Linkages

Periodical of the Institute for Ecological Health **Issue No. 5, Fall 1997**

SPECIAL FOCUS -- CONSERVATION PLANNING

CAN WE MAKE CONSERVATION PLANNING WORK IN CALIFORNIA?

By John Hopkins and Michael Vasey

California is at the center of controversy on how to effectively protect endangered species and their habitats. Rapid urbanization in landscapes rich with rare species and sensitive habitats has created a great many conflicts. Future development to provide for our increasingly high rate of population growth could lead to even greater friction.

Federal and state legislators and wildlife agencies have developed two types of conservation plans to try and resolve conflicts between endangered species and economic activity. Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs) are in place or under development in many locations. NCCPs and the more recent HCPs cover large areas and address multiple species and habitat types. They provide conservation of key habitat areas, while permitting take of endangered species in other locations. Most of these plans are extremely controversial. Environmentalists, farmers, and developers all complain about the system, seeing it run counter to their interests (*Perspectives, page* 5.) Biologists see severe problems in most plans (*Science, page 14*.)

Whether liked by different interests or not, regional conservation planning appears here to stay. The Institute for Ecological Health's concern is how to make the multi-species / multi-habitat plans work for nature, for landowners and other economic interests, for communities and for government. Unless we move beyond the current conflicts, and find solutions that meet seemingly contradictory needs, both people and nature will lose.

Six Steps for Effective Conservation Planning

- Involve all stakeholders
- Base plan on good science
- Meet needs of different interests
- Ensure long-term conservation and aid species recovery
- Include public involvement
- Provide adequate funding for implementation

Without effective planning, future generations will inherit a California that will have lost much of its world-renowned natural heritage. Economic interests, including farming, will continue to be plagued by a wide variety of costs.

Nature, Land and Economy - the Background to Conflict

California is one of the richest biological regions on the planet. It possesses over 5,000 different flowering plants, more than the whole of central and north-east United States and Canada. A quarter of the nation's vertebrate species are found in the state. This cornucopia of native species results from a tremendous variety of habitats, climates and a complex geology. Many of these species only exist in California, often in specialized conditions within small areas, and frequently only or primarily on private land. Their habitats are equally varied and usually restricted to particular physical conditions.

Over the past 150 years there has been a tremendous transformation of our land as the state became home to 30 million people and the world's most productive agricultural system. Riparian forests that lined many rivers are almost gone, as are most of the other historic wetlands. Large areas of grassland, woodland and scrub are now productive crop lands and extensive metropolitan areas.

This loss, degradation and fragmentation of California's indigenous landscape has put many species and habitats in danger of extinction. Currently over 200 species of plants and animals in California are listed under the Federal Endangered Species Act (FESA). Many biologists consider several hundred more have the potential for listing. About half of the numerous habitat types are either naturally rare or are imperilled by human activities.

News from IEH

The Institute for Ecological Health seeks solutions to problems in the relationships between people, economy, land and nature. One of the most difficult problems is the tension between endangered species conservation, urban development, and agricultural operations, so conservation planning is a natural topic for *Linkages*. IEH staff and directors have been involved in several conservation plans and workshops, seeing the many conflicts and issues first hand. And we would like to thank all who wrote material for this issue of *Linkages*.

Updates on Some of Recent and Current Activities.

We have two successful partnerships in the six county Sacramento region. As a first step in our "Living with Land" project for the region, we worked with Valley Vision to develop and hold a major workshop on regional collaboration for land, transportation and air quality issues. (Valley Vision is a regional group of business, institution and community leaders.) The October event was a great success, attracting over 150 people. It put land issues on the agenda for regional approaches and will lead to future collaborative efforts. Also, we've begun a partnership with the Sustainable Communities Consortium (SCC) at the University of California Davis. The SCC is looking at sustainability issues in the multi-county region. We will work together on a range of topics.

Our new Sierra Foothills biodiversity project is the beneficiary of a Sierra Nevada Alliance grant. We are very appreciative of this support, which allows us to carry out a pilot conservation analysis for a portion of the Central Sierra foothills, in collaboration with Dr. James Quinn at UC Davis. The analysis will aid understanding of how to effectively provide for conservation in foothill areas facing significant suburban and rural development.

In collaboration with the Friends of the Santa Clara River in Ventura and Los Angeles counties, we've produced a draft vision document for the central part of the Santa Clara River Basin. A critical step remains - looking at the fiscal and economic needs of three small agricultural communities along the River.

Additional Thank- you's

Thanks to the Environmental Support Center in Washington DC for a strategic planning grant and to consultant Rick Breeze-Martin for his excellent work in leading our board through a planning process. Our thanks to the many individuals and organizations who work with us, and to our members, major donors and workshop sponsors. Special thanks to Mary Mesmer, Gail Ervin & Radley Reep.

Linkages

Providing information on California land issues, including conservation biology, planning and economics, development, urban design, and agriculture. We explore the needs of different interests and creative solutions. We welcome articles, story ideas, and letters.

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Making Conservation Planning Work, continued

We face the very likely prospect of the state's population increasing by another 20 million in coming decades. Populations may triple in the Central Valley and Sierra Foothills, increase from 9 to 16 million in Los Angeles County. While most would like major reductions in growth rate, it is not clear how we reduce the lure of the state.

But the issue is far more than numbers of people. Other trends greatly exacerbate the growth pressures on the land, including fewer people per household, the development of much more land per person than earlier in the century, and the crisis in California local government financing.

Development allowed under existing city and county General Plans will have an enormous impact on the land and nature. In southwest California counties, this develop-ment will render about 20 currently common natural habitats rare, and place most of the lower elevation habitats in jeopardy according to a 1994 report by UC Santa Barbara scientists. The risk communities include coastal sage scrub, coast live oak woodland and Engelmann oak woodland. In the Central Valley, where only small fragments of natural habitat remain, a population doubling is expected within a few decades The development already accommodated by General Plans also will consume very large acreages of productive farmlands. The difficulties in trying to provide for three opposing needs - urban growth, habitat protection and farmland conservation - can easily seem insurmountable.

Conservation Planning in California

HCPs and NCCPs provide a habitat based conservation system for key species, as well as federal and state incidental take permits to allow take of the covered species in designated development areas. *(See box, next column.)* Most funding for acquisition and long term management of preserves comes from development fees. In some cases, federal, state and local monies provide additional funds.

The earliest HCPs addressed the needs of one or two species in small areas. In recent years conservation planning has shifted to multi-species and multi-habitats (see *list, page 4.*) Areas are large, often major portions of a county. Local government is the lead entity for these large plans. Generally, a consultant develops the plan, a steering committee provides oversight & guidance.NCCPs developed in the coastal sage scrub lands of southwest California (*see NCCP overview, p 9*). The larger plann-ing efforts take several years and a great deal of money. This frustrates government, and development interests. Conservationists, on the other hand, are frustrated in many planning efforts by a lack of influence, by often inadequate science, and by the often low level conservation achieved. Some conservationists oppose the whole idea of incidental take permits. The farming community is usually opposed to plans that put pressure on agricultural lands. The perspectives starting on page 5 stress these tensions.

Conservation Plans - Legal Basis

HCPs authorized under section 10(a) of the Federal Endangered Species Act (FESA). Allows authorization of incidental take upon approval of a conservation plan that include, for the species covered:

- take is incidental **
- impacts of take minimized and mitigated to maximum extent practicable;
- adequate funding for the plan;
- taking will not appreciably reduce the likelihood of survival and recovery

State permits under the newly enacted Section 2081(b) of California Endangered Species Act (CESA) have similar requirements. The differences with FESA are:

- requirement for full minimizing & mitigating of impacts roughly proportional to impacts of authorized take
- permit won't jeopardize continued existence of the species

NCCP authorized under California's Natural Community Planning Act. An NCCP

- identifies and provides for the regional or areawide protection and perpetuation of natural wildlife diversity, while allowing compatible and appropriate development and growth.
- provide comprehensive management and conservation of multiple wildlife species

Under current law, there are no required conservation standards for NCCPs, others those required for species covered by FESA & CESA.

**** Incidental Take.** This means that the take is incidental to the purpose of the project, not that the magnitude of the take is necessarily incidental to the species.

Providing for Effective Conservation

Recent advances in conservation biology suggest we need to plan for conservation at a large landscape scale in order to protect key species, conserve functioning ecosystems and provide for ecological health. NCCPs & regional HCPs provide this scale. To be biologically effective, the plans must have a very high likelihood of protecting viable populations of covered and key species over the long term. The plans should assist recovery of listed species. Many of these species do not have recovery plans to provide guidance. But by using conservation biology principles and ensuring long term population viability, a conservation plan will aid recovery.

Ideally, a conservation plan should provide adequate protection of an area's overall biological resources, from habitats to ecosystem processes. In reality, there is no legal mandate beyond conservation of listed species and wetlands, plus mitigation for species of special concern. under the California Environmental Quality Act.

Supporting Conservation Planning

There are several reasons why conservationists, as well as landowners and other interests, should support an effective conservation planning effort.

There is a high probability that HCPs and NCCPs are here to stay. As Reed Noss et.al. point out *(page 14)*, the best approach is to try to ensure plans work biologically. Some conservationists wistfully believe all development of important habitat will stop in the absence of HCPs and NCCPs, blaming conservation planning for allowing development. We consider this view highly unrealistic. Without regional conservation plans the development still occurs, there is just even less conservation. There are project by project negotiations between agencies and landowners, resulting in inadequate, postage stamp preserves, often destined for an urbanized surrounding. These small preserves will not provide for natural ecological functions and processes, will need intensive management to maintain key species.

In addition, it is possible to produce a good conservation plan that provides effective conservation & aids recovery. Also, the planning process can provide an essential forum for reaching out to other interests, educating and building bridges - key steps for resolving differences and obtaining better land use planning in the future.

Conservation planning benefits other interests as well. With a plan in place, developers have a speedier process, a vast improvement over two or three years of delay. Local government and wildlife agencies benefit from a simpler process and avoidance of conflict. But the agricultural community is basically opposed to regional conservation planning. The current process pits conservation needs against farming - the greater the biological protection, the greater the demand on agricultural lands. Society is a long way from resolving this fundamental problem.

Six Steps for Effective Planning

1. Involve all the key interests from the very beginning and ensure they have a major role in plan development and future implementation

Conservationists, developers, farmers and others all need to be at the table, with multiple representatives for each interest present from the initial discussion phase. This group should participate in developing the Request for Proposals (RFP) that will dictate the work of plan consultant. Representatives of different interests should also have an oversight role during plan implementation.

2. Use the best possible biological data and good science in preparing and implementing the plan.

Good HCPs must be driven by sound biological goals. It is essential that the plan be scientifically well-informed and be focused on insuring species and habitats are adequately protected. Biological monitoring of target species and habitats, peer review, and adaptive management based upon monitoring are all critical implementation components. Our review of the *Science of Conservation Planning (page 14*) indicates many key scientific issues.

Major Regional and Multispecies Conservation Plans in California

Kern County Valley Floor HCP
Metropolitan Bakersfield HCP
Natomas HCP
Riverside County HCP
San Benito County HCP
San Joaquin County HCP
Santa Rosa HCP
South Sacramento County HCP
Tulare County HCP
Yolo County HCP
Central / Coastal Orange County NCCP
Orange County South NCCP
San Diego County MSCP
San Diego County MHCP
West Mojave Coordinated Management Plan

Note: This list includes many adopted plans and plans under development. Additional plans are at the initial discussions stage.

3. Meet the concerns and needs of different interests and move them beyond fear.

A good plan must meet the needs of all stakeholders, as well as biological goals. These interests often approach the process fearful of the outcome and with little understanding of each others' needs. It may take considerable time, and excellent facilitation, to achieve three essential goals for participants: a) move beyond fear; b) understand the science, needs of other interests and legitimacy of their concerns; c) devise a plan meeting the needs of all interests. But as we have mentioned, there are fundamental conflicts between interests that limit how much agreement can be reached under the current process.

4. Develop a plan that ensures effective long term conservation and aids recovery of imperiled species.

If a plan designates specific reserves, these must be adequate for long-term viable populations of key species. Plans utilizing mitigation in farm and range land often cannot delineate precise conservation lands. They have broader target areas for purchase of easements, together with biological criteria to guide choosing between willing sellers of the easements. These plans may need significant up front funds to "jump start" easement acquisition.

5. Ensure public involvement and build broad support for the plan
The plan must be accepted by local government. It will likely require a local ordinance for implementation, as well as the state and federal permits. Extensive public outreach and dialog, and the building of political support are essential steps. Although it must be driven driven by biological goals, conservation planning is a socio-political exercise as much as a biological exercise.

6. Provide adequate funding for plan implementation
A conservation plan needs funds for land or easement purchase. But it also needs funds for monitoring, adaptive management, and addressing future biological surprises. If the plan includes fee acquisition of preserves, then there must be an adequate endowment fund for in perpetuity management of those areas. Developer fees are unlikely to provide all the needed funding. Conservationists and others need to agree to, and find, additional funding.

We Need an Integrated Approach to Land Use Planning

Conservation planning cannot succeed in isolation from other land use planning efforts. One helpful step will be for local general plans to provide for effective habitat protection, as suggested by Dr. Robert Johnston and Mary Madison in a 1991 report for the California Department of Forestry and Fire Protection. But we must go further than that, and move toward truly integrated land planning based on providing for economy (including farming), people and nature. Much of the current conflict stems from our sprawl-ing patterns of urbanization that consume vast landscapes, producing megacities that do not work well for people or nature. The next two issues of *Linkages* will address crucial growth concerns, and explore possible solutions.
John Hopkins and Michael Vasey are respectively president and a board member of IEH.

Conservation Planning Resources

- *The Science of Conservation Planning : Habitat Conservation under the Endangered Species Act.* Noss, O'Connell and Murphy. Island Press. 1997
- *Habitat Conservation Planning Handbook* U.S. Fish & Wildlife Service and National Marine Fisheries Service. 1996
- *Habitat Conservation Planning : Endangered Species and Urban Growth* . Timothy Beatley. University of Texas Press. 1994
- *Leap of Faith : Southern California's Experiment in Natural Community Conservation Planning.* Michael Jasny. Natural Resources Defense Council 1997

Perspectives on Conservation Planning

Individuals from several different interests kindly prepared their perspectives on conservation planning. These help our understanding of the issues and the difficulties facing our society.

The Regulated Community
Conservation Strategies that Work
By Demar Hooper

As an attorney in the land use field, I have more than a dozen years of experience on which to base a perspective. Most of that experience has been representing clients interested in securing approvals for urban development of all kinds. I use the term "regulated community", because that group is much broader than the traditional term "developer", which is frequently limited to new urban structures. It includes many other uses that can affect conservation planning, such as mining, telecommunication, health care. I also developed my viewpoint through twelve years preceding becoming an attorney, spent preparing environmental documents for Sacramento County.

Those two careers remarkably brought me to the same outlook on conservation strategy : to be successful, a conservation strategy must be attractive to the regulated community in term which that community values.

Although this may sound obvious or even simplistic, many conservation strategies have been developed that failed to heed this message. Proponents of strategies motivated by other agendas - education, philosophy, morality - believe in transforming the values of those in the regulated community. They insist on making "converts" to the value of conservation as a basis for succeeding. The problem with this approach is that it misses a major factor : the viability of the business when the conservation strategy is implemented. I know many individuals working in the regulated community who are sympathetic to, or even outright advocates of, conservation ideals. In practice, however, they must measure the potential effect on their business. In some cases, the price is simply too high.

By contrast, I know business owners and managers philosophically opposed to conservation ideals who recognize the practicality of making minor concessions to a good conservation strategy. "Winning the souls" of these individuals is much less important than working with the regulated community to develop a strategy that works from all perspectives. government, environment and regulated.

In practice, this means that successful conservation strategies must be prepared to abandon some aspects of philosophy to reach a more satisfying goal. For example, in this years' successful legislative effort to modify the California Endangered Species Act, some opponents articulated the position that we simply could not afford the take of any listed species, and argued for a strict limitation on permits. The environmental coalition supporting the process looked at the long-term management benefit.

Successful conservation strategies must provide an identifiable incentive to bring the regulated community to the table. In the exchange of values that accompanies the approval process, there is room to fashion "win-win" solutions. It is critical that those engaged in the process of developing strategies be prepared to develop fresh approaches which are mindful of the real life implications to property owners seeking entitlements. By doing so, they stand the best chance of developing succesful plans.

Demar is a partner in the Sacramento law firm of Taylor and Hooper.

No Surprises - a Key Controversy

One very controversial issue of great importance to developers and others is "no surprises". When developers agree to a conservation plan, they do not want to be hit with an additional financial burden in a few years if the plan proves biologic-ally inadequate. The Interior Department has established a "no surprises" system, stating that developers will not have to pay additional funds if the original conservation plan proves inadequate.
This is a tremendous concern to biologists and conservationists - who realize our current scientific and bio-geographical knowledge is limited , and that surprises are the rule in nature. As usual, the socio-political reality is complicated. The workable solution is a combination of no surprises for landowners with periodic plan review, amendment when deemed biologically necessary, and a source of additional funds for those inevitable "biological surprises." A second key step is limiting the incidental take permit to 25 or 30 years.

Agriculture

By Carolyn Richardson

California's highly diverse agricultural industry rarely unites behind any single point of view on environmental issues, but it comes close to a cohesive opinion on the use of regional multispecies habitat conservation plans (MHCPs). We oppose them.

We are not alone in our opposition. Representatives from both statewide and local environmental groups share our concerns about the long-term utility and adverse environmental impacts of habitat conservation agreements covering such a broad scale of time and space. But at this time the agricultural industry appears to be alone in its concern about the adverse impacts on the future of the state's food-producing lands - a concern that is largely ignored in a land use planning process seemingly held captive by large scale developers. As massaged by these interests, MHCPs are little more than rapid build-out plans, facilitating urban growth to benefit a few at the expense of citizens who subsidize these plans through increased permit fees, and agricultural landowners whose rangelands become the source of mitigation set-asides and whose croplands become preferential development targets.

The model appears to be the much touted MHCP for northern San Diego County. The general approach is the designation of large swaths of co-called habitat lands for sequestration to offset the species impacts of urban growth during the life of the current land use General Plan. Some of these lands may be contributed from the assets of large developers, but extraordinary acreages of agricultural lands are included to supplement insufficient contribution of development interests (about 100,000 acres in the case of San Diego County.) These agricultural lands are "preserved" for habitat by prohibiting cultivation. Unlike restrictive agricultural zoning, which the agricultural industry supports, often these MHCP designations will deprive owners of all economically viable use of land.

Although some pretense of voluntariness may be created under the plan by allowing cultivation of designated lands if mitigation is provided, agricultural returns will not support mitigation. This problem is compounded by long-standing US Fish and Wildlife Service policy, requiring significantly greater mitigation for designated rangeland habitat than for cultivated lands. Ironically, cultivated lands are actually targeted for development by lower mitigation ratios designed to force growth away from rangeland onto prime agricultural soils. Generally a one-to-one ratio is required for subdivision of cultivated lands, but a 3 to 1 or more ratio is required for rangelands with so-called habitat value. Another biologically defensible, but counter-productive case is the Kern County MHCP (covering some of our most valuable agricultural resources), where no mitigation is proposed for conversion

of cultivated lands to urban uses.

We view the MHCPs as nothing less than a mitigation subsidy, transferring assets from agricultural families to urban developers. As a plain matter of equity, those who own lands designated for habitat in an MHCP must be fully compensated for the fair market value of their land, including forgone opportunity costs. No MHCP has yet approached these equity problems honestly.

The failure of these plans from a fairness perspective is fixable. Their failure from the resource planning perspect-ive may not be. The California Farm Bureau Federation has long played a lead role in legislation and litigation for the preservation of valuable agricultural lands against urban conversion. But despite our best efforts we are still losing thousands of acres of our most productive land resources annually to urban sprawl. Surely no one is so naive as to believe that development will stop when the forces driving urbanization run out of developable land under a regional MHCP. It will not happen. Short-term economics drive local politics, local politics drive regional MHCPs.

A very different approach will have to be taken to prevent these rapid build-out plans from causing a significant net loss of both agricultural and habitat resources. Agricultural organizations in California have joined forces with some farsighted leaders in the environmental community to address one part of the solution through Senator Costa's bill SB 231 - enhancing the habitat value of existing agricultural lands while preserving their economic viability. The rest of agriculture's proposed solution however, will have to be the subject of another, longer, article.

Carolyn Richardson is director, Department of Environmental Advocacy, California Farm Bureau Federation.

Local Government
Perspective from Sacramento County
By Peter Morse

Sacramento County is fortunate to have varied natural communities including vernal pools with habitat for listed species, croplands that provide foraging for the state listed Swainson's hawk, and riparian habitat along the Cosumnes, the Great Valley's last free flowing river. The County is also fortunate to have a robust economy fed by the computer industry and land development. These two fortunes represent a regional planning challenge to preserve open space while providing for urban expansion.

Our regional resource plan began in 1993 as a U.S. Environmental Protection Agency funded watershed project. In 1995, financial assistance from the development community and additional US-EPA funding allowed a research committee and consultant to draft a report on the feasibility of developing an HCP for the south County. The report concluded that an HCP could be biologically beneficial, economically and politically feasible.

In 1996 the research committee grew into a Steering Committee with expanded representation from the agricultural, environmental, regulatory and development communities. The committee is comprised of three development representatives, four environmentalists, the County Farm Bureau, Cattlemen's Association, state and federal regulators and County planners. The committee decided that the HCP should be multi-species and multi-habitat. The project is currently funded by US-EPA, the Department of Fish and Game and the County. We anticipate receiving additional private and public funds to continue the planning process.

Vitally important to the process are stakeholders who are knowledgeable of their constituents' views, regarded as leaders in their community, and are able to participate in a negotiated decision-making process. Also vital is a commitment from all participants to attend and participate in monthly meetings, and political and practical support at the local, state and federal levels.

The County chose to pursue a habitat conservation planning process because it appears to be an effective tool to address difficulties with the current project by project permitting. From a local perspective, habitat conservation planning is a component of the broader land use planing process that must effectively integrate growth, transport-ation and public services with conservation of important natural habitat. A successful HCP will accommodate efficient urban growth, consolidate habitat acreage and minimize hurdles by streamlining the permitting process.

Project by project permits have demonstrated some success in conserving habitat while providing for urban expansion. The current process, however, has high processing costs, may cause project delays, is sometimes unpredictable, and often results in small, fragmented reserves. Successful implementation of a feasible conservation plan is dependent upon reducing the costs and time of the current permitting process, while ensuring long-term conservation of the County's important natural habitat. The HCP process appears to be a tool that can decrease mitigation costs and increase species viability.

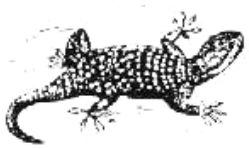
Peter Morse is associate planner for Sacramento County in charge of the South Sacramento County HCP

Environmental Organization
The Failed Promise of Habitat Conservation Planning

By Tara L. Mueller
Multi-species habitat conservation plans (HCPs) have become the preferred, if not the sole, mechanism for balancing endangered species conservation with economic growth on private lands. In practice, however, multi-

species HCPs are literally paving the way for species' eventual extinction. HCPs remove existing legal barriers to development of imperiled species' habitat and lock in unsustainable levels of growth and resource extraction and highly inadequate species mitigation measures. At the same time, HCPs shift the entire future burden of protect-ing species and habitat from those responsible for impacts to these species to the federal and state taxpayers, while offering little long term conservation benefits in return.

In an HCP, development of endangered species habitat is authorized if the project proponent prepares a conservation plan that outlines mitigation measures sufficient to ensure that the species will be better off, and at least no worse off, than before the development occurred. On a large scale, habitat conservation planning offers potential opportunities to conduct scientifically based, landscape level, ecosystem planning by protecting



the most biologically valuable habitat, providing crucial migration corridors, reducing habitat fragmentation and increasing habitat connectivity.

But to date these ideals have rarely, if ever, been achieved. The basic problem: HCPs are political, not scientific documents, whose biological integrity depends entirely upon the political influence of the plan proponent, the political will of the approving wildlife agency, and the backbone of the environmental community (who may or may not even be offered a seat at the table). This basic problem is compounded by the fact that HCPs are driven by a permit process which requires federal & state wildlife agencies to authorize destruction, not conservation, of species and habitat - a fundamentally flawed mechanism for achieving species and habitat protection goals.

The HCP process also is fraught with numerous procedural inadequacies. HCPs are typically prepared by industry or local government consultants, with little or no independent scientific input, and often based on minimal scientific information. Not one HCP approved to date has been scientifically peer reviewed. Many HCPs are negotiated by the government and the permit applicant behind closed doors. By the time the draft HCP and environmental documentation are circulated for a brief period of public review, the "deal" has already been made.

HCPs approved or prepared to date fall far short of standards necessary to ensure the continued survival, let alone recovery, of imperiled species. For example, HCPs do not usually include measurable biological criteria or species-specific management actions and mitigation measures. They also do not quantify the level of take expected to occur, or adequately account for cumulative impacts to species across their range. Most approved HCPs permit immediate take and significant net losses of biologically valuable occupied habitat in exchange for vaguely defined management of marginal habitat set asides. HCPs also contain ineffective monitoring programs that evaluate only general habitat conditions, and not population trends, for a few indicator species. Some HCP mitigation programs simply rely on mere compliance with existing law, or on uncertain federal land management actions. In response to landowners' unsupported claims of financial infeasibility, federal wildlife agencies further reduce HCP mitigation requirements to those that are deemed "practicable." Funding for critical land and water acquisitions and future monitoring and adaptive management programs usually is not assured.

But perhaps the most problematic aspect of HCPs is the Clinton Administration's controversial "no surprises" policy. This policy locks in the inadequate species protection measures in HCPs, relieving landowners of any future obligation to provide additional meaningful mitigation measures, for decades of time. Instead, federal and state taxpayers bear this burden. The problem is that no money has been or is likely to be set aside for the federal and state governments to meet this substantial new obligation. So the species themselves bear the risk of an inadequate HCP, directly contrary to the purpose of the ESA. Although the no surprises policy is very likely illegal under the current ESA, environmentalists have yet to challenge the policy on substantive grounds.

In sum, the promise of HCPs as the panacea for endangered species conservation on non-federal lands has not materialized. Instead, as currently implemented, HCPs are highly likely to accelerate species extinctions by absolving non-federal landowners of virtually all responsibility for protecting imperiled species in exchange for minimal conservation actions. In order for HCPs to achieve their purported goal of balancing the needs of vanishing wildlife and habitat with ever increasing growth and resource extraction, they must incorporate far more meaningful biological protections for species and far fewer regulatory assurances for developers and industries.

Tara L. Mueller is Director of the Biodiversity Legal Program at the Environmental Law Foundation in Oakland

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California Native Plant Society

The Devil's in the Details

By David H. Chipping

The California Native Plant Society (CNPS) is dedicated to the conservation of California's native flora, and has supported the idea of the federal Habitat Conservation Plan (HCP), and the state Natural Community Conservation

Planning (NCCP) processes. It was evident that habitat fragmentation under older land use processing was detrimental to the long term preservation of species, due to the small size and susceptibility to disturbance of protected areas. Protection at the spatial scale of the plant community, such as coastal sage scrub under the San Diego Multiple Species Conservation Plan (SD-MSCP), should afford more effective species protection.

The devil is in the details. Our concerns hinge on the inadequate science and the resultant poor project design underlying multispecies conservation plans (MSCPs). The San Diego MSCP 'covers' over eighty species, many of which are not listed by State or Federal ESAs. Section 10 of FESA allows that a 'covered' species can be 'taken' provided that it does "not appreciably reduce the likelihood of the survival and recovery of the species in the wild". MSCP designers have to delineate protected areas, and areas where take is permitted.

As the number of species increases under an MSCP, its design becomes more difficult. At some point it is likely that no conservation area of a scale acceptable to the development community will encompass the major populations of all of the species proposed for coverage.

Some rare species like the California gnatcatcher are broadly distributed in a region - finding conservation set-asides is relatively easy. Others, like the Otay tarplant, have tiny, scattered habitats that may not be well represented in areas proposed for protection. Good science is critical to project design. If major populations of a rare species are to be destroyed, is enough left to prevent extinction? If not, the species should legally not be included under a MSCP, and separate protection should be obtained. But developers enter into MSCP to avoid such problems, and pressure exists to force the species back under MSCP coverage and a resulting unacceptable level of take. Since developers want to conserve as little land as possible due to cost containment, the conservation spaces may reflect a generous assumption of their long term protective function. Inadequate field mapping, fast decision making, and the added negation of 'no surprises' will push science even further from the process.

In Section 10 consultation the US Fish and Wildlife Service works on behalf of the developer, and then under Section 7 consultation on behalf of the species, in a potential conflict of interest. This may be reflected recently, when the Service declared a 'no jeopardy' decision in spite of sacrificing to development at least 50% of the individuals of a plant listed as endangered under the state ESA and proposed for listing under the federal ESA.

It is our natural heritage that suffers. CNPS only asks that good science be applied to realistic assessment of the security of each and every species covered under the MSCP process, and that no species be sacrificed.

Dr. Chipping is the California Native Plant Society's Vice President for Conservation

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Natural Community Conservation Planning: A 1997 Interim Report

by Daniel Silver

The goal of the State of California Natural Community Conservation Planning (NCCP) Act of 1991 is to resolve environmental-economic conflicts over endangered species on private lands. Typically, a mix of listed and declining, though unlisted, species are conserved on a habitat or natural community basis while development is facilitated outside the preserves.

The NCCP pilot project encompasses southwest California's coastal sage scrub and associated habitats, a global biodiversity and extinction hotspot. There are seven subregional efforts, all with local jurisdictions as lead agencies, that are completed or underway across a largely contiguous 6,000 square mile planning area.

The NCCP program began with controversy, marketed by the Wilson Administration as a substitute for listing, under the California Endangered Species Act, of the California gnatcatcher. Since NCCP participation was voluntary for all parties, progress was variable and insufficient until 1993, when the listing of the gnatcatcher as a threatened species under the Federal Endangered Species Act FESA) gave essential backbone and impetus to the program. In fact, the federal listing formally linked itself to the NCCP via a special rule: the incentive of expedited interim take of the gnatcatcher was offered to program participants subscribing to a set of Conservation Guidelines.

What motivates each of the primary participants? For conservationists, a comprehensive plan based upon ESA standards appears the best hope of rescuing a decimated ecosystem. For developers, the assurances against future listings are perceived as vital to a predictable business environment. For local governments, it is a way to retain autonomy over land use in the face of impending listings and to better balance future growth with natural open space which contributes to quality of life. For the wildlife agencies, it is a way to improve upon project-by-project mitigation and a way to avert the regulatory nightmare of a succession of overlapping listings.

Overview of the Plans

Orange County Plans

One Orange County plan, the Central/Coastal NCCP, is complete. The reserve design process involved a gap analysis between already planned open space (exactions obtained through the land use process and earlier purchases) and maps of overall habitat quality and target species presence. The result - a preserve of 37,378 acres covering 39 species combined the pre-existing open space with smaller, though important, new additions (about 5,000 acres). Apart from two newly constructed toll roads which bisect it, the reserve contains relatively unfragmented lands, thanks to the planning area being mainly a single ownership, that of the Irvine Company.

The covered species list of the Central/Coastal NCCP relies upon umbrella species methodologies, variable amounts of survey data, and judgements of habitat sufficiency. When planned restoration of agricultural lands is factored in, the result is particularly defensible for coastal sage scrub. As in all the NCCP plans, monitoring and adaptive management are major program components. The purported conservation of the endangered Pacific pocket mouse is disputed, though.

Another huge Orange County ownership is involved in the Southern NCCP. An absence of already planned land uses in this area makes it a test case for the NCCP program. This effort is progressing very slowly but has excellent conservation potential.

San Diego County Plans

In San Diego, the logistically complex and politically daunting Multiple Species Conservation Program, or MSCP, pre-dates the NCCP itself and involves multiple jurisdictions and hundreds of landowners. After extensive public participation, a 172,000 acre preserve, covering 85 species across a full range of habitats, has been approved at the framework level and by two of the five jurisdictions involved. Included are 90,000 acres of currently private lands, two thirds of which will derive from development exactions, and the remainder acquired at an estimated cost of $300 million (to be shared by local, state, and federal sectors). In some jurisdictions, preexisting Resource Protection Ordinances serve as the underpinning for program implementation.

The preserve design process had a basis of standards and guidelines for preservation of vegetation communities and for maintaining viable populations of 90 target species of plants and animals. There was a useful map of biological core areas and linkages, preserve design alternatives, and evaluation of species coverage. The final rationales for species coverage, though, do not well reflect the scientific back ground work, and suffer from a disturbing lack of supporting scientific analysis.

The MSCP preserve largely corresponds to preexisting alnd use constraints. About 3/4's of the best remaining habitat is slated for protection. Maintenance of connectivity across an already fragmented landscape is a major potential benefit. A new San Diego National Wildlife Refuge will be created in the most intact remaining landscape.

The San Diego MSCP : a 172,000 acre preserve covering 85 species across a full range of habitats.

Uncertainties in preserve assembly still need resolution, however: While some preserve areas have “hardlines” derived from project specific negotiations, others have “softlines” where the preserve is to be assembled over time according to pre-determined criteria.

A companion plan amongst several cities in northern San Diego County, the Multiple Habitat Conservation Program, is proceeding at a slower pace. Preexisting fragmentation has severely restricted preserve design and connectivity options, and the treatment of farming operations also needs resolution.

Other Plans

In Riverside County, a Planning Agreement is nearing completion to begin an NCCP. It will include Stephen’s kangaroo rat reserves and multiple species plans done for major Metropolitan Water District construction projects, totaling about 40,000 acres. Integration of agricultural lands, as buffers for example, may occur in the Riverside plan, but the landowners request both conservation incentives and maintenance of development options. In a rapidly growing region like this, with little previous history of preserving open space through the land use process, an NCCP can make a considerable difference.

In the Palos Verdes Peninsula in Los Angeles County, a smaller NCCP is underway. San Bernardino County, facing a possible San Bernardino kangaroo rat listing, is also initiating a Valley wide program.

Lessons

A purpose of the ESA is to conserve “the ecosystems upon which . . species depend.” The NCCP program uses the ESA as leverage to apply the principles of

conservation biology over a wide area, and is the most realistic option to salvage, connect, and manage the best habitat remaining on private lands within the vast, numbing sprawl of coastal Southern California. But despite overwhelming practical benefit, controversy still exists over whether there are sufficient scientific grounds to believe the plans will deliver the species protections they promise. So far, what has been learned from the NCCP experience?

9 Listings play an essential role.
The ESA can indeed be parlayed into significant multiple species conservation, far beyond what would otherwise occur. But as proven by potentially disastrous project approvals by NCCP participating jurisdictions, voluntary programs in and of themselves are inadequate substitutes for actual listings. In Southern California, the California gnatcatcher listing remains an indispensable driving force.

9 Public participation must be sought.
Public input is very likely essential to achieving an acceptable conservation result. Collaborative stakeholder groups, as employed in the NCCP, have made many substantial contributions, particularly in preserve implementation and finance. Consensus is not common, but very powerful when it does occur. For final arbitration of contentious issues, however, the composition of local decision-making bodies remains of utmost importance.

9 Partnerships with local government are powerful.
The key advantage of an NCCP over the ESA alone is that local government is an active partner. The application of local land use authority allows accomplishments that state or federal agencies could not manage alone. For example, wildlife movement corridors through habitat unoccupied by a listed species can be protected. Also, implementation tools are much more effective when local government steps in. The City of San Diego, for example, uses an open space zone, within which development of 25% of a parcel is permitted, to effect part of its plan.

9 Assurances are part of the equation.
The trade-off for proactive planning, and, indeed, for the very involvement of local government and landowners, is the no surprises assurance *(see box on page 6.)* Is the biological robustness of the NCCP preserves sufficient for the iron-clad assurances? Habitat based assurances, where no additional mitigation is required for subsequently listed species if these are dependent upon habitats predetermined to be sufficiently conserved, exceeds prudent bounds.

9 There is spill over into better planning in general.
The NCCP programs have allowed local governments to understand the many benefits of natural open space to their communities, and to act. Furthermore, fiscal analyses have demonstrated positive economic effects, not only in terms of regulatory efficiency but also in furthering more compact patterns of development.

9 State delegation is unwise.
Authority should not be delegated from federal to state wildlife agencies. Further removed from special interests and representing the national interest, the U.S. Fish and Wildlife Service has a singular role to play.

9 Scientific accountability is still insufficient.
Since the dissolution of the early NCCP scientific panel which prepared a general set of Conservation Guidelines, the program has suffered from a serious deficiency of independent scientific input and review. While it should not be inferred that the plans are necessarily unsound, neither are they as yet fully credible. The biggest obstacle to independent scientific input has been the wildlife agencies themselves. As time goes on, this deficiency is being partially remedied, as the individual NCCPs are putting in place their own advisory panels.

A dilemma regarding the role of science in the NCCP has been the overarching biological imperative to protect large blocks of habitat quickly, before they disappear, even in the absence of detailed species-level data. This has forced the use of practical methodologies which urgently need more study and validation.

9 Recovery objectives are paramount.
A critical unresolved issue is that of standards. These regional plans must be considered de facto species recovery plans. At a minimum, therefore, they must assure healthy populations across the species range, which goes beyond the FESA standard for HCPs ("not appreciably reduce the likelihood of survival and recovery "). The NCCP Act itself contains no standards, although the Conservation Guidelines specifically prepared for coastal sage scrub call for no net loss of habitat value as defined by viable populations. The failure to explicitly address the recovery objectives of the ESA is the most cogent conservation criticism of the NCCP plans to date. In this regard, recent testimony by the Regional Director of the U.S. Fish and Wildlife Service that the San Diego MSCP supported or contributed to the recovery of all covered species establishes a vital policy precedent.

***9 Local land use factors limit program* effectiveness.**
Thee specific deficiencies of current plans are often due to irremediable zoning constraints or project entitlement actions by local government. It should be emphasized that the ESA alone cannot undo local General Plans or reverse long standing, anti-environmental policies. To the contrary, on private lands, the local land use authorities create the legal and economic parameters within which all other parties operate.

9 Vital acquisition funding remains unavailable. Funding for land acquisition which goes beyond development project exaction is essential for most programs. Sufficient funds are not currently available, and will not be unless the political roadblocks to meaningful funding at both state and federal levels are reversed.

Conclusion

The most important conclusions about NCCP pertain to context. Rather than viewing the Southern California experience as an off-the-shelf national model, the role and form of multiple species planning should be individualized to each locale. For example, rather than a defined preserve, land management practices may be superior for less developed areas.

Even more fundamental is the issue of when use of minimal ESA standards upon which NCCPs are currently based is appropriate. Coastal Southern California, with highly depleted ecosystems under immediate threat from continued population growth, and governed by local jurisdictions unwilling to protect the landscape on their own, is a case in point. There are undoubtedly many other urbanizing areas where the NCCP is an appropriate model. But in more intact landscapes, where mere viable populations is a low standard, the future balance between conservation and development should be determined otherwise, and the potential of other land use tools not undermined.

Ideally, the primary land use tools should remain the traditional ones - growth management and sound local General Plans. From this perspective, NCCPs could play individualized roles in creating meaningful conservation elements for General Plans, and thereby also integrate with land use, housing, open space, circulation, and agriculture elements. It should be recognized, though, that in Southern California, the biologically driven NCCPs may, perhaps ironically, stimulate better planning in general. More compact urban forms and agricultural preservation may be facilitated, either indirectly through implementation of the preserve or simply as a result of citizens facing problems they would otherwise have avoided.

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Conservation Banks: Regional Planning's Newest Tool

By Michael McCollum

After years of false starts, it is said that regional planning has come of age. It is finally recognized that traditional project-by-project approaches to land use planning do not work. If you doubt that statement, consider the massive and haphazard development that encroached upon the natural landscape over the past two decades. After all the dust settled, significant and irreplaceable habitat is gone, and once expansive ecosystems are more fractured than ever.

Traditional project by project approaches to land use planning do not work

Determining appropriate areas to preserve as habitat is a challenging exercise; but, in reality, this is the easy part. In many of our most highly fragmented ecosystems, much of the land that needs to be preserved is private property. Taken regionally, obtaining this land for public benefit is an expensive proposition. The real challenge is finding funding mechanisms to underwrite the purchase of these open space preserves.

Under regional planning, impacts should occur in areas better suited for development. The remaining, more sensitive, habitat areas are supposed to be preserved as open space. The idea is to fast-track development in areas planned for such use. This should conserve money to purchase property from landowners in areas of more constrained development (a.k.a., future conservation areas) while providing those landowners economic incentives to sell. Money previously spent on attorneys, consultants, and lenders for development, can now be spent on acquiring habitat lands. But, this is the rub: to be successful under this scenario, regional planning must *encourage* development. For many, this is a hard concept to accept.

Traditionally, one of the primary mechanisms for obtaining open space is through regulatory fiat. If you want to develop your property, you first have to give government something it wants...land. As long as the

Private Landowner Conservation Incentives

Protection of key species, habitats and ecological health is critically dependent upon private landowners. Voluntary activities will be key to providing for wildlife across our private lands in the 21st Century. Incentives and landowner assistance programs are the cornerstone of this approach. Examples include conservation easements, tax credits, inheritance tax exemptions, wildlife friendly farming techniques such as those promoted by the Yolo County Resource Conservation District, and funding for projects from the US Dept of Agriculture and other sources.

Programs such as safe harbor, H.E.L.P. (Habitat Enhancement Landowner Program - a California Farm Bureau proposal), and hold harmless agreements for land adjacent to preserves, are necessary for successful conservation in landscapes dominated by private ownership.

For discussion of some of these items, see:

- *Building Economic Incentives into the Endangered Species Act*. H. Fischer and Wendy Hudson. Defenders of Wildlife. 1993
- *The Keystone Dialogue on Incentives for Private Landowners to Protect Endangered Species*. The Keystone Center, CO. 1995.

landowner can make a profit, he goes along with it, if not a bit grudgingly. However, this process preserves far less than what is needed to maintain stable populations of wildlife and has major constitutional limitations.

Since we know government cannot pay for massive acquisitions, and private property cannot be taken without compensation, there are only two options left. Challenge the constitutional rulings, but risk landowner rebellion against what would certainly result in unbearable regulations. Or completely restructure the whole project-by-project mitigation concept into a new approach.

I suggest that the latter is the only feasible alternative. Oppressive regulation, no matter how noble the justification, spawns equally impressive opposition. When society's property rights, comforts, and jobs are at risk, the environment will almost always lose the contest.

Effectively addressing mitigation on a landscape, multispecies level is incompatible with the traditional project-by-project approach where each project mitigates for itself, preferably onsite. Nevertheless, many of us continue to try to merge the two approaches. This reluctance to dump the old and adopt the new is having disastrous consequences. Regional planning, for example NCCPs in southern California, is designed from a whole new cut of cloth to *replace* traditional project-by-project methods. Instead, timid policy makers simply overlaid it. The most serious fallout of this situation is the growing sourness of relations among government agencies, environmental groups, and landowners. Many who were once vocal proponents of regional planning are beginning to express doubts about the program.

To reverse this dismal trend, I believe that policy makers and landowners must more clearly define and agree upon the real vision of regional planning and how it works, complete with examples. Most importantly, this vision must be communicated to their staff in the field; consultants, agency staff, activists, and landowner and developer representatives, alike.

Radical thinking must prevail. Each participant must think in terms of how to develop solutions that benefit the other participants. Government must minimize regulatory inducement and find incentives for landowners to do good things for the environment on their own. The surest way to encourage cooperation is preservation of self-interest.

Radical thinking must prevail. Each participant must think in terms of how to develop solutions that benefit the other participants.

A good example of landowner incentives is conservation banks. Conservation banks are pre-approved mitigation banks sited in areas that regional planning designates as open space. These banks sell conservation credits, not simply acres. Generally, all the credits in the entire bank have equal habitat value. Each credit sold represents mitigated habitat, a management plan, and a prorated portion of the endowment account that will fund management in perpetuity. A developer needing mitigation can purchase a credit from a bank in a day, instead of the six months to a year it typically takes to find a site, have it approved by the wildlife agencies, negotiate its purchase, set up a management plan, and fund long-term management. Credits can be sold in quantities as little as one tenth of an acre, or thousands of acres.

This concept encourages landowners to set aside their property for open space rather than fight for development because they can make a profit by selling the land with speed and ease. Developers in need of mitigation will pay a premium for this. Conservation banks complement regional planning because land is obtained for public benefit, yet no government money is spent. For the

landowner, a novel thing has happened: endangered species are now an economic asset!

Conservation banks serve the public's interest by ensuring that mitigation is meaningful, ecosystems are properly designed, managed, and interconnected, and endangered and other sensitive resources can have a reasonable chance of persisting into the future. Importantly, this is accomplished without depending entirely on government programs or unworkable regulations.

In my view, we need to look at development as one of several financial opportunities to construct permanent ecosystems. To ensure that conservation banks are financially successful, mitigation policies must be more flexible and focus upon management, restoration, and preservation of habitat offsite. The market area for sales of conservation credits must recognize that ecosystems are created on a macro scale, not arbitrary limits on distance from the bank site. And, finally, the process of implement-ing mitigation requirements encourages landowners to participate in this process, not making it so onerous that resistance to conservation, or reliance on expensive consultants, is a viable option.

Conservation banking is but one idea to address our natural heritage stewardship responsibility. We need to think of other ideas and give them a try. This may require some original thought. Differences of opinion will continue. No one has all the right answers. But we must engage in constructive debate, not guerrilla warfare. There is still time to conserve our natural heritage, and we must rise to the challenge to be good stewards of what has been given to us. We have very few chances remaining before an increasingly urban society, with little attachment to the natural world, makes these decisions for us. Let's show some courage and make it happen, together.

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Review : Science and Conservation Planning

The Science of Conservation Planning : Habitat Conservation under the Endangered Species Act.
By Reed Noss, Michael O'Connell and Dennis Murphy. Island Press. 1997 $25.00 (paper)

Reviewed by John Hopkins

These three eminent conservation biologists take the view that "habitat based conservation planning is here to stay. Trying to stop or undermine these plans is counter-productive. Instead, become an informed and responsible participant and try to make plans as biologically conservative as possible."

In contrast to some members of the conservation community, the authors consider multi species plans to be much better than the status quo - "the seemingly rigorous standards of the ESA are actually of little or no value in addressing many of the principal threats to species." Examples are re-connecting of fragments, protection of suitable but unoccupied habitat, control of exotics, augmentation of small populations. Regionally based conservation plans provide the opportunity to take many of these actions.

Much conservation planning is going on without adequate information about species' ecology, distribution across their ranges, and other basic biological data. But society will not stand still while scientists gather data and learn more about individual species and biological communities. So Noss and colleagues lay out a set of conservation planning principles, based on those often seen in the conservation biology literature. They urge plan developers to follow these principles.

The authors recognize the tension between ecosystem based planning and conservation of individual species. They recommend that habitat based conservation planning "reconcile species and ecosystem conservation" and that it "include the collective habitat needs of all native species and the processes through which species interact with each other and the environment."

Ecosystem processes and function are important and usually overlooked in conservation planning. "Species and processes interact in ways that determine the health of an ecosystem and human society is dependent on healthy ecosystems." An HCP should approach these processes and functions from the viewpoint of how they relate to the needs of endangered and rare, not the inverse of what species are needed for ecosystem function and processes.

The authors stress the importance of involving scientific experts from the start of an HCP process, keeping them independent from the steering committee, and ensuring review of plan material as the plan develops. These experts need to encompass a range of disciplines, from biology of key species to landscape ecology. This approach will do more good than peer review of a draft document, they wisely point out. The practical problem, however, is that key experts may be unwilling to assist.

Environmentalists in particular are concerned about the "no surprises" policy *(see box, page 6.)* Noss and colleagues point out that no surprises does not mean the HCP will never change, just that the public will have to bear the costs of additional conservation actions deemed necessary in the future. "This appears fair except to those who would place the entire responsibility of conservation on the private sector." The problem, of course, is how to be sure that the money and conservation opportunities are available when the inevitable biological surprises occur.

Chapters on criticisms of conservation plans, assessment of a conservation plan, and a framework and guidelines for a conservation plan provide a wealth of thoughtful information and ideas. Some common themes emerge - the need for proper monitoring, research and adaptive management in plan monitoring, plans that contribute to the recovery of species and biological communities, and the proper use of science in developing a plan. These all-important chapters are not a cookbook, but educate the reader and provide the general knowledge essential for working on, or critiquing, a plan.

The rigor of science in developing a conservation plan is very important. Now science means use of scientific methods, adequate research. It does not mean some arbitrary system of calling a plan good science if you like it, bad science if you do not. And scientific method is about posing hypotheses, then testing them. Hypotheses include alternative conservation plans, which should be tested to see which best accomplishes the plan's biological objectives.. Use of models to test mapped based reserve systems, and an iterative process to refine the mapped based conservation plan, is important if there is enough biological information available. The authors warn that GIS can "produce professionally looking results based upon very poor data and little or no real science." They urge "that conservation planners make every effort to acquire the basic field data necessary for reliable assessments of the status and trends of target species." Plans developed without adequate biological information about key species and ecosystems will require a lot of modification over time.

Their book does an admirable job of explaining the scientific issues and needs. Like the authors, I hope that everyone involved in HCP development and implementation, from citizens and conservationists to agency biologists to landowners and local government officials, will study this book carefully.

Information Resources

National

Nature's Services : Societal Dependence on Natural Ecosystems. Ed. Gretchen Daily. Island Press, 1997.

Our society vaguely recognizes that nature provides services important to human well-being. But there is very little understanding of what these services are, or the fundamental roles played by natural ecosystems. Thus recently researchers found that the basic American attitude to invertebrates is "exterminate them", showing how little people understand & value the workings of nature & our total dependence on biological systems.

This book, written by an array of respected scholars, provides an essential overview of ecosystem services. It ranges from the role of biodiversity in ecosystem functioning to examination of the services provided by aquatic, forest & grassland habits, by the soil, pollinators and pest predators. There is also an exploration of the economic value of ecosystem services, and case studies from different locales and ecosystems. *Nature's Services* provides invaluable information and ideas that will be useful to everyone working to protect natural landscapes or needing to demonstrate to policy makers and the public the need for ecosystem conservation.

Preserving Working Ranches in the West. Ed. Liz Rosan. The Sonoran Institute, Tucson, Arizona.

Private ranchlands are immensely important for conserving many large landscapes with a wealth of rare species and habitats. Grasslands, vernal pool complexes, oak woodlands and many other communities lie mainly on private ranchland in California. But "throughout the West working ranches are being converted into small tracts of recreational and residential homes, creating serious social, ecological and economic problems" notes this report. Urbanization is an additional problem in many areas of California.. Maintenance of the private ranches is absolutely essential, for nature and for our quality of life.

This is a 50 page report for the rancher. It looks at land trusts and conservation easements, at estate planning and the selling of development rights. There are five case studies, from Arizona, Colorado, Montana and Oregon. But it is more than a work for ranchers themselves. It helps everyone who cares about the open spaces, healthy ecosystems and the rural West to understand these issues, needs and opportunities.

To obtain this report, contact the Sonoran Institute at (520) 290-0828, or E-mail at soninst@azstarnet.com.

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California

Planning for Prosperity : Building Successful Communities in the Sierra Nevada. The Sierra Business Council. 1997

This really excellent report focuses on land development practices in the Sierra Nevada. With the foothill region expecting a tripling in population over the next few decades, suburban and rural sprawl threaten the quality of life and the biological health of the region. *Planning for Prosperity* provides invaluable information for local communities and concerned citizens to use as they plan for their futures. Principles for sound development utilize case examples from around the nation. They focus on how we can build thriving towns with a high quality of life and at the same time conserve the natural assets that attract people to the Sierra in the first place. There are the invaluable results of an extensive survey of 1,000 Sierra residents, overall and by county. They show residents want to preserve quality of life and natural landscapes. Finally there are overviews of twelve counties and their general plans. The only drawback to this excellent document is insufficient attention to the difficulties posed by tens of thousands of existing but unbuilt scattered parcels and to the strong attraction of owning five acres in the woods.

To purchase a copy, phone the Sierra Business Council at (530)582-4800.

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