



## SPECIAL FOCUS-- THE FUTURE OF OUR RURAL LANDSCAPES

### **CAN OUR RURAL LANDSCAPES SURVIVE THE 21ST CENTURY?**

**R**ural landscapes have defined the western United States for generations of residents and newcomers. Vast landscapes, an endless panorama of hills, mountains, canyons and valleys, varying flora and fauna and bountiful agricultural lands have been the essence of the West. But now the future of many remaining valley and foothill landscapes is in doubt. How society deals with urban and rural growth in the 21st century will determine whether many great rural landscapes of the West remain whole or whether they change to vast metropolitan areas and large tracts broken up into rural ranchettes.

Except for many deserts lands, the lower elevation valleys and foothills of the West are primarily private lands. These landscapes have undergone many changes since European settlement. Valleys and plains became agricultural areas - firstly dryland farming and then intensive irrigated agriculture in areas like California's Central Valley.

We see five major issues facing many of these private lands.

- " Urban and suburban growth spreading out from existing communities.
- " Spread of areas given over to ranchettes.
- " How to keep large ranches and family farms intact.
- " How to maintain the economic viability of various forms of agriculture.
- " How to improve wildlife habitat on range and farm lands.

#### **Spreading Suburbanization**

In California the current public policy focus is on the first issue : suburban development and the growth of sprawling metropolitan areas in the Los Angeles - San Diego, San Francisco Bay and Central Valley regions.

Metropolitan growth in these areas can also create growth at more distant locations, particularly when there are good transportation routes. Thus job growth in the San Francisco Bay area, coupled with a lack of housing, is creating bedroom communities in some Central Valley counties. UC Berkeley's Tim Duane points out that growth of Central Valley metro areas stimulates growth in neighboring Sierra Nevada foothills. Placer County led the way with growth along the I-80 corridor and is now a growth center in its own right. El Dorado County is following, perhaps 20 years behind, with growth along the Hwy 50 corridor. Duane suggests that other areas are

simply earlier in the growth curve and as Valley cities like Stockton and Modesto grow they will stimulate similar growth along their road corridors into the Sierra Foothills.

**As long as we rely on low density subdivisions as the dominant form of new housing, metropolitan growth will consume vast landscapes**

As long as we rely on low density subdivisions as the dominant form of new housing, metropolitan growth will consume vast landscapes, and smaller towns (*to page 3*)

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# News from IEH

## IEH and Rural Landscapes

The conservation of rural landscapes, extensive tracts of land with very few buildings (including farm and range lands), is the heart of the Institute for Ecological Health. This is the first *Linkages* since our Sierra Foothills edition to focus on these landscapes, the needs of Nature, and how to incorporate human communities and people's desire to live in rural settings. It touches on a number of very important topics, and outlines a range of issues that we will examine in more detail in future editions of *Linkages*.

## IEH Columns

This edition of *Linkages* introduces our second regular column, *The Needs of Nature* and continues *Planning for Quality of Life*. We will use these regular columns to explore a wide range of important issues in the future.

In the next edition of *Linkages* we will start our third column - *The Sustainability of Agriculture*. This will address a range of farming topics, from the IEH viewpoint of sustainable land use. They will include the importance of conserving and enhancing healthy soils, all important issues of maintaining the economic viability of agriculture, and the need to keep family farms and ranches in operation.

## The IEH Web site

In this Information Age the Internet should be a central focus of a non-profit organization. Web site designer Anne Kao is a volunteer who very generously designed and set up our current Web site, which exists courtesy of San Francisco State University. She is now carrying out a very extensive project for us, producing a redesigned and up to date site. We plan to launch this site in the Fall at a new url.

Currently IEH's program activities take place within the state of California, although we have no formal geographic boundaries. We also have members in Arizona, Nevada and Canada, reflecting a growing *Linkages* readership beyond California. A web site provides access to the whole planet, and we get regular inquiries that show our usefulness to people in a wide variety of areas. The new site will focus on expanding that usefulness in the years ahead and ensuring we have no geographic limits.

## Urban Villages

One important current project for IEH is how to incorporate urban natural areas into Urban Village design for Central Valley cities. We are carrying out this project as a contract with the University of California, Davis, working with landscape architect Randall Fleming.

## Individual & Business Memberships - the Financial Basis of *Linkages*.

Thank you to all who have donated in the past. You represent a wide range of interests, including farmers, ranchers, business people, planners, elected government officials, scientists and conservationists. Your generous donations ensure that *Linkages* reaches a wide array of decision makers, newspaper reporters and community leaders, many of whom use *Linkages* as a valuable reference tool. **We need the support of you, our readers, in order to produce *Linkages*. Please send your contribution today (see form, page 16.)**

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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.

#### IEH Web Site

[www.instituteforecologicalhealth.org](http://www.instituteforecologicalhealth.org)

#### Contacting IEH

409 Jardin Place, Davis, CA 95616  
(530) 756-6455 (phone and FAX)  
E-mail: [ieh@cal.net](mailto:ieh@cal.net)

## Rural Landscapes *continued from page 1.*

will grow excessively in area. Simply increasing the density of new housing can dramatically reduce land consumption. For example the American Farmland Trust, in its 1995 report *Alternatives for Future Urban Growth in California's Central Valley*, states that increasing the gross residential density from three to six dwelling units per acre would save one and a half million acres of farmland by the year 2040.

A range of solutions are well known and in the forefront of public discussion and growth management campaigns. They involve creating very livable communities that include vibrant areas with high and very high densities for those who like urban lifestyles. UC Davis's Randall Fleming calculates that if 25 percent of a metro area's population lived in urban villages then the total land need of that metro area would shrink by 35 percent (*Linkages* #8). This approach would blend both with conventional subdivision development for the majority of new residences, and with the creation of suburban areas with a greater pedestrian, bicycle and transit focus than current developments. And the possibilities for achieving a significant fraction of new growth by infill development are tremendous, but not quantified for individual communities.

However there are great obstacles to achieving this change in the form of metropolitan development. One is the current system of federal and state incentives and disincentives. A second is the widely used system of zoning and building codes, which usually mandates lower density development forms and makes many desirable features of compact development illegal. A third is the need to solve some quality of life and social equity issues of central cities and inner suburbs such as poor schools. For example, imagine the regional land use impacts if California's central cities and older suburbs developed the best schools.

A fourth is the need for political will. After World War II, the City of Los Angeles adopted a vision for future growth in the then undeveloped San Fernando Valley. The Planning Director and a planning commissioner proposed "concentrated new development at medium-density levels around sixteen existing suburban modes permanently separated by 83 square miles of citrus and farm greenbelts." The Los Angeles City Council voted to adopt the greenbelt zoning. But soon the familiar California development system took charge. Land developers obtained options to buy cheap agricultural land in the greenbelts, then applied for changes in zoning. The City Council approved repeated zoning changes, so creating the vast developed expanse of the San Fernando Valley (see Davis, 1996). Similar problems continue today in California and elsewhere, with some developers viewing the land use planning process as "planning by the vote of three" (a majority of county board of supervisors).

## Exurban Growth

William Stewart of the California Department of Forestry and Fire Protection showed how there are several forms of growth in a 1997 report, *Bioregional Demographic Trends and Implications for Biodiversity*. Sonoma County, north of the San Francisco Bay, exemplifies a very different pattern to the highly publicized metropolitan sprawl. Over half the county now has an intermix of wildlands and houses. These include ranchettes of various sizes as well as small farms and vineyards. While county residents have enacted ballot measures to create urban growth boundaries around the growing cities, the low density development consumes a far greater amount of land and can have a tremendous impact on ecological health and water quality.

In 1990, 1,443 square miles of the Sierra Nevada had houses at densities of one per 4 to 32 acres, while only 89 square miles had houses at densities greater than one per acre. The latter class contained 39 percent of Sierra residents, the former 31 percent (Duane, 1999). This is a stark demonstration of how much land ranchettes consume. The problem is national. Charles County, Maryland is an example. Here one quarter of the county's development, on one to three acre lots will, over a

### California Futures Network Smart Growth Policy Briefing Sacramento, CA Tuesday May 9th, 2000

The briefing will be held from 8:30 AM to 12 PM with time in the afternoon to meet with state legislators. There will be a \$25 registration fee to cover breakfast and materials.

You will hear from state officials and organizations about current reform proposals, the opportunities for change and how you can make a difference.

You will have opportunities to network with other leaders across the state who are working for Smart Growth in their communities.

**For more information and to register, contact CFN at: (510) 238-9762 or E-mail to [cfn:igc.org](mailto:cfn:igc.org)**

The Institute for Ecological Health is a member organization of the California Futures Network (CFN), a statewide coalition of organizations dedicated to fiscally, socially and environmentally sustainable land use in California. CFN defines Smart Growth as:

- steering public and private investments toward existing developed areas;
- providing for increased social justice, economic and housing opportunities;
- conserving the state's agricultural and natural lands.

25 year period, consume 50 percent more land than the remaining 75% of development occurring at higher densities (Porter, 1997).

Stewart suggests that about 20 California counties fit the Sonoma model, including an outer ring of counties around the San Francisco Bay region and the Sierra Nevada foothill counties. Under current local government plans and zoning, these counties face the creation of very large rural residential landscapes. These are usually foothill landscapes, hilly terrain with a mosaic of grasslands, oak woodlands and chaparral scrub. Development puts houses on two to 10, 20 or even 40 acre lots. The new residents often work in the nearest cities, telecommute or enjoy retirement. In fact Americans even view such an area as a rural landscape. In reality, it is an exurban landscape, very much altered by human development. Natural plant and animal communities are degraded by habitat fragmentation, spread of exotic garden plants and predation of birds and small mammals by domestic and feral cats. Water quality is often impaired as there are rarely sufficient setbacks from water courses. Traffic becomes a problem as build-out on the small parcels continues because local government cannot afford to upgrade local roads. Wildfire hazards are a growing problem.



In some areas, such as the Sierra Foothills in Nevada County, the small parcels were created decades ago and if ever they are all built out there will be widespread septic tank failures says Tim Duane. Continued build out of these existing parcels, which is grand-fathered into newer county plans and zoning systems, can be a bigger problem than subdivision of larger parcels.

Both Tim Duane, in his book *Shaping the Sierra* (see review on page 14), and the Sierra Business Council in its report *Planning for Prosperity*, call for changes in land use patterns to combat the problems of exurban growth. The Sierra Business Council urges more compact development around existing Sierra communities - taking livability design principals for cities and applying them to small towns. Tim Duane calls for both this approach and the use of carefully clustered development in new growth areas. Thus a string of small exurban developments along a watershed could each cluster their development and protect connected natural areas, such as a wide creek corridor. While it often seems that people move to these areas specifically for the large lot exurban lifestyle, Duane explains how many newer residents come to avoid existing cities rather than be closer to nature and that they will live in more compact developments. Local governments, however, mistakenly utilize large lot zoning in rural landscapes, while local residents worry that the open space in clustered developments will not be permanently protected

At the greater county-wide and regional scale, however, it is essential to protect large landscapes from creation of small parcels and exurban growth by limiting development to selected areas and preserving viable ranches. A viable cattle ranch often needs to be in excess of 5,000 acres, while wildlife conservation and ecological integrity call for maintenance of very large natural landscapes. Achieving this goal will take major actions by local and state government to protect working landscapes - both the irrigated farmland that gets great attention and also the undervalued range lands. This will require use of transfer of development rights programs (see *Linkages # 7*) conservation easements, general plan restriction of development areas, avoidance of new or greatly upgraded roads and other techniques (see *Landowner Incentives* on page 10).

A landscape with small, compact communities and embedded in rural areas with virtually no housing is the centuries old European model. Americans have long resisted this approach, starting with the failure to obey a 1635 Massachusetts Bay Colony law requiring settlers to establish homes within a half mile of the community meeting house and church (Kunstler, 1994). And concerns about protection of private property rights make change difficult in modern day rural areas. However change we must, or those very qualities we value in our rural landscapes will disappear.

## Maintaining Viable Agriculture

The long term viability of agriculture is essential to the conservation of our rural landscapes. Nearly all of the private rural lands will remain private. The alternative to active farms and ranches is usually parcel splitting and a trend toward exurban growth. Several forces currently promote this change and hinder rural land conservation.

Many family farms and ranches suffer from several multi-generation fiscal pressures. When the owner of a large landholding dies, the land must often be split up and some sold off to pay inheritance taxes. For many farmers, the land is the retirement fund and so sale is essential. And there may not be any children interested in taking over a family agricultural operation. If the land is within commuting distance of a city or metro area it will sell for more than the agricultural value and so is difficult to purchase purely for agricultural purposes. And farming operations are often uneconomical, both for cattle ranchers and for crop farmers.

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Solving these problems needs a variety of approaches from federal action such as changes in inheritance taxes to local actions such as purchase of agricultural easements, restrictions of parcel splitting and fostering of compact growth around existing communities.

### Wildlife Habitat on Farm and Range Lands

Many urban dwellers appear to see farm and range lands as biological deserts, (do you mean not focusing on the barrenness, etc.?) focusing on the barrenness of clean farming, pesticide problems and impacts of inferior grazing management practices. In reality agricultural operations can provide a wide array of wildlife values. Croplands provide habitat in particular areas such as field edges and small wetlands, as well as raptor foraging habitat across row crop fields and waterfowl habitat in areas like winter flooded rice fields. And our private rangelands encompass nearly all of a wide variety of habitats and vegetation types, such as grasslands, blue oak woodlands and various types of chaparral, that are poorly represented on public lands. Specific grazing practices can help restore the range and contribute to an abundance of wildlife in these habitats. A future issue of *Linkages* will explore this topic in detail.

### Conclusion

The ongoing conversion of rural landscapes is a continuous and multi-faceted process. Each individual piece of development may seem innocuous and beneficial to the human community. But wait a while and an entire landscape will disappear. In the late 1940's Los Angeles County was the leading agricultural county in the nation. Its orange groves gave way to urban sprawl as local government failed to protect farmland. The orchards of

the Santa Clara Valley gave way to a poorly designed Silicon Valley, leaving business officials dismayed that society had made a mistake by allowing low density development (see *Linkages* # 6).

Most of the foothill oak woodland in Placer County that lies outside city boundaries is in rural residential areas, a landscape of existing small parcels that is slowly building out. The solutions are also multi-faceted and pose tremendous challenges. One of the most urgent needs is to make our cities and older suburbs very livable, attractive places and to help the recent resurgence of urban communities. Curbing the spread of metropolitan development, changing local government planning for rural landscapes, and protecting farm and range lands through easements and transfer of development rights are all critical steps. Determination and a sustained effort over a great many years is essential. The rewards will be better cities and a protected countryside.

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# PLANNING FOR QUALITY OF LIFE

## Investment and Metropolitan Growth

A great variety of investment decisions affect the location of future growth. In past decades both government and private sector have put much of their funding into newly developing suburbs. The consequence is both widespread loss of agricultural lands and wildlife habitat and deterioration of many cities and older suburbs.

Infrastructure is one of the biggest investments. Highways, sewers and other infrastructure are very expensive. Financial resources are limited and cannot provide for the total wish list of projects, so how society prioritizes the funding of infrastructure projects will have an increasing influence on where development occurs. Usually citizens concerned about badly planned growth in a community or metropolitan region have focused on local government land use planning. But as William Fulton explains in his *Guide to California Planning*, a fundamental issue is “the overwhelming power of capital improvements to control the development process and shape communities”.

Two basic strategies that will benefit both land conservation and community quality of life are to fix existing deteriorated infrastructure first and to emphasize investment in existing developed areas.

In 1999 the California State Treasurer, Phil Angelides, released *Smart Investments*, a special edition of the state’s Debt Affordability report. This document and the State Treasurer’s vision are having a profound impact on debate and decision-making about infrastructure financing. The treasurer recognizes that current growth patterns threaten the future economic well-being of California because they both “accelerate environmental degradation and exacerbate the widening gap in economic opportunity among

our residents”. He calls for changes in state investment to “support livable communities, sustainable development and sound environmental practices.” He also calls for stronger regional planning, supported by those investments, since key issues transcend traditional local government boundaries.

In a separate publication, *Smart Public Investments for the California Economy*, economist Steven Levy stresses that much of the state’s infrastructure needs are independent of growth. We need to make very substantial investments to repair or replace existing facilities and to catch up with the back log from past growth. “In California, deferred maintenance and low investment in our infrastructure has caused us to lose our economic edge, has led to increased social tensions, and threatens the beauty and viability of our natural environment” states the California Council for Environmental and Economic Balance.

The benefits of redirecting investment go beyond infrastructure financing. One of the obstacles to increasing infill development is financial, with developers and banks being concerned whether projects will be profitable. Recently the California Public Employees’ Retirement System, CalPERS, which is the nation’s biggest public pension fund, and the State Teachers’ Retirement System committed substantial amounts to urban infill.

These welcome moves to shift investment strategies to existing developed areas will have a growing impact on development patterns. They have the potential to improve the livability of urban areas and reduce the pressure on farmland and wildlife habitat at and beyond the urban fringe.

## Smart Investments on Land Use

### Key excerpts from the California State Treasurer's Report

— **On dealing with growth.** “Sustainable development accepts the reality that we will experience growth and ask how best to direct this growth without destroying the quality of life which is a critical factor in stimulating private investment”

— **Defining Sustainable Development.** “Land uses support transportation options beyond more freeways and roads; a better mix of housing in communities and neighborhoods; locating jobs near housing and balancing job growth with new housing; land use designs that bring homes, schools, workplaces, services and retail shops closer together; communities centered around civic spaces, with neighborhood features such as well-lit, tree lined streets and inviting, human scale architecture design; more efficient, well planned higher density use of land; and protection of environmental resources.

— **Patterns of Growth.** “Present patterns of growth are consuming our open space at a rate even faster than our population growth.” “ These patterns of expansion are not sustainable fiscally, economically, environmentally or politically. Fiscally the State and local governments cannot afford to meet the demand for transportation, public works, and other services needed to connect increasingly far-flung new communities. Economically and environmentally, our quality of life, on which our future competitiveness depends, is being eroded. Politically, if we fail to achieve a needed consensus on growth, our State will become a battleground, creating chaotic development and instability, and impeding economic progress.”

— **Redirecting growth.** “Accommodating more growth within the existing urban fabric takes pressure off the urban fringe and simultaneously brings new economic opportunities to existing communities. This strategy is more economical, more efficient, and less harmful to our natural environment.”

— **Regionalism.** “Many major public policy challenges facing the State, from transportation to employment, from affordable housing to preservation of open space, must be addressed from a regional perspective, for these problems transcend traditional city and county boundaries”

See page 15 for details on how to obtain a copy of *Smart Investments*.

## Congress Struggles with Funding for Land Conservation

The Land and Water Conservation Fund (LWCF) permits up to \$900 million a year in annual federal appropriations for land conservation, including a matching grant program for states. Only a fraction of this money is actually appropriated and in many years there has been no state matching grant program. In 1997, Congress appropriated just \$159 million. This year's \$460 million is substantially higher, but includes only \$40 million for states.

Funding needs for land conservation are huge. There is broad support for making the \$900 million a year an automatic expenditure, not requiring annual appropriation. One bill in this Congress to do just this is CARA, the Conservation and Reinvestment Act, H.R. 701. Rep Don Young (R-AK) introduced this bill which has bipartisan support, including that of Rep. George Miller (D-CA). A large fraction of the \$900 million would be available for state and local programs. There is additional funding to support wildlife habitat conservation on private lands. Other sections of HR 701 provide additional funding for state wildlife conservation and restoration programs, assistance to local governments for improving park and recreation programs and for acquisition of conservation easements to aid the recovery of endangered species and their habitat.

In November 1999 the House Resource Committee passed H.R. 701 on a 37 to 12 vote, after extensive negotiations about some controversial items in the introduced bill. The legislation awaits action on the House floor and in the Senate.

It is not at all clear that this Congress can pass legislation to fully fund the LWCF. H.R. 701 remains controversial. For example, there are concerns that this legislation will promote further off-shore oil drilling that would have severe negative impacts on the ocean and coastline. Also some individuals and organizations oppose further funding for land conservation for endangered species protection. But there is very broad public support for increased funding to protect open space and wildlife habitat and growing pressure to provide full and automatic funding for the LWCF. Passage of such legislation will provide very substantial additional funds for land conservation by state and local governments.



# CONSERVING WILDLIFE HABITAT IN THE SIERRA NEVADA FOOTHILLS: AN EXAMPLE OF CONSERVATION STRATEGIES FOR RURAL LANDSCAPES

*By John Hopkins and Sue Britting*

Rural landscapes of privately owned farm and range lands usually have very important biological values as wildlife habitat and it location of varied native plant communities. The vegetative associations and animal species include many that are not found in the public lands dominated mountain and desert regions. Conservation of these landscapes is of great importance to the maintenance of biological diversity and the overall ecological health of the state. The spread of suburban and rural residential development and the conversion of lands to less wildlife friendly agriculture (for example conversion of range lands to vineyards) will continue as a major threat to that biological health until enactment of changes in local government planning and widespread adoption of land conservation measures such as acquisition of permanent agricultural easements.

The western foothills of California's Sierra Nevada provide an example of the problem and potential solutions. Several portions of the foothill region are undergoing rapid

development because of their proximity to expanding metropolitan areas, with additional subregions facing future threats (see *Shaping the Sierra* review on page 14 and also Linkages #3 with its special focus on this region.)

The region has a great biological wealth. The foundation is an intricate mosaic of blue oak woodland, grasslands now dominated by non-native annual grasses, various types of chaparral scrub and live oak woodlands. A complex geology creates a great variety of soils, and soils in turn determine the plant communities. In addition, the topography of rolling hills bisected by a series of river canyons creates a variety of aspects (eg, north or south facing slopes) with different temperature and moisture regimes that affect vegetation and wildlife distributions. There are many rare plants and specialized plant communities found only in very restricted locations. Less than one percent of the land is protected for the conservation of biological diversity and very little land is publicly owned. The region is also a refugia for species now virtually extirpated from the Central Valley floor.

## A Four Level System for Rural Land Conservation

**Working Landscapes.** Large areas with few roads and development. Have a mosaic of vegetation types, are managed as range land, and allow for continuance of ecological functions and processes.

**River Corridors.** Rivers and major creeks with riparian lands and adjacent uplands. Some scattered development. Managed to conserve biological diversity and ecological processes.

**Natural Preserves.** Areas specifically managed for biological values, usually rare species or plant communities.

**Management Zones.** Lands with vital biological roles in the regional landscape but with some existing development and the expectation of more growth. Include key wildlife corridors across inhabited areas.

## Underlying Principles for Conservation in the Region

- " The region is mainly private land, and will likely remain so.
- " While natural preserves whose primary role is protection of biological diversity are an essential component of a regional strategy, conservation across most of the landscape will occur on private lands, and on public lands that primarily provide passive recreation.
- " Long term biological conservation will be dependent upon good stewardship, voluntary cooperative efforts that go beyond individual property boundaries, and the ability of landowners to make an adequate economic return from their property.
- " Long term biological conservation requires conservation of the full variety of native plants and animals, their communities and habitats, not just species of concern.
- " The least disturbed, best quality lands that make the highest contribution to protection of existing biological values provide the basis of a conservation strategy.



" In addition, we must ensure that Nature can accommodate future changes. For example, climate changes will have profound effects on the distribution of many plant and animal species. A one degree centigrade change in the average temperature during the period 8,000 to 4,000 years before present had major impacts on the current distribution of California's plant species. Providing for change requires conservation of natural areas encompassing the full variation of altitude and microclimates, conserving individual species across their geographic ranges, and maintaining biological connectivity wherever possible.

## Four Landscape Zones

We can view the rural landscape as four zones, depending on its current and future level of human activity. Three categories, working landscapes, river corridors and management zones indicate increasing levels of human development and progressively more complicated biological management issues. The fourth category, natural preserve, indicates lands specially managed for biodiversity conservation, whether public land, land owned by a local land trust or private land.

**Working Landscapes** are large areas, usually private land but sometimes including portions of public land owned by the U.S. Bureau of Land Management or other agencies. They are characterized by their large size and very low level of buildings and paved roads. A working landscape may well include the entire watershed of one or more streams. In the Sierra Foothills these landscapes are usually cattle ranches, or multiple ranches. They provide the best opportunity for long term conservation of the mosaic of foothill plant communities and maintenance of ecological functions and processes. This requires the continued economic viability of foothill ranches. The growing interest of the California Cattlemen's Association in conservation of range land, including the recent establishment of the California Rangeland Trust, is an encouraging step. Often there are major opportunities for enhancement of wildlife habitat through restoration projects and modification of range management processes, a topic we will explore in another issue of *Linkages*.



## The Conservation Need

*From State of the Sierra Nevada, the Sierra Nevada Ecosystem Project's Final Report to Congress*

"The oak woodland communities of the western Sierra Nevada Foothills are the most vulnerable of the widespread vegetation types." (*Summary, page 2*)

"Less than one percent of the native plant communities is in land formally allocated to biodiversity protection" (*Summary, page 2*)

"Eighty five terrestrial vertebrate species require west slope foothill savanna, woodland, chaparral or riparian habitats to retain population viability; of these 14% are considered at risk. The number of species actually declining in the foothill zone is undoubtedly far greater because so much critical habitat has been converted" (*Summary, page 5*)

"As most of the original riparian forest habitat in the Central Valley is gone, the remaining riparian habitat in the lower foothills becomes essential to a number of (bird) species with limited habitat and critically low population levels in the Sierra" (*Volume. II, p. 719*).

**River Corridors** are linear features encompassing a river or stream, its floodplain and riparian vegetation, and those adjacent uplands that are essentially free of development. We distinguish these corridors from Working Landscapes in that they already have occasional, scattered, developments such as individual houses near the watercourses. These corridors are often very rich in wildlife, since a large fraction of vertebrate species utilize riparian areas. Future management of these areas should include as few additional structures as possible and those that are built should have extensive setbacks from the rivers and streams. Land conservation efforts should focus on protecting continuous riverine stretches that are still free from human habitation. The formation of voluntary watershed groups to develop coordinated approaches to land use decision making and actions will be a great benefit to these areas.

**Natural Preserves** are areas with special biological features such, as populations of endangered species or rare plant communities, that are explicitly managed for conservation of these features. Ideally they are connected to additional undeveloped lands that are working landscapes or river corridors. But sometimes of necessity they are small and somewhat isolated parcels surrounded by a degree of development. Often natural preserves are public land or tracts belonging to a land trust. But they can also be privately held land whose owner has committed to protect the biological resources.

**Management zones** are areas with existing development and probably the expectation of additional development. However, they fulfill vital roles in the regional landscape such as important stream corridors or wildlife linkages through partially developed areas. Management requires development of guidelines focused on conserving the existing natural values necessary for the long term biological health of each zone and the larger region. It also requires cooperation by watershed groups and other community organizations.

The remaining areas of the foothill landscape are given over to development, from rural residential to cities and small communities. The delineation of key areas into these four zones, which could be done through the conservation or wildlife elements in local General Plans,

would go a long way to ensure the long-term ecological health of a rural region like the Sierra Nevada Foothills.

*John Hopkins is Institute for Ecological Health president. Sue Britting is a consultant for non-profit organizations on habitat conservation & land use issues*

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## LANDOWNER INCENTIVES FOR RURAL LAND PROTECTION

There are a wide variety of landowner incentives for conservation and management of rural lands. One class provides temporary or permanent protection through purchase of development rights. A second provides funding for certain management practices, associated with protection of water quality or wildlife habitat. A third involves agreements to protect farmers and ranchers from possible endangered species act issues if they create or enhance wildlife habitat on their property. Here are some of the main approaches.

### Conservation Easements

When a landowner puts a conservation easement on the land, he or she relinquishes development rights on the property, usually in return for a sum of money. The development rights are then held by a non-profit organization such as a land trust or by a government entity. The easement may or may not have additional conditions on land management - that is up to the landowner and the purchaser of the development rights.

For example, conservation easements to protect farmland that is habitat for the Swainson's hawk in California's Sacramento County require that the land remain in suitable agricultural production, meaning a variety of field crops, and not be converted to orchards or vineyards. Agencies like the U.S. Fish and Wildlife Service will buy easements to protect endangered species or wetlands habitat. There are also agricultural easements, where the primary purpose of the easement is to protect agriculture production rather than wildlife habitat or generic open space. For example, the Marin Agricultural Land Trust has an extensive program of protecting ranches in western Marin County just north of San Francisco, with over 25,000 acres currently protected through easements. The Colorado Cattlemen's Association formed a land trust to protect range land from development and recently the California Cattlemen's Association followed suit with establishment of the California Rangeland Trust.

Conservation easements may be term easements (for example, 30 years) or in perpetuity. The baseline for

determining easement value is the difference between the value of the land if there is no development potential (ie, the farm value for agricultural land) and the full market value of the land (which will depend on the actual or speculative development value of the land).

## Transfer of Development Rights

In this approach local government designates areas for protection and areas open for additional development. When a company wishes to develop in the latter areas, they will purchase development rights from a landowner in the protection area. This is a powerful tool for local government to couple the short-term protection of a land use plan with the long-term protection of acquisition of development rights (See *Linkages* #7).

## Payment for Management Practices

Various government agencies make payments to landowners in return for use of various management practices. The U.S. Department of Agriculture (USDA) has the largest programs. Under its Conservation Reserve Program over 31 million acres of farmland are withdrawn from crop production for a 10 to 15 year period in return for an annual payment. The focus is on protection of highly erodible soils, which are usually converted to grasslands. But some contracts focus on conservation of riparian buffer areas, to protect water quality, or wildlife habitat protection. The USDA also runs the Wetlands Reserve Program, which conserves wetlands on private lands through 30 year or in perpetuity easements plus payment for the cost of restoring seasonal wetlands. Both Ducks Unlimited and the California Waterfowl Association provide additional financial and technical assistance. The USDA Environmental Quality Incentives Program program provides competitive grants for funding conservation practices on farmland.

## Safe Harbor Agreements

Sometimes landowners' practices are affected by concern that appearance of endangered species on their property could result in the U.S. Fish and Wildlife Service or the state wildlife agency placing restrictions on their land management. The result is banks of streams and ditches kept clear of vegetation and fallow fields that could provide temporary wildlife habitat disced repeatedly to keep wildlife out. Under the federal Safe Harbor Program, landowners can enter into an agreement with the U.S. Fish and Wildlife Service to carry out and maintain specific habitat enhancements on some of their property for a defined time period. If this habitat enhancement results in listed species moving on to the property, the landowner is not subject to any additional restrictions under the federal Endangered Species Act regarding species covered by the agreement. The

landowner is free to remove the habitat enhancement after the agreement period, as the normal restrictions of the Endangered Species Act only apply to the baseline conditions at the time the safe harbor agreement is initiated.

### Further Reading

Environmental Defense Fund (1999) *Safe Harbor: Helping Landowners Help Endangered Species*. Washington, DC.

Fischer, Hank and Wendy E. Hudson (1993) *Building Economic Incentives into the Endangered Species Act*. Defenders of Wildlife, Washington, DC

Hopkins, John D. (1999) *The potential of fallow land patches to provide wildlife habitat in California's Central Valley Agro-ecosystem*. Centers for Water and Wildland Resources, University of California, Davis, CA.

The Keystone Center (1995). *The Keystone Dialogue on Incentives for Private landowners to Protect Endangered Species*. Keystone, CO.

Preutz, Rick. (1997) *Saved by Development : preserving environmental areas, farmland and historic landmarks with transfer of development rights*. Arje Press.

Rosan, Liz (1997) *Preserving Working Ranches in the West*. The Sonoran Institute, Tucson, AZ.

U.S. Fish and Wildlife Service. (1999) *Announcement of Final Safe Harbor Policy*. Federal Register. 64. 32717-32726.

### Web sites for information on programs

USDA Conservation Reserve Program  
<http://www.fsa.usda.gov/dafp/cepd/crpinfo.htm>

Wetland landowners incentives in California  
<http://ceres.ca.gov/wetlands/introduction/management.html>



## NEEDS OF NATURE - AN IEH COLUMN

*A new Linkages column exploring needs of wildlife, habitat and healthy ecosystems*

**M**ajestic sandhill cranes flying through a winter fog, conversing with an ancient “crrrrk”. Blue oak woodlands alive with birds. Spectacular wildflower gardens stretching across an alluvial plain. Pronghorn antelope bounding across rolling grasslands. Streams and rivers winding through ever changing landscapes to the ocean. These are just a few of the sights of Nature that are a critical part of our heritage.

What does Nature need for species to survive over time, for long-term population declines of many species to stop, for endangered species to recover? What is the role of range and crop land in providing wildlife habitat? How do we conserve rural landscapes to protect the integrity of ecosystems and maintain ecological functions and processes? Future issues of this column will explore these and other questions, examining what scientific disciplines such as conservation biology and landscape ecology tell us about how to conserve nature, as well as how much we do not know and the resulting implications for effective public policy.

Current public policy and debate usually does not utilize much of the more recent scientific knowledge and thinking. Most of our conservation focuses on protecting some areas of suitable habitat for endangered species, plus examples of habitat or plant communities that are in excellent condition. The idea of wildlife corridors or landscape linkages to connect these patches is added in, although not always achieved on the ground. Issues from the need to focus on mosaics of different habitat types, to the protection of ecological functions to nature being ever changing rather than static, receive scant attention and understanding in public policy discussions.

In addition, there is a focus on “how do we mitigate for impacts of development or a particular resource use?” rather than the all-essential “what conservation do we need to achieve across the landscape to provide for Nature?” The result can easily be isolated patches of protected land that may be worthless 100 years from now if their context changes from a rural to an urban landscape.

California is especially challenging. It has a huge

amount of biological diversity, whether you are thinking about species richness, variety of plant communities and ecosystems, or changing habitats across a landscape. It has more species than the entire north-east quadrant of the United States and Canada. It has virtually every type of habitat except tropical rain forest and mangrove swamps and bewildering habitat mosaics, thanks to the varying climate, topography and soils.

And all this variety lies in a state which underwent massive landscape alteration over the past 150 years, and faces the possibility of huge expansion in the urbanized area unless we can change development patterns or somehow reduce the forecast rate of population growth. The result is a very large and rapidly growing array of species listed under federal and state Endangered Species Acts and nearly half the terrestrial plant communities being either naturally rare or endangered by human activities. All these past and future human impacts make conservation of Nature extremely important, very urgent and immensely challenging.

Welcome to the 21<sup>st</sup> Century!

# CAN LOCAL PLANS EFFECTIVELY GOVERN LAND USE?

Local government General Plans in California frequently invite skepticism. Too often, they fail to address key land use issues adequately, promote sprawl, and contain conflicting policies. Even sound General Plan policies are vulnerable because they can be weakened by a General Plan amendment, allowed quarterly under state law. Indeed some individuals in the development community refer to County land use planning as “planning by the vote of three”, reflecting the fact that you can do more or less anything if you can garner a majority of three votes on a County Board of Supervisors. In addition, Specific or Project plans for localized areas can undermine good intents of a General Plan.

Here are two examples of the General Plan process in action. The first is implementation of the 1993 Sacramento County General Plan, where good intent fades into sprawl-promoting revision. The second is preparation of a new Riverside County General Plan, an attempt to truly integrate different issues and develop broadly supported principles

## Getting Around the General Plan

The 1993 General Plan map for Sacramento County includes TODs or transit oriented development areas. These provide high density development around transit stops, including future stops for Light Rail line extensions. TODs aid compact development, and so can reduce sprawl across farmland and wildlife habitat. They also make transit more feasible, since denser development provides more riders for an individual transit stop.

Local residents in a large Sacramento County area experiencing rapid suburban development are leery of TODs and other forms of higher density development. They regularly persuade the County Planning Commissioners and Supervisors to decrease densities and change map designations. This occurs as Specific and Project Plans for individual urban fringe development areas make their way through the approval process.

Another version of getting around the General Plan is underway in an “interagency” situation. The 1993 Plan includes an Urban Policy Area, where fringe development is expected through 2015 or so. Then there is an Urban Services Boundary (USB), the line for ultimate provision of services and the ultimate urban boundary. The land within the USB is slated for development. And the largest expanse of within-USB land is enough for over 50 years of development. But land speculators are buying land and options beyond the USB. The Sacramento Business Journal compares the situation to the 1970's when speculators bought up rice fields in the Natomas Basin flood-plain preparing for the eventual push that

moved boundaries and turned agricultural land into future urban development sites (compare with the San Fernando Valley example on page 3.)

Enter the Regional Sanitation District. This is a multi-jurisdiction body, with a governing board of County supervisors and City councillors. Currently it is developing a long-term master plan for extending the sewer infrastructure, which includes deciding how large the pipes should be. The District is considering planning for pipe diameters large enough to provide for eventual sewer line extension to four areas beyond the USB. This would undermine the USB; sewer capacity is a powerful way to promote metropolitan sprawl.

## Preparing a General Plan that Might Work

Riverside County, on the other hand may be taking a very different approach as it rewrites the County General Plan. The County faces rapid growth in its western, mainly non-desert, sector. The area also has lots of critical wildlife habitat and endangered species issues. And metropolitan sprawl all the way from downtown Los Angeles is having severe negative effects on Riverside County. Currently a new General Plan is in the works, with a goal of an integrated approach to development, habitat protection needs, transportation planning and other issues. An earlier lawsuit led to developer-environmentalist negotiations. This in turn resulted in these interests negotiating some principles which they recommended for a new General Plan. These principles included providing enough land for development and habitat conservation and reducing the per capita land consumption by new development, as well as the need to integrate land use planning with transportation and air quality planning. The County is utilizing these ideas in drafts of the revised General Plan.

## The Need for Legislative Reform

California General Plan law is process oriented. Local governments are required to have plans, to include certain elements, and to carry out periodic updates. Except for the Housing Element, however, there are essentially no substantive requirements. Review of General Plan revisions utilizes CEQA, the California Environmental Quality Act, which again is a procedural law.

Most General Plans are unlikely to provide effective land use controls, achieve Smart Growth, curb sprawl, protect farm and range lands, and conserve important wildlife habitat until we have reform of state law. New laws must require these types of substantive policies be included in General Plans and be adhered to in specific projects.

# REVIEW : SHAPING THE SIERRA

## *Shaping the Sierra*

Timothy P. Duane  
University of California Press 1999  
595 pages.

Tim Duane, Professor of City and Regional Planning at the University of California, Berkeley, provides us with an important, exhaustive, and very readable analysis of growth in the western foothills of California's Sierra Nevada. Having grown up in the Nevada County foothills, & taken the lead in analyzing foothill growth for the Sierra Nevada Ecosystem project, Duane is perfectly placed to provide this analysis and a host of insights.

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“The fate of the Sierra Nevada is inextricably tied to the fate of California's metropolitan centers”

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The Sierra Foothills faces a projected tripling in its population between 1990 and 2040. Duane explains that while these are just projections, reality can be even more growth than forecast, as has happened in the 10 county Plumas to Calaveras region between 1970 and 1990. “The fate of the Sierra Nevada is inextricably tied to the fate of California's metropolitan centers,” he states. Growth of metropolitan areas in the Central Valley and, in turn, growth in the Bay Area, together with the attractions of life in the scenic foothills, are driving foothill growth.

Duane examines growth in the Gold Country segment of the Foothills in great detail. This region, next to

Sacramento, has the most extensive foothill growth to date and Duane examines trends and implications, from the establishment of many small parcels in earlier decades to current General Plan activities.

The evolution of Nevada County growth politics gets special attention. This County, on the north-east fringe of the Sacramento metropolitan area, has been under significant growth pressures for many years. Successive efforts to implement more effective planning were stymied, however, by lack of political support. This changed only recently, when the citizen's group The Rural Quality Coalition gained sufficient influence and the voters elected four County Supervisors who support strong growth controls. His fascinating account provides a very strong lesson for local citizens across the nation - change in land use planning requires change in local political dynamics.

This book covers a wealth of key rural issues in great details. There is an excellent account of the history of Supreme Court rulings on property rights and regulatory takings. Duane has an extensive look at biological aspects of growth, and how changes in development patterns and closure of some small roads could greatly improve habitat protection. The impacts of General Plan decisions, as shown by different versions of an El Dorado County Plan, provide a vivid geographic example of how landscape fragmentation occurs.

*Shaping the Sierra* ends with Duane's views on how to change our planning, *Reinhabiting the West* in ways that provide a high quality of life for people but conserve wildlife habitat and rural landscapes. While the book is about one region, it will be highly useful to those concerned about the future of any rural landscape in California and beyond.

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## INFORMATION RESOURCES

### National

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*For the Health of the Land.* Aldo Leopold. Island Press. 1999

Aldo Leopold's *Sand County Almanac* is a 50 year old classic about land conservation. His Land Ethic is the foundation of sustainable land use. Now we have a new Leopold book to read, a collection of essays that have not been published in book form before. Many were first

published in the Wisconsin Agriculturalist and Farmer between 1938 and 1942. They contain practical advice to Wisconsin landowners on how to provide for wildlife and its habitat. His essays remind us that the problems in our management of rural lands predate modern intensive agricultural techniques. The *Fifth Column of the Fencerow*, for example, could be written today. "Somebody once noticed that bad farmers had big fencerows and jumped to the conclusion that good farmers should have none at all," writes Leopold. "Bushy fencerows, it was said, harbor noxious insects and weeds. It is time to re-examine the soundness of the all-too-simple rule-of-thumb. Bushy fencerows do harbor

noxious insects. They also harbor beneficial insects which prey on the noxious ones, and birds which prey on both". Over and over again he stresses the necessity to look beyond yield and profit. "A thriving woodlot, full of birds, is thus a contribution to the community and a badge of social conduct. Both are rare in this 'gimme' world."

The third part of the book focuses directly on conservation and land health. "Conservation means harmony between men and land", he writes in *The Farmer as a Conserv-ationist* before going on to address the health of the soil, nature and the management of the land. He stresses the need for education and involvement in nature. "There is also drama in every bush, if you can see it. When enough men know this, we need fear no indifference to the welfare of bushes, or birds, or soil, or trees. We shall than have no need for the word 'conservation' for we shall have the thing itself."

There is no better way to begin the millennium than reading the wisdom of Aldo Leopold and these newly available essays, a magnificent companion to his *Sand County Almanac*.

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***Planning for Biodiversity : Issues and Examples.***  
Sheila Peck. Island Press. 1998.

This is a book about conservation planing, written for planners and decision-makers. Much of the work is devoted to examining a variety of scientific issues. They include concepts of biodiversity, issues of scale and of change over time, issues of area and connectivity. Reserve design, collecting baseline information, and adaptive management and monitoring have their own chapters. Peck illustrates the concepts with conservation planning examples from various locations and includes an extensive general bibliography as well as references for each chapter. This will be a very helpful and readable introduction into biodiversity planning issues for individuals from a wide array of backgrounds.

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[http://www.smartgrowth.org/index\\_text.html](http://www.smartgrowth.org/index_text.html)

The Smart Growth Network is a Web site that provides access to very extensive resources on Smart Growth. It includes monthly news from around the U.S. listed by state, and links to other sites. We recommend this site as a great way for Internet users to explore Smart Growth topics or to seek specific information.

## California

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***Smart Investments. Special Edition of California's Debt Affordability Report.*** Philip Angelides, California State Treasurer. Sacramento. 1999.

This ground breaking report outlines the importance of redirecting state investment to existing urban areas in order to protect the state's economy and quality of life, conserve the environment and help reverse the trend toward two Californias, one in poverty and one enjoying an economic boom. See page 7 of this *Linkages* for land use issues excerpts from this report, and the Planning for Quality of Life column on page 6.

To obtain copies of Smart Investments contact:  
State Treasurer Philip Angelides.  
915 Capitol Mall, Room 110.  
Sacramento CA 95614. Phone (916) 653-2995.

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***Smart Public Investments for the California Economy: Information and Analysis for Infrastructure Planning.***  
Steven Levy, Center for the Continuing Study of the California Economy. Californians and the Land, Sacramento. 1999.

This report examines the need for a comprehensive picture of infrastructure needs and a partnership approach to infrastructure investment, including local government and private and non-profit entities. It stresses that many needs are independent of future growth and outlines concepts for developing cost-effective approaches to improving infrastructure capacity.

To obtain copies contact:  
Californians and the Land, 915 L St, PMB C-256,  
Sacramento CA 95614. Phone (916) 341-3329.

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***California Farmland and Urban Pressures : Statewide and Regional Perspectives.*** Albert Medvitz, Alvin Sokolow and Cathy Lemp (eds). Agricultural Issues Center, University of California, Davis. 1999.

The book provides a wealth of information and insights to the ongoing impacts of development on California's agriculture, as well as land conservation efforts and local government policies. It looks at the development of agriculture since the Spanish mission period, shifting to extensive dryland agriculture in the late nineteenth century, to irrigated farming in the 20th century, then to highly mechanized farming and the spread of high value crops like wine grapes after 1945. It examines the relationships

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between population growth and agriculture, including those between settlement and increasing farms in early decades, then between rapid urban growth & the expansion of large scale, highly intensive farming that utilizes extensive technological innovation to increase yields.

Additional chapters examine the conflicts at the agriculture-urban fringe, the current status of state growth management law, and the use of conservation easements. A large part of the book is devoted to case examples,

including the Marin Agricultural Land Trust, and to regional analysis of local government policies.

This is essential reading and also an invaluable reference work for everybody concerned about the conservation of California's farmlands.

To purchase a copy, contact the University of California Agricultural Issues Center at (530) 752-2320.

***Agricultural Land Conservation in the Great Central Valley.*** Great Valley Center. 1998.

A summary report of the farmland situation and trends in Central Valley counties, lessons from Los Angeles and the San Francisco Bay Area, and examples of conservation approaches from various locales. The report includes a set of Central-Valley-specific recommendations which promote a private land conservation transaction program utilizing Agricultural Land Trusts and easements.

To obtain this report, contact the Great Valley Center at (209) 522-5103.

## **Back Issues of *Linkages* Available**

Most articles in each issue focus on a single topic: *Grappling with Growth* (Spring and Fall 1998 and Spring 1999) is a set of three issues dealing with the problems and solutions of metropolitan sprawl and the need for livable communities. Previous issues address *Conservation Planning* (Fall 1997), *Flood Management* (Spring 1997), the *Sierra Foothills* (Fall 1996), and the *Central Valley* (Spring 1996.)

Single copies are \$2, free with payment of a new IEH membership. From: IEH, 409 Jardin Place, Davis, CA 95616.

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