

APPLYING ENVIRONMENTAL ETHICS TO THE WETLANDS DELINEATION PROCESS

Leisha DeHart Davis

AUTHOR : Leisha DeHart Davis, Public Policy Masters Candidate, Georgia Institute of Technology, Atlanta, GA 30332.

REFERENCE : Proceedings of the 1993 Georgia Water Resources Conference, held April 20 and 21, 1993, at the University of Georgia, Kathryn J. Hatcher, Editor, Institute of Natural Resources, The University of Georgia, Athens, Georgia.

INTRODUCTION

The nation's ongoing battle over defining wetlands has been portrayed as a tense political conflict between environmental protection advocates and economic development forces. A more accurate interpretation of the situation, I assert, is this: in our struggle to identify a diverse, complex and vast body of water systems in one definition, we have created a situation of extremes. Too vague a definition includes lands not worthy of protection by environmentalist standards. An overly-specific definition leaves wild systems open to commercial development.

The search for an appropriate wetlands definition is particularly relevant for Georgia. With 5.3 million wetland acres, Georgia ranks eighth among the contiguous states in total wetlands area. The Fish and Wildlife Service estimates that between the 1780s and 1980s nearly twenty-three percent of Georgia's wetlands were converted to other uses. This translates to an annual conversion rate of 7,700 acres. (Dahl, 1990).

In Georgia or at the national level, ethics can assist the wetlands delineation conflict to resolution. An ethical approach does not prove one side right and the other side wrong, nor does it provide a theoretical resolution removed from the real world. Instead, it redefines the issue so that the values in each position that are worthwhile, yet which are perceived to be in opposition, may be seen as potentially reinforcing and achievable in concert.

BACKGROUND

"What is a wetland?" This question has been intensely debated ever since a federal district court ruled in 1975 that wetlands were subject to the Clean Water Act 404(k) permitting program. Up until 1989 the answer to "What is a wetland?" differed depending on which government entity was asked. During that time the key agencies involved in wetlands protection — the Fish and Wildlife Service, the Environmental Protection Agency, the Army Corps of Engineers and the Soil Conservation Service — all used different wetlands delineation criteria.

That situation changed when the agencies, motivated by President Bush's 1988 campaign promise of "no net wetlands loss," teamed up to develop the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*. This interagency document outlined national wetlands delineation criteria based on the presence of a combination of soil, hydrology, and

vegetation characteristics. Landowners, developers and farmers reacted strongly against the manual, asserting (among other things) that its delineation criteria were too broad and, as a result, subjected relatively dry, commercially productive lands to the permitting process. After an investigation President Bush's Council on Competitiveness agreed with the manual's opponents and mandated major modifications.

The revised manual, released in 1991, narrowed the wetlands delineation criteria to the documented presence of three highly specific soil, hydrology and vegetation indicators. This requirement provoked an onslaught of feedback, mostly from environmentalists who feared the criteria would be so explicit that it would leave half the nation's wetlands open for development. To illustrate the magnitude of the controversy, a 60-day public comment period that was to end in December, 1991, was extended. By June 1992, 90,000 mostly critical comments were submitted to the Army Corps of Engineers regarding the revised manual.

WETLANDS PROTECTION: WHAT WENT WRONG?

Many reasons have been posed as to why wetlands protection evolved into such a heated battle. Some say that lawyers rather than ecologists played a major role in the revision process, and as a result the proposed re-definition was scientifically unsound. Others feel the wetlands conflict is a larger issue that encompasses the classic struggle between protection-oriented environmentalists and profit-oriented industry. An even broader hypothesis asserts that the United States lacks an environmental ethic from which goals and objectives can be outlined, decisionmaking criteria can be developed, and policy decisions can be made.

Regardless of which reason is the causal link to the current conflict, the development of a national environmental ethic could mandate a central role for scientists in the policymaking process and could also outline national environmental priorities that strike middle ground between environmental protection and economic development. The first step in developing a national consensus would be to examine current ethical approaches and evaluate their strengths and weakness. Then, the best elements of each could be extracted and integrated into a new, national environmental guideline. This paper will attempt a similar exercise, focusing on wetland delineation. Four environmental concepts will be surveyed and briefly analyzed for their overall potential impacts on the wetlands delineation

moralism, it assumes that preservation should occur. But, like cost-benefit analysis, it gives weight to costs in preservation decisions.

For policy issues like pollution control and endangered species protection, SMS provides sound environmental protection criteria. For example, a paper company polluting a river would have to control its emissions and clean up the river, unless doing so would result in unemployment and economic depression for an area. Similarly, a timber company wanting to raze a forest that houses an endangered species would have to prove that the costs of protecting the species from extinction are prohibitive. Richard Bishop, a resource economist at the University of Wisconsin, has used SMS for a number of specific endangered species cases and has concluded that many preservation efforts are not very costly (Bishop, 1978).

According to SMS, wetlands should be protected unless the costs of doing so are unbearable. If given the choice between a broad definition that includes too much land and a narrow one that protects too little, an advocate of SMS would probably choose the broad definition. After all, preservation is something that should occur. A farmer or real-estate developer would have to prove that protecting the wetlands he wishes to use would pose unbearable cost to his company, the community and the local economy. Consider that a broad wetlands definition will designate for protection many small parcels of land located within larger developable tracts. A small wetland cannot be both developed and preserved: it must be one or the other. Because of exorbitant land values and the opportunity costs of land not developed or farmed, it would seem fairly easy to conclude that the costs of protecting wetlands would be prohibitive. A similar conclusion was reached in Connecticut, where a court allowed a New Haven wetland to be paved over for a shopping center deemed crucial to the area's economy.

HIERARCHY THEORY: PROVIDING BETTER UNDERSTANDING

Hierarchy theory aids wetlands policy analysis by providing a better understanding of how the water systems operate within bigger environmental systems. According to this concept, nature is made up of parts and wholes. Parts are fast-moving, individual ecosystems. Many parts comprise a whole, which is a slower moving ecosystem. The whole can impact the parts, but each part is unable to impact the whole — unless it is operating in tandem with other individual parts. For example, if an alligator in the Florida Everglades dies, it is unlikely that other species in the Everglades will be affected. (Here, the alligator represents a part to the Everglades whole.) When many alligators die — the parts operating in tandem — the Everglades experiences a decline in the population of other species. Why? Because alligator wallows provide the other species with their water source. The elimination of one water source might not make much impact, but the elimination of many water sources has potential for devastation of the entire natural system. This example demonstrates the interconnectedness of parts and wholes

— while the individual parts are often expendable, individuals must exist to perform important functions in the larger system.

Hierarchy theory builds on an ecological concept, sometimes referred to as “contextualism,” that originated with forester Aldo Leopold. Leopold set out three principles to guide actions against the environment: (a) the food chain is the basic organizing structure of the system; (b) the trend of evolution is to elaborate the biota; and (c) energy flows upwards. These principles each contribute to system complexity, which, in turn, contributes to ecosystem health. Human activity, so the theory goes, shortchanges system complexity and inflicts damage. The degree of damage is determined by the fragility of the ecosystem, the size of the human population, and the speed of human activities.

The dust bowl is a good example of the ecosystem damage that can result from violation of contextualist principles. In *Toward Unity Among Environmentalists*, Bryan Norton explains how hierarchy theory provides insight into this ecological disaster:

The dust bowl proved that rapid and pervasive changes in human use of land can lead to breakdowns of entire geographical systems; such breakdowns both signal and exacerbate destruction of the complexity and integrity of the land system, destroying the complex pathways by which energy flows through the system. Hierarchy theory, which aspires to model and relate the various temporal scales that constitute ecological complexity, may therefore provide a precise means to explore the thresholds and limits beyond which human-induced changes on larger systems, such as the whole atmosphere, are likely to result in ecological breakdowns with unacceptable consequences. (p. 213.)

Hierarchy Theory could be used, within a broad or narrow definition of wetlands, to decide borderline and disputed cases. Using the contextualist's framework, consumption of the resource would be analyzed according to its impact on larger human and natural systems. Development deemed to inflict irreversible or unacceptable damage would be prohibited. Conversely, if a parcel did not serve any crucial biological functions, it would be open for development.

Notice the shift in emphasis from physical attributes to system functions. This, I believe, illuminates a major weakness in defining a wetland by its characteristics. Physical attributes do not fully explain a parcel's function within its respective whole. Hierarchy theory seems to suggest that, rather than identify wetlands by characteristics, we should attempt to define them by the functions they serve within larger environmental and human systems. That way, when their consumption is proposed, the damage that results from having these functions

process. Then, elements of each approach will be selected and integrated into one paradigm that helps overcome weaknesses in the current wetlands delineation process.

Moralism, the first concept to be analyzed, positions environmental protection as a matter of right versus wrong. Cost-benefit analysis, the second concept, is a decisionmaking method based on weighing consumer preference for environmental protection. The third concept, the Safe Minimum Standard Approach to Conservation, blends aspects of moralism and cost-benefit analysis — it is a decisionmaking method for pursuing morally sound environmental actions. And Hierarchy Theory, the fourth concept, is an ecological construct that provides a better understanding of the systems for which policies are developed.

MORALISM: AN ETHICAL VIEW OF THE ENVIRONMENT

Moralism regards the protection of the environment as a matter of ethics. This stance is supported by two notions: (a) that ecosystems and species have a right to exist apart from any value placed on them by humans and therefore (b) that ecosystems are not resources at all. This view makes it immoral to undertake a policy action without regard for its impact on natural systems. To do so would be the equivalent of implementing a policy without regard for human life.

Because moralism regards natural systems as inherently valuable, it rejects the need to impose economic value in order to justify preservation. David Ehrenfeld summarizes this view in a passage from his book *The Arrogance of Humanism*:

... we have been much too careless in our use of resource arguments — distorting and exaggerating them for short-term purposes and allowing them to confuse or dominate our long-term thinking. Resource reasons for conservation can be used if honest, but must always be presented together with the non-humanistic reasons and it should be made clear that the latter are more important in every case. (p. 210)

If environmental policymakers were all moralists, then the original, broader definition of wetlands would be preferred because it errs on the side of wetlands preservation. More wetlands would be protected and some economic sacrifice would occur, which would be acceptable. This is not to say that moralists would want all wetlands to be protected; some land parcels would invariably be recognized as better suited for development or farming. However, it would make a moralist far more comfortable to operate under a definition that favors protection than to risk the loss of half the nation's wetlands inventory.

Using the broad definition, however, would produce some of the same problems encountered in 1989. Land not worthy of

protection, even by environmentalist standards, would be kept from more profitable farming or development. And negative publicity about inflexible standards might undermine public confidence in the practicality of valuing the environment.

COST-BENEFIT ANALYSIS: WEIGHING CONSUMER PREFERENCE

Moralists view environmental protection as an ethical imperative, whereas the cost-benefit analysis approach regards it as the result of consumer preference measured in dollars. How much would people be willing to pay to protect a wetland? What is the dollar value of fishing and recreational benefits provided by the water systems? How much will water pollution and flood damage cost if certain wetlands are eliminated? If the sum of these values outweighs the costs of protecting the wetland, then the wetland should and will be protected.

Where moralism would risk protecting too many wetlands, cost-benefit analysis promises to protect too few. Many wetlands functions, like water pollution control, flood regulation and recreation, would be easily measured in dollar value. However, not all wetlands benefits can be assigned monetary worth — like a beautiful view or an endangered species. These benefits are regarded by many, especially moralists, as priceless and any attempts to assign price will only underrepresent their true value. As for willingness-to-pay, moralists contend that many consumers don't have complete knowledge of the benefits they gain from wetlands, so they are not fully equipped to indicate their preferences. Again, this results in underrepresentation of the wetlands values of the environment.

A cost-benefit analyst as the environmental authority might devise a definition that counts only those ecosystems offering measurable benefits. So wetlands that abate pollution, control floods, nurture fishing grounds and provide recreational values will be protected, while those that house wildlife habitat, replenish groundwater, and facilitate the food chain will be left open to development. The percentage of wetlands protected versus developed would depend on how many provide measurable benefits significant to outweigh economic gain. Using cost-benefit analysis the nation would run the risk of losing even more endangered species and permanently damaging the ecological balance until a method was devised for valuing other wetlands benefits.

SAFE MINIMUM STANDARD: PRESERVATION AT REASONABLE COST

An alternative to the cost-benefit approach is called Safe Minimum Standard of Conservation (Ciriacy-Wantrup 1959). The SMS criterion states that a resource should be preserved unless the costs for doing so are unbearable. The burden of calculating preservation costs are on the prospective resource user. An advantage to this approach is that, like

removed will be easy to predict.

Relatively easy, anyway. The challenges to using hierarchy theory to develop a function-centered definition are formidable, and include the potential for bias:

Hierarchy theorists recognize that the analysis of any complex system will depend upon the observer's viewpoint and on the scale of resolution adopted, which is a function of the place the observer assumes in viewing the complex system. Choosing the place involves deciding on both (1) the perspective of the resource manager and (2) the scale on which to conceptualize the larger system or context of which it is a part, which involves setting ecosystem boundaries. (Bryan Norton's *Toward Unity Among Environmentalists*, p. 246)

This passage suggests that a function-based definition would vary greatly depending on who is formulating the definition. Pro-environmental protection forces would be predicted to identify hundreds of intricate functions that would capture all diverse wetland processes. Developers, in contrast, might wish to focus on a few, major functions so that only "real" wetlands" would be protected. While a function-based definition would face similar problems as the characteristic-based one, distinguishing between ecologically important systems and developable lands would become easier.

Another challenge is that a function-based delineation process would rely heavily on wetlands ecology, which is a relatively new science going back only two decades. Scientists are still learning about the functions wetlands perform, such as for nutrient retention and carbon cycling. Therefore, uncertainty in wetlands ecology could result in long and expensive learning curves during the delineation process.

INTEGRATING ENVIRONMENTAL PHILOSOPHIES

The environmental concepts discussed in this paper yield very different potential solutions to the wetlands delineation conflict. Moralism, because it views wetlands protection as an ethical imperative, would probably favor the broad definition that protects the most ecosystems. Cost-benefit analysts, with their focus on assessing consumer preference, might propose a definition that only recognizes ecosystems offering measurable benefits, like tourist value, pollution control, and flood conveyance. A Safe Minimum Standard advocate might choose a broad definition that preserves more wetlands, but would not be able to protect most of them when development interests easily prove the opportunity costs of land use is prohibitive to preservation. And Hierarchy Theory might provide us with an

alternative definition completely, one that focuses on function instead of characteristics.

That these concepts provide different conclusions doesn't preclude us from borrowing the best elements of each for an integrated approach to a national environmental ethic. For example, from moralists, we would adopt the view that the environment is intrinsically valuable and its protection is an ethical matter. To reach this mindset, environmental policymakers would need to create awareness of nature's role in the fulfillment of the good life. This was recognized by Leopold as critical to the public's acceptance of an ethical view of environmental protection:

The task of American culture, Leopold concluded, is to construct a mental model of the good life, but to do so within the constraints imposed by ecological systems... The cultural harvest from the land is the contribution of an organic conception of the good life. It is so because society does not yet have a definition of the good life that managers can use as a blueprint. In the tradition of Thoreau and Muir he connected the "quiet desperation" of materialism and consumerism with alienation from nature. And thus the task of the environmental manager, besides managing, is to play midwife to the public's ecologically informed idea of the good life. (Bryan Norton's *Toward Unity Among Environmentalists*, p. 55)

From cost-benefit analysis, we can adopt the willingness-to-pay concept and transform it into a tool for environmental protection. This will only happen, however, if we successfully incorporate environmental protection into mainstream American values. If we sufficiently value the environment then we *will* pay for environmental protection. Willingness-to-pay could potentially become our defense mechanism against blind development interests, and in using it as such, we will become more adept at assigning value to the environment. Admittedly, however, such a proposition could be enormously expensive.

A national environmental ethic could utilize all of the elements of hierarchy theory. First, hierarchy theory would allow wetlands ecologists to play a more prominent role in environmental protection. Greater participation by these scientists would uncover the weaknesses inherent in attempting a single wetlands definition, for example, uniform requirements that ignore regional wetness variations. It also might result in the development of function-based delineation criteria.

Hierarchy theory could also be used as an explanatory tool in environmental education, a benefit which could help achieve the integration of environmental protection into mainstream values. Once people understand the benefits they receive on a day-to-day basis from healthy ecosystems, it will be much easier to prove their cultural value. Policymakers would also benefit from enhanced understanding, through their ability to make sounder environmental decisions.

When the pieces of these concepts are put together, we have an environmental ethic that provides a framework for understanding the ramifications of wetlands destruction; that more effectively distinguishes wetlands from developable land; that protects the environment because it is a valuable element of our culture and, thus, it is the right thing to do; and that seeks to strike a balance between protection of environmental values and economic development.

REFERENCES

- Bishop, Richard C. "Endangered Species and Uncertainty: The Economics of a Safe Minimum Standard." *The American Journal of Agricultural Economics*. February 12, 1978.
- Ciriacy-Wantrup, S.V. *Resource Conservation: Economics and Politics*. (Berkeley and Los Angeles: University of California Division of Agricultural Sciences) 1959.
- Dahl, T.E. 1990. *Wetlands Losses in the United States 1780s to 1980s*. U.S. Department of Interior, Fish and Wildlife Service, Washington, DC. 13 pp.
- Ehrenfeld, David. *The Arrogance of Humanism*. (New York: Oxford University Press) 1978.
- Leopold, Aldo, "The Land Ethic," in *A Sand County Almanac* (New York: Oxford University Press, 1949)
- Norton, Bryan. *Toward Unity Among Environmentalists*. (New York: Oxford University Press) 1991.

ACKNOWLEDGEMENTS

Many thanks to Bryan Norton at Georgia Institute of Technology, whose teaching inspired this paper; to William Anderson at Georgia Institute of Technology, whose thorough and thoughtful review improved it; and to Todd Votteler at Battelle Pacific Northwest Laboratory, who encouraged and guided the paper through its development.