from the homonymous 14th Cary Conference, which brought together leading scholars and practitioners in ecology and environmental philosophy. We discussed core philosophical and ecological terminologies, methods, and questions, as well as practical frameworks to incorporate interdisciplinary integrations of ecology and ethics into sustainability policies, environmental decision making, and long-term socio-ecological programs such as the International Long-Term Ecological Research network or the UNESCO network of biosphere reserves. On the one hand, this Cary Conference is the result of a long-term theoretical endeavor to better understand the reciprocal links between ecological sciences and ethics, broadly understood as the ways we *perceive* the world and the ways we should *co-inhabit* the world (*sensu* Rozzi 1999). On the other hand, the conference and the preparation of this book are stimulated by the pressing need to address urgent practical questions on how to reorient some prevailing eco-social trajectories toward more sustainable paths; such reorientation of trajectories requires not only the natural and social sciences, but also ecologically informed ethics. To address these major theoretical and practical challenges, the present volume is organized in four interrelated parts; each one begins with a concise introduction that identifies concepts discussed in the chapters that are essential for cross-disciplinary understanding.

Part I. Integrating Philosophy and Ecology: Biocultural Interfaces

Over 2,000 years ago, ethics was established by Aristotle as an “exclusive club” in which only humans, and in fact only certain humans, had the privilege to participate. Until 20 years ago ecological sciences, especially in North America, remained focused on study sites located in wilderness areas, as remote from humans as possible. With the arrival of globalization, this divorce is no longer possible. Ricardo Rozzi proposes a biocultural ethics that dissolves the walls of the exclusive club of ethics. He invites philosophers to understand humans and other beings as co-inhabitants embedded at the interfaces of multiple biophysical, symbolic-linguistic, institutional, and socio-political levels of organization; and invites ecologists to explore interrelationships between research questions on ecosystems and biodiversity with questions on how to co-inhabit ecosystems and the planet. These questions are stated in different terms by the diverse contributors to this volume, but, foremost, this book is an invitation to explore and open new questions at the interfaces of ecology and philosophy. As Irene Klaver asserts in her chapter “Life is *vita* in Latin... An in-*vita*-tion leads to new connections, new situations, or a renewal of existing relations, which entail change and transformation. This affects how we understand things.”

Peter Vitousek and Kamanamaikalani Beamer affirm that “all knowledge is embedded in values and practices, in the science of ecology as well as in any indigenous culture.” They present an intercultural, interdisciplinary dialogue that transits toward the practices involved in the development of the Kamehameha Schools in Hawaii. Grounded in a Hawaiian integration of ecological knowledge, values, practices, and institutions, they ask: “How can [traditional] institutions and societies sustain themselves while in contact with the homogenizing power of the modern world? And, what can such institutions or societies bring to living more sustainably in the world, through their values, practices, and knowledge?” In local–global dialectics, stewardship and dialogic partnerships bring twenty-first century ecologists, philosophers, and other professionals to work together with traditional communities both in remote places and in metropolises. Historically, universities have conducted *outreach* programs that offer one or a set of potential problem-specific solutions, such as gardening or renewable energy. However, partnerships aim to also foster *inreach* from communities to the university, as emphasized by Stuart (“Terry”) Chapin and his Alaskan collaborators. The local–global dialectic is not always idyllic, however.

Daniel Simberloff discusses the motives people have for antipathy towards introduced biological species, including ecological and economic negative impacts, aesthetics and at various times xenophobia. However, antipathy towards introduced species is frequently inspired not by their foreign origins *per se* but rather by the fact that their presence replaces local biodiversity, and also culture. Tensions between native and foreign biota and cultures are frequently tacit. For example, when, shortly after the arrival of the Spaniard conquerors, the Virgin of Guadalupe appeared to Juan Diego Cuauhtlatatzin in Nahuatl territory, she offered him a *tilma* full of fresh roses, not of native flowers. As Susan Bratton describes, the Virgin of Guadalupe has a long-established role as protector of the humble and undefended, and today her image is found at roadside shrines, bus pennants, and school decoration where (non-native) roses are omnipresent. How to address the tensions between native floras and cosmopolitan ornamental species such as roses that comprise 66 % of the world flower market today? Irene Klaver suggests that philosophers can act as translators: “An environmental philosopher is an initiator, translating various concerns along multiple perspectives opens up new situations and affords us the freedom of ongoing new beginnings. It is crucial to an understanding of [and respect for] the various viewpoints, positions, places and experiences of others.”

Part II. Ecological Worldviews: Aesthetics, Metaphors, and Conservation

Twenty years ago, in another book in the Cary Conference series, Mark McDonnell and Steward Pickett (1993) apologized to Sergio Leone and the genre of “Spaghetti Western” for describing the ecological influences of humans as divided between the “the good, the bad, and the subtle.” McDonnell and Pickett there focused on human influences on the biophysical properties of ecosystems, and a major spectrum of

ecological novelties that came with “the subtle.” In this volume, J. Baird Callicott addresses a symbolic-linguistic level of reality, by focusing on the concept of worldview. With a post-Kantian epistemological freedom and a Leopoldian ecological wisdom, Callicott identifies: a “bad” worldview associated with an “Abrahamic” concept of the land, regarded as a commodity that belongs to humans; a “good” worldview associated with an ecological-evolutionary concept of the land, regarded as a community to which humans belong. The *philosophical novelties* come with his call for a worldview remediation. How to decide which are bad and good, wrong and right worldviews? In a post-Kantian world “to determine the *truth* of a worldview by comparing it... to some objective reality is epistemologically impossible. We have no unfiltered access to any such objective reality.” To address this aporia, Callicott turns to the concept of the “tenability” of a worldview. To the traditional epistemological criteria of self-consistency and of consistency with the empirical evidence, he adds “to be more tenable and a more viable worldview than are its historical antecedents, I think that Leopold would also add a third criterion for the tenability of a worldview: it should be aesthetically and spiritually satisfying as well.” The integration of aesthetic and spiritual dimensions of ecological worldviews is discussed in the chapters of Part II of this volume.

Aldo Leopold’s highest moral maxim summarizes that “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.” Sheila Lintott and Allen Carlson ask: “How does the word ‘beauty’ fit in this maxim?” To answer, they introduce a compelling cognitive approach to aesthetic appreciation, which enables them to explain why “beauty” is introduced into the Leopoldian maxim, and which are the ethical consequences of having this word introduced within this maxim. According to the cognitive approach, ecological understanding stimulates a broader aesthetic appreciation that goes beyond a mere *picturesque* stereotype of landscapes. Once aesthetic refined appreciation is achieved, it motivates the preservation of lands that have ecological aesthetic value. In a three-step movement, from (i) ecological understanding to (ii) aesthetic appreciation onto (iii) the preservation imperative, the traditional fact/value problem is avoided. When ecological facts are embedded within aesthetic appreciation, there is no direct movement from facts to values. The movement is wholly from aesthetic value, which is itself informed by ecological facts. Within a broader historical and cultural context, it is interesting to note that aesthetic has been indeed a major motivation for conservation in the United States (Hargrove 1989), and other regions such as Germany (Jax and Rozzi 2004). Moreover, the word “ecology” was coined by a German artist and scientist: Ernst Haeckel.

At a socio-political and institutional level, Aldo Leopold’s endeavor is analyzed by Curt Meine, who emphasizes that “creative interdisciplinary thinkers in the history of both ecology and ethics have ventured beyond their disciplinary boundaries and into the zone where they overlap.” Meine emphasizes how Leopold was vigorously committed to encourage his colleagues and students to be integral professionals, much more than mere trained technicians. With the guidance of a fluent historian, such as Meine, we appreciate how Leopold offers us an outstanding example of how to integrate conservation science, policy, philosophy, and practice. Rachel Carson’s life offers a complementary perspective on the integration of theory and practice

embedded in an ecological worldview; her science led her to an outstanding life of advocacy. After a 15-year career as a U.S. Fish and Wildlife Service biologist, she learned about the beauty of wild places and biodiversity, and the wounds caused by humans to habitats, their plants and animals. Phil Cafaro shows how Carson's life teaches us much about humility and courage, a courage that allowed her not to remain silent, and to denounce the "Silent Spring" that had been caused by the indiscriminate use of pesticides. Cafaro quotes a letter in which she wrote "if I kept silent, I could never again listen to a veery's song without overwhelming self-reproach." Lisa Sideris emphasizes in her chapter the significance of everyday experiences, such as listening to the songs of veeries. She concludes that encounters with the natural world are essential and that a variety of worldviews can orient these everyday experiences that nourish our reenchantment with nature and give us the courage to protect it. Brendon Larson, however, cautions that different worldviews and metaphors arise from and stimulate different social practices and values. He calls attention to the synergistic, multidirectional, feedbacks between metaphors and the ecological (and other sciences) and the social contexts in which these metaphors originate, enriching the understanding about the reciprocal links between ecological sciences and ethics, and about potential and actual pathways to enact worldview remediations.

Part III. Environmental Philosophy: Ethics, Epistemology, Justice

Fifteen years ago, as an epilogue to the Cary Conference book on the Ecological Basis of Conservation, Joel Cohen wrote "A Vision of the Future," which began proclaiming that:

If conservationists, together, with demographers, economists, earth scientists, anthropologists and politicians, could put forward a positive and persuasive vision of the future, they could lead billions of nonscientists to look to conservationists as helpful allies in their search for better lives. They could also give direction and meaning to the daily research that occupies many scientists (Cohen 1997, p. 400).

In our own Cary Conference we addressed Cohen's recommendation. In order to work on this question, we began by extending the scope of the participants. First, we considered not only scientists but also philosophers, traditional ecology and religion studies scholars in the team of participants who are experienced in examining the concepts of "better lives." Second, we considered not only human beings but also other-than-human beings in the discussions about a "better life."

Part III of our volume begins with Clare Palmer's chapter that introduces some essential terminology from what she calls "Anglo-American" approaches to environmental ethics. This terminology is helpful in addressing core ethical questions such as: (i) *Where does value come from?* Subjectivists maintain that value are created by human beings; objectivists maintain that, in some sense, values exist in the world independently of our creating them. (ii) *What entities and attributes have value?* For some environmental ethicists, not only individual living beings have value, but also species and ecosystems; while we may also values qualities such as

naturalness and diversity. While traditionally philosophers have privileged human rationality, ethicists have increasingly expanded the circle of those they consider to have some kind of moral relevance. A focus on sentience (roughly, the capacity to feel pain and pleasure) enables the inclusion of other vertebrates in the community of morally relevant beings. Some philosophers – biocentrists – argue that all living-beings have a welfare and are therefore morally relevant. Ecocentrists argue that inclusive entities such as ecosystems and species are morally relevant in themselves; thereby they do not only extend the moral community, but they also propose new “new objects of value” – a question explored further in Eliots’s paper in this Part III.

Palmer further addresses the questions (iii) *Which ethical theories should orient human actions?* (iv) *Should people decide on a single governing value, principle or ethical theory?* Different forms of ethical monism and pluralism are discussed with regard to values, ethical theories, and methodological approaches, and applied to the context of policy and decision making. Palmer’s overview equips the reader with an ethical vocabulary, and an introduction to central values and theories, as well as conflicts among the different positions. She does not advocate for a particular position, but leaves ecologists and other readers better equipped to address Joel Cohen’s question about the concept of “better lives.”

Consistent with a conceptual framework that interrelates the ways we understand the world guided by sciences, and the ways we should co-inhabit the world guided by ethics, Palmer’s chapter is followed by a chapter on scientific epistemology. Helen Longino focuses on *positivism*. This focus is very relevant given the high influence that positivism has had and continues to have on scientists, ecologists included. Longino provides a concise but critical historical overview of positivism. She considers criticisms of *verificationism* flowing from the notions of *incommensurability*, *theory-ladenness of meaning*, and *underdetermination*. Addressing these criticisms, Longino has developed an interesting alternative: *critical contextual empiricism*. Longino distances herself from the original meaning of positivism, and arrives to (at least) three conclusions that are particularly relevant for a biocultural approach to ecology and philosophy: (i) “It is possible that multiple non-reconcilable accounts of the same set of phenomena be equally acceptable”; (ii) “Local epistemologies are evaluable with respect to the particular cognitive goals brought to bear on a phenomenon or set of phenomena”; and (iii) “knowledge in this framework must also be understood as partial and as dynamic. Partial because limited by the questions, and their associated assumptions and methodologies.”

Part IV. Ecosystems: Science, Values, and Action

In the opening plenary lecture of the first Cary Conference in 1985, Gene Likens asked:

Why is ecology so fractioned at the current time? Is this healthy or normal? ... Should we get our act together to make some quantitative jump in understanding of ecosystems? ... Our hope is that the Conference will be useful, not only in examining these questions, but in providing some insight about where ecology may go in the future and how it might make a quantum jump in terms of our understanding of ecosystems (Likens 1987, pp. 1–2).

Our answer to Likens' initial questions is that, today, the branches of ecology are much more intertwined. Each Cary Conference has made significant contributions in a series of quantum jumps in the development of the field. Our 14th Cary Conference made an ethical quantum jump: we move from questions about "understanding of ecosystems" to an integration of them into questions about how to "co-inhabit ecosystems."

To address these new transdisciplinary questions, ecology provides "theoretical lenses" or paradigms that orient the understanding of our place in ecosystems and the biosphere, as well as "practical lenses" or cross-disciplinary methodologies for integrating ecology and environmental philosophy into research, education, and ecosystem management practices, thereby broadening current theoretical and applied approaches to enhance regional and global sustainability. Part IV begins with two chapters by ecologists who have contributed to a shift in the twenty-first century ecological worldview: Steward Pickett provides an updated view of "the flux of nature" paradigm, and Jingle Wu offers an encompassing overview of hierarchy theory.

Two scientists present chapters that outline important frameworks that inform contemporary ecology, and hence are relevant to how the sciences might interact with the theory and practice of ethics. Steward Pickett notes the shift in paradigm from the classical worldview, based on *balance of nature* and its technical expressions. Important assumptions have been altered, by the new *flux of nature* paradigm. These acknowledge the openness of ecosystems to material fluxes, the regulatory role of external influences, the lack of a single stable end point to dynamics, and the role of disturbance and probabilistic dynamics, and finally the entanglement of humans with the biota and physical structures of ecosystems. In addition, the complexity of the science of ecology is illustrated by methodological paradigms that focus on individual entities as opposed to material and energetic fluxes, and which focus on instantaneous, contemporary dynamics as opposed to historical legacies in environment and adaptation. The science of ecology is making great strides in overcoming the fractured nature of its knowledge base and explanatory apparatus noted by Likens in the quote above (Pickett et al. 2007).

Further structuring ecological science is hierarchy theory, introduced by Jianguo Wu. Ecological systems are seen as self-organizing, nested hierarchical systems, in which scaling relationships and partial decoupling are important. These last two features suggest that the generalization that "everything is connected to everything else" is misleading in the realm of ecology, and hence its application. Complex, hierarchical systems are in fact highly modular, such that the successful ones can isolate the effects of disturbance and stress before they ramify unchecked across an entire system. Understanding system dynamics and characteristics emerges from focusing on a given level of organization, while understanding the slower moving dynamics from the level above as constraints, and the faster moving dynamics of the lower level as mechanisms. The principles laid out by Wu apply to all ecological systems, of whatever scale or specific methodological paradigms they fit, whether large or small, or whether they focus on entities versus aliquots, historical versus contemporary causation.

The chapter by Shahid Naeem further elaborates on a view based on nested hierarchical levels of organization, and points out that this view is inconsistent with current political, technological and economic governance. He highlights that in spite of the vast growth in scientific information, the prevailing Western scientific view of ourselves and life on Earth has not changed much since Ancient Greece. The overarching worldview of nested spheres remains essentially the same. The modern scientific view of life is that it exists within a slim sphere; the biosphere, which suffuses into the hydrosphere and atmosphere, is nestled between an underlying sphere of rock and magma and the vast expanse of the cosmos above. The notion of ecosystem services seems very narrow within this broader worldview. The ecosystem service construct is clearly important, but it is insufficient by itself to form the foundation for our environmental actions aimed at achieving environmental sustainability because it continues to promulgate the notion that nature is in the service of humanity. The worldview and the empirical evidence suggest that such an approach may be an impediment rather than a catalyst for achieving environmental sustainability. Naeem admonishes that the decoupling of economics and technology from the biosphere has increased exponentially, and if we do not reorient our socioeconomic trajectories toward coupled socio-ecological ones, then we will cross the sustainability thresholds of the functioning biosphere.

Based on her long-term ecological studies in Los Angeles, Stephanie Pincetl adds in her chapter another layer of difficulty to couple social and ecological spheres. For the last two decades, in the United States, public funds for cities have steadily declined, particularly for parks and recreation. She raises three questions that are relevant beyond the case of Los Angeles: “What to make of all these efforts in a time of budget shortages and rise of nonprofit philanthropy? How are the agendas set and carried out? What community participation is involved and whose vision is being advanced?” Pincetl presents emerging new urban ecosystem and greenspace public/private initiatives for greater urban sustainability led by public/nonprofit partnerships. However, these initiatives are characterized by opportunism, little accountability and consultation, and in low-income communities, they may create an additional burden of responsibility and labor for maintaining these new infrastructures. The type of governance and government organization is central, and public administration should ensure coverage of essential socio-ecological needs in urban ecosystems encompassing both rich and poor neighborhoods. For example, projects such as stormwater infiltration, whose relevance Irene Klaver analyzes from a phenomenological and community perspective in Part 1, would require indispensable public administration for long-term socio-ecological urban sustainability and justice.

Nalini Nadkarni offers an alternative to address some of the concerns expressed by Naeem and Pincetl. According to Nadkarni, “ecosystem ecology provides a powerful framework to understand and care for biota and the environment.” The key is to enhance the capacity of ecologists to communicate and the valuation that academia and scientific societies give to initiatives to share ecological knowledge

with people outside of academia, particularly with underserved audiences and those who have little exposure to science and nature. Nadkarni critically assesses the effectiveness of the way in which the “Second Criterion” or Broader Impacts Statement of the National Science Foundation (NSF) is being implemented by researchers and institutions. Most of the proposals submitted to NSF included just teaching and training mostly for small groups (<50 people) that are close to academia, and less than 10 % of the proposals considered assistance with under-represented groups. To overcome this narrowness, Nadkarni illustrates several case studies of interactions among scientists and diverse social groups that show ways of linking ecological and social values, and the relevance of direct exposure to nature. Interestingly, Nadkarni not only *reaches out* to diverse and numerous audiences, but she also *reaches in* to the epistemic community of ecologists, demonstrating the decisive impact that early experiences of exposure to nature had on their career paths. The chapter by Alexandria Poole and collaborators also highlights case studies that emphasize the relevance of direct encounters in nature. Complementarily she and her colleagues address two major barriers to integrate ecology and ethics in education, from elementary school to higher education. First, the *assumption of value free science*, although outdated is still prevailing. Second a two-century-long *culture war* prevents the teaching of ethics in the United States. Latin America has also suffered a severe reduction in ethics education since the 1960s (Rozzi 2012). Despite these barriers, as demonstrated by the previous chapters of this book, conceptual frameworks are available for an academic, interdisciplinary education of ecology and ethics both in school and higher education. As a good example of an axiological model that integrates ecology and ethics, Poole et al. refer to Holmes Rolston, III, one of the founders of the field of environmental ethics. Rolston (1985) identified a variety of environmental values in wilderness areas, and he identified the ecosystem as the fundamental one. According to Rolston, organism values, individual and social preferences, and market prices and economic values should be always subordinated to ecosystem values. Poole et al. highlight Rolston’s axiology by affirming that:

Inverting the value hierarchy—i.e., treating economic value as the primary value as we usually do—is as incorrect as planting a tree with its roots in the air.

The chapter and the book conclude with the presentation of six ongoing education programs that integrate ecology and philosophy. These ongoing programs take place in different regions of the Americas, from the United States to Mexico, Colombia, Venezuela, Guyana, along the Andean and Amazonian Ecuador, Peru, Bolivia, to Argentina, Chile and the southern end of the Americas in Cape Horn. These programs involve scientists, philosophers, and educators working in formal and non-formal education, developing conceptual basis and practical strategies for the integration of ecological and ethical concepts, theories, and values, into methodologies that involve inter-institutional and international collaborations.

Future Projections at the Interfaces of Ecology and Philosophy

This book builds on the valuable history of a series of Cary Conferences and ecosystem science books that progressively have included (i) humans as components of ecosystems, (ii) interdisciplinary approaches to investigate ecosocial questions, and (iii) the integration of theory and practice to achieve broader ecological understanding and decision making (Table I). Embedded in this trend, the 14th Cary Conference innovated by having been jointly organized by three different institutions that

Table I Series of Cary Conference books

Conference title	Year	Publisher	Editors
1 <i>Status and Trends in Ecosystem Science</i>	1985	IES	Likens et al. (1987)
2 <i>Long Term Studies in Ecology</i>	1987	Springer	Likens (1989)
3 <i>Comparative Analysis of Ecosystems</i>	1989	Springer	Cole et al. (1991)
4 <i>Humans as Components of Ecosystems</i>	1991	Springer	McDonnell and Pickett (1993)
5 <i>Linking Species and Ecosystems</i>	1993	Chapman & Hall	Jones and Lawton (1995)
6 <i>The Ecological Basis of Conservation: Heterogeneity, Ecosystems, and Biodiversity</i>	1995	Chapman & Hall	Pickett et al. (1997)
7 <i>Success, Limitations and Frontiers in Ecosystem Science</i>	1997	Springer	Pace and Groffman (1998)
8 <i>Understanding Urban Ecosystems: A New Frontier for Science and Education</i>	1999	Springer	Berkowitz et al. (2003)
9 <i>Understanding Ecosystems: The Role of Quantitative Models in Observation, Synthesis, and Prediction</i>	2001	Princeton University Press	Canham et al. (2003)
10 <i>Ecosystem Function in Heterogeneous Landscapes</i>	2003	Springer	Lovett et al. (2005)
11 <i>Disease Ecology: Effects of Disease on Ecosystems and of Ecosystems on Disease</i>	2005	Princeton University Press	Ostfeld et al. (2008)
12 <i>Resilience in Urban Ecology and Design: Linking Theory and Practice for Sustainable Cities</i>	2007	Springer	Pickett et al. (2013)
13 <i>Effective Communication of Science in Environmental Controversies</i>	2009	Frontiers in Ecology and the Environment (Special Issue)	Groffman et al. (2010)
14 <i>Linking Ecology and Ethics for a Changing World: Values, Philosophy, and Action</i>	2011	Springer	Rozzi et al. (2014)

became independently interested in the interface of ecology and philosophy: the Cary Institute of Ecosystem Studies, New York, the Institute of Ecology and Biodiversity (IEB-Chile), and the University of North Texas (UNT). The Cary Institute provided the strength of a tradition of cutting-edge research on ecosystem science and coupled human-nature systems. IEB added for the first time in the history of the Cary Conferences an international partner, which represents a leading Latin American research center committed to develop long-term socio-ecological research in southwestern South America. The UNT Department of Philosophy and Religion Studies and its Center for Environmental Philosophy integrate epistemological, ethical, and environmental justice approaches to address socio-ecological challenges. In this way, the 14th Cary Conference builds on a strong partnership among these three institutions, which have different histories of long-term collaborations between ecologists and philosophers, as shown by previous international workshops, such as *Comparative Studies of South and North American Temperate Ecosystems* held in January 1991 (Pickett and Armesto 1991), *Integration of Ecology and Environmental Philosophy into Biocultural Conservation and Long-Term Socio-Ecological Research* held in March 2007 and June 2008 (Rozzi et al. 2008; Anderson et al. 2010), and *Latin- (inter-) American Conference on Environmental Philosophy* held in March 2013 (Massardo et al. 2012) with participation of ecologists and philosophers from the USA, Chile, Latin America and other regions. These workshops were aimed at building the theoretical and practical foundations for integrating ecological sciences and environmental ethics into long-term socio-ecological research programs, including the new Long-Term Socio-Ecological Research (LTSER-Chile) network in southwestern South America (Rozzi et al. 2012).

Through this Conference and book, this partnership aims to stimulate further growth of the field and to consolidate action plans for improved cross-disciplinary integration, generating innovative research questions and approaches, broader professional training, practice, and place-based projects. The results will be essayed in Long-Term Ecological Research (LTER) programs at national and international sites that span from urban to remote pristine ecosystems, the exploratory network of Urban Long-Term Ecological Research Areas (ULTRA), or in forest, range, and aquatic management programs, as well as UNESCO biosphere reserves that integrate the goals of improving human well-being and the preservation of biological and cultural diversity. As an example of setting in motion the interface of ethics and ecology at the southern end of the Americas (Rozzi et al. 2012), we are currently making progress in the following endeavors: (1) creating new field work methods that bring together ecologists and philosophers, thus fostering novel research questions and broader understanding of human-nature relationships; (2) developing a cross-disciplinary agenda of workshops and courses, based on a network of field stations associated with LTSER-Chile, which creates opportunities for training, academic discussion and collaboration among practitioners of ecology, philosophy, and other professions; (3) guiding field-based, co-tutored, graduate theses that integrate ecological and ethical concepts to address critical issues in the disciplines; (4) strengthening research on environmental ethics and ecology in a region of the world threatened by large-scale economic development projects (such as, salmon

farming, hydropower) that are often in conflict with local community aspirations; (5) conducting transdisciplinary research programs with government agencies and local communities. Such activities are being supported through collaboration agreements among local universities (e.g., Universidad de Magallanes), national research Institutes (Institute of Ecology and Biodiversity, Chile), and international research programs based at academic institutions (Sub-Antarctic Biocultural Conservation Program, at the University of North Texas, USA). This model of interaction among disciplines, academic institutions, regional authorities and local communities can offer a valuable scenario for assessing methodological approaches essayed at the interface of ethics and ecology.

The fundamental importance of broadening socio-ecological research and better integrating human values in environmental decision making in this rapidly changing age compels us to continue the task addressed in this Cary Conference by organizing a series of activities on *Linking Ecology and Ethics for a Changing World: Values, Philosophy, and Action* at the 100th anniversary of the Ecological Society of America that will take place in Baltimore in August 2015. Our present volume aims also to become the first of a new series of books on Ecology and Philosophy published by Springer. This series will be devoted to continuing research at the interfaces of ecology and ethics (embedded in the multiple fields of philosophy) to broaden our conceptual and practical frameworks in this transdisciplinary field. We hope that this will help to effectively guide society toward more sustainable and just ways of co-inhabitation among diverse humans, and among them and other-than-human co-inhabitants with whom we share our habitats in the heterogeneous regions of the planet.

Denton, TX, USA
 Millbrook, NY, USA
 College Station, TX, USA
 Santiago, Chile
 Denton, TX, USA

Ricardo Rozzi
 S.T.A. Pickett
 Clare Palmer
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