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CONSERVATION AND COOPERATION: Strategies for making endangered species laws work

Prepared for the California Department of Fish and Game

This study was commissioned by the Department of Fish and Game as part of the Department's effort to improve administration of endangered species laws. Specific recommendations in the study are made as options for the Department to consider and have not been adopted as Department of Fish and Game positions or policy.

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Executive Summary

This report analyzes and recommends options for improvement in conserving threatened and endangered and potentially threatened and endangered species in California. Particular attention is paid to achieving (1) an effective transition from species-focused to ecosystem-focused policy strategies, (2) better cooperation with local governments and private landowners, (3) better coordination with overall land use law, and (4) a sounder, more equitable funding system.

The important conclusions of this analysis include:

1. Species protection is being replaced as a policy goal with "ecosystem conservation," encompassing more habitat and more species, seeking to avoid species decline to threatened or endangered levels. Policies evolve as learning occurs (five alternative policy strategies are identified below).

2. Successful ecosystem conservation requires making rule enforcement under endangered species acts a rare event; success will come largely as other institutions and individuals incorporate ecosystem conservation into their ongoing decisions and activities.

3. If private property owners and proponents of projects are to be enlisted in the effort to conserve species, they need incentives to do so and compensation for voluntary ecosystem conservation.

4. Those societal processes that influence land use decisions, including state, local and regional governmental bodies, as well as financial institutions and economic and demographic factors, are central to ecosystem conservation; the goals of ecosystem conservation are one of many factors shaping land uses.

5. Making the goals of ecosystem conservation a clearly stated, but seamless, part of land use processes is the best strategy for achieving those goals; this suggests that working closely with local, regional, state and national governmental entities with land use policy responsibilities is necessary.

6. Protecting species requires both "scientific" and "policy implementation" information ranging from the mapping of natural communities through

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peer-reviewed and public-authority legitimated protocols for management of ecosystems and mitigation measures in cases where species are threatened or endangered. These information systems are not now well-supported, well-developed or widely-accepted and used, with the consequence that more uncertainty and conflict arises than is necessary. Even the extent of species decline is not well established. Models exist in other policy arenas that can guide efforts to improve information here.

7. Lack of information regarding costs of participating in protection and conservation efforts is a critical barrier to private land owners and local and regional governments. Information about these costs should be improved.

8. Moreover, the information gaps are exacerbated by the current system's allocation of large planning costs to local governments and private property owners and of most mitigation costs to private property owners. This provides both incentives to avoid participation in species and ecosystem conservation. These financial disincentives to conserve species and ecosystems need to be reversed and replaced with positive incentives.

9. A concept which deserves exploration is creation of insurance against increased costs where land uses are restricted by conservation efforts or mitigation costs are imposed.

10. Policy strategies to protect species are changing radically. Efforts to reap the improvements in both protection of biodiversity and in ability to achieve other societal values sought with a shift to ecosystem conservation will require very large changes in the capacities and behaviors of the national, state, regional and local governmental agencies involved in this arena. These changes must proceed in linked and reinforcing manners.

Several techniques were used in the analyses reported here, including review of documents provided by the California Department of Fish and Game, review of available literature on endangered species protection in this nation and in others, and interviews with individuals knowledgeable about endangered species protection. Additionally, the experience of the research team in analyzing analog policy processes, includ-

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ing land use, environmental protection, transportation, and energy, among others, and general knowledge of policy processes in California and elsewhere provided insights into this policy arena.

Five approaches to protection of endangered species can be identified:

- *historical* (species listing and project-linked mitigation)
- *current practices* (adds multi-species, regional planning, such as in Riverside County's Multi-Species Strategy)
- *ecosystem conservation* (planning natural community regions, as in the Natural Communities Conservation Planning process)
- *integrating plans* (as in Governor Wilson's Strategic Growth Plan, where the strategy is to make state, regional and local plans for land use, transportation, air quality, endangered species, etc., integrated and congruent)
- *"learning systems"* (as in the Regional Comprehensive Planning effort being undertaken by the Southern California Association of Governments and other national, state and regional organizations, which emphasizes integrative, iterative planning processes divided between regional and subregional arenas, characterized by joining technical information and political judgment to meet legal requirements and desired goals for the region and conscious efforts to stress plan revisions and mediation and rely far less on rule enforcement and litigation remedies for non performance)

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Efforts to protect endangered species are becoming vastly more complex than when initiated with passage of the national Endangered Species Act (ESA) in 1973 and are likely to become more complex still. Perhaps nowhere are these changes more visible than in California, which incorporated earlier policies into its own Endangered Species Act (CESA) in 1984. While the goals of the "Acts," as the two are referred to here, remain in place, new strategies are being developed to pursue protection of species. Further changes in strategy will be needed over the next few years. Identifying some of those possible strategies and sorting out the most promising is the ultimate purpose of this effort.

The important conclusions of this analysis include:

1. Species protection is being replaced as a policy goal with "ecosystem conservation," encompassing more habitat and more species, seeking to avoid species decline to threatened or endangered levels.

2. Successful ecosystem conservation requires making rule enforcement under the endangered species acts a **rare** event; success will come largely as other institutions and individuals incorporate ecosystem conservation into their ongoing decisions and activities.

3. If private property owners and proponents of projects are to be enlisted in the effort to conserve species, they need incentives to do so and compensation for voluntary ecosystem conservation.

4. Those societal processes that influence land use decisions, including state, local and regional governmental bodies, as well as financial institutions and economic and demographic factors, are central to ecosystem conservation; the goals of ecosystem conservation are one of many factors shaping land uses.

5. Making the goals of ecosystem conservation a clearly stated, but seamless, part of land use processes is the best strategy for achieving those goals; this suggests that working closely with local, regional, state and national governmental entities with land use policy responsibilities is necessary.

6. Protecting species requires both "scientific" and "policy implementation" information ranging from the mapping of natural communities through peer-reviewed and public-authority legitimated protocols for management

of ecosystems and mitigation measures in cases where species are threatened or endangered. These information systems are not now well-supported, well-developed or widely-accepted and used, with the consequence that more uncertainty and conflict arises than is necessary. Even the extent of species decline is not well-established. Models exist in other policy arenas that can guide efforts to improve information here.

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8. Moreover, the information gaps are exacerbated by the current system's allocation of large planning costs to local governments and private property owners and of most mitigation costs to private property owners. This provides both incentives to avoid participation in species and ecosystem conservation. These financial disincentives to conserve species and ecosystems need to be reversed and replaced with positive incentives.

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California is blessed with a rich biodiversity, encompassing eleven biogeographic regions, 396 habitat types and more plant and animal species than any other state. Under ESA, 64 animals and 44 plants are listed as threatened or endangered. Seventy-three animals and 213 plants are listed as threatened or endangered under the CESA or California Native Plant Protection Act of 1977. Most of these listings as threatened or endangered are the result of habitat losses.

A few cases of threatened or endangered species are the result of human actions other than habitat modification, such as DDT residues in food chains weakening the eggs of Brown Pelicans, but the linkage to habitat is usually critical. The focus here is on land habitat-related impacts on species viability, the largest number of cases and those where policies are changing most rapidly. To maintain a sharper focus, water habitats, where the scientific and policy issues differ somewhat, are not given much attention.

Some successes are evident in the effort to protect species, including progress made in protection of specific species (such as the Bald Eagle) and in creation of a number of protected habitats (the California Department of Fish and Game owns or manages 56,489 acres of habitat for threatened or endangered species). Perhaps most importantly, the goal of species protection is placed firmly on the public policy agenda and has sufficient societal support that it is unlikely to be dislodged.

As with any policy, endangered species protection policies can be improved and possible reauthorization of the ESA in 1994 ensures that varying proposals for improvement will be fully debated. In California, interest in improving policies is sizable, with neither those focused on species protection nor those concerned about the impacts of these policies upon property and businesses currently fully satisfied.

California is the location of several endangered species controversies, such as the Spotted Owl and protection of the Sacramento-San Joaquin Estuary, which are influencing national policy debates. Additionally, the State is undertaking a cutting edge experiment in management of large areas of important habitat, the Natural Communities Conservation Planning (NCCP) program, which will provide information about how to improve endangered species policies and implementation. This effort has now been linked to national policy through the manner in which the gnatcatcher has been listed as a threatened species in Secretary of the Interior Babbitt's order of April 1, 1994.

Thus, it is a propitious time to analyze the current state of endangered species policies, to extract lessons from two decades of experience, to anticipate unfolding events

and to suggest directions in which policies can evolve over the next decade. Such an examination and laying out of alternative future actions is undertaken here. The goals are to:

1. Understand the evolution of endangered species policies.
2. Identify strategies for better coordination with overall land use law, and better cooperation with local governments and private land owners.
3. Identify steps which could improve the implementation of endangered species policies.
4. Identify strategies for a sounder, more equitable funding system.

These four goals are addressed in the report. The intended audience of this examination is the larger community of those interested in endangered species policies, including policy makers, their staffs, advocacy groups and interested citizens.

I. Policies Evolve as Learning Occurs

Protecting Species is a Complex Process

Protection of endangered species in California is a complex process. As already noted, it involves both national and state laws. The United States Fish and Wildlife Service (FWS) and the California Department of Fish and Game (DFG) are primarily responsible for implementation of the Acts. Decisions and cooperation of other national and state agencies and actions of local governments are critical to success. Additionally, actions of private land owners and of proponents of changes in land uses, interrelationships with other significant public policies (such as the National Environmental Protection Act or the California Environmental Quality Act), and the constraints imposed by public and private institutions which shape business practices (such as tax codes, bank regulations, or decision rules of financial institutions) are all relevant.

The national Endangered Species Act and the California Endangered Species Act have many parallels and some differences. Most fundamentally, they share a common strategy to protection of species, being rule-oriented after species decline is severe, rather than providing incentives to conserve species. Similar provisions of both include listing as

threatened or endangered, wide coverage of species (e.g., bird, mammals, fish, amphibians, invertebrates, reptiles and plants) and prohibitions against "taking" of threatened and endangered species. Differences include mandatory recovery plans for the ESA, protection of candidate species for one year under the CESA, and some differences in definitions of "taking" and of provisions for incidental take during otherwise legal or permitted activities.

The California Department of Fish and Game has the primary responsibility for implementation of the CESA. For its several roles, which also include enforcement of game laws and oil spill prevention and clean up, among others, the DFG has an estimated budget for 1992-93 of $159 million and an authorized work force of 2175. Activities supporting endangered species are concentrated in the Natural Heritage, Environmental Services and Wildlife Management Divisions of DFG, with total budgets of $54 million and 218 authorized positions in 1992-93. The Inland Fisheries and Bay-Delta Divisions, with a budget of $57 million, have significant endangered species responsibilities within their arenas.

The United States Fish and Wildlife Service has the primary responsibility for implementation of the ESA within the State of California. It has a total budget of $20.5 million for expenditure in California, of which $4.4 million and 78 personnel are for units with endangered species program responsibilities.

Excluding fisheries and hatcheries, the FWS owns or manages 364,927 acres in California although not all solely for endangered species protection. Through oversight of lands that serve as habitats of species listed as threatened or endangered under the ESA, the FWS exercises indirect control over vast areas of privately held lands in California; by one estimate, as much as one-third of the total privately held land in California may be within the boundaries of known habitats of listed species. The United States National Marine Fisheries Service has similar responsibilities within waters under its purview.

How the national ESA and the CESA interrelate and how they are implemented are obviously critical to the protection of species. National government preemption powers allow it to define the boundaries of state action, as occurred clearly with passage of the Federal Marine Mammals Protection Act (1972). The relevant national agencies, or courts interpreting national laws, can sometimes override positions developed through State policy processes.

Coordination and cooperation also occurs. Funds transferred from the national government contributed $26 million to overall DFG operations (which includes much more than endangered species, of course) in 1992-93 and additional support was provided to the NCCP, to be discussed below.

Other national and state agencies make decisions and own lands that are important for endangered species policies. Decisions by the United States Forest Service, National Park Service, Bureau of Reclamation, Bureau of Land Management and Corps of Engineers all affect habitats and species, for example. Additional lands are in military bases and installations. Similarly, decisions of the California Departments of Water Resources, Parks and Recreation, and Transportation affect habitats and species. The national government owns 47 percent of the total land in California, the State 2 percent and local and regional governments an additional 2 percent, leaving 49 percent privately owned.

Local and regional governments, including cities, counties, special districts, county transportation commissions, and councils of governments all make decisions which affect endangered species. They do so directly with infrastructure projects, such as roads or water systems. More powerfully, they regulate land uses, deciding allowable uses of private lands. Inescapably, given their reliance on revenues which are distributed to the point of generation (property and sales taxes) and the reductions of their revenues the State has imposed to balance its budget, local governments commonly seek to make land use decisions which increase their revenues over expenses. In this context, endangered species protection can collide forcefully with other priority concerns.

Nonetheless, some jurisdictions have developed innovative approaches to endangered species protection, usually when they needed to in order to continue to make land use decisions. As examples, Kern County developed an "Endangered Species Element" to its General Plan, Riverside County has developed a Multiple Species Habitat Conservation Strategy and the City of Carlsbad has developed a city-wide Habitat Conservation Plan under the NCCP umbrella.

Non-Governmental Actors: Several environmental and conservation groups are important contributors to endangered species policy debates. Examples include Defenders of Wildlife, The Audubon Society, The Sierra Club, the Planning and Conservation League, the Environmental Defense Fund and the Natural Resource Defense Council, among others. The Nature Conservancy, and also a number of local land trusts, are also important actors in habitat protection. Between 1978 and 1991, the California Nature Conservancy acquired nearly 320,000 acres of lands of high biological significance, regularly transferring some to others for on-going management while adding new areas of significance. Successful initiatives supported by the Planning and Conservation League and others provided funding for acquisition and management of parks and wilderness areas. The Wildlife, Coastal, and Park Lands Conservation Act of 1988 earmarked $776,000,000 for lands acquisition and development for parks, wild life habitat and related purposes. The Tobacco Tax and Health Initiative, also passed in 1988, earmarked 2.5 percent (about $15 million) of a total of $600 million anticipated to be raised annually by taxes on tobacco products to programs to protect, restore, or maintain fish, waterfowl, and wildlife habitat. In June 1990, passage of the California Wildlife Protection Act required spending no less than $30 million annually on wildlife habitat.

Private land owners play major roles in the fate of species, of course. Many private land owners act to conserve habitat and species, including those who participate in local land trust programs or innovative partnerships such as the Ricelands Habitat Partnership (which floods rice fields in the Winter, providing habitat and food for migrating water-

fowl), and more who conserve habitat and species without participation in formal programs. Currently, however, private land owners have few incentives to protect species and can suffer large costs in project delays, modifications, mitigation requirements or denials if endangered species are on their lands. Anecdotally, this leads some land owners to actively seek to reduce the chance of finding endangered species; regular disking of fallow lands to avoid establishment of listed species is an often-cited example.

From the perspective of a private land owner, or of a local government seeking to make decisions concerning land uses, a myriad of complex and sometimes conflicting requirements are confronted, in which decision arenas are often neither stable nor capable of making conclusive decisions. Doing anything requires affirmative action by many parties while stopping a project commonly requires a negative decision in only one arena.

A major land use project, such as a subdivision of several hundred homes or construction of a sizable manufacturing plant, often requires approvals of more than a dozen governmental agencies. Each agency has its own legal authority, own procedures and own timetables. State and local authorities will usually have approval powers, but some of the policies they implement may be national. Project opponents can often oppose a project on related grounds in several arenas. Legal challenges can often be brought in both state and federal courts on more than one legal theory. In this situation, it is sometimes difficult to reach definitive closure so that a project can proceed without risk of further challenge. In all cases, the variety of arenas and decision criteria makes the land use process complex, a factor which increases the transaction costs not only of private land owners, businesses, and developers, but also of public agencies involved.

To illustrate, an analysis of the steps required to build a subdivision in Orange County identified over 140 separate public decisions required. As endangered species policy makers seek to influence land use processes, they will sometimes find overlapping and only loosely articulated policy systems. In transportation, for example, separate planning processes exist for the State Transportation Improvement Plan (STIP), county transporta-

tion commission plans, local general plan circulation elements, state-mandated congestion management plans, and trip reduction actions required of employers by air quality management districts.

Even setting aside the major state and national water capture and delivery systems, a similar litany of governmental agencies can be offered. In Southern California, for example, the Metropolitan Water District, City of Los Angeles Department of Water and Power, a variety of ground water basin management structures, water quality boards, many municipal water departments and some private water companies all play roles in the ultimate delivery of this resource. Yet advocates of species conservation must find ways to become effective in these arenas. Delivery of water and provision of roads are among the most powerful factors in opening areas to more intensive human use and, thereby, greater habitat losses.

From this review, it is clear that endangered species laws are one among a plethora of laws and policies the implementation of which revolves around land use decisions. Their successful implementation requires the voluntary, cooperative actions of many public and private sector organizations, and of many more individuals.

Compared to other policies seeking to influence land use, the distinctive feature of endangered species laws is the prohibition against taking of listed species, a strong restriction which provides substantial leverage once a species has declined to the point where a listing is made. But the sanctions attached to listing a species as threatened or endangered may ultimately not be sufficient to ensure species survival. Listed species have become extinct. More importantly, it is unlikely that draconian sanctions can be regularly imposed to further a single policy goal. These issues receive more attention below.

Increased Complexity Requires Facilitative Strategies

Continued rapid population growth, and especially the increasing rates of growth in previously isolated areas such as the Sierra Nevada and further reaches of Southern California, is an important source of the increased complexity in protecting native wildlife species. As more species and more habitat are threatened, the number, variety, and intensity of conflicts to be resolved increases.

However, other causes of complexity are also very important. Perhaps the most important source of increased complexity is evolution in strategies to protect species. Once focused on protecting single species from the impacts of single human acts, strategies now coming into use seek to protect multiple species in adequately sized, long-term sustainable habitats and to do so before specific projects are developed which will take the species and its habitat to the brink of extinction.

Protecting a single species, such as Swainson's hawks, from the impacts of single projects is still of great importance. However, it is other, emerging, strategies that so dramatically increase complexity.

Examples of these other strategies include efforts to protect:

- a single species over large areas (such as Spotted Owls in old growth forests), that will ultimately protect many species,
- multiple species in special habitats (a total of 30 species in Riverside County, where listing of the Coachella Valley fringe-toed lizard and Stephen's kangaroo rat precipitated action),
- multiple species with sizable areas of habitat (gnatcatchers are the most publicized of over forty different species of plants and animals associated with coastal sage scrub classified as rare, sensitive, threatened or endangered by national or state agencies)

Ecosystem conservation has replaced single species efforts in limited habitats as the orienting framework. Policies have evolved to seek to expand the numbers of species protected, to move up in scale of land affected, and to move forward in time. In short, the goal is to anticipate the impacts of human behaviors upon habitats important to species and to so influence decisions as to limit those impacts in ways that protect many species.

Several weaknesses have spurred this change in policy thinking.

One is simply recognition that **listing is evidence of failure**, a failure that the original ESA and CESA provided few tools to address. Listing of a species as threatened or endangered commonly occurs after review of the evidence submitted in support of a petition to list that chronicles the species' decline. A listing can be made by FWS without a petition, based on information it collects. The boundaries of a critical habitat area can be designated with the listing. The ESA requires adoption of a recovery plan and such a plan may be adopted under CESA, but funds for recovery are limited. Under ESA, 651 species were listed nationwide in 1991; since the adoption of ESA in 1973 through 1991, only five species recovered sufficiently to be delisted. In the same time period, seven listed species became extinct.[1]

After a decision to list is made, the Acts are essentially reactive, invoked when a specific project proposal affects the known habitat of a listed species or a CEQA review discovers a listed species within a proposed project. The Acts provide strong powers to control the uses of land within the habitats of listed species, but their reach is essentially limited to the impacts of single projects. As a consequence, efforts to protect habitat can result in a patchwork of parcels too small and too separated to provide effective long-term protection of a species. Public funds for recovery efforts have not been sufficient to allow a more proactive approach to management of threatened and endangered species.

The cost of maintaining small reserves is also much higher per acre than for larger, self-sustaining ecosystem-based reserves. These larger open space areas also offer substantial societal values in watershed protection, soil protection, flood control, air quality and aesthetic or quality of life value.

Additionally, experience with the ESA and CESA revealed that imposing much of the costs of achieving the societal goal of protecting species upon individual land owners

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1. United States General Accounting Office. *Endangered Species Act: Types and Numbers of Implementing Actions*, May 1992. Table 4.4, page 38.

or project proponents was considered inequitable by those affected parties. Affected land owners also perceive themselves to be unfairly bearing costs that should have been borne by those whose actions disturbed habitats earlier, but who escaped responsibility for the consequences. Lack of financial incentives to conserve habitat and species combined with large costs and great uncertainties concerning allowable use of lands, means few welcome the prospect of discovering threatened or endangered species on their lands. Indeed, the incentives presented to land owners (and to governments seeking to accomplish their defined missions) are to reduce possibly sensitive habitat and thereby reduce their exposure to the Acts.

Moreover, the Acts do not link well with other agencies of the national or state governments or with local governments, all of whose actions prove critical to protecting species. This is seen first in actions of those agencies which can harm species, where public agency decisions to allow logging has harmed critical watersheds, resulting in sedimentation of spawning beds in affected streams, or where decisions about dams and pumps of water systems or alignments of freeways are made with little recognition of negative impacts on endangered species.

These other public agencies have inadequate information and legal and political bases to fully incorporate impacts upon species in their decisions. The agencies implementing species protection (the United States Fish and Wildlife Service and the California Department of Fish and Game) are often involved only after other agencies have basically made their decision, putting DFG and FWS in the awkward position of modifying or reversing a decision already made. The project proponent may have very limited flexibility in modifying a project at a late date, being constrained by prior decisions regarding project features and mitigation measures required for other public policy goals and by agreements made with financial institutions or others. Additionally, the information available to all is often insufficient, being time-consuming and expensive to collect, particularly late in the game. Finally, the Acts have not provided a firm basis upon which other national and state

agencies or local governments can participate in planning for habitat conservation or for species recovery prior to a listing occurring.

Endangered Species Protection Policies Will Continue to Evolve

A progression through three approaches to thinking about endangered species policies is evident and two more approaches are visible choices for future development of policies in this area. The progression is more fully explored in Appendix A; abbreviated descriptions of each approach follow:

1. *historical* (species listing and project-linked mitigation, including habitat conservation plans, HCPs)
2. *current practices* (adds multi-species, regional planning, as in Riverside County)
3. *ecosystem conservation* (planning natural community regions, as in the NCCP process)
4. *integrating plans* (as in Governor Wilson's Strategic Growth Plan, where the strategy is to make state, regional and local plans for land use, transportation, air quality, endangered species, etc., integrated and congruent)
5. *"learning systems"* (as in the Regional Comprehensive Planning effort being undertaken by the Southern California Association of Governments and other national, state and regional organizations, which emphasizes integrative, iterative planning processes divided between regional and subregional arenas, characterized by joining technical information and political judgment to meet legal requirements and desired goals for the region, and conscious efforts to stress plan revisions and mediation, and to rely far less on rule enforcement and litigation remedies, for non performance)

Figure 1 contrasts four of these five approaches, omitting the historical approach. Following the order of their presentation above, the approaches are numbered 2-5 in Figure 1. Each approach is compared according to attributes and according to strengths and weaknesses on meeting endangered species act goals and other societal goals. The "current approach" column, "# 2, CESA" may be considered the baseline against which the effects of changing strategies can be compared. When a change occurs, the cell is shaded.

Most of the entries in Figure 1 are self explanatory. Important effects are captured with short entries. For example, shifting from strategy # 3, ecosystem conservation, to either strategies 4 or 5 requires changing the character of endangered species planning

substantially. It would now be integrated into ongoing planning undertaken by regional, subregional and local governments rather than standing alone. As a consequence, the planning cycle would become regularized and the decision boundaries for major planning decisions would be fixed by other than habitat and species criteria.

For example, a multi-county Council of Governments (COG) could schedule review and modifications of its integrated or comprehensive plan for the region every two years. That plan would include economic and demographic projections and transportation, housing, air quality and ecosystem conservation policy goals, among others, all being worked out in the context of land use and other policies of the region. Portions of the analyses and decision making required would probably be undertaken in established sub regions. In this process, the boundaries of the region and of its sub regions are fixed and persist over many years. They may or may not coincide with city or county boundaries and are unlikely to correspond to natural ecosystem boundaries or to those of HCPs or NCCPs. Of course, analysis of species issues would still be based on habitat boundaries and Habitat Conservation Plans (or conservation under the NCCP statute) would have distinctive boundaries for implementation of species conservation activities.

Some of the entries are judgmental and differences of opinion will exist about the correct entry. The dimensions of comparison are what is most important as they provide a framework within which to begin analysis of alternative policy strategies.

Natural Communities Conservation Planning: Endangered species polices are now moving toward planning for natural communities, the third phase, "ecosystem conservation" approach above. California's NCCP statute may be the nation's most visible example of this trend. Its concept guided development of the Southwestern Riverside County Habitat Conservation/Multi-Species Plan between DFG and the Metropolitan Water District even before implementing guidelines were finalized. The NCCP is currently being used to develop conservation plans for the Coastal Sage Scrub habitat areas of Southern California. This is an important experiment in which much learning will occur. Secretary

Babbitt's decision to tie the gnatcatcher listing to the NCCP ensures that it will be developed further.

Already, several lessons are evident in the experience to date with the NCCP. New skills and procedures are required within DFG. New forms of cooperation are needed with local governments and land owners, reflected in the MOUs developed to achieve that co-operation. Until confronted with an immediate compelling rationale to participate, some local governments and land owners hesitated to sign MOUs. These incentive and transition problems are considered further below.

Not surprisingly for the first time any innovation is implemented, the NCCP is both time consuming and expensive; its costs are analyzed below. For the NCCP process to be more widely used, both the hesitation of local governments and land owners to participate until they have immediate needs, and the total costs and payment of those costs, will need to be addressed. Initial analyses of both issues are undertaken below.

Further movement toward integrated planning and/or a learning systems approach could occur quite quickly. Movement in these directions will be required in order to effectively achieve the policy goals of protecting natural communities, to accommodate other important public policy goals and to maintain broad political support for protection of natural communities, all within tight budgets.

Air Quality Management Offers Lessons: The evolution of air quality policies is instructive as to the patterns that could be followed in protecting natural communities. Major progress toward clean air was made by reducing automobile tailpipe emissions and controlling emissions from industries using a rule enforcement strategy. When only a few, large corporations needed to be regulated, the rule enforcement strategy worked reasonably well. However, over time, the rule enforcement policy strategies have broken down. As the emissions of smaller firms needed to be reduced in order to meet air quality targets--for example, dry cleaning establishments--rule enforcement became more difficult. These firms often lacked the capital to reduce emissions or the available technologies were pro-

hibitively expensive given their scale. Moreover, these firms often had a politically potent personal face, of the neighborhood small business owner, rather than of a monolithic corporation.

A second obstacle to the rule enforcement strategy emerged as the conflicts between this approach to improving air quality and other significant societal values grew more visible (e.g., displacing significant industries and their associated employment from Southern California). A third obstacle emerges as broader changes in societal behaviors, such as changing land use or commute patterns, are required to achieve further air quality improvements. Proposed regulation of backyard barbecues came to symbolize the depth of regulation required under this strategy and to highlight the implementation difficulties likely to be encountered in ever tighter regulation of behaviors.

Rule enforcement is still a part of efforts to improve air quality, but it is being complemented by market-based strategies (e.g., trading rights to emit sulfur dioxide) and by strategies to work collaboratively with cities and counties to influence land uses. An example can be seen in the development of a Regional Comprehensive Plan in the region encompassed by the Southern California Association of Governments (SCAG).

Ultimately, the developments in air quality policy making, which have parallels in other areas such as siting waste disposal facilities or non-point source water pollution, are not merely suggestive of the directions in which protection of natural communities and endangered species will evolve. Instead, those developments are likely to be controlling. In order to participate in influencing land use decisions, those who seek to protect natural communities will be drawn into the processes society has legitimated for those decisions.

As in the case of improving air quality, the policy goals about species and natural communities protection can remain clear and strong legally, but their pursuit is almost certainly moving to strategies that rely increasingly on negotiation of how to achieve them while simultaneously achieving other societal goals.

Figure 2. Strategies to Make Endangered Species Policies More Central to Society

Possible Strategy	*Current Context*	*Implementation Issues*	*Transition Steps*
Embrace policy strategy of facilitating protection of critical ecosystem conservation **through the actions of others**, with DFG becoming the resource provider and manager of processes by which protection of species becomes integral to four policy processes: (a) State policy making (especially transportation, water and forestry), (b) regional and local policies affecting land uses, (c) CEQA, and (d) implementation of mitigation and recovery processes after a listing under national ESA <u>Seek</u>: • clarity of State and DFG roles • focus DFG resources on critical "front end" and ecosystem conservation issues • reduce tension within DFG and outside as rule-enforcer vs. facilitator	Current strategies allow protection of species through actions of others, but substantial problems arise from weaknesses in the policy design: • inadequate legal basis for facilitative actions with local governments and others • punitive character of ES listing and mitigation measures and imposition of costs on projects creates incentives to land owners and to local governments to avoid Acts • mission is clouded and DFG is not well integrated into relevant policy processes, such as State transportation planning or local land use policy making	Will require clearly conveying advantages to all parties - State, environmentalists, land owners, local governments and citizens - to give a chance of success. Needs champions in all these arenas and unlikely to succeed just as a DFG, Resources Agency, or administration proposal. Steps: • establish working relationships with Dept. of Interior to test/develop support for effort • establish California task force to elaborate and develop implementation plans • work with others to develop an education and communication process to inform leaders and citizens re focus and strategy	A. Embrace NCCP/CSS process fully as a learning process: • establish links to SCAG and to SANDAG, working with local governments through them, and • begin experiments with incentives to land owners to participate, including Transfer of Development Rights, Habitat Transaction Credits and mitigation banks. B. Begin discussion of transferring implementation of mitigation and recovery plans for listed species in San Joaquin Valley from US FWS to appropriate COGs supported with technical work by DFG.

II. Financing and Incentives Issues

Traditionally, achieving a public purpose is expected to be accomplished mostly through expenditure of public funds. Public safety is to be accomplished by police supported by governmental revenues. In the first variant on this model, governments can require businesses and individuals to undertake an activity in the public interest with their own resources. A second variation is payment of a fee for government or a third party to undertake the activity. Requiring employers to provide workers with family leave is an example of the first type and charging for building inspections an example of the second. Additionally, government can provide incentives for private action, without requiring that they be undertaken and/or providing considerable latitude in their accomplishment. An example of this third approach would be deductibility of mortgage interest from the personal income tax.

Obviously, the resources government devotes to achieving its purpose will vary according the method it uses to pursue its objectives. Equally obviously, total societal costs to achieve any public policy goal are almost always larger than just governmental costs and some strategies shift large proportions of the costs to the non-governmental sector of society.

Thus, the issue of financing species protection can most sensibly be discussed only in linkage with the policy strategies chosen to protect species.

If all habitat to be conserved must be acquired with public funds, the total governmental costs are likely to be much larger than if the private sector undertakes conservation efforts also. Moreover, it is likely that not only governmental, but also societal costs will be less in this strategy.

This section does not sort out anywhere near all of the possible combinations of policy strategies and financing. It does examine major dimensions of financing choices. In addition, it initiates exploration of an insurance option, in which land owners participate in an insurance program somewhat analogous to title insurance and/or to flood plain insur-

ance. In the eventuality an endangered species is found on a parcel, insurance proceeds are available for mitigation or compensation of lost property values.

Expenditures on Species Protection

Total current societal expenditures on endangered species activities in California are not easily estimated. Expenditures are made by several agencies of the national government (e.g., U. S. Fish and Wildlife Service and U. S. Forest Service), by several California state agencies (e.g., Department of Fish and Game and Department of Water Resources) as well as by numerous local governments and by even more private property owners and development project proponents. As discussed above, information is available on total expenditures of the DFG and of the FWS, and for their divisions, but those divisions have responsibilities in addition to endangered species protection.

One effort estimated that 15.4 percent of the total DFG budget was spent on endangered species and nongame activities in 1987.[2] If the same percentage was spent in these areas in 1991-92, expenditures would have been $25.4 million. In any case, this is a fraction of the total societal expenditures in this area.

For example, evidence of the costs to undertake multi-species, habitat planning show, not surprisingly, that major costs are incurred outside State government. The NCCP budget at DFG in 1992-93 is a total of $1,055,000, including a $200,000 grant from the National Fish and Wildlife Foundation. Substantial in kind contributions have been made by participating local governments and they also bear costs of adopting compatible plans for their decision making. The City of Carlsbad estimates it has spent $400,000 on its city-wide Habitat Management Plan. Costs are also borne by private land owners and project proponents. A development company, Fieldstone, estimates it spent $250,000 directly on NCCP participation and made project changes valued at $12.5 million to its proposal to

2. Sarah E. Vickerman, "State Wildlife Protection Programs: The Nongame Program." In: *In Defense of Wildlife* (no date), pages 67-96.

build 2,800 homes over fifteen years, including dedicating nearly 500 acres to a preserve and undertaking other, off-site mitigation.

Other evidence of the costs involved in moving toward planning and managing large habitats is available in the report prepared to support the Riverside County Multiple Species Habitat Conservation Plan. Projected Riverside County expenses included $300 million for habitat acquisition within the first six years (actual County costs could be reduced if mitigation banking shifted costs to private land owners), acquisition overhead, estimated to be $450,000 annually, non-acquisition capital costs, estimated at $1.5 million over six years, and operations and maintenance estimated at $200,000 in first year and $800,000 by year six. Non-acquisition costs to the County of Riverside were projected to be approximately $7.4 million over their first six years of the effort.

More important than the total expenditures on endangered species is the structure of the financing provided, which is widely regarded as suffering three weaknesses:

1. total public funds are inadequate
2. costs of protecting endangered species are inequitably distributed
3. insufficient incentives are provided to private parties to practice conservation; indeed they have incentives to avoid designation of lands as critical habitat

Matching Revenue Source to Species Protection Activity

This discussion emphasizes sorting out the different financing and incentive issues involved in endangered species activities.

Three distinct types of activities related to avoiding species extinction can be identified:

1. "planning and policy making," which includes development of information, application of scientific judgment, interaction with relevant parties, decision making and monitoring of outcomes,
2. activities directed at protecting threatened or endangered species from the impacts of specific human actions or of mitigating the effects of those impacts, and
3. activities intended to recover species to a non-threatened status.

Similarly, there are ultimately only three sources of funding for endangered species activities:

1. broadly-collected revenues, such as a widely applied tax (e.g., a sales tax or property transfer fee) or debt secured and paid from such a broadly-collected revenue source (e.g., general obligation bonds),
2. revenues collected from a narrowly circumscribed category of payers who impact endangered species negatively (e.g., mitigation fees charged development project proponents or assessments levied against property owners in a certain area), and
3. revenues derived from uses supportive of protecting species and habitats (e.g., non-disruptive recreational uses of preserves) and from donations

Two important principles of public finance are the "benefit" and the "equity" principles. The benefit principle suggests that those who benefit from a public activity or impose a cost upon the public should bear its cost, while the equity principle suggests that those members of society with more wealth or income should pay proportionately more in taxes. Economists suggest constraining both of these principles by the general requirement of seeking efficiency in allocation of society's resources: actions should not be taken which decrease the total benefits available to society. If two strategies are available to equally protect a species, but one costs three times as much as the other, society is better off if the less expensive alternative is chosen, leaving more resources available to pursue other valued ends.

These principles suggest the following relationship among types of endangered species activities and sources of revenues:

Type of Activity	*Preferred Source of Revenues*	*Examples*
planning and policy	broadly-collected, general revenues	appropriations from the general fund; dedicated % of sales tax or of real estate transfer tax
tied to specific human actions	from specific sources that caused impacts	impact fees; mitigation agreements; payments for conservation
recovery of species or habitats	broadly-collected and from specific parties that caused damages	broad-based as above, plus fees and/or costs imposed on cause of loss (e.g., super fund process)

The most important conclusion to emerge from this limited analysis is that major portions of species protection activities cannot reasonably be supported by linkage to specific human actions in the short term. Moreover, the types of activities which are increasing, planning and policy making, have the least claim upon resources of specific parcels and individuals. The constraints of relying on fees for general planning and policy making (or for species recovery) are found in three areas. First, as is already seen in some efforts of private parties and local governments to avoid participation in voluntary species protection activities, the incentive structure encourages escape. This ensures difficulty in collecting the revenues and high administrative costs. Second, heavy reliance on this funding strategy would provide basis for political opposition to species protection and hostility to the implementing agencies, already evident. Third, the legal requirement that fees and assessments meet a "nexus" test of relationship between the charge and an action of the paying party, joined with the effects of Proposition 9 of 1979 (the Gann Initiative), which limits fees to the costs of providing a service, suggests real limits on such revenues.

Another important issue in considering financing and incentive systems is the ultimate incidence--who bears the actual cost as distinct from who makes initial payment--which may be different than the first parties to the transaction. Consider the case of a mitigation fee imposed on all development within a specified area (even as large as a whole county), set at a certain level per acre altered in ways that reduced the viability of its natural communities (e.g., $400/acre for managed grazing and $10,000/acre for housing construction). Even if the party paying the mitigation fee is the owner of the grazing livestock or the developer of the housing units, the ultimate incidence of the mitigation fee is very likely to be on the land owner. This occurs because the market price for the grazing or housing is set in an area larger than that encompassed by the mitigation fee and will not usually be increased by the imposition of the fee. In this circumstance, the cattle owner or developer can only afford to graze their cattle or build their project if the price they pay to the landowner is reduced sufficiently to maintain their anticipated profits.

While the national and state governments own roughly half the land mass of California, they cannot protect sensitive natural communities nor threatened and endangered species without supportive actions from private property owners, proponents of development projects and local and regional governments. The necessity of such collaboration is one of the reasons species protection policy making is moving from rule application focused on single species to ecosystem conservation planning.

It is widely agreed that the current approach provides inadequate positive incentives for such collaboration and, indeed, strong incentives to avoid involvement with endangered species processes. The emerging "ecosystem conservation" approach makes positive incentives available (in the form of increased certainty regarding allowable land uses) but retains some incentives to avoid participation, such being outside the boundaries of designated managed areas or avoiding or delaying bearing costs of participation. The integrated planning and learning systems approaches can make more positive incentives

available (e.g., broader funding in addition to increased certainty) and limit dysfunctional incentives (e.g., being outside the boundaries of the policy review will be impossible, although disputes about designation of boundaries of sensitive areas subject to more intensive management will still occur).

Choices for General Purpose Revenues

Sources of general purpose revenues are scarce in California and likely to remain so for the foreseeable future. The State and local governments are strapped for funds and citizens show little evidence of a desire to support increases in current taxes. In this context of fiscal limits, non-traditional strategies are the most promising way to obtain revenues. While Missouri funds all its Fish and Game services, including endangered species activities and wardens, from a dedicated portion of the sales tax, that is unlikely to occur in California.

In California, dedicated taxes approved by citizens are the most likely way to provide increased general source revenues for species protection. The Planning and Conservation League provides two thorough, recent reviews of mechanisms by which revenues could be raised for parks and conservation.[3] PCL argues for reducing the votes required for approval of general obligation bonds from the current two-thirds to a simple majority and for a real estate transfer tax sufficient to raise $200 million annually for preservation of natural environments and for a housing trust fund. These two actions, as well as others analyzed by PCL (oil and mineral severance taxes, utility user taxes, etc.) are commonly considered by many groups interested in increasing public expenditures for their purposes. None have yet been enacted at the state level. However, it is possible that an initiative to impose such a tax could be approved by voters if attached to a popular purpose.

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3. The Planning and Conservation League Foundation. *The Twenty-First Century Study: Preserving California's Natural and Human Environment* (Sacramento, 1991) and *Funding for Land Protection: A California Primer* (Sacramento, 1993)

In addition to the measures examined by PCL, the sources of revenues used by other states to fund preservation were reviewed for possible revenue raising avenues for California. Vickerman provides a state by state listing, including amounts generated.[4] However, most states rely on the same sources as does California, with the notable exception being Missouri's dedicated sales tax. An additional source possibly usable in California is from Florida, which raises $2 million annually with a $4 license plate fee for new residents.

Choices for Site-Specific Financing

As seen above, the opportunities to fund species protection from fees, charges and assessments are limited. However, some such opportunities do exist. Rather than being limited to just a straight government imposed fee or similar action, however, it is preferable to initiate one or more experiments in which land owners pay when they harm species or habitats and receive compensation when they conserve species or habitats. Several ideas for such approaches have been suggested specifically for endangered species and others have been suggested for analogous areas, such as air quality. For example, an approach entitled the "Habitat Transaction Method" has been developed by Olson and Moser.[5]

Providing monetary incentives for conservation is a high priority, as is providing more predictable ways in which compensation will be allowed in partial or full mitigation of a negative impact on an important habitat. Every effort should be made to develop ideas of this sort further and to begin experimenting with alternative approaches. If the dynamics are similar to those in the air quality policy arena, it will take some time for various parties interested in endangered species to become comfortable with such an approach. Also judging by the air quality experience, the ESA and CESA should be amended to explicitly

4. Op. cit., pages 93-96.
5. Todd G. Olson and Dennis M. Moser. *The Habitat Transaction Method of Conservation Planning, Land Acquisition, and Funding.* Costa Mesa, 1992.

allow market-based, incentive approaches to meeting the Acts' goals and to set up processes for these practices to be implemented.

Figure 3 offers some suggestions for "Strategies to Improve Financing and Incentives for Endangered Species Protection."

An Insurance Strategy

Quite different in concept, and offered nowhere in the literature reviewed for this report, would be to approach endangered species as an insurance problem. Consider the situation of a land owner whose land is discovered to encompass an important habitat of a threatened or endangered species. Under the ESA and CESA, land owners' abilities to use the land may be impaired and they have a legal obligation to mitigate impacts of disturbance of the habitat, including such possibilities as impact fees or mitigation agreements to acquire additional habitat. In short, they may experience unanticipated costs of two kinds: impaired use of the land and financial obligations for habitat conservation and management. Insurance policies can be written to compensate for unexpected costs, with premiums based on expected costs and, eventually, the cost experience. It is also important to recognize that conservation of an important ecosystem may increase the value of lands in the area, so unanticipated benefits may occur also.

The insurance concept is embryonic at this time, but bears exploration. Any approach should operate as an incentive to landowners to conserve multi-species ecosystems before any listing process begins.

Figure 4 suggests rough elements of an insurance approach. Among the issues to be analyzed as the approach is considered are the following, assuming that the risk to be insured against are unanticipated costs caused by decisions of DFG or FWS limiting use of a parcel or a part thereof in a way that diminishes value (when land is purchased for species protection, the seller receives market value) and/or imposing requirements for a mitigation plan to conserve habitat:

- determine basic strategy of who should pay insurance, in what form, etc. (one option is a policy analogous to a rider on existing property title insurance covering all property in the state and a second policy required of those within areas of special concern re habitat protection, perhaps analogous to current flood plain insurance programs)
- establish tests for unanticipated costs, building on what is already available in land use law and in the ESA (e.g., "critical habitat" designation) and in practices under CESA (but recognizing that the more stringent the test for harm is, the more incentive land owners have to remain outside the ES process)
- make an initial estimate of total costs of the exposed risk, and of a reserve level sufficient to reasonably insure against the risks anticipated
- determine if the total costs could appropriately include costs of analyzing the habitat for its ecosystem value (could the analog be the costs of land surveying to determine parcel boundaries?)
- allocate the total costs among those who may bear them: land owners, in the form of a deductible before any coverage becomes available; insurance companies, in return for premiums charged; tax payers (if desired) in the form of subsidizing premiums or absorbing costs above a cap of losses per acre [for example, costs could be divided as follows: (a) up to $100/acre for the total parcel acreage as a deductible to the land owner, (b) from $100 to $40,000/acre for total parcel acreage as an insurable amount, and (c) anything above that amount paid by taxpayers (a source of money for this reserve would need to be designated)]
- establish legal parameters and administrative processes for making a claim (e.g., formal ruling regarding use of habitat by DFG or FWS, exhaust administrative remedies of any appeals, exhaust less costly mitigation measures, agree to HCP or other management plan acceptable to DFG or FWS or convey land to them in fee for management; place time limits on these processes)
- establish processes for reviewing experience with insurance program and adjusting coverage requirements, premiums, administrative processes, etc. and updating program to maintain its integrity and viability

Insurance is a complex area of law, practice and politics. Explorations of this idea will have to be systematic and persistent if its merits are to be fully evaluated.

Figure 3. Strategies to Improve Financing and Incentives for Endangered Species Protection

Possible Strategy	*Current Context*	*Implementation Issues*	*Transition Steps*
Recognize differences in financing requirements at planning and recovery stages, which require general source funds, vs. financing possibilities where positive or negative impacts can be linked to specific human activities, where financing can be tied to those activities. Develop positive incentives for preservation of important ecosystems and of species, ideally available to land owners and to local governments.	Current public funding for endangered species activities is inadequate and too linked to fees derived from specific projects, which leads to under investment in front end planning and in recovery and also encourages hostility between project owners and DFG. Initiative on endangered species funding is passing out of policy makers' hands.. Legislature and LAO do not understand either the critical need for NCCPs or that the planning cannot be funded by specific projects. PCL seeking to launch initiative which has some ES protection provisions and habitat acquisition, but no money for needed scientific work or planning.	The options for general source funding are limited and hotly contested. In the current environment, an initiative tying a specific tax to endangered species protection is more likely to succeed than is a legislatively enacted measure. A possible strategy for such a measure would be a small levy imposed on a large base, supported by a coalition of environmental groups seeking species and ecosystem conservation and land owners and businesses supportive of a predictable, equitable and effective system.	As transition steps, the DFG can explore: • setting up experiments in specific action linked incentive programs, including both the Habitat Transaction Charge and Transfer of Development Rights approaches that have been proposed • exploring bringing endangered species and ecosystem conservation policy goals into transportation related planning now underway, arguing that addressing these issues early saves greater costs later (especially timely now with the arrival of ISTEA moneys and efforts to advance integrated regional plans)

Figure 4. An Insurance Strategy

Possible Strategy	*Current Context*	*Implementation Issues*	*Transition Steps*
Triggering endangered species sanctions currently often results in a "loss" for the affected party, in the diminished value of land or project or in time delays and increased analysis costs. The risk of such an occurrence could be insured against. One model is available in flood insurance, required of those who build in flood plains. In a second case, the "ES insurance" premium could be charged to all, perhaps as a surcharge to title insurance. The proceeds could be used to fund ES planning and to offset losses of those harmed by ES rulings and to reward those who conserve valued habitats.	Remedies available to those whose property is worth less because of the need to protect habitat are now quite limited. Suits alleging a "taking" are expensive to undertake and the results uncertain. On the other hand, there are few monetary rewards available for anyone who conserves important habitat.	Several steps are required to pursue this strategy: • establishing decision rules for compensation for losses (e.g., all other remedies, such as denser development on non-critical portions of the parcel, exhausted) • determining the needed level of reserves against losses and of funding for general ecosystem conservation planning and recovery • choosing a funding vehicle (such as a surcharge on title insurance or fully incorporating within title insurance)	A major departure from current practices, so the most important transition steps are analytical and coalition building.

III. Achieving Greater Integration with Local Governments and Land Use Processes

The primary strategy suggested here to achieve greater integration with local governments is to make conservation of species meaningful and beneficial to them. The most critical places to do this are in the public finances of local governments and in land use policy processes, which are greatly influenced by financial issues. As long as local governments' general revenue sources are predominantly tied to property taxes and to sales taxes that return to the point of sale they will have incentives to allow "development" of land to increase its value and particularly to seek land uses that generate both sales and property taxes. This bias toward development is strengthened when limited alternatives for financing infrastructure such as water systems or roads encourages bargaining with developers for improvements which benefit the larger community.

The State's decisions regarding local government finances are a very powerful factor in shaping the fiscal constraints and incentives facing local governments. Transferring property taxes from cities, counties and special districts to schools, as was done last year and is proposed again this year, puts them under greater fiscal pressure and tilts their decision calculus further toward sales tax generating land uses. Less visibly, the property tax allocation formula adopted in AB 8 (1979) greatly advantages San Francisco and severely disadvantages San Diego and Orange Counties, among others. Those fast-growing counties then have to scramble even harder to generate revenues, encouraging them to welcome development with consequent impacts on habitat.

Land use policy making processes are complex and can not be described here. However, the critical point for species protection policy makers to understand is that several ways exist to influence local land use decisions. The importance of underlying finance of local governments has just been noted. Additionally, the planning and decision parameters under which local governments work can be modified in several ways. Greater lever-

age in meeting both State policy goals and local government interests can sometimes be achieved if access to financing is integrated into the new planning processes. Only the major elements of these possibilities are explored here; the details change frequently in this arena as financing systems change, new approaches to planning and decision making unfold, the real changes in California's demography and economics shape alternatives available, and local governments develop adaptive responses.

Consider first a straight forward State-dominated planning approach. Efforts could be made to require attention to species conservation through a required element of the General Plan or by amplifying the Open Space element specifications. However, such an effort would probably be resisted by local governments and might well be of very limited effectiveness, something like the current requirements to take a fair share of low income housing, for example.

A more promising variant would be to link extension of major infrastructure projects which have the likely impact of increasing habitat losses to payment for the associated costs. In short, more of the total societal costs of such projects would be included in their original financing. For example, access to imported water often spurs development in California with resultant habitat losses. Including costs to analyze ecosystems and plan for their conservation in initial water project planning budgets and then to impose a water use fee to finance the resulting conservation efforts would do a great deal to internalize these costs into the new development and spead them over time.

Also promising, when money is available, is the approach behind "congestion management planning," which cities and counties must undertake in order to receive allocations of funds under State transportation programs. Urban counties are required to develop congestion management plans that seek to improve the relationship among land use, transportation and air quality; in smaller counties, CalTrans undertakes similar planning. Access to increased transportation funding ($16.5 billion over ten years) made possible by

passage of Propositions 108, 111 and 116 in 1990 is contingent upon meeting the requirements for congestion management planning.

Interestingly for possible parallels to endangered species policies, some environmental organizations participated in the deliberations leading to the Legislature placing Proposition 111 and 108 on the ballot. They sought increased attention to mass transit, to rail systems and to other alternatives to single occupant automobile use and to tighten requirements that development pay for air quality mitigation measures. In developing their congestion management plans, some agencies in both Southern California and the San Francisco Bay Area also pursued use of market-based and incentive approaches to Transportation Demand Management.

A fourth approach, which may be promising because of efforts to make regional planning more integrative, is to seek to participate effectively in the integrated regional and subregional planning efforts now underway in much of the state. Stimulated in part by arrival of Intermodal Surface Transportation Efficiency Act moneys (approximately $3 billion authorized over seven years) to Metropolitan Planning Organizations (e.g., SCAG, SANDAG and MTC, not ABAG), and in part by growing frustration with the fragmented system of requirements imposed on them by the national and state governments, plus such single focus regional entities as Air Quality Management Districts, city and county officials are seeking new ways to collaborate effectively.

The current status of attention to conservation of species and habitats apparently varies widely among COGs. SANDAG's Geographical Information System (GIS) was used to prepare digitized maps for the City of Carlsbad's "Biological Resources and Habitat Guide," in preparation of its Habitat Management Plan. This effort was initiated before the NCCP became law but is now incorporated within the NCCP.

Improving the "transition" processes between developing information about ecosystems and finalizing a conservation management plan, whatever form that may take, is a critical necessity to make ecosystem conservation approaches workable. The difficulties

are well-illustrated in efforts to develop the Austin Regional Habitat Conservation Plan. Initiated in 1988, the process came "unraveled" in 1989 as maps showed the important habitat to include much land around Austin, raising fears of negative economic impacts, and substantial development fees were proposed as the mechanism to fund conservation. The process came close to collapse in April 1990, when FWS announced emergency listing of the golden-cheeked warbler as endangered. Large land-owners, corporations and local governments shortly began bailing out of the ARHCP, striking separate accommodations with FWS using section 10 and section 7 processes.[6]

This report identifies no specific strategies to address the transition problem. Instead, it relies on improving integration with the ongoing policy processes of local governments and of improving the financing of ecosystem conservation, especially in providing financial incentives to private parties. If these actions cannot be undertaken, or prove inadequate to address transition difficulties, they will need to be addressed separately.

Those who seek to advance ecosystem conservation have much work to do to integrate their policy goals with the activities of local and regional governments. But they must somehow succeed if their goals are to become more influential in the critical land use policy decisions made by these governments. Figure 5 provides suggested steps along these lines.

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6. J. B. Ruhl. "Regional Habitat Conservation Planning Under the Endangered Species Act: Pushing The Legal and Practical Limitations of Species Protection." *Southwestern Law Journal*, V. 44, 1991, 1393-1425.

Figure 5. Strategies to Work with Local and Regional Governments

Possible Strategy	*Current Context*	*Implementation Issues*	*Transition Steps*
Integrate endangered species policies into ongoing local and regional government policy making, especially in land use and transportation planning by the following DFG activities: • adopting performance standards re ecosystem conservation and species protection • facilitating the mapping of resources in biogeographic regions of the State, starting with those most likely to be impacted in near term • provide financial incentives for local and regional governments to engage endangered species policy making • provide financial incentives for private parties to conserve ecosystems	Endangered species policies developed and implemented largely apart from local and regional governments with most common points of connection being CEQA and Habitat Conservation Plans.	Requires integrating ES into ongoing policy making that affects ecosystem conservation and species, of which the most important are land use and transportation. Focus on the regional level, working with Councils of Governments (e.g., SANDAG, SCAG or ABAG) where ever possible to get beyond city and county boundaries and to link into the most integrated and future oriented planning and policy making now available.	Deepen linkages between SANDAG and SCAG and the NCCP-CSS processes. Assign DFG personnel as regular liaison to existing regional and subregional planning processes (this is a critical time in SCAG area, developing first iteration of a Regional Comprehensive Plan).

IV. Improving Implementation of the Endangered Species Acts

Regardless of the strategy used to protect endangered species, a number of factors arise which affect the success of the chosen strategy. This section begins with a general discussion of the factors affecting success in implementing complex policies and then turns to specific suggestions for strategies to improve information upon which to base policy making and implementation and to reduce uncertainty. Progress in either, or both of these areas, would improve implementation of the Acts and improve relationships with local governments and private parties. To conclude, some of the changes likely to occur in DFG as policy strategies evolve are examined. If an ecosystem approach to habitat and species protection becomes dominant, for example, DFG will presumably need to deploy more of its personnel to support activities in whatever regions are established and to ensure that it can bring needed expertise to bear in a timely fashion. This discussion is necessarily general, but still instructive.

Successful Policy Implementation Requires All the Pieces Working Together

The heading above appears simple. It is simple to say, but hard to accomplish. Social scientists refer to this need to "get the critical parts working together" as coalignment, and the term will be used here as a shorthand expression of this simple idea. "Coalignment" means that the parts fit together in supportive and reinforcing ways to achieve the policy goal. An example of lack of coalignment would be attempting to "win" the war in Vietnam without either strong political support in the United States or an effective strategy by which to drive North Vietnamese troops out of the south.

Success in implementing complex policies requires coalignment in five distinct areas:

- societal values
- political system
- policy strategy
- organizational design and culture
- individual skills and behaviors

When seeking to improve policy performance, these latter three, policy strategy, organizational design and culture and individual skills and behaviors are more easily changed than are societal values or political systems. As a consequence, changes in one or more of those three is the common remedy when lack of coalignment hampers achieving a policy goal. The five dimensions are briefly explained here:

1. societal values

Societal values are the closely held and cherished "guideposts" that bind a social collectivity together. Values are relatively stable over time, although they do change. In the recent past, for example, societal values have changed to more positively support protection of endangered species.

Six basic societal values which are relevant to a wide range of policy areas, including endangered species protection, are:

- *access* (of citizens and affected parties to decision processes)
- *accountability* (of those who develop and implement policies to citizens, and of individuals and organizations for their actions)
- *effectiveness* (in achieving a policy goal)
- *efficiency* (economic efficiency is the most important, which is using society's resources to maximum benefit)
- *equity* (ensuring that benefits and costs are not disproportionately allocated to some groups or individuals)
- *adaptability* (capacity to change as values and circumstances change)

2. political system

The DFG political environment includes actors with formal roles (e.g., Governor, Legislature, Commission, Resources Agency) and actors without formal roles but varying degrees of influence (e.g., affected land owners, advocacy groups, users of habitats). Differences in values and objectives are inescapable in the political system.

The strategy for success in species protection cannot be consensus among all actors. However, support by most actors with formal power and at least acquiescence from all is required. Among actors without formal power, support from significant sectors is important. Particularly important over the long term is acceptance of the policies and of

DFG's role by the major affected groups in society or they will toil tirelessly for change in the policies or the weakening of DFG.

Without specifying how, it is clear that DFG and others committed to ecosystem conservation must devote energy and resources to making the case for these values into policy debates and popular discussion. Species conservation is a legitimated societal goal, but it must compete for attention and effectiveness with other societal goals. Keeping this goal visible to society at large and to policy makers should be a high priority.

3. policy strategy

Any goal can be pursued by alternative policy strategies. Protection of endangered species can be pursued with strategies that rely on rule enforcement and public ownership of critical habitats. Alternatively, incentives may be provided for private owners of critical habitats to undertake actions to protect endangered species. Obviously, elements of policy strategies can be combined. A basic policy strategy of providing incentives for private owner habitat and species protection could be complemented by a program of public ownership under certain conditions, all undertaken in the context of regulations.

Choice of policy strategy is THE MOST critical decision made in pursuing any policy. Policy strategy greatly influences likely success in achieving the policy goal, greatly influences political relationships, determines the organizational competencies needed for implementation and determines the time sequencing of implementation processes.

4. organizational design and culture

Organizations can group their employees in several ways, including by task, by skills, by location, or by funding source, among others. Along a different dimension, they may be more or less hierarchical. Organizational culture includes the values held by members of the organization, particularly concerning their mission and norms in such important areas as decision making and risk taking.

5. individual skills and behaviors

The policy strategy chosen greatly influences individual skills and behaviors within the organization implementing a policy. If the policy strategy chosen to protect endangered species emphasizes rule making based on technical analyses, for example, the implementing organization will need members skilled in technical analyses, rule making, and rule enforcement.

Reducing Uncertainty

Uncertainty imposes large costs on society, often increasing conflict and sometimes creating paralysis. In the endangered species context, for example, uncertainty about the consequences of inclusion within the boundaries of a critical habitat area of a listed species is one factor leading to resistance to such designations. How adequate is the science underlying the decision? What are the costs? If I am to be compensated, by whom? at what level? when? If I choose to contest this decision, how? with what likelihood of success? in what arena can a final decision be reached?

One obstacle to addressing these questions is different perceptions of the risks associated and how to compensate for those risks. Conservationists fear catastrophic loses (e.g., extinction) and believe they have modest understanding of the underlying dynamics of ecosystems, which as living systems, change. They prefer to compensate for risk by protecting larger ecosystems and remain fearful. Land use planners, developers, architects and structural engineers also fear catastrophic failure (e.g., the collapsing freeway) but they are also concerned with market and financial risks. They believe their understanding of the underlying dynamics is reasonably strong and that they have well-accepted ways of estimating and managing risk, making them more comfortable with risks.

To make ecological conservation successful, it should somehow fit into the pattern of risk management already in place for land use. That process has developed different approaches to risk, reflecting the types of risks encountered. These include:

- routinized, forward-looking, comprehensive devices (e.g., land use plans or building codes),
- processes for application to specific cases (e.g., permits and inspections), and
- capacity to tailor general rules to specific cases (e.g., use of expertise such as structural engineering or geological studies or public-private agreements).

In contrast, most of the current processes in endangered species policy making and implementation are case specific. Several factors contribute to this difference. The first, and most important, is the fundamental difference in perceptions of risks involved. Biologists, botanists and others who study species consider their understanding of the dynamics of species survival to be permanently imperfect. Second, extinction is forever, while most risks encountered in the land use process can be recovered from, although the financial and sometimes human costs can be high. Additionally, the Endangered Species Acts have encouraged a reactive approach to species conservation, encouraging little attention to development of anticipatory strategies by which species and habitats could be conserved. As a result, the organizations charged with implementation of the Acts have emphasized reactive, case specific approaches.

Regardless of the policy strategy being used, it appears that the endangered species protection process would be improved by reduced uncertainties. Figure 6 offers some suggestions in to this end.

Figure 6. Strategies to Reduce Uncertainty

Possible Strategy

Uncertainty exacts a high cost from society, commonly increasing conflict about what to do and increasing costs of undertaking any action due to delays in decisions, reworking errors and guarding against mistakes.

Uncertainty can be reduced by any of the following:

- clearly stated policy goals, including performance standards whenever possible
- reduce the arenas for decision making
- clarify the standards for decision making
- provide "safe harbors" for those who rely on public policy, protecting them from negative regulatory actions or legal judgments
- shorten and make more definite the time frames within which decisions are made
- delineate what is acceptable "evidence" and "expertise"
- socialize the risks of errors made in good faith reliance on best available knowledge, spreading their costs widely

Current Context

Uncertainty is a large obstacle to successful implementation of the ESA and CESA now and to their improvement. It includes:

- uncertainty regarding the extent of threats to species
- uncertainty as to the efficacy of the Acts; do they sufficiently protect species?
- uncertainty as to when a decision is made regarding the status of a species or land area
- uncertainty as to the allocation of costs for implementing endangered species laws
- uncertainty as to the options available for change

Implementation Issues

A thorough reworking of ES policies would be required to make progress on the list of strategies two columns to the left. It provides a template for action, however. Among the first priorities would be:

- setting clear policy goals and performance standards
- reducing the number of decision arenas, such as through integration of habitat and species protection planning with regional land use planning processes and clearer delineation of national and state roles

Transition Steps

Among the transition steps that can be taken are:

- establishing procedures and tools for acquiring, validating, releasing and updating scientific information
- clarifying statements of standards for adequate studies of species and habitats for CEQA process reviews
- facilitating inclusion of habitat/species protection goals in the long-term, integrative regional planning now undertaken by Councils of Governments

Improving and Systematizing Information for Policy Making

Improving information can be considered a special case of reducing uncertainty but it is so critical that it warrants separate attention. The suggestions made in Figure 7 focus on two specific issues: a formal process for acquiring and using "scientific" knowledge and a regularized process for learning about successes and weaknesses in efforts to conserve species and habitats.

Establishing a formal process for acquiring and using scientific knowledge is of the highest priority. It would make accomplishing ESA and CESA goals more probable, ease difficulties in interacting with affected parties and should both improve the morale of DFG personnel and improve the quality of their decisions. Experience in areas such as building codes should be examined for approaches here. For example, one feature of those systems of making "scientific" judgments appears to be ability to adjust standards for uncertainty of knowledge and criticality of function and then to refine the standards over time. Thus, a standard for a new material may be set at a level above the failure ratio of a proven material, especially if the use is critical, and then adjusted up or down as experience accumulates.

Consider briefly the ways in which building codes are developed and used, features of which could be emulated in endangered species work. The Uniform Building Code (and related codes, such as the Uniform Plumbing Code or National Electrical Code) are developed by private associations of the professions involved in the trades related to each area. The codes are revised, using public hearings to review suggested revisions, primarily developed by those in the related professions, roughly every three years. The codes gain legal authority as they are adopted by local cities and counties with legal authority over the matters the cover. While many jurisdictions adopt the codes without revision, some make locally desired revisions, usually reflecting the use of a locally available building material or the political strength of one of the involved trades (e.g., requiring copper or cast iron plumbing where the national code allows PVC, thus advantaging professional plumbers vs.

do it your-selfers). Once adopted locally, the codes become the standards against which private parties and permitting authorities alike can judge the adequacy of work. Projects built to satisfy the applicable codes can receive certificates of occupancy, be connected to utilities, and access mortgage financing, for example. The codes also provide a sizable measure of safe harbor to contractors, who can defend themselves against charges of poor work or liability claims by meeting code requirements.

In the case of Energy Conservation Standards, the California Energy Commission has had the responsibility of developing building and appliance energy efficiency standards under the Warren-Alquist Act of 1974. These state-wide standards have evolved over time, including through legislative battles between the Energy Commission and the construction industry, moving from a prescriptive to a performance standards approach. This movement to performance standards has been eased by experience gained over the years and by development of micro computer-based software which allows analysis of how many different combinations of measures can meet the overall energy efficiency goals of the process. Education and compliance efforts have also emerged as important components of the drive for improved energy efficiency.

Figure 7. Strategies to Improve Information for Policy Making

Possible Strategy	*Current Context*	*Implementation Issues*	*Transition Steps*
Establish two processes to improve information available to policy makers: (a) a formal process for acquiring, validating, legitimating, disseminating and updating scientific information about species and ecosystem conservation, and (b) a structured process for learning about successes and failures in policy implementation and incorporation of lessons into subsequent policies and activities	Currently, the scientific basis of policies is often attacked and appears open to challenge politically, legally and in public perception (e.g., mountain lions). Information about successes and failures of policies is largely anecdotal and links to policy makers are weak. Private parties and local governments seeking to comply with endangered species laws (e.g., in CEQA) report being frustrated by lack of clear standards for studies.	The criteria for the improving information include: • scientific integrity, • participation by non-public employees, • timeliness, • public legitimation, • systems for release and use, • regular updates, and • "safe harbor" for individuals, businesses and governments that rely on the information Successful analogs may be found in the following: • building codes • Title 24 Energy Efficiency Standards	Expand on the NCCP-CSS Scientific Review Panel concept to establish a "policy implementation review panel." Among the apparent lessons to be learned already from the NCCP process are these: • insufficient funds are available for front end planning, • legislators and their staff focused too much on project linked funding, • efforts to force participation in the NCCP by imposing sanctions on those who did not participate failed in the Legislature • those with an immediate economic stake participated more fully (e.g., Fieldstone and MWD) • Interior was willing to collaborate via the manner in which it listed the gnatcatcher

Implications for DFG

Figure 8 analyzes the coalignment of current and alternative approaches to endangered species protection along the five dimensions suggested above, contrasting the current system with the alternatives identified above and analyzed in Figure 1. It provides, at a general level, information about changes required of DFG as endangered species policy strategies evolve.

The changes required to successfully move from the current situation to an ecosystem conservation or to a learning system approach are very large. Consider just the changes required to move to the ecosystem conservation policy strategy:

- the dominant strategy changes from protecting species to conserving ecosystems, presumably requiring changed legal authority
- DFG's organizational structure would need to more closely reflect the ecosystems it was trying to conserve; for example, regular linkages would be needed with regional and local governments, almost certainly more extensive than the single liaison person suggested for each county
- economic efficiency could be improved, through reducing transaction costs required to protect an entire ecosystem as opposed to a parcel by parcel approach and greater protection of species should result, both results of considerable value to society
- the working relationships to develop and implement the approach would change on a case by case basis and be reflected in MOUs

Consider also how much more would change to move to a learning systems approach:

- the critical issue is now the design of processes that achieve species and habitat protection goals through the actions of others; analysis and education become more important
- in cases of conflict, revisiting the planning process, negotiation and mediation are the preferred alternatives rather than rule enforcement (reserved for cases of conscious, flagrant actions contrary to the policies)
- the organizational culture becomes more process oriented; "science" is valued, but so too is devising ways to support local government officials incorporating ecosystem conservation into their local plans
- in order to achieve its goals more collaboratively, DFG would have more regularized interactions with outside individuals and groups (e.g., technical panels to develop protocols for managing different types of ecosystems, ad hoc teams to address a new problem, and ecosystem-specific monitoring teams), thus becoming more accessible to others

- development of these collaborative processes and of performance standards would also probably make all participants in the process more accountable for their actions

The beginning observation of this analysis was that endangered species policies evolve as learning occurs. This learning is visible to those in the Department of Fish and Game, as it is to those outside the Department who are committed to species conservation.

Equally visible are the challenges ahead. Those challenges are unlikely to be met with the responses learned a decade ago, when California was pulling its various conservation efforts together into the California Endangered Species Act. Change is already accelerating and it is likely to accelerate more as the national Endangered Species Act is re authorized and experience accumulates with the NCCP and other innovations.

The premise underlying this analysis is that by envisioning a future where responsibility for ecosystem conservation is more widely shared, and by designing strategies by which that vision might be realized, that the Department of Fish and Game can create the opportunity in which greater success is possible. Rarely is opportunity given, especially when societal values conflict, as they do over endangered species. Learning how to create this opportunity, working jointly with others to better conserve our natural heritage, is a challenge worth engaging.

Figure 8. Coalignment of Current and Possible Approaches Given Alternative Design Elements

	current approach	possible approaches		
	# 2. CESA	# 3. ecosystem planning	# 4. integrated plans	# 5. learning systems
Design elements:				
Policy Strategies				
dominant strategy	protect species	protect ecosystem	develop static plan	develop plan process
secondary strategy	protect habitat	-	adjust by variance	analysis & education
conflict resolution by	rule enforcement	rule enforcement	rule enforcement	negotiation/mediation
relate to private sector	adversarial	adversarial	adversarial	integrated
Organization Design & Culture				
structure units by	task; geography; $	geography; skill	geography; skill	geography; skill
DFG culture	technical + facilitation	technical + facilitation	technical + planning	technical + process
Individual Skills & Behaviors				
technical skills needed	sciences\bargaining	sciences\bargaining	sciences; planning	sciences; planning
common behaviors	research; apply rules	research; apply rules	research; plan	negotiation; mediation
Coalingment with:				
Societal Values				
access	low	low	moderate	moderate/high
accountability	moderate	moderate	moderate/high	high
effectiveness	moderate	moderate	moderate	high/moderate
efficiency (economic)	low/moderate	moderate	moderate	moderate/high
equity	low	depends on design	depends on design	depends on design
adaptability	low	low	low	high
Political System				
actors involved:				
national govt agencies	US F & WS	US F & WS	several	several
CA state agencies	few others	depends on MOUs	many agencies	many agencies
local governments	some	required	required	required
Councils of Governments	none ?	depends on MOUs	required	required
major non-govtal actors	advocacy groups	depends on MOUs	depends on design	integrated
performance:				
conflict potential	high	high	high/moderate	moderate
consensus potential	low	moderate	moderate	high/moderate
capacity to act	limited	moderate	moderate	high

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The Endangered Species Acts Implementation in California

Appendix A: Five Approaches to Protection of Endangered Species

1. Historical approach:

- protect species through listing process
- prohibitions against taking
- strategies chosen to protect species are dependent on source of threat, with most emerging in changed land uses (emphasized here) but important cases arise from other causes and are not addressable in habitat related land use choices (e.g., impact of DDT on the Brown Pelican)
- enforcement usually triggered by proposal of projects
- mitigation limited to project area, with costs borne (mostly) by project proponent
- mitigation often relies heavily upon public ownership
- ESA process is isolated and apart from other public policy processes

dominant metaphor: "protect individual species threatened by individual projects"

2. Current approach continues and augments historical approach with:

- limited multi-species, regional planning (e.g., Riverside County plan)
- explores mitigation banks, including third party ownership with DFG oversight

dominant metaphor: "move up in scope, to more species and larger areas, earlier in time"

3. Emerging approach is to plan natural community regions:

- plan proactively to protect large areas, especially those with rich diversity of life types (e.g., NCCP)
- emphasize natural communities and corridors
- planning regions defined by life types (i.e., biogeography)
- develop strategies other than public ownership to achieve goals

dominant metaphor: "preserving biodiversity through protecting natural communities and corridors"

4. "Strategic Growth" - Governor Wilson's initiative

- develop an "Integrated State Plan," including eight elements: capital improvements, economic and employment development, resources protection and conservation, water, environmental protection, energy, housing, and transportation.
- strengthened COGs and associated subregional structures, with significant regional planning roles and creation of regional mitigation banks

- replacing current local government "general" plans with local "comprehensive" plans, congruent with regional (COG) plans and, thereby, with the Integrated State Plan
- CEQA reforms, emphasizing Master Environmental Impact Reports tied to local comprehensive plans, intended to be anticipatory and broad rather than reactive and project specific
- single-issue permits/permit streamlining, intended to reduce the number of required permits and concentrate actual permit administration at the local level

dominant metaphor: "integrate planning, state, region, and local"

5. Strategic Choices through Learning Systems

- premises:
  - success in complex arenas requires learning strategies, defined as designs which expect that knowledge of causes and/or techniques of action is inadequate to achieve desired outcomes, errors will be made, preferences will change, new technologies will emerge, and that success will occur unexpectedly, so adaptation is anticipated and included in the policy design
  - public policies and government contribute modestly to most societal processes; government can achieve virtually no goal through its own direct actions and must always rely on the supportive actions of individuals and businesses and other organizations to achieve society's goals
- given these premises, public policies should emphasize:
  - developing policies with specific outcome/performance measures
  - designing and legitimating stable decision arenas in which relevant actors can interact and make needed public policy decisions over time (e.g., as is now possible in cities and counties)
  - empowering communities and individuals to take responsibility for their futures and holding them accountable for their actions
  - "nurturing and managing" the social learning process, so that the best information available on the consequences of choices is available to decision makers

- structural and policy changes to coordinate ES with overall land use planning and achieve better cooperation with local governments:
  - adopt the Wilson proposal for an "Integrated State Plan," limiting the Plan to setting performance specific state policies (e.g., to improve energy efficiency in the California economy by 2 percent annually; or, relevant to endangered species, to maintain 1993 levels of ecosystem diversity, to stabilize the rate of new listings of threatened and/or endangered species within five years and to thereafter succeed in rebuilding populations sufficient to "delist" 2 percent of the listed species annually)
  - simplify California government by establishing a set of stable, uniform regional governance structures based on existing (and created) COGs; current state agency regions would be modified to

fit these regions and issues which spill across regional boundaries would be handled by inter region MOUs; sub regions would be necessary in larger regions
- create a regional governance and policy making body limited to planning and conflict resolution only, with no service delivery, taxing, permit issuance or rule enforcement authority; this body would develop a regional comprehensive plan and manage conflict resolution processes as the plan is developed and implemented
- reserve to local governments and to operating state agencies all service delivery and rule enforcement activities, requiring that they be congruent with an adopted regional plan (and thereby with the Integrated State Plan)
- approach planning and policy making as an iterative, learning process (as opposed to development of static, permanent decisions), including using the ongoing planning process and such conflict resolution processes as mediation to resolve disputes rather than regulatory rule enforcement and legal actions (except for willful misconduct of a serious nature)
- maintain the legal sanctions of listing species as threatened or endangered and adopting mitigation plans as a constraint upon policy makers to ensure conformity with the law; the goal of these revised processes is to avoid invoking the ES process

- address funding issues through incentive/financing changes:
  - commit a fixed percentage (two thirds ?) of the public funds available to pursue any state policy goal as payments for performance in achieving that goal, whether achieved by local governments, private businesses, non-profits or whatever
  - use pricing strategies wherever possible in preference to either simple regulations or to direct provision of publicly funded, unpriced goods and services

dominant metaphor: "learn and achieve by working together, rather than in fragmented isolation"

BIBLIOGRAPHY

Jack Adler, "A Growth Market for Forests," *The Sacramento Bee*, April 17, 1993, p. B7.

Jack Anderson and Dale Van Atta, "U.S. Drags Feet on Protecting Bear," *The Washington Post*, November 7, 1991, p. B23.

Peter Asmus, "CEC Approves Nation's Most Stringent Building Efficiency Standards," *California Energy Markets*, San Francisco, California, May 17, 1991 p. 9.

Associated Press, "Spotted Owl Called Canary in a Coal Mine for Ancient Forests," *The Sacramento Bee*, April 4, 1993, p. A8.

Assembly Office of Research, *California 2000: Biological Ghettos; Major Issues in Land Conservation*, July 1991.

Associated Press, "Owls Cleared of Blame for High Timber Prices," *The Sacramento Bee*, March 12, 1993.

Eric Bailey, "Prospect of Wren Control Doesn't Faze Builders," *Los Angeles Times*, January 7, 1991, p. A3.

Donald Barry, Leslie Harroun and Christine Halvorson, *For Conserving Listed Species, Talk is Cheaper Than We Think: The Consultation Process Under the Endangered Species Act,* World Wildlife Fund, Washington, D.C. February 1992.

Bay Area Air Quality Management District, *Bay Area '91 Clean Air Plan*, Volume II, Appendix F, Transportation Control Measure Descriptions, San Francisco, California, October 30, 1991.

Michael J. Bean, *The Evolution of National Wildlife Law*, Environmental Defense Fund, Praeger Special Studies, New York, NY, 1983.

Michael J. Bean, "Issues and Controversies in the Forthcoming Reauthorization Battle," *Endangered Species Update*, Vol. 9, Nos.1 & 2, University of Michigan, Ann Arbor, Michigan, May 1992.

Michael J. Bean, Sarah G. Fitzgerald and Michael A. O'Connell, *Reconciling Conflicts Under the Endangered Species Act*, World Wildlife Fund, Washington, D.C.

Thor Kamban Biberman, "Fieldstone Agrees to Save 500 Acres for Gnatcatcher," *San Diego Daily Transcript*, May 7, 1992, p. B1.

Deborah Blum, "Science, Politics Mixed Reluctantly," *The Sacramento Bee*, October 12, 1992, p. A12.

Deborah Blum, "Renewal Battle Looms," *The Sacramento Bee*, October 11, 1992, p. A16.

Deborah Blum, "What's Lost When Species Disappear?" *The Sacramento Bee*, Oct. 12, 1992, p. A1.

Deborah Blum, "What's Killing Off State Amphibians?" *The Sacramento Bee*, October 12, 1992, p. A10.

Raymond Bonner, "Crying Wolf Over Elephants," *The Sacramento Bee*, February 28, 1993, p. 1, Forum Section.

Michael Brandman Associates, *Biological Resources and Habitat Analysis (in support of the) City of Carlsbad Habitat Management Plan*, prepared for City of Carlsbad Community Development Department, Carlsbad, California, August 1992.

Buzz Breedlove, *Air Pollution: Cleaning the Air for Profit Using Marketable Permits*, Senate Office of Research, Sacramento, California, May 26, 1989.

Buzz Breedlove, *Reducing Automobile Pollution*, Senate Office of Research, Sacramento, California, September 1991.

California Energy Commission, *Energy Efficiency Report*, Sacramento, California, October, 1990, p. 47-53.

California Futures, *Market-Based Environmental Laws: 100 Ways to Use Prices to Prevent Pollution*, Sacramento, California, 1992.

Michael Cameron, *Transportation Efficiency: Tacking Southern California's Air Pollution and Congestion*, published by the Environmental Defense Fund and Regional Institute of Southern California, March 1991.

City of Los Angeles, Environmental Affairs Department, *Los Angeles Clean Air Plan*, Los Angeles, California, December 1992.

Les Blumenthal, "Clinton Puts Gore to the Test on Forests," *The Sacramento Bee*, March 29, 1993, p. A1.

Chris Bowman, "Endangered Species Losing Out," *The Sacramento Bee*, April 13, 1990, p. A1.

Chris Bowman, "Fish and Game Department: Who's Going to Pat the Tab?" *The Sacramento Bee* (no date, but prior to Gov. Wilson).

Chris Bowman, "Fish and Game's Off Endangered List For Now, Thanks to Bailout," *The Sacramento Bee*, October 2, 1990, p. A5.

Chris Bowman, "Global Canaries Signal Trouble," *The Sacramento Bee*, November 19, 1990.

Chris Bowman, "President Promises Solutions For Forests: Balanced Answers Vowed at Conference," *The Sacramento Bee*, April 3, 1993, p. A1.

Chris Bowman, "Timber Adversaries Move Toward Burying Hatchet," *The Sacramento Bee*, April 4, 1993, p. A4.

Peter F. Brussard and Dennis Murphy, *Subregionalization For Natural Communities Conservation Planning*, Coastal Sage Scrub Scientific Review Panel, Sacramento, California, August, 1992.

Building Industry Association of Southern California, Foothill/Eastern Transportation Corridor Agency, San Joaquin Hills Transportation Agency, *Complaint for Injunctive and Declaratory Relief*, Howard, Rice, Nemerovski, Canady, Robertson & Falk, San Francisco, California, November 20, 1992.

Building Industry Association of Southern California, Foothill/Eastern Transportation Corridor Agency, San Joaquin Hills Transportation Agency, *Memorandum of Law in Support of Motion for Preliminary Injunction*, Howard, Rice, Nemerovski, Canady, Robertson & Falk, San Francisco, California, March 16, 1993.

California Chamber of Commerce, *Endangered Species Act Task Force*, Memo from David Lindren to members of Water Resource Committee, November 13, 1991.

California Endangered Species Campaign, *WildLifeLines*, The Roanoke Company, Inc. Menlo Park, California, Volume 1, Number 3, March, 1992.

California Department of Fish & Game, *A Vision For the Future*, Administrative Report No. 93-1, Sacramento, California, January 28, 1993.

California Department of Fish & Game, *Annual Report on the Status of California State Listed Threatened and Endangered Animals and Plants*, Sacramento, California, 1991.

California Department of Fish & Game, *Guidelines for State Agency Consultation with the Department of Fish & Game Subject to the California Endangered Species Act*, Sacramento, California, December 6, 1991.

California Department of Fish & Game, "Ecosystem Conservation" *The Natural Communities Conservation Planning Program*, Sacramento, California, March 1993.

California Department of Fish & Game, *Procedures for Preparation of California Endangered Species Act Memoranda of Understanding and Acquisitions of Habitat Management Lands*, Sacramento, California, February 25, 1993.

California Department of Fish & Game, Natural Heritage Division, *Report of the California Endangered Species Act Section 2081 Project Team*, Sacramento, California, February 24, 1993.

California Department of Fish & Game, *Southern California Coastal Sage Scrub: Natural Community Conservation Planning Process Guidelines*, Sacramento, California, September 1, 1992.

California Department of Fish & Game, *Report on the Status of the Natural Communities Conservation Planning Program, 1991-92*, Sacramento, California.

California Energy Commission, Participating in the Siting Process: Practice and Procedure Guide, Sacramento, California, March 1991.

Tim W. Clark et al, "Designing and Managing Successful Endangered Species Recovery Programs," *Environmental Management*, Vol. 13, No. 2, Springer International, New York, NY, March/April 1989, p. 159-170.

Tim W. Clark and Ron Westrum, "High-Performance Teams in Wildlife Conservation: A Species Reintroduction and Recovery Example," *Environmental Management*, Vol. 13, No. 6, Springer International, New York, NY, November/December 1989, p. 663-670.

Russell Clemings, "Act's Goals For Species Endangered," *The Fresno Bee*, December 6, 1992.

Russell Clemings, "Compromise So That Some May Live," *The Fresno Bee*, December 8, 1992.

Russell Clemings, "Environmental Lawyer Courts Protection For At-Risk Species," *The Fresno Bee*, December 7, 1992.

Russell Clemings, "Preserving Habitats Key to Saving Endangered Species," *The Fresno Bee*, December, 8, 1992.

Susan Cochrane, "Why Rare Species?" *Outdoor California*, California Department of Fish & Game, Sacramento, California, September/October 1985.

Commission on California State Government Organization and Economy (Little Hoover Commission), *Report on California's Fish and Game Commission and the Department of Fish and Game*, January, 1990.

Marla Cone, "Caltrans Damages Habitat of Imperiled Animals," *Los Angeles Times*, April 26, 1992, p. A3.

Marla Cone, "State Funds for Protection of Gnatcatcher Cut By 75 Percent," *Los Angeles Times*, September 11, 1992, p. A38.

Doug Conner, "Government To Fight Sea Bird's Listing as Endangered Species," *Los Angeles Times*, September 26, 1992, p. A2.

Claire Cooper, "Suit Tests Private Logging on Endangered Bird's Territory," *The Sacramento Bee*, April 17, 1993, p. B4

Council on California Competitiveness, *California Jobs and Future*, Sacramento, California, April 23, 1992.

Scott Cressey, "An Environment of Change," *Resource*, Resource Management International, Inc. Sacramento, California, Vol. 5, No. 1, Winter, 1993, p.6

Dames & Moore, *Endangered Species Element Kern County General Plan (Preliminary Draft)*, prepared for Kern County Department of Planning and Development Services, July 1991.

Daniel J. Curtin, Jr. "Court Expands Definition of Endangered Species Taking," *Butte County Business Journal*, Jan. 25-Feb.4, 1993.

Dangermond & Associates, RECON, *Multiple Species Habitat Conservation Plan*, Riverside County, California, 1991 Report.

Defenders of Wildlife, *Preserving Communities & Corridors*, Washington, D.C. March 1989.

William Dillinger, "The Fish and Game game -- What Ails a State Agency," *The Sacramento Bee*, August 26, 1990, p. 1, Forum Section.

Roger L. DiSilvestro, *The Endangered Kingdom*, Wiley Science Editions, New York, NY, 1989.

D. Barton Doyle, *Comments on H.R. 6134, Endangered Species Act Reform Amendments of 1992*, Brobeck, Phleger & Harrison, Los Angeles, California, February 16, 1993.

Michael Doyle, "Babbitt Launches Huge U.S. Biological Review," *The Sacramento Bee*, April 27, 1993, p. B6.

Michael Doyle, "Interior Budget Boosted for Parks, Troubled Species," *The Sacramento Bee*, April 9, 1993, p. A22.

Michael Doyle, "New Tactics May Save Rare Bird -- and Jobs," *The Sacramento Bee*, April 26, 1993, p. A1.

Michael Doyle, "Wilson Shirks Duty to Protect Delta, U.S. Interior Chief Says, *The Sacramento Bee*, Sacramento, California, April 20, 1993, p. B4.

Stan Draenos, "Snake in the Grass: Is The Endangered Species Act Any Way To Do Business?" *Comstock's Magazine*, Sacramento, California, March, 1993.

Timothy P. Duane, "Managing the Sierra Nevada," Chapter Eight, *California Policy Choices*, John J. Kirlin, editor, University of Southern California, Sacramento Center, Sacramento, California, 1993, p. 167-194.

Pamela Pride Eaton, "ESA Amendments: The Good, the Bad and the Unnecessary," *Endangered Species Update*, Vol. 9 No. 5 & 6, March/April 1992, p.9.

Endangered Species Act Roundtable, *Endangered Species Act: Time For Change -- A White Paper*, paper presented by a coalition led by the National Cattlemen's Association, Washington, D.C. 1992.

Endangered Species Act Roundtable, *Suggested Amendments to Regulations Implementing The Endangered Species Act of 1973*, Washington, D.C. April 13, 1992.

Endangered Species Coordinating Council, *The Endangered Species Act is Broken*, Washington, D.C. (no date)

Jon Engellenner, Effort to Preserve Rare Foothills Plants Takes Root," *The Sacramento Bee*, April 5, 1993, p. B1.

Florida Game and Fresh Water Fish Commission, *Endangered and Threatened Species Management and Conservation Plan, 1991-1992 Update and Progress Report*, Tallahassee, Florida, December, 1991.

Boyd Gibbons, *Amendments To Improve the Endangered Species Act*, California Department of Fish & Game, April 8, 1992.

Boyd Gibbons, "Ethics, More than Science, Should Guide Bear Hunting," *The Sacramento Bee*, April 7, 1993, p. B7.

Curtice Griffin and Thomas French, *Protection of Threatened and Endangered Species and Their Habitats by State Regulations: The Massachusetts Initiative*, 57th North American and Natural Resources Conference, Charlotte, North Carolina, October 21, 1992.

Growth Management Council, *Strategic Growth: Taking Charge of the Future (A Blueprint for California)*, Governor's Office of Planning and Research, January 25, 1993.

Ted Gup, "Down With the God Squad," *Time Magazine*, November 5, 1990, p. 102.

Rose Gutfeld, "New Schemes Are Tried To Assist Woodpecker," *Wall Street Journal*, April 5, 1993 p. B1.

Curt Guyette, "Pushed To The Edge," *Sacramento News & Review*, February 11, 1993, p. 17-20.

George Hardeen, "Eagles Flock to an Unlikely Feast," *Los Angeles Times*, April 30, 1991, p. A5.

Tom Harris, "Marbled Murrelet Flies Into War Zone," *The Sacramento Bee*, October 11, 1992 p. A18.

Mark O. Hatfield, "Can't See the Forest for the Endangered Species," *The Washington Post*, June 12, 1992, p. A23.

H. Josef Hebert, "Report: Federal Chaos Threatens Endangered Species," *Marin Independent Journal*, October 19, 1990, p. A8.

Michael Haederle, "Whooping Cranes Tarry at Brink of Extinction," *Los Angeles Times*, March 11, 1992 p. A5.

Larry Harrison, *North Fork Feather River Erosion Control Program*, Pacific Gas & Electric, San Francisco, California, Paper No. 84.

Deborah Hastings, "Game Wardens Struggle to Protect Wildlife," *The Sacramento Bee*, April 10, 1993, p. B6.

Patrick Hoge, "Refuge is Starting to Take Wing: County Offers property for U.S. Wildlife Project," *The Sacramento Bee*, March 18, 1993 p. B1.

Berkley Hudson, "Steps Taken to Save Endangered Plants on Federal Lands," *Los Angeles Times*, November 17, 1992 p. B3.

Frances A. Hunt and William Robert Irvin, "A Tough Law To Solve Tough Problems," *Journal of Forestry*, Vol. 90, No. 8, August, 1992.

Deborah B. Jensen, Margaret Torn and John Harte, *In Our Own Hands: A Strategy for Conserving Biological Diversity in California*, California Policy Seminar, Berkeley, California, April, 1990.

Robert Johnston and Mary Madison, *Planning For Habitat Protection in California: State Policies and County Actions To Implement CEQA Through Improved General Plans*, a report for Forest and Rangeland Resources Assessment Program, UC-Davis, California, June 1991.

Joint Committee on Energy Regulation and the Environment, *Energy Efficiency As a Coordinated Environmental and Energy Strategy*, Sacramento, California, April, 1990.

Biological Diversity in California, prepared for California Department of Fish & Game and California Department of Forestry & Fire Protection, Sacramento, California, September, 1992.

Linda Kanamine, "What is Nature's Share?: Ecosystem vs. Economy," *USA Today*, March 4, 1993, p. A1.

John Kell, "A Species Worth Preserving," *The Freeman*, Foundation for Economic Education, Irvington-on-Hudson, New York, March 1992, p. 120.

Donald M. Kelly and Julianne B. D'Angelo, "Near Extinction: California's Protection of Endangered Species," *California Regulatory Law Reporter*, Vol. 10, Nos. 2 & 3, University of San Diego, California, Spring/Summer, 1990.

Tom Kenworthy, "Endangered Species Rules Streamlined: U.S. Agrees to Hasten Process on Decisions," *The Washington Post*, December 16, 1992 p. A1.

Tom Kenworthy, "Wildlife Protection Stops Few Projects, Study Asserts, *The Washington Post*, February 11, 1992, p. A19.

William W. Keye, "Giving Up on Lumber's Past and Environmental Myths," *The Sacramento Bee*, March 23, 1993 p. B9.

Cynthia C. Kelly, "Escalating Environmental Mandates: Can Local Governments Cope?" *Public Management*, Washington, D.C. March 1993, p. 2-8.

E.J. Koford, "Why Should We Bother to Save Endangered Species?" *Sacramento Business Journal*, Week of February 22, 1993, p.7.

Kathryn A. Kohm, *Balancing On The Brink of Extinction: The Endangered Species Act and Lessons For The Future*, Island Press, Washington, D.C. 1991.

Paul D. Kamenar, "Private Property Rights: An Endangered Species," *The Freeman*, Foundation for Economic Education, Inc. Irvington-on-Hudson, New York, May 1990 p. 164-167.

Elizabeth Larson, "Elephants and Ivory," *The Freeman*, Foundation for Economic Education, Inc. Irvington-on-Hudson, New York, July 1991, p. 261-263.

John O'Leary et al, *The Coastal Sage Scrub Community Conservation Planning Region*, an NCCP Special Report prepared by California Environmental trust, San Francisco, California, March, 1992.

Marc Lacey, "Stemming the Tide: Endangered Plant Has Knack of Blocking Construction," *Los Angeles Times*, January 18, 1991, p. B3.

The Land Letter, "The Endangered Species Act: Controversial Listings Sharpen Reauthorization Act," Vol. 11, No.3, January 20, 1992. (A newsletter for natural resource professionals.)

Legislative Analyst's Office, *The 1989-90 Budget: Perspectives and Issues, Implementing the California Clean Air Act,* Sacramento, California, 1990, p. 111-126.

Brenda Lind, *The Conservation Easement Stewardship Guide*, Land Trust Alliance and Trust for New Hampshire Lands, Washington, D.C. 1991.

Local Government Commission, Land Use Strategies For More Livable Places, Sacramento, California, June 1, 1992.

Michael Mantell, "Broader View of Threatened Species," *The Sacramento Bee*, May 27, 1992 p. B5.

Ruth Marcus, "Endangered Species Act Must change, Bush Says," *The Washington Post*, September 15, 1992 p. A8.

Jessica Mathews, "It's Not Jobs vs. Endangered Species," *The Washington Post*, January 1, 1992 p. C7.

Jim Mayer, Deborah Blum and Tom Harris, "Can We Coexist with Animals? Declining Species Pitted Against Needs for Growth," *The Sacramento Bee*, October 11, 1992 p. A1.

Jim Mayer, "Cost of Act is Anyone's Guess," *The Sacramento Bee*, October 11, 1992 p. A18.

Jim Mayer, "Delta Smelt's Restoration Called Costly," *The Sacramento Bee*, March 23, 1993 p. B1.

Jim Mayer, "Environmentalists Rap Wilson's Delta Orders," *The Sacramento Bee*, April 6, 1993, p. B3.

Jim Mayer, "Governor Backs Off New Rules for Delta," *The Sacramento Bee*, April 2, 1993, p. B1.

Jim Mayer, "Hunters Hound Wildlife Official," *The Sacramento Bee*, April 9, 1993, p. A1.

Jim Mayer, "Interior Chief Readies Plan to "Help Save the West," *The Sacramento Bee*, April 22, 1993, p. A7.

Jim Mayer, "Little Beetle Upsets Builder of Big Projects," *The Sacramento Bee*, October 12, 1992, p. A11.

Jim Mayer, "Scientific Doubts Focus of Smelt War," *The Sacramento Bee*, April 14, 1993, p. A1.

Jim Mayer, "State Officials Ease Proposed Limits on Big Delta Pumps," *The Sacramento Bee*, March 9, 1993, p. A1.

Jim Mayer, "State Panel Votes to Protect Delta Smelt as Threatened Species," *The Sacramento Bee*, April 3, 1993, p. B1.

Jim Mayer, "State to let Tainted River Recover Alone, Ban Fishing," *The Sacramento Bee*, April 2, 1993, p. B5.

Jim Mayer, "Threatened Listing likely for Delta Smelt," *The Sacramento Bee*, March 4, 1992 p. A1.

Jim Mayer, "Water Negotiations Hit Logjam," *The Sacramento Bee*, April 17, 1993, p. B1.

Joanna M. Miller, "Critical Habitat for Bird Proposed," *Los Angeles Times*, August 8, 1992 p. B1.

Becky Mills, "Who Gains if Ranching Shuts Down?" *The Sacramento Bee*, April 25, 1993, p. 1, Forum section.

Matt Mitchell, "Toward a Comprehensive Wetlands Policy for California," *California Executive Fellows Journal*, California State University-Sacramento, Volume 1, November 1991, p. 69-97.

Eric Morgenthaler, "The Airport is Loud, But These Residents Don't Give a Hoot," *Wall Street Journal*, October 6, 1992, p. A1.

Brett J. Morris, "DFG -- Legal Trustee of Wildlife, Habitat," *Outdoor California*, Vol. 53, No.6, California Department of Fish & Game, Sacramento, California, November-December, 1992.

Peter B. Moyle and Ronald M. Yoshiyama, *Fishes, Aquatic Diversity Management Areas, and Endangered Species: A Plan to Protect California's Native Aquatic Biota*, California Policy Seminar brief, Vol. 4, No. 10, Berkeley, California, September, 1992.

Dennis Murphy, *The California Coastal Sage Scrub Scientific Review Panel: Its Purpose and Approach*, An NCCP Special Report prepared by the California Environmental Trust, San Francisco, California, February, 1992.

Dennis Murphy, "Scientists and Endangered Species Act Reauthorization," *Endangered Species Update*, Vol.8 No. 4, p. 10.

National Endangered Species Act Reform Coalition, *Comparison of ESA Reform Amendments*, Washington, D.C. April 2, 1993.

National Endangered Species Act Reform Coalition, *Summary of H.R. 1490, The Endangered Species Act Procedural Reform Amendments of 1993*, Washington, D.C. March 26, 1993.

The Nature Conservancy, *Sliding Toward Extinction: The State of California's Natural Heritage, 1987* prepared by Jones & Stokes Associates, Inc., San Francisco, California, November, 1987.

Jeffrey McNeely, et al, *Conserving the World's Biological Diversity*, International Union for the Conservation of Nature and Natural Resources, World Resources Institute, Conservation International, World Wildlife Fund, World Bank, Gland, Switzerland and Washington, D.C., 1990.

New York Times, "Timber Firm's Plan to Save Bird OK'd: Pact on Woodpecker First of Kind for U.S." *The Sacramento Bee*, Sacramento, California, April 16, 1993, p. A10.

Tim Palmer, *California's Threatened Environment: Restoring the Dream*, Planning and Conservation League Foundation/Island Press, Washington, D.C. 1993.

Sue McClurg, "The Delta Dilemma Continues," *Western Water*, Sacramento, California, March/April 1993.

Jeffrey A. McNeely, *Economics and Biological Diversity*, International Union for Conservation of Nature and Natural Resources, Gland, Switzerland, November, 1988.

Todd Olson and Dennis Moser, *The Habitat Transaction Method of Conservation Planning, Land Acquisition, and Funding*, August 11, 1992.

Mark Palmer, et al, *Problems With the State Endangered Species Program*, Sacramento, California, March 12, 1993.

Pat Paquette, "Seeking Balance Between Owls and People," California Journal, February 1993, p. 15-18.

Planning and Conservation League Foundation, *The Twenty First Century Study: Preserving California's Natural and Human Environment*, Sacramento, California, January 1991.

Resources Agency, et al, "The Agreement on Biological Diversity," Memorandum of Understanding signed by ten federal and state agencies in September 1991.

Richard P. Reading, Tim W. Clark and Stephen R. Kellert, "Towards an Endangered Species Reintroduction Paradigm," *Endangered Species Update*, Vol. 8, No. 11, University of Michigan, Ann Arbor, Michigan, September, 1991, p. 1-4.

Roy Rivenburg, "Pact Sets Aside Habitat for Gnatcatcher," Los Angeles Times (San Diego County Edition), May 7, 1992, p. B1.

The Sacramento Bee, "Wilson's New Water Fight," Editorial, April 7, 1993, p. B6.

Santa Clara County Congestion Management Agency, *Congestion Management Program for Santa Clara County*, San Jose, California, August 29, 1991.

South Coast Air Quality Management District, *Making Clean Air a Priority: A Guide for Planners on Local Governments*, El Monte, California, September 1990.

David Savage, "Court Rules for Loggers in Spotted Owl Habitats," *Los Angeles Times*, March 26, 1992 p. A3.

John C. Sawhill, "Saving Endangered Species Doesn't Endanger Economy," *Wall Street Journal*, February 20, 1992 p. A15.

Elwood L. Shafer and James B. Davis, "Making Decisions about Environmental Management When Conventional Economic Analysis Cannot Be Used," *Environmental Management*, Vol. 13, No. 2, Springer International, New York, New York, 1989, p. 189-197.

Michael Schrage, "Scope of Endangered Act Needs Broadening," *Los Angeles Times*, May 21, 1992 p. D1.

William Shireman, *Market-Based Environmental Policies: Tools to Drive Pollution Prevention and Sustainable Growth*, published by California Futures, Sacramento, California, March 1, 1993.

Drew Silvern, "Rare Agreement for Rare Songbird," *San Diego Union-Tribune*, May 7, 1992, p. A1.

Marlise Simons, "Thumbs Out -- Dutch are Dismantling the Dikes," *The Sacramento Bee*, March 14, 1993, p. 1, Forum Section.

Southern California Association of Governments, Caltrans, *Congestion Management Program Resource Handbook*, November 1990.

Richard Spotts, "Compromise Can Fulfill Needs of Man and Beast," *Los Angeles Times*, September 23, 1990, p. K6.

Larry Stammer, "Peregrine Falcon Breeding Project Hailed," *Los Angeles Times*, January 11,1992 p. A18.

Peter Steinhart, *California's Wild Heritage: Threatened and Endangered Animals in the Golden State*, California Department of Fish & Game, California Academy of Sciences, Sierra Club Books, Sacramento, California, 1990.

William Stevens, "Protecting Wildlife -- A Policy Shift," *Seattle-Post Intelligencer*, February 17, 1993.

Tom Stienstra, "DFG Chief Blasted by State Senator," *S.F. Examiner*, February 14, 1993.

Ike C. Sugg, "Ecosystem Babbit-Babble," *Wall Street Journal*, April 2, 1993, p. A12.

Ike C. Sugg, "To Save an Endangered Species, Own One," *Wall Street Journal*, August 31, 1992, p. A10.

Richard Sybert, "Resisting Taxes Isn't Timidity," *The Sacramento Bee*, April 3, 1993, p. B9.

Cathy Taylor, "Protecting Environment -- Painlessly," *Orange County Register*, May 17, 1992 (no page number).

Karen Terwilliger and Toni Harrison, "Virginia Department of Game and Inland Fisheries Nongame and Endangered Wildlife Program," *Endangered Species Update*, Vol. 9, Nos. 7 & 8, University of Michigan, Ann Arbor, Michigan, May/June 1992, p. 5-8.

Scott Thurm, "Environmentalists Back Away From Wilson Delta Panel," *The Sacramento Bee*, April 13, 1993, p. B4.

Richard J. Tobin, *The Expendable Future: U.S. Politics and the Protection of Biological Diversity*, Duke University Press, Durham, North Carolina, 1990.

U.S. Environmental Protection Agency, *Acid Rain Program: Allowance Auctions and Direct Sales*, Washington, D.C. October 1992.

U.S. Fish and Wildlife Service, *Interim National Conservation Planning Guidelines*, Region 1, Portland, Oregon and Sacramento, California, July, 1990.

Utility Environment Report, "New Fish Rule Would Cut Dam Output in West; Some Rates Seen Rising 40%," McGraw Hill, New York, NY, March 19, 1993, p. 18.

Sara E. Vickerman, "State Wildlife Protection Efforts: The Nongame Programs," *In Defense of Wildlife* (no date), p. 67-96.

Nancy Vogel, "New Timber Limits Imposed in Sierra To Aid Spotted Owl," *The Sacramento Bee*, March 2, 1993.

United States Congressional Budget Office, *Environmental Regulation and Economic Efficiency*, March 1985.

United States General Accounting Office, *Endangered Species: Management Improvements Could Enhance Recovery Program*, Washington, D.C. December, 1988.

United States General Accounting Office, *Endangered Species Act: Types and Numbers of Implementing Actions*, RCED-92-131BR, Washington, D.C. May, 1992.

Wall Street Journal, "Timber and Other Loud Noises," Review & OutLook, April 2, 1993, p. A12.

Gary Warth, "Big Fight Over a Tiny Bird," *North County Blade-Citizen*, May 11, 1992, p. A1.

T.H. Watkins, "The Lands of Life," *Wilderness*, a publication of the Wilderness Society, Washington, D.C. Spring 1993, p. 8-9.

Western Association of Fish & Wildlife Agencies, *Position of the WAFWA on the Reauthorization of the Federal Endangered Species Act*, Sacramento, California, November 18, 1992.

Governor Pete Wilson, *Annual Environmental Report of the Governor: 1991 and 1992*, Sacramento, California, December 1992.

Suzanne Winckler, "Is the Endangered Species Act Environmentally Sound?" *The Sacramento Bee*, July 19, 1992, p. 1, Forum Section.

Tom Wolf, "Endangered Species Act Endangers Wrong Species," *Los Angeles Times*, April 21, 1991 p. M1.

Tom Wolf, "Why We Cannot Buy Our Way Out of the Environmental Dilemmas," *Los Angeles Times*, July 21, 1991, p. M2.

Daniel Wood, "California Spotlights Endangered Species," *Christian Science Monitor*, September 12, 1989. p. 13

World Resources Institute, World Conservation Union and United Nations Environment Programme, *Global Biodiversity Strategy: Guidelines for Action to Save, Study and Use Earth's Biotic Wealth Sustainably and Equitably*, Washington, D.C. 1992.

Steven Lewis Yaffee, *Prohibitive Policy: Implementing the Federal Endangered Species Act*, MIT Press, Cambridge, Mass. 1982.