Incorporating Environmental Ethics into Ecosystem-based Management
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"Education can counteract the natural tendency to do the wrong thing, but the inexorable succession of generations requires that the basis for this knowledge be constantly refreshed."
Garrett Hardin, The Tragedy of the Commons (1968)

In an article published in the midst of the first great awakening of public reaction against environmental degradation, Lynn White, Jr. wrote, "What we do depends upon what we think. In order to change behavior, we first have to change the way we think."[2] Despite numerous setbacks and deliberate back sliding since then, we have made great changes in how we think about and what we do to the land we walk on, the water we drink, and the air we breathe.

Now we need a second great awakening--this time for the oceans. The geographic magnitude of the oceans overwhelms our capacity to believe that our actions there might matter. Yet in a stunning survey article, Jeremy Jackson and colleagues used paleoecological, archaeological, and historical records to demonstrate the profound structural and functional changes humans have wrought worldwide in coastal marine ecosystems.[3] Driven primarily by overfishing of large vertebrates and shellfish, these cumulative changes have increased ecosystem vulnerability to other natural and human disturbances, such as habitat loss, pollution, and the advent of industrial-scale fishing.

This "shifting baseline syndrome" applies to successive generations of scientists and non-scientists alike. We simply forget what the ocean used to be[4] just as we have difficulty comprehending that chestnuts were one of the dominant trees in the eastern forests of North America a hundred years ago or that hordes of bison once roamed the plains. Thus our first hurdle will be to convince people that humans do change the marine environment and that practices we abandoned long ago as wasteful and benighted on land still occur in the oceans today. Today's public opinion would not allow practices such as burning grasslands or cutting down forests to drive game animals out of hiding to be captured or killed. Yet we persist in doing the equivalent to marine and coastal environments as fishers trawl and dredge the seafloor and sieve the water column clean, not only "harvesting" their target species but destroying other fauna and the habitat itself.[5]

Where can we find guidance for this behavioral change? Despite the long history of classical philosophy's approach to ethics, we face many complicating factors when trying to apply classical philosophy to environmental disputes.[6] First, the individuals affected might be non-human and thus "non-standard" to classicists (e.g., thus raising the question, "What moral duties do we owe to halibut, albatrosses, or krill?"). Second, we might not be dealing with humans or discrete natural objects but with more theoretical constructs such as an ecosystem. Third, even if we focus strictly on human needs, some of the individuals we should consider might not yet exist, as when we try to take into account the values, needs, and preferences of future generations. Finally, the harm we are trying to ameliorate or avoid could be the cumulative result of many individual acts over several human generations. That is, we may not perceive the ethical import of our negative impacts at a small scale until we are faced with their cumulative dire consequences.

Whereas philosophy may offer some guidance for constructing an environmental ethic, an additional source contributing particularly to the development of modern American environmental ethics comes from the field of resource management itself. For centuries humans have viewed the natural environment as a source of material resources and services as well as a source of spiritual, cultural, and aesthetic experiences. Yet it was at the beginning of the 20th Century that the conflict between advocates of material benefits and other values became most sharply drawn, primarily over which values should be paramount in managing federal lands in the United States.

Both Gifford Pinchot, first head of the U.S. Forest Service, and John Muir focused on protection of the environment for the benefit of future generations of humans, i.e., an anthropocentric viewpoint.[7] Pinchot was concerned simply about protecting the utilitarian resource base, whereas Muir went beyond material benefit to emphasize additional values offered by the natural environment to humans, such as air and water quality and preservation of pristine vistas. Muir later augmented his concern for human mental and spiritual enrichment with a notion that nature had worth regardless of whether this value accrued to the benefit of humans or not.[8] This idea laid the foundation of a third concept, that nature has intrinsic value, and provided the next step in the evolution of environmental ethics.

The chief proponent of what we might call an "ecocentric" view was Aldo Leopold. A forester like Pinchot, Leopold initially was concerned with the sustainability of human actions within biotic systems. But he also adopted the view of Muir in arguing that humans are transformed by their interaction with wild nature. In Leopold's view, humans are "plain members" of the broader biotic community and not its masters.[9]

As the field of ecology – with its focus on interactions among species in communities of living things – began to displace the earlier wildlife management

[6] THE ENVIRONMENTAL ETHICS AND POLICY BOOK: PHILOSOPHY, ECOLOGY, AND ECONOMICS (Van DeVeer, D. and C. Pierce, eds., Wadsworth Publishing Company 3d ed., 2002).
[7] GIFFORD PINCHOT, BREAKING NEW GROUND (1947); and JOHN MUIR, THE MOUNTAINS OF CALIFORNIA (1894).
[8] JOHN MUIR, OUR NATIONAL PARKS (1901).
[9] ALDO LEOPOLD, A SAND COUNTY ALMANAC (1949).

paradigm, which had classified and treated species according to their utility, Leopold adapted his thinking about values to recognize natural systems as integrated systems of complex processes. He promoted a resource management vision much larger and more comprehensive than one only focused on a maximum sustained flow of natural products (like lumber and game) and human experiences (like hunting and fishing, wilderness experience, and solitude) extracted from an otherwise impassive resource pool.[10] What Leopold recommended was a shift from "resource" management to "environmental" management. He captured this holistic approach in his famous statement, "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."[11]

Drawing on contributions from both traditional philosophy and resource management, environmental ethics as it has developed since the 1970s can be distinguished from traditional ethics on several grounds. One difference is that environmental ethics recognizes natural systems and objects as having value in their own right, i.e., their value does not depend upon their ability to contribute to the lives of humans, thus moving environmental ethics beyond the merely utilitarian. A second difference is that environmental ethicists try to express the value of the natural environment in ways that take into account not just the individual components but the integrated character of natural systems. Finally, environmental ethics takes into account not only the short-term benefits to be garnered from natural systems, but also requires us to think about the long-term impacts.

Despite three decades of development, the body of environmental ethics literature examining our relationship with the marine environment remains slim. A search of the International Society of Environmental Ethics database containing thousands of references yields fewer than 100 entries focused on marine environmental ethics and most of these analyze ethics in relation to a specific topic area (e.g., whaling and fisheries management).[12] Additionally, although Pinchot, Muir, and Leopold expressed some regard for marine environments in their writings, their focus, conscious or unconscious, was on terrestrial environments. Indeed Leopold characterized the sum of his views as "the land ethic" and wrote that "we can be ethical only in relation to what we can see, feel, understand, love, or otherwise have faith in." Where does that leave us when we think about the oceans?

Bringing environmental ethics into the discourse on marine policy will produce a paradigm shift both in the way we design policy and justify our actions. In other areas of applied ethics we have seen similar shifts, the best example of which is the inclusion of ethics training in the medical school curriculum. Hargrove noted, "Medical ethicists generally are asked to participate in the resolution of tough decisions which members of the medical community do not want to make themselves. . . Environmental professionals

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[10] J. B. Callicott, *Principal traditions in American environmental ethics: a survey of moral values for framing an American ocean policy,* 17 OCEAN AND COASTAL MANAGEMENT 299-308 (1992).
[11] *Supra note 8.*
[12] International Society for Environmental Ethics (2007), *available at* http://www.phil.unt.edu/bib/.

have little interest in having philosophers make tough decisions for them."[13]   If marine environmental ethics is to become a mission-oriented field like medicine, then, like medicine, it will require tools and techniques to protect nature that go beyond traditional disciplinary boundaries of science or law or economics. Thus, we should place a priority on cross-cutting efforts between natural sciences and social sciences in the policy arena. Otherwise, if the dialogue is taken up by only those who see marine life as a commodity and if narrowly drawn cost-benefit analysis is the only social science recognized by the management agencies, nothing will change.

Consequently, we will need a sustained educational effort that goes beyond raising public awareness of the problems to creating an integrated method to evaluate the sustainability of our activities in the ocean. We will have to rely on marine scientists and others who know the oceans to make these arguments, but not just because of their mastery of scientific data. More important is the fact that, despite the growing concentration of the human population in coastal areas, relatively few people have an intimate connection with the ocean and what goes on beneath its surface. By comparison with the land, our existing knowledge of what the oceans contain at this moment is woefully inadequate. Thus, it is a special opportunity, if not a unique obligation, for marine scientists to serve as messengers between two worlds. And their message must be composed not only of scientific fact and observation or evaluations of the utility of the marine environment for our needs, but also should convey impressions of aesthetic value, wonder, respect, and awe.[14]

While explicit discussion of this wider range of values could make some scientists uncomfortable, reassurance can come from recognition that morals and values underlie the social structure of science itself.[15] Scientists have traditionally accepted norms such as originality, disinterestedness, organized skepticism, and truth-telling as fundamental to the practice of good science.[16] Moreover, one could argue that by deliberately choosing their field over other disciplines, marine conservation biologists have willingly accepted a moral commitment to protection of the biotic community.

Environmental ethics at its best offers a principle-based process which seeks ethical solutions of environmental problems by melding the skills of many disciplines with the knowledge and self-interest of human communities. The marine environment may lend itself particularly well to the consideration of these community values. The high seas which occupy nearly half the surface area of the globe are a classic example of the commons.[17] Even within zones of unilateral national control, such as the Exclusive Economic Zone, access to living resources generally is meted out as if they formed a common pool. Public goods, however, are more than just an aggregation of individual values achieved through resource exploitation. By shifting our focus to values held at the community scale (rather than at the individual level), we will push cost-benefit analysis

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[13] EUGENE HARGROVE, *The State of Environmental Ethics*, *in* ENVIRONMENTAL ETHICS AND THE GLOBAL MARKETPLACE (Dorinda G. Dallmeyer and Albert F. Ike, eds., University of Georgia Press) (1995).

[14] STEPHEN R. KELLERT, KINSHIP TO MASTERY: BIOPHILIA IN HUMAN EVOLUTION AND DEVELOPMENT (1997).

[15] K. TENORE, *Roles and practices of the scientific community in coastal science: Understanding values that underlie science*, *in* VALUES AT SEA: ETHICS FOR THE MARINE ENVIRONMENT 260-277 (D.G. Dallmeyer, ed., University of Georgia Press) (2003).

[16] R.K. MERTON, SOCIAL THEORY AND SOCIAL STRUCTURE (1957).

[17] SUSAN BUCK, THE GLOBAL COMMONS (1998).

beyond what it does well -- accounting for consumptive uses by humans (e.g., food and fiber production, hunting) -- to better address nonconsumptive uses as well as aesthetic, spiritual, and transformative values of nature.

Trying to solve practical problems in the marine policy process will help to create a robust marine environmental ethic. The marine policy process must adapt to engage a wider community in the formulation, adaptation, and application of principles of ethics and values. Indeed the report of the Pew Oceans Commission called for the creation of an "ocean ethic" to guide US policy-making.[18] Survey data indicate that members of the general public can identify major problems in ocean management such as pollution, coastal development, and overfishing but are uncertain why government allows these damaging policies to persist.[19] At the same time, participants in the survey saw achievable solutions to many of these issues. The report concluded that the public could be rallied to address these problems by framing ocean protection in the context of what drives American concerns about the oceans: a desire to protect themselves and their families; an appreciation of nature's beauty, as embodied in the oceans; and a responsibility to leave future generations a healthy planet. In other words, success depends on achieving not just conservation goals but serving economic, cultural, and social needs as well. And ethics is part of that dialogue.

According to Norton, "The lesson of ecology is that one cannot care for the future of the human race without caring for the future of its context...Context gives meaning to all experience; consequently, it is a shared context that allows shared meaning -- what we call culture -- to survive across generations."[20] In Norton's sense, then, the ethic we create must link past, present, and future generations in a culture that recognizes and respects limits on our actions in the ocean.

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[18] PEW OCEANS COMMISSION, AMERICA'S LIVING OCEANS: CHARTING A COURSE FOR SEA CHANGE (Pew Oceans Commission) (2003).

[19] Ocean Project, *Summary Analysis of Six Focus Groups* (1999), *available at* http://theoceanproject.org/activities.html.

[20] BRYAN G. NORTON, TOWARD UNITY AMONG ENVIRONMENTALISTS (1991).