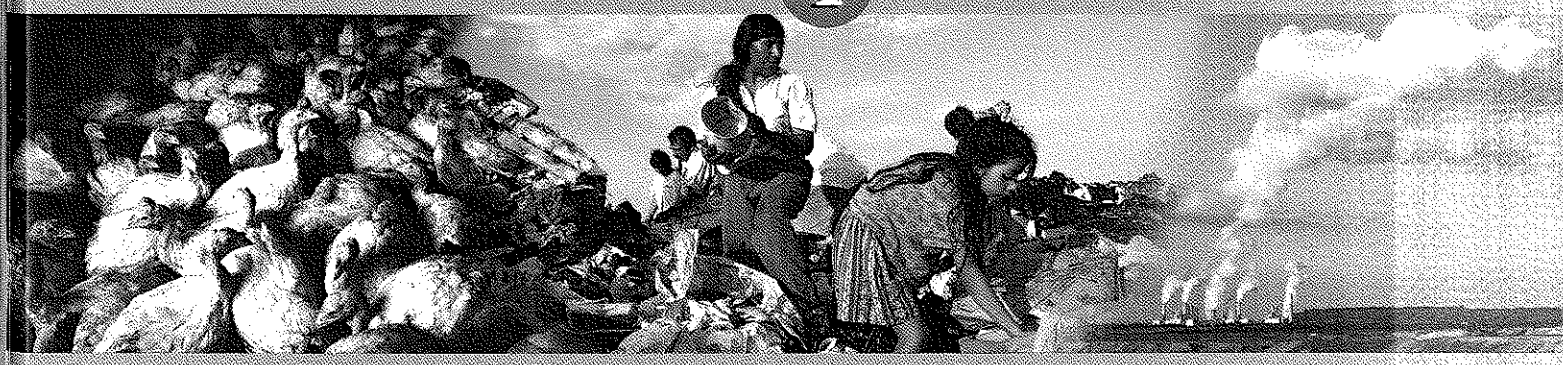
ENCYCLOPEDIA OF
environmental ethics AND philosophy

1



J. Baird Callicott and Robert Frodeman
Editors in Chief

Editorial and Production Staff

PROJECT EDITOR
Jason M. Everett

CONTRIBUTING EDITOR
Ken Wachsberger

EDITORIAL TECHNICAL SUPPORT
Mark Drouillard

MANUSCRIPT EDITORS
Judith Clinebell
William Kaufman
Christine Kelley
Eric Lowenkron
Alan Thwaits

PROOFREADERS
Melodie Monahan
Amy Unterburger

CAPTION WRITER
Jaclyn Setili

INDEXER
Katharyn Dunham

PRODUCT DESIGN
Pamela A.E. Galbreath

IMAGING
Lezlie Light

GRAPHIC ART
Pre-Press PMG

PERMISSIONS
Margaret Abendroth
Jennifer Altschul
Margaret Chamberlain-Gaston
Leitha Etheridge-Sims

COMPOSITION
Evi Seoud

MANUFACTURING
Rita Wimberley

DIRECTOR, NEW PRODUCT DEVELOPMENT
Hélène Potter

PUBLISHER
Jay Flynn

GALE
CENGAGE Learning™

Encyclopedia of Environmental Ethics and Philosophy

J. Baird Callicott and Robert Frodeman, Editors in Chief

Library of Congress Cataloging-in-Publication Data

Encyclopedia of environmental ethics and philosophy / J. Baird Callicott, Robert Frodeman, editors in chief.
p. cm
Includes bibliographical references and index.
ISBN 978-0-02-866137-7 (set) — ISBN 978-0-02-866138-4 (vol 1) — ISBN 978-0-02-866139-1 (vol 2) — ISBN ISBN 978-0-02-866140-7 (ebook)
1. Environmental ethics. 2. Environmental sciences—Philosophy. I. Callicott, J. Baird. II. Frodeman, Robert.

GE42.E5318 2009
179'.1—dc22 2008027495

Gale
27500 Drake Rd.
Farmington Hills, MI 48331-3535

ISBN-13: 978-0-02-8661377 (set)
ISBN-13: 978-0-02-866138-4 (vol. 1)
ISBN-13: 978-0-02-866139-1 (vol. 2)
iSBN-10: 0-02-866137-0 (set)
ISBN-10: 0-02-866138-9 (vol. 1)
ISBN-10: 0-02-866139-7 (vol. 2)

This title is also available as an e-book.
ISBN-13: 978-0-02-866140-7; ISBN-10: 0-02-866140-0
Contact your Gale sales representative for ordering information.

Printed in the United States of America
1 2 3 4 5 6 7 12 11 10 09 08

opposite of value) until humanity (or possibly until intelligent vertebrates) first appeared and began making judgments. (Could birds have lacked value in the days of archaeopteryx and acquired it only when first appreciated by primates?) Normative biocentrism claims that the good of living creatures supplies interpersonal reasons for action (some of them nonderivative); such a claim would make it reasonable to treat ethical judgements not as mere expressions of human valuing but as having truth values of the kind widely recognized as belonging both to moral and to value discourse; indeed, there is as much reason to be a realist about intrinsic value as there is for moral matters in general. Hence biocentrists can consistently and reasonably be resolute metaethical realists, even though their normative stance (biocentrism) does not hang upon this affiliation to realism.

SEE ALSO *Animal Ethics; Deep Ecology; Last Man Arguments; Naess, Arne; Norton, Bryan; Singer, Peter; Taylor, Paul.*

BIBLIOGRAPHY

Agar, Nicholas. 2001. *Life's Intrinsic Value.* New York: Columbia University Press.

Attfield, Robin. 1983. "The Good of Trees." *Journal of Value Inquiry* 15: 35–54.

Attfield, Robin. 1983. "Methods of Ecological Ethics." *Metaphilosophy* 14(3, 4): 195–208.

Attfield, Robin. 1991a. *The Ethics of Environmental Concern.* 2nd edition. Athens: University of Georgia Press.

Attfield, Robin. 1991b. "Postmodernism, Value and Objectivity." *Environmental Values* 10: 145–162.

Attfield, Robin. 1994. *Environmental Philosophy: Principles and Prospects.* Aldershot, Hampshire, UK: Ashgate.

Attfield, Robin. 1995. *Value, Obligation and Meta-Ethics.* Amsterdam and Atlanta, GA: Editions Rodopi.

Attfield, Robin 2003a. *Environmental Ethics: An Overview for the Twenty-First Century.* Cambridge, UK: Polity Press.

Attfield, Robin. 2003b. "Biocentric Consequentialism, Pluralism and 'the Minamax Implication': A Reply to Alan Carter." *Utilitas* 15(1): 76–91.

Attfield, Robin. 2005. "Biocentric Consequentialism and Value-Pluralism: A Response to Alan Carter." *Utilitas* 17(1): 85–92.

Callicott, J. Baird. 1992. "Rolston on Intrinsic Value: A Deconstruction." *Environmental Ethics* 14: 129–143.

Carter, Alan. 2001. "Review of Robin Attfield, *Ethics of the Global Environment.*" *Mind* 110: 149–153.

Carter, Alan. 2005. "Inegalitarian Biocentric Consequentialism, the Minamax Implication and Multidimensional Value Theory: A Brief Proposal for a New Direction in Environmental Ethics." *Utilitas* 17(1): 62–84.

Feinberg, Joel. 1974. "The Rights of Animals and Unborn Generations." In *Philosophy and Environmental Crisis*, ed. William T. Blackstone. Athens: University of Georgia Press.

Gandhi, Mahatma. 1958. *The Collected Works of Mahatma Gandhi.* Ahmedabad, India: Navajivan Trust.

Goodpaster, Kenneth E. 1978. "On Being Morally Considerable." *Journal of Philosophy* 75: 308–325.

Gruzalski, Bart. 2002. "Gandhi's Contributions to Environmental Thought and Action." *Environmental Ethics* 24(3): 227–242.

Hare, R. M. 1972. *Essays on the Moral Concepts.* New York: Macmillan.

Naess, Arne. 1973. "The Shallow and the Deep, Long-Range Ecology Movement: A Summary." *Inquiry* 16: 95–100.

Norton, Bryan G. 1991. *Toward Unity Among Environmentalists.* Oxford, UK: Oxford University Press.

Paske, Gerald H. 1989. "The Life Principle: A (Metaethical) Rejection." *Journal of Applied Philosophy* 6(2): 219–225.

Scherer, Donald. 1982. "Anthropocentrism, Atomism, and Environmental Ethics." *Environmental Ethics* 4(2): 115–123.

Schweitzer, Albert. 1932. *The Philosophy of Civilisation*, trans. C. T. Campion. 2nd edition. London: A. & C. Black.

Singer, Peter. 1999. *Practical Ethics.* 2nd edition. Cambridge, UK: Cambridge University Press.

Sterba, James. 1998. "A Biocentrist Strikes Back." *Environmental Ethics* 20(4): 361–376.

Taylor, Paul W. 1981. "The Ethics of Respect for Nature." *Environmental Ethics* 3(3): 197–218.

Taylor, Paul. 1986. *Respect for Nature: A Theory of Environmental Ethics.* Princeton, NJ: Princeton University Press.

Thompson, Janna. 1990. "A Refutation of Environmental Ethics." *Environmental Ethics* 12(2): 147–160.

Varner, Gary E. 1990. "Biological Functions and Biological Interests." *Southern Journal of Philosophy* 27: 251–270.

Varner, Gary E. 2002. "Biocentric Individualism." In *Environmental Ethics: What Really Matters, What Really Works*, ed. David Schmidtz and Elizabeth Willott. Oxford, UK: Oxford University Press.

Varner, Gary E. 2003. "Review of Nicholas Agar, *Life's Intrinsic Value.*" *Environmental Ethics* 25(4): 413–416.

Williams, Bernard. 1995. "Must a Concern for the Environment Be Centred on Human Beings?" In *Making Sense of Humanity and Other Philosophical Papers 1982–1993.* Cambridge, UK: Cambridge University Press.

Robin Attfield

BIOCULTURAL AND LINGUISTIC DIVERSITY

Three interrelated factors—human language, culture, and the inhabited ecosystems—have helped to shape the evolution of the human species. In the 1990s, numerous studies demonstrated correlations between biological and linguistic diversity, and suggested that these correlations provide evidence about the coevolution of human groups with their local ecosystems.

Humans interact with their environment, modifying it and developing specialized knowledge about it. In order to convey ecological knowledge and practices, humans have also developed specialized ways of talking about the flora, fauna, and ecosystems. The continued use of these local, coevolved languages promotes, in turn, the continuity of local ecological knowledge and practices. Relationships between local languages and their socio-ecological environments are particularly apparent in indigenous communities that maintain close material and spiritual ties to their regional ecosystems (Maffi 2001).

LANGUAGE, CULTURE, AND NATURE

Biological and cultural diversity are inextricably interwoven among all peoples for at least two reasons (Rozzi 2001). First, perception and understanding of biological diversity are influenced by human language, culture, and technology. The compound term *biocultural* makes explicit the role of the "cultural lenses" of any observer (including one using academic research methods and taxonomies) in interpreting biological diversity; those interpretive "lenses" in turn influence how humans modify living organisms and processes, from molecular to global scales. For example, the indigenous Amazonian Waorani word *ömö* defines *forests* as "worlds inhabited by countless sentient beings who share with humans a home, dispositions, values, and culture." This human-forest kinship connoted by the word *ömö* gives rise to various rituals and encourages the Waorani people to oppose oil extraction in the Amazonian forests (Sawyer 2004). In contrast, the English word *woodland* implies that forest ecosystems are resources for wood for fuel or building materials. This utilitarian perception has reduced trees to objects that today can be genetically engineered without any consideration of them as integral living beings interacting with other living and non-living beings in forest ecosystems. These contrasting definitions of forests illustrate how concepts embedded in language influence both ecological knowledge (the ways in which humans perceive trees and their ecosystems) and practices (the ways in which humans transform other species and their habitats) (Rozzi 2001). By fostering an understanding of the multiple representations and classifications of biological diversity in various languages, this biocultural method can help to deconstruct the economic-mathematical approach to ecosystems that predominates in European and North American cultures, thereby bringing attention to alternative modes of ecological knowledge and practice.

Second, according to ecology and evolutionary biology, *Homo sapiens* is an animal species that, like other species, participates in the structure, processes, and composition of ecosystems (McDonnell and Pickett 1997). The human species forms part of biodiversity and, with its multiple ethnicities and cultures, generates ramifying networks of biocultural relations that interact with the heterogeneous ecosystems and landscapes in which they unfold. Novel biocultural approaches in anthropological and ecological research indicate that many landscapes previously depicted as pure, pristine expression of nature—wilderness—are in fact *cultural landscapes*, either deliberately created by humans or modified by human activities. Some remarkable cultural landscapes are found in the vast tropical areas of Amazonia, where, since the 1970s, scientists have begun to discern vegetation patterns that are the result of extensive plantations of fruit and nut trees, such as the *apêtê* "forest islands." Through the use of fire, forest management, and planting and transplanting within and between many ecological zones of Amazonia, indigenous people have created a mosaic of forest islands and corridors that attract useful animals. These discoveries within the world's most extensive forested region have obliged scientists to reevaluate these Amazonian landscapes; whereas they once labeled them as purely natural, they now apply the term *cultural forests* to these areas, which include large agricultural zones, open parklands, hills built with clay, and managed wetlands (Heckenberger et al. 2003, Mann 2005).

BIOCULTURAL DIVERSITY AND ECOLINGUISTICS

The biocultural approach contrasts with the prevailing disciplinary compartmentalization that has arisen from the specialized studies of languages, culture, and biodiversity. Despite the important role that language plays in the relationship between knowledge and the environment, the linguistic sciences have devoted scant attention to this link. Andrew Pawley (1996) attributes this neglect to the prevalence of grammar-based models that conceive of languages as autonomous systems that are independent of beliefs about and knowledge of the world. Some scholars argue that the syntactical and lexical description of a language is only a small subset of all its possible characteristics and that such anatomical studies of languages do not take into account the cultural and ecological knowledge that languages both convey and construct. On this view, then, such studies have little to contribute to documenting and conserving that knowledge. In contrast to this "classical" context-free, grammar-focused linguistic science, later subject-matter models of language have called for ecolinguistic approaches that view languages as ecologically embedded (Calvet 2006). These scholars argue that languages are not self-contained systems but are an integral part of larger ecological, social, and cultural environments.

When a human population colonizes a new environment, people have to learn from scratch about its flora and fauna, the relationships among species, and how to talk about them. Based on historical records about settlements of small populations on Polynesian and other islands, Peter Mühlhäusler (1995) has shown how drastic

environmental degradation often takes place at the beginning of human colonization. Negative environmental impacts continue until an attunement is achieved between the "contours of language and knowledge and the contours of the environment" (p. 36). Mühlhäusler's perspective might deepen insights into twenty-first-century patterns of linguistic, cultural, and ecological degradation associated with the rapid, intensive, and abrupt kinds of colonization practiced by homogenous, global, urban-industrial societies. This ecocultural-linguistic degradation has arisen from the imposition of a single cultural-linguistic model—global colonialism, it might be called—on the diverse environments of the planet. This cultural-linguistic imposition leads to the simultaneous loss of local languages and the ecological knowledge and practices embedded in them.

LOSSES OF BIOLOGICAL, CULTURAL AND LINGUISTIC DIVERSITY

Biodiversity loss is a well-known phenomenon. By some estimates, some 20 percent of the world's biological species may cease to exist during the twenty-first century. Less widely appreciated is the diversity loss in the world's languages and cultures. There were an estimated 6,912 languages spoken in the world as of 2005 (Gordon 2005). More than half of these languages, however, are spoken by very small communities of between 1,000 and 10,000 fluent speakers. On the other hand, only ten languages (Chinese, English, Spanish, Hindi, Arabic, Russian, Bengali, Portuguese, German, and French) are spoken by more than half of the world's population. Accompanying this rapidly growing predominance of a few languages is a correlative, if not proportional, loss of the diversity of the many languages that coevolved with unique ecological and cultural environments. This global "language shift" (Harmon 2002) has been accelerated by growing assimilation pressures that lead to the collective abandonment of native languages.

Many threatened languages belong to microlanguage families spoken by fewer than 100 people. For instance, the Fuegian language family in southern South America includes four languages, of which two are already extinct (Selknam and Haush); the other two are nearly extinct, spoken by fewer than ten persons among the Yahgan and Kaweshkar peoples (Rozzi 2001). Worldwide more than 10 percent of the living languages are "nearly extinct," almost 30 percent are highly threatened (there are fewer than 10,000 speakers), and as many as 90 percent of the languages may vanish during the twenty-first century (Krauss 1992, Maffi 2005).

Biocultural diversity, especially among indigenous peoples, faces three major challenges. First, more than 70 percent of the 6,912 languages in the world are endemic; hence the indigenous peoples who speak them represent most of the world's cultural diversity (WGPI 2001). Second, the populations of 5,000 indigenous groups number a mere 300 to 350 million, less than 6 percent of the world total. Third, the areas of highest biological diversity (over a wide biogeographical range from the polar regions to the deserts, from coastal areas to high-altitude zones, from savannas to tropical and temperate rainforests) are inhabited by indigenous people. More than two-thirds of the world's languages are spoken in the 238 ecoregions that the World Wide Fund has identified as the highest-priority targets for biodiversity conservation efforts (Oviedo and Maffi 2000). These three interrelated considerations underscore the fragility of biocultural diversity.

Foreseeing this scenario, Darrell Posey led the way in creating the International Society of Ethnobiology in 1988. That year the group's first international congress, held in Belém, Brazil, issued the Declaration of Belém, which called public attention to the need to better understand and conserve the "inextricable links" between biological and cultural diversity. Four years later, during the Earth Summit, another landmark international conference held in Brazil, these biocultural links were recognized by the Convention on Biological Diversity (CBD). In its preamble the CBD states, "The Contracting Parties ... recogniz[e] the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and sustainable use of its components. ..."

The terms *traditional ecological knowledge* (TEK) and *indigenous knowledge* (IK) were first used in 1979 and 1980 (Maffi 2001). It was only under the influence of the United Nations Conference on the Environment, or Earth Summit, held in Rio de Janeiro in 1992 (Rio 1992), however, that these terms gained wide currency. Rio 1992 generated global awareness about the connections between biodiversity and indigenous knowledge. The CBD, Agenda 21, and the Global Biodiversity Strategy signed in Rio in 1992 affirmed the principle that "cultural diversity is closely linked to biodiversity. Humanity's collective knowledge of biodiversity and its use and management rests in cultural diversity; conversely conserving biodiversity often helps strengthen cultural integrity and values" (WRI, WCU, and UNEP 1992). In turn, the U.S. National Research Council (NRC) stated in 1992 that "a vast heritage about species, ecosystems, and their use exists, but does not appear in the world literature" (National Research Council 1992, p. 179). It therefore recommended that development agencies place greater emphasis on, and assume a stronger role in, systematizing the local knowledge held by indigenous peoples as recorded in the gray literature (e.g., reports and other non-academically published documents) and in anecdotes. The NRC report declared, "If indigenous knowledge has not been documented and compiled, doing so should be a research priority of the highest order. Indigenous knowledge is being lost at an unprecedented rate, and its preservation, preferably in data-base form, must take place as quickly as possible" (National Research Council 1992, p. 113).

FORMAL EDUCATION AND LOSSES OF BIOCULTURAL DIVERSITY

In spite of growing conservation efforts, the juggernauts of cultural assimilation and homogenization are still charging through the global village. One of the main causes of linguistic and cultural diversity loss is formal education. Worldwide fewer than 500 languages are used and taught in formal education, leaving out more than 90 percent of the world's languages. In addition, more than half of the world's 193 sovereign states are officially monolingual. These educational policies are due not only to the dominance of colonial languages such as English and Spanish but also to internal political conflicts. For example, in Africa many states see minority languages as a threat to national unity. Home to 2,092 languages, Africa harbors more than 30 percent of the world's linguistic diversity. According to Herman Batibo (2005), unless "unmarked bilingualism" (in which two or more languages of unequal social prestige are treated equally) is achieved in Africa's formal education systems, minority language speakers will continue to face the dilemma of either (a) abandoning their native languages (and the ecocultural forms of knowledge that inhere in them) in order to gain access to the wider society or (b) conserving their languages, but at the price of consigning themselves to the margins of their multiethnic nations.

Languages, like biological species, have undergone extinctions before. The peak of linguistic diversity on earth may have occurred at the beginning of the Neolithic Period, 10,000 years ago, when geographically discrete societies tended to have distinct dialects, contributing to the maintenance of strong group boundaries, internal social cohesion, and coordinated environmental practices (Nettle 1999). During the last 5,000 years the colonial expansions of dominant civilizations have ridden roughshod over tribal languages and cultural traditions, with attendant losses in tribal people's sovereignty and control over their ancestral territories and resources. The temporal rate and biogeographical scale of current global cultural homogenization is, however, unprecedented. The spread of the dominant culture is proceeding by way of linguistic assimilation as the languages of the stronger groups monopolize education, the media, government, and other avenues of public discourse. Because most languages are unwritten, undocumented, and unrecorded, their disappearance will be as irreversible as that of living species (Maffi 2001).

BIBLIOGRAPHY

Batibo, Herman. 2005. *Language Decline and Death in Africa: Causes, Consequences and Challenges.* Clevedon, UK: Multilingual Matters Limited.

Calvet, Louis-Jean. 2006. *Towards an Ecology of World Languages.* New York: Polity.

Gordon, Raymond G., Jr., ed. 2005. *Ethnologue: Languages of the World.* Fifteenth edition. Dallas, TX: SIL International. Available from http://www.ethnologue.com/web.asp

Harmon, David. 2002. *In Light of Our Differences: How Diversity in Nature and Culture Makes Us Human.* Washington DC: Smithsonian Institution Press.

Heckenberger et al. 2003. "Amazonia 1492: Pristine Forest or Cultural Parkland?" *Science* 301: 1710–1714.

Krauss, M. 1992. "The World's Languages in Crisis." *Language* 68: 6–10.

Maffi, Luisa, ed. 2001. *On Biocultural Diversity. Linking Language, Knowledge, and the Environment.* Washington, DC: Smithsonian Institution Press.

Maffi, Luisa. 2005. "Linguistic, Cultural, and Biological Diversity." *Annual Review of Anthropology* 34: 599–617.

Mann, Charles. 2005. 1491: *New Revelations of the Americas before Columbus.* New York: Knopf.

McDonnell, Mark, and Steward Pickett. 1997. *Humans as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas.* New York: Springer.

Mühlhäusler, Peter. 1995. *Linguistic Ecology; Language Change and Linguistic Imperialism in the Pacific Rim.* London: Routledge.

National Research Council. 1992. *Conserving Biodiversity: A Research Agenda for Development Agencies.* Washington, DC: National Academy Press.

Nettle, Daniel. 1999. *Linguistic Diversity.* Oxford: Oxford University Press.

Oviedo, Gonzalo, and Luisa Maffi. 2000. *Indigenous and Traditional Peoples of the World and Ecoregion Conservation: An Integrated Approach to Conserving the World's Biological and Cultural Diversity.* Gland, Switzerland: WWF International. Available from http://assets.panda.org/downloads/EGinG200rep.pdf

Pawley, Andrew. 1996. "Grammarian's Lexicon and Lexicographers' Lexicon: Worlds Apart." *Konferenser* 36: 189–211.

Rozzi, Ricardo. 2001. "Éticas ambientales latinoamericanas: raíces y ramas." In *Fundamentos de Conservación Biológica: Perspectivas Latinoamericanas,* eds. R. Primack, R. Rozzi, P. Feinsinger, et al. Mexico City: Fondo de Cultura Económica.

Sawyer, Suzana. 2004. *Crude Chronicles: Indigenous Politics, Multinational Oil, and Neoliberalism in Ecuador.* Durham, NC: Duke University Press.

Office of the United Nations High Commissioner on Human Rights, Working Group on Indigenous Populations. 2008.

Available from http://www2.ohchr.org/english/issues/indigenous/groups/groups-01.htm

World Resources Institute, World Conservation Union, and United Nations Environment Programme. 1992. *Global Biodiversity Strategy: Policy-Maker's Guide.* Baltimore, MD: WRI.

Ricardo Rozzi
Alexandria Poole

BIODIVERSITY

The neologism *biodiversity* was introduced as a contraction for *biological diversity* in the mid-1980s to describe the intended target of preservation efforts by conservation biologists (Takacs 1996). The new term was meant to include more than the game species, other resource species, and charismatic species that had been the targets of most earlier conservation efforts. All aspects of biological heterogeneity, whether structural, functional, or taxonomic, were to be included in its scope. There was a synergistic interaction between the growing use of the term in the 1990s and the spread of conservation biology, which emerged as an organized discipline in the 1980s (Sarkar 2005). As David Takacs observed: "In 1988, *biodiversity* did not appear as a keyword in *Biological Abstracts,* and *biological diversity* appeared once. In 1993, *biodiversity* appeared seventy-two times, and *biological diversity* nineteen times" (Takacs 1996, p. 39). The first journal with the term in its title, *Canadian Biodiversity,* began publishing in 1991 and changed its name to *Global Biodiversity* in 1993; a second, *Tropical Biodiversity,* began appearing in 1992; *Biodiversity Letters* and *Global Biodiversity* followed in 1993. The Society for Conservation Biology was founded in 1985, and its journal *Conservation Biology* started appearing in 1986. The goal of conservation biology is the preservation of biodiversity.

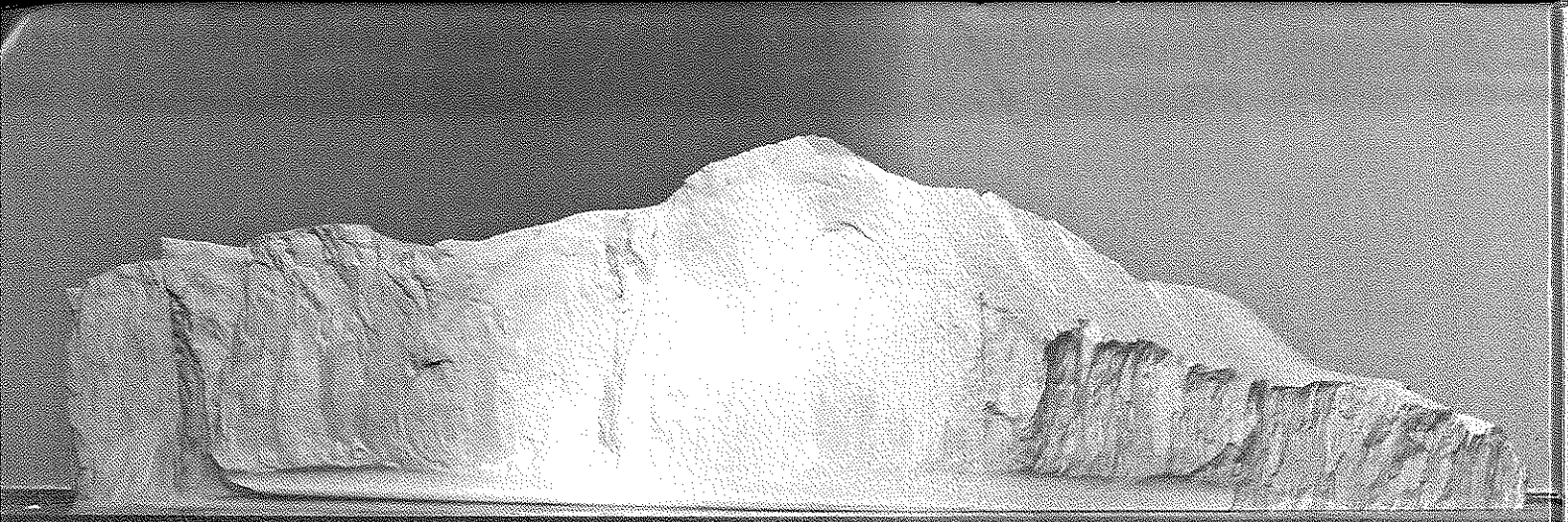
NORMATIVE CONCEPTS AND ISSUES

Because of its origin as the target of a goal-oriented enterprise, conservation biology, the concept of biodiversity has a normative component as well as a descriptive one (Norton 2003a). A useful analog is health, the goal of medicine, and Michael Soulé (1985) and other founders of conservation biology have endorsed the analogy between the two disciplines. The normative aspect of biodiversity is critical to understanding the concept and manifests itself in five ways in the context of the formulation of conservation policy.

Justification of Biodiversity The justification of the normative claim that biodiversity should be conserved remains a contentious issue that is central to environmental ethics. At one extreme are proposals that attribute intrinsic value to biodiversity, to all taxa, and sometimes even to physical features of the environment (Callicott 1986, Naess 1986, O'Neill 1992). However, those attributions are most convincing when they refer to individual organisms rather than abstract entities such as species or, especially, higher taxa. Even this is controversial; some philosophers have held that species are individuals (Hull 1978). At the other extreme is the position that biodiversity deserves protection because of its instrumental value to humans in providing resources and other services. Between those positions are more nuanced forms of anthropocentrism (Norton 1987, Sarkar 2005) that sometimes are coupled to a pragmatic multifaceted approach that admits a plurality of values (Norton 2003b). Environmental ethicists continue to debate these issues. The critical point is that, if there is no adequate normative basis for biodiversity conservation, conservation biology becomes a dubious enterprise because its explicit purpose is the conservation of biodiversity.

Definition of the Normative Basis The way the question of the normative basis for biodiversity conservation is answered influences what counts as conservation. If all individual organisms have intrinsic value, the target of conservation should be each one of them. Even controlling an invasive species to protect the habitat of an endangered endemic species becomes an ethically suspect policy. Conservation becomes a question of protecting lives rather than preventing the extinction of species. If the justification for conservation is purely instrumental, conservation consists of natural resource management and "biodiversity" is little more than a fancy new name for living natural resources. All other proposals require a much broader approach to conservation and thus a more general concept of biodiversity than individual organisms or living natural resources.

Establishment of the Normative Basis The way the normative basis for biodiversity conservation is established influences the way conservation policy is conceptualized and formulated. In particular, conservation planning, which is a central part of the practice of contemporary conservation biology, increasingly is being approached within the formal framework of decision theory and often involves the use of extensive software-based decision support tools (Sarkar et al. 2006, Margules and Sarkar 2007). The use of such a framework presumes that there is an anthropocentric basis for conservation decisions that are ultimately supposed to be evaluated through the use of expected utility functions



The field of environmental ethics is a new but now well-established sub-discipline of philosophy. Emerging in the mid-1970s, the field coalesced with the inaugural volume of the journal *Environmental Ethics* in 1979 and developed rapidly. By the turn of the century, most colleges and universities offered courses, if not major programs of study, in this important discipline.

The *Encyclopedia of Environmental Ethics and Philosophy* addresses the needs of upper high school students and undergraduates, researchers, teachers, and professors, as well as general readers, by examining the philosophical and ethical issues underlying contemporary and historical environmental issues, policies, and debates. The encyclopedia covers concepts, institutions, topics, events and people, including global climate change, animal rights, environmental movements, alternative energy, green chemistry, ecology, and ecosabotage.

The *Encyclopedia of Environmental Ethics and Philosophy* was guided by an editorial board of scholars, who worked with more than 250 contributors from the world's leading universities. Each of the more than 300 articles contains a bibliography for further reading. More than 200 photographs, illustrations, and sidebars augment the text. Appendices include an annotated bibliography, a glossary, and a collection of classic articles and documents. The text is fully indexed for ease of research, and a thematic outline categorizes entries under broad subject areas for an alternative access path.

J. Baird Callicott, Regents Professor and chair of the Department of Philosophy and Religion Studies at the University of North Texas, is one of the founders of academic environmental philosophy, having taught the first environmental ethics course in the United States in 1971, at the University of Wisconsin-Stevens Point. His Ph.D. in Philosophy is from Syracuse University (1971). Dr. Callicott is a contributor to many journals including *Conservation Biology* and *Environmental Ethics*. His books include *In Defense of the Land Ethic: Essays in Environmental Philosophy* (1989) and *Beyond the Land Ethic: More Essays in Environmental Philosophy* (1999). He is co-editor of the book *The Wilderness Debate Rages On: Continuing the Great New Wilderness Debate* (2008).

Robert Frodeman is former chair of the Department of Philosophy and Religion Studies at the University of North Texas. He specializes in environmental philosophy and science policy. His Ph.D. in Philosophy is from Pennsylvania State University (1988). He is Director of UNT's Center for the Study of Interdisciplinarity, which seeks to develop the theory and practice of interdisciplinary research and education. Dr. Frodeman is editor of *Earth Matters: the Earth Sciences, Philosophy, and the Claims of Community* (2000), co-editor of *Rethinking Nature* (2004), and author of *Geo-Logic: Breaking Ground between Philosophy and the Earth Sciences* (2003).

The *Encyclopedia of Environmental Ethics and Philosophy* joins the suite of other Macmillan applied ethics titles: *Encyclopedia of Bioethics* and the *Encyclopedia of Science, Technology, and Ethics*.

COVER ART: Sunbeam on iceberg [© Armin Rose/Shutterstock]. Factory farming [© Bojan Brecelj/Corbis]. Scavenging at the garbage dump [© Corbis]. Strip mining [© Mikhail Lavrenov/Shutterstock].

Cover Design: Cynthia D. Baldwin

ISBN-13: 978-0-02-866138-4
ISBN-10: 0-02-866138-9
90000
9 780028 661384

GALE
CENGAGE Learning
Visit Macmillan Reference USA online at **gale.cengage.com/macmillan**
Visit our corporate website at **cengage.com**