The Endangered Species Act: Crystallizing Ecosystem Management

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Summary

The first two years of the Clinton Administration's environmental policy was often characterized publicly as "pragmatic and centrist," failing to satisfy interest groups on either end of the spectrum. In the past year, with the unpopular assault by the Republican congressional leadership on existing environmental laws, the Administration's stance has often been viewed as fighting to retain 25 years of environmental progress, i.e., defending the status quo.

Neither characterization is accurate.

In fact, this Administration has aggressively - - if not always that visibly to the general public - - begun to shape a quiet revolution in the way natural resource management and habitat protection is undertaken by the federal government. For the first time, in dozens of places around the country, the federal natural resource and land management agencies are actually beginning to do "ecosystem management" on the ground.

Central to this revolution is an attempt to reorient the Endangered Species Act from a federally-administered, species-by-species regulatory provision (a safety net for a few drastically imperiled species) to a multi-species planning tool that engages state and local governments, and private landowners, in developing and implementing long-term (50 years or more) habitat protection plans. These regional plans, covering tens or hundreds of thousand of acres, focus more on protecting important vanishing habitats needed for many, sometimes tens or hundreds of species (most of which are not listed as endangered, but might become threatened in the future), than on a single listed species.

Each of these regional ecosystem plans is driven primarily by the Endangered Species Act - - often by fear of the havoc that conventional federal regulation one species at a time over decades would do to local planning and development, as opposed to a one-time future-looking multi-species planning exercise. Each effort is somewhat different from the others. Each is an experiment: an architect-designed house. The purpose of this paper is to describe several of these regional projects, listing others for comparison; to summarize some of their common characteristics; and to discuss a few of the initial lessons, issues, and challenges that are emerging from this pioneering effort.

I. REGIONAL ECOSYSTEM PROJECTS

A. President's Northwest Forest Plan

1. FEMAT Plan Formation Team

2. Elements of the Plan: 10 million acres of old-growth and riparian reserves; matrix; pattern of key watersheds, with watershed analysis; reduction of timber harvest by approximately 75% from 1970's/1980's levels; Adaptive Management Areas (AMAs); economic provisions/CERTS

3. Management structure: an entirely new way of doing business: regional steering committee; dedicated Regional Ecosystem Office; watershed analysis process

B. Everglades/South Florida Restoration

1. Establishment of federal task force/role of state and local partner (South Florida Water Management District)

2. Role of Army Corps of Engineers' Comprehensive Restudy of the Central and South Florida Project

3. Adding Governor's Commission on a Sustainable South Florida to the "governance" structure in an ad hoc manner

C. California "Natural Communities Conservation Planning" (NCCP) Process

1. Listing of the California gnatcatcher, and use of a special rule under section 4(d) of the ESA

2. Formation of planning teams in San Diego, Orange, and Riverside Counties

3. Progress to date

D. The Northwest "Habitat Conservation Plan" SWAT Team

1. Reasons for formation of the team

2. Goals of the initiative: to create an incentive for large industrial forest landowners to protect owl habitat and riparian areas for not-yet-listed fish species. Mutual benefits.

E. Similar HCP Efforts: Clark and Washington Counties; Plum Creek's Agreement on Montana Grizzly Habitat; Balcones HCP, Austin, TX

F. Other Examples

1. Bay-Delta Accords (Club Fed)

2. SE Forest Management Agreements

3. The "Safe Harbor" Concept

4. Exxon Valdez Oil Spill Trustees' Restoration Plan

5. Upper Colorado River

6. Bull Trout (MT/ID) and Atlantic Salmon

7. Virgin River Spinedace

8. Mojave Planning (BLM, NPS, Armed Services)

II. ELEMENTS OF ECOSYSTEM MANAGEMENT

A. What it is <u>not</u>: a bigger and better way of "locking up" more land; a sophisticated cover or rationale for trading away legally-required habitat protection; a scientific system that always produces optimized results and resolves conflicts amicably or rationally.

B. Ecosystem management is not mysterious, sophisticated, or newfangled. It is a resolutely practical, common sense strategy or series of strategies designed to maximize the changes of sustaining a diverse set of natural communities (and their biological health) over a long period of time while maximizing sustainable economic productivity based in and around their natural communities.

C. Most commentators have identified the following elements of ecosystem management, most or all of which are characterized by every one of the above regional projects:

1. Choosing appropriate ecological boundaries, which seldom coincide with political or agency jurisdictional lines

   - - Joe Sax's concept of the "problem-shed"

2. Seek to optimize not just for one species but to protect the integrity of a full variety of species, habitats, and natural communities

3. Use the best available science

4. Forge cooperation between management agencies, different levels of government, and private and non-profit parties to that they merge their distinctive mandates into a common management regime for the ecosystem; build partnerships to accomplish this goal

5. Choose a long period of time to accommodate natural and other disturbance cycles

6. Monitor results and pursue adaptive management, remaining flexible enough to adapt the plan to new information and better science when it becomes available

7. Identify and promote sustainable economics for communities in and around, or dependent upon, the ecosystem

8. From my own experience, I would add another criterion: decentralization of decision-making in the planning, so that those who will have to live with the

consequences of implementing the plan are most involved in its development. Federal agencies should seek to play a leadership, assistance, and supervisory role: set overall directions; promulgate or validate scientific requirements; provide technical assistance; retain overall approval authority; participate in funding where appropriate. But detailed plans should be developed by state and local governments, private land owners and concerned non-profits, and their experts, to the extent possible.

III. CHALLENGES AND LESSONS LEARNED

What have we learned from our regional ecosystem experiments? If the projects discussed above are indicative of the future of ecosystem management, and reflect the future direction of much of the administration of the Endangered Species Act "on the ground," how does our experience square with the definitional element listed in Part II, above?

A. Developing A Shared Vision Of Ecosystem Objectives

Ecosystem management is messy because it's about new kinds of partnerships: not just between management agencies that are unaccustomed to working with each other, but between different levels of government, and between government and stakeholders in the private and non-profit sectors.

So the issues go beyond simply finding a common set of management objectives for different management agencies, to developing a shared vision of what we are trying to accomplish - - what we want the ecosystem to "look like" - - that can win support from key decision-makers and elements of the public.

Ecosystem management can never be value-neutral, or value-free. You cannot optimize for a set of outputs without deciding what you want to optimize "for." Sustainability of a collection of resources, for example, cannot be defined in very great detail until we first identify exactly what it is we are trying to sustain.

Ultimately, then, it's human values that play a dominant role in prioritizing the goals of ecosystem management. Critical, then, to the success of a regional habitat protection plan is the initial "dynamics of value formation" between stakeholders and partners (including government agencies, based on their missions and regulatory objectives.

B. Understanding and Defining The Role Of Science

Based on the above observations, it should be obvious that understanding and defining the role and the limits of science, and its interrelationship with policy, is also essential to the success of a regional habitat protection effort.

It is human values, not science, that ultimately prioritize ecosystem goals. How then do we integrate the necessary requirement to "base ecosystem planning on sound science"?

I suggest two postulates:

1. There is never adequate scientific information on which one can be confident basing a decision.

2. Science can never "supply the answer"

Science can predict consequences (or at least assess risks) of certain actions. Scientists can give opinions about whether a particular management regime meets a legal standard or some standard that is proposed as a definition of a legal standard (e.g., "viability", or "likely to go extinct," or "likely to persist for one hundred years," or "likely to jeopardize the existence of a species.") Science can bound decision-making, and it can sharpen decision-making.

But in every case in my experience over the past three years, science has almost never eliminated the ultimate need for policy judgment to arrive at the final decision on a disputed, difficult, or sensitive issue.

In each of the regional projects, understanding the appropriate intersection or interrelationship between science, policy, and law (legal standards), and what kinds of judgments (or decisions) involve how much of an element of science and how much of an element of policy (or law), has been perhaps the single most troubling and challenging problem we have faced.

C. We Sell Insurance: Trading Certainty for Coverage

Virtually every Habitat Conservation Plan negotiation has involved a trade-off of certainty for breadth of coverage. If a landowner or local government wants a greater guarantee that species-by-species regulation can be supplanted by a long-term habitat protection plan, then more habitat must be set aside.

Three years after the Fish and Wildlife Service's HCP Initiative began, it is seldom approached any longer for single-species HCPs. Multi-species HCPs are the norm,

because more overall certainty can be obtained that a regional land-use plan will not have to be revised, and expectations overturned, if the plan covers many species including those that could be listed under the Act in the future. However, such a plan requires setting aside and protecting long-term different types (and therefore greater amounts) of habitat.

Interesting questions arise about the traditional bias of regulatory agencies and many environmentalists (unwillingness to provide certainty; e.g., wilderness "release") in the current setting in which (a) some habitat, if not protected, will clearly by lost forever to development, and (b) in the HCP context, granting more certainty to development buys much broader protection.

D. The Challenge of Adaptive Management

1. Science is shifting our understanding of "nature" toward a paradigm of consistent change and only local and short-lived "stability."

2. Therefore, leaving more flexibility for adaptive management should become more essential to the long run success of ecosystem management.

3. At the same time, however, the trend in regional conservation planning (driven by the insurance bargain described above) is toward more certainty in exchange for more protection. This cuts directly against adaptive management; the purpose of planning, after all, is to avoid constant changes in the plan.

4. The central issue, and an increasingly difficult one, is not how to "do"

adaptive management but how to negotiate the terms of adaptive management up front.

a. The No Surprises Policy

b. Adaptive Management Areas/ experimental areas

c. The terms of re-opener provisions (e.g., unusual circumstances, extraordinary circumstances)

d. Who pays for changes, in land or money?

e. The Plum Creek I-90 HCP: targets and ranges.

f. The Safe Harbor targets as a form of adaptive management

E. Role of Communities in Monitoring/Adaptive Management

The problem of mutual distrust between government agencies and citizens. What role for citizens, agencies, and science in making the plan work?

F. What We Have To Learn From Complexity Theory

There are a number of things we may be able to learn from the developing science of how complex adaptive systems work. Scientists from widely different disciplines are beginning to look at whether there are rules or principles common to systems

as divergent as the stock market, HIV virus, fundamental particle physics, and nature ecosystems. Computer modeling to investigate these ideas has produced some provocative notions. Two are:

1. The concept of the "edge of chaos." The most progressive, or adaptive (evolving) system is the one that is not steady-state or very stable but is on the "edge" of being totally unstable. What does this tell us about adaptive management?

2. The concept of "emergence." Trends develop, and decisions are made (if the management regime we create is itself viewed as a complex adaptive social system), in surprisingly non-linear ways.

G. The Importance of Metaphors

A point made most recently by writers in William Cronon, et al's Uncommon Ground is that "nature" is more elusive than we think because it is not a pure, objective, independent entity - - raw material existing entirely separate from either our conception about it or our human interaction with it (both historical and present).

Nature, and ecosystem management, may be more about metaphors than we had thought. For example, as the metaphor of "stable state of nature" as an ecosystem goal has now given way to a metaphor of constant change, how do we establish a set of goals that must be constantly changing? Could a shared vision be constantly changing in a political/scientific setting?

One of the postulates I have suggested here is that ecosystem management, to be successful, is dependent on a shared vision of a desired condition (or perhaps a shared vision of a political process to derive scientific baselines, if you incorporate the notions of edge of chaos and emergence discussed just above).

Similarly, it may be that long-term progress on environmental protection is more dependent than we have realized on our basic assumptions and metaphors about nature, and on the perspective we adopt toward it.

Two examples: the issues of forest structure (old growth) and forest health; and the issue of interbreeding/cross breeding of populations and subpopulations of endangered species.