

Linkages

Newsletter of the Institute for Ecological Health

Issue No. 2, Spring 1996

THE CENTRAL VALLEY NEEDS A VISION

What will California's Central Valley look like in fifty years, what legacy will we leave future generations? At the moment the Central Valley is drifting toward a future of vast urban sprawl. But it is not too late to chart a different course for our use of the land. How will we insure retention of rich agricultural lands, protection and restoration of wildlife habitat? How will we provide livable communities with a high quality of life, clean air and easy movement between home, shops, and work?

In order to build a better future, we need a Vision for the Valley that provides for these and other land-use values. To become reality, the Vision requires support from a wide array of interests, so it must meet the needs of these interests. 'The success or failure to cooperate for the future will determine the vitality and quality of life for generations', said Sacramento Bee executive editor Gregory Farve in October 1995. Policies, standards, and other implementation measures accompanying this vision will provide the basis for local change.

Growth and Urban Sprawl

The California Department of Finance projects a Central Valley population in excess of 12 million by the year 2040, more than triple that of 1990. The department sees almost 2.5 million people in both Fresno and Sacramento counties, almost two million in Kern and about one and quarter million in both Stanislaus and San Joaquin counties (see chart on p 2).

This level of population growth, coupled with current development patterns, would transform the landscape across much of the Valley and adjacent Sierra

Some Key Vision Principles for the Central Valley

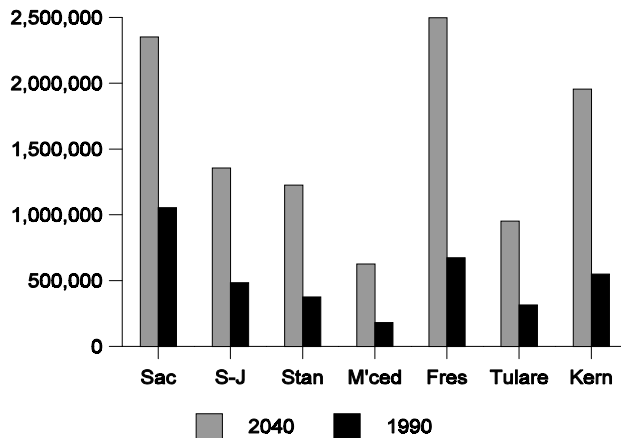
- L Conserve important farm and ranch lands.
- L Create firm urban boundaries and greenbelts between cities.
- L Develop and implement a regional framework for protecting and restoring native biodiversity and ecosystem health.
- L Utilize livable community principles for new development.
- L Utilize opportunities for infill and neighborhood revitalization in existing cities.
- L Reduce reliance on automobiles, while ensuring effective mobility
- L Obtain major improvements in air quality.

Foothills. Planning consultant Rudy Platzek has developed thematic maps showing the current urbanized areas in the Central Valley and the results of these 2040 population projections (page 3). They include three huge metropolitan areas, one centered on Sacramento County, one stretching from Lodi to Merced in the northern San Joaquin Valley, and the third around Fresno. Growth like this would create a wide variety of environmental, social and economic problems. Ironically, many people move to the Valley in order to get away from vast urban areas such as the Los Angeles Basin.

Development projects currently use huge amounts of land. "We

build at densities and in locations that maximize the capital and operating costs of all systems", says architect David Mogavero. Low density housing, and rigorous separation of houses, shops and business, are the norm. Travel between these uses requires a car, creating traffic congestion and air pollution. We fail to build real neighborhoods, then wonder why our communities do not work for their inhabitants. A shift to more compact, livable communities will save land and provide a higher quality of life. We must also ask how large a population the Valley can accommodate.

Growth Projections for the Central Valley



1990 Populations and 2040 projections for Sacramento (Sac), San Joaquin (S-J), Stanislaus (Stan), Merced (M'ced), Fresno (Fres), Tulare and Ken Counties. Source: California Department of Finance, 1993.

Fundamental Land Use Factors

'The geography and climate of the Central Valley make the basin more vulnerable to air pollution than Los Angeles or anywhere else in the United States' and 'Rapid growth has held back the smog-fighting effort and it promises to make air pollution still worse.' Sacramento Bee. 11/14/93

Air Quality

The southern two thirds of the San Joaquin Valley has the second worst air quality in the nation, while the Sacramento Region is number five. Some San Joaquin Valley cities top the national list for death rates from particulate pollution. The impacts of this dirty air will continue 'until the air gets a whole lot cleaner than it is now' said John Holmes, state Air Resources Board research director, in the Sacramento Bee.

Ozone from vehicle pollution, and fine particulates from various sources, are both major problems. Cars are 95 percent cleaner than in 1970, but increased traffic offsets ozone reductions from technological advances. The clean fuel introduced this year will help, but that too will be offset by future growth.

The problem is not just more vehicles. Urban sprawl results in people driving more miles. California Air Resources Board projections show that between 1992 and 2005 California's population will increase by 26 percent, vehicle miles traveled by 51 percent. And we make several trips each day, usually starting with a cold engine. These "cold starts" are a major cause of air pollution. If we designed communities for people rather than autos, we would walk or bicycle to many destinations, and use effective public transit, leading to cleaner air.



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Linkages

Our newsletter, *Linkages*, provides information on California land use topics, including conservation biology, planning and economics, development, urban design, and agriculture. We will also discuss techniques important to citizens groups, from mapping to city and county general plans. We wish to explore the needs of different interests and creative solutions. Readers are encouraged to submit articles, ideas, or letters for future issues to IEH. The summer issue will focus on the Sierra foothills and the results of the Sierra Nevada Ecosystem Project.

Web Site

www.instituteforecologicalhealth.org

Contacting IEH

You can reach us at:
409 Jardin Place, Davis, CA 95616
(916) 756-6455 (phone and FAX)
E-mail: ieh@cal.net

Urban Expansion on Irrigated Cropland in California's Central Valley

Maps only available in hard copy. Contact ieh@cal.net

Maps show irrigated cropland, potential irrigated cropland and urban areas.

Two time points : 1993 and 2040 with current trends

Maps by Rudolph M. Platzek, WPM

Traffic Congestion

Increased traffic congestion is a major result of automobile dependent growth. The San Francisco Bay and Los Angeles provide dramatic warnings. Traffic projections from the Sacramento Area Council of Governments (SACOG) show a fifty percent population growth in the number of vehicle trips a day would result in five times as many congested miles on freeways. Highway construction provides only temporary relief, as we have seen elsewhere.

Loss of Farmland

The Central Valley is the most important agricultural region in the country, producing over \$13 billion in crops a year. In 1992, six of the top ten agricultural counties in the US were in the Valley, as determined by product value: Fresno (1), Tulare (2), Kern (3), Merced (6), Stanislaus (7), and San Joaquin (10).

Important Reports

Alternatives for Future Urban Growth in California's Central Valley: the Bottom Line for Agriculture and Taxpayers. American Farmland Trust, Davis, CA. 1995.

Beyond Sprawl: New Patterns of Growth to Fit the New California. Bank of America et.al. 1996

The Land Use - Air Quality Linkage: How Land Use and Transportation Affect Air Quality. California Air Resources Board. 1994.

The Valley is also the nation's farming region most threatened by urban sprawl. A recent report from the American Farmland Trust (AFT) shows we will lose over a million acres of Valley farmland by the year 2040, if current trends continue. Sixty percent of the lost acres will be prime or important farmland. An additional two and half million acres will see conflict between farming activities and adjacent urban land. The AFT report shows dramatic reductions in loss of farmland, and in the zone of conflict, through compact development in urbanizing areas.

We also need to address the price of farmland, and ensure farming is viable. Around cities, the market price for farmland often exceeds the farm value a great deal. Land can only be purchased as speculation for future

development or divided into ranchettes. The formal sphere of influence, where each city expects to grow, extends into a zone of dreams, where landowners may hope for eventual urban development.

This issue is most important for ranching operations in the grasslands and savanna around the edge of the Valley. Ranching is a marginal economic operation. But those wide open spaces have many biological values, as well as human open space values. We must avoid widespread loss of Valley and foothill grasslands. Another issue is the price of farmland. In regions where future development may occur, market value of land often exceeds the farm value. We need solutions that both protect farmland from development and make farming affordable.

Wildlife and its Habitat

Most natural habitat disappeared from the Central Valley over the last 150 years. Small remnants remain of once extensive marshes and riverside woodlands, while many other habitats were severely reduced and fragmented (see article on page 7.) Massive sprawling growth of our cities will put additional pressure on beleaguered wildlife and reduce restoration opportunities.

Various preservation and restoration projects are under way around the Valley. Recovery and conservation plans are in place or under development for some endangered species. Some farmers are developing wildlife friendly agricultural techniques, planting trees along creeks and sloughs, using cover crops, hedgerows and strips of native grasses. They see the value of predators, beneficial insects and native plants

But we lack an overall framework for the protection and restoration of native biodiversity and healthy ecosystems. This framework will be a crucial part of a vision for the Valley (see page 6.)

Quality of Life and Economic Health

There are a great many social and economic costs of sprawling urban development, in addition to the issues above. Government and business are often tempted to promote sprawling development, erroneously thinking it is the only way to grow and achieve healthier economies, more jobs and badly needed tax revenues for local government. Many of these costs are listed in *Beyond Sprawl* a recent report by the Bank of America,

the state Resources Agency and others, Here are a few examples.

- § Massive construction and maintenance costs for the infra-structure of sprawling development. Taxpayers bear much of the burden, even seeing a doubling a property tax bills. By contrast, farmland is a net taxpayer benefit.
- § Long commutes and auto-dependency erode family time and budgets. A fifth of the average Californian's income goes to auto use.
- § Loss, or under-use, of investments and infrastructure in older communities.
- § Loss of jobs in urban centers. In some areas we see simultaneous commutes - high income workers from outlying suburb to city, low income service workers from city to suburb.
- § Businesses have a variety of higher costs and a less attractive environment for employees.

§ The development community often has major problems because of uncertainty and delay

Conclusion

Major changes are needed in the Central Valley, covering both land use planning and related issues. Drastic curbing of urban - suburban sprawl is essential to conserve farmlands and wildlife habitat, to improve air quality and to avoid major economic burdens. To achieve these changes we must build livable communities that provide a high quality of life.

IEH programs will focus on these issues and the need for change. This year we will host two workshops, a regional biodiversity workshop in Sacramento and a San Joaquin Vallery Vision workshop in Fresno. We encourage all interested individuals and organizations to enter the dialog for change.

Providing for Nature in the Central Valley

How can we protect and restore native biodiversity in the Central Valley, a region almost completely altered by human activity? A number of existing protected areas and ongoing conservation projects provide protection or restoration of representative biological communities and sites with endangered species (page 7).

But we need a larger view, to ensure that we protect biodiversity and ecosystem health across the Valley. Biodiversity includes genetic diversity within species, the diversity of communities or ecosystems, and maintenance of ecological functions and processes, such as natural disturbance regimes (see *Linkages*, Fall 1995). Ecosystem Health includes resilience to stress and maintenance of ecosystem structure. Providing for these needs in the Central Valley requires an integrated or big picture view. Here are some of the key components.

A Regional System of Natural Areas

We need an extensive network of natural areas, including some very large preserves. It should provide for the native species of the Valley throughout their geographic ranges. This will be possible by a combination of conservation and restoration, particularly if we are flexible about what activities occur on a preserve. The system should allow for the reintroduction of some extirpated species, such as the willow flycatcher and least Bell's vireo. This requires attention to minimum preserve size and the ecological needs of key species. Where possible, there should be linkages or corridors between natural areas. There should be areas with the historic mosaics of habitats, not just preserves that stress individual habitats or groups of species.

Future urbanization and the need for accessible open space will stimulate major additions to the current roster of protected areas. Grasslands and savanna are

especially suitable for natural area protection through conservation easements on private lands - combining maintenance of ranches with provision for nature.

Small, specialized preserves play a significant role in the conservation of rare plant populations, naturally isolated rare habitats, and small animals. However, a small preserve that seems fine now may not maintain key species if it becomes surrounded by urban development.

Rare and Endangered Communities of the Central Valley

Relictual interior dunes, valley sink scrub, valley saltbush scrub, valley needlegrass grassland, valley sacaton grassland, wildflower field, vernal pool (several types), alkali meadow, freshwater seep, alkali playa, cismontane alkali marsh, coastal and valley freshwater marsh, vernal marsh, Great Valley cottonwood riparian forest, Great Valley mixed riparian forest, Great Valley valley oak riparian forest, Great Valley willow scrub, buttonbush scrub, elderberry savanna.

Classification system of Bob Holland (Cal. Dept of Fish and Game, 1986).

Source: *Sliding Toward Extinction* The Nature Conservancy / Jones and Stokes, 1987.

Conserving Processes and Gradients

Ecological processes such as natural disturbance regimes and nutrient cycles are essential for the long term well-being of natural areas. For example, the complex structure of riparian woodland results from natural flood events. Our society completely disrupted these processes in the Valley, as we channelized and diverted rivers, suppressed fire, and fragmented the landscape. We must conserve what elements remain, and seek opportunities to restore ecological processes.

Conservation along gradients is also important. These include altitudinal gradients from the Valley floor up into surrounding mountains and gradients of different soil or vegetation types. Many species need opportunities to migrate or use multiple habitat types. And we need to make accommodation for future shifts in

species distribution, as would occur because of climate change.

Importance of Private Farm and Ranch Lands

Private farmland and rangeland will play a central role. While row crops and orchards are hardly native ecosystems, they can provide for many wildlife species through techniques some farmers are developing.

If undertaken on a widespread basis, these techniques will have a major beneficial impact. Steps include building small ponds and wetlands for irrigation drainage; creating hedgerows and windbreaks; planting grasses and perennials along roadways and other spots to reduce mowing costs; and planting trees along creeks and sloughs. The resulting small riparian areas, ponds, and patches of wetlands are invaluable to many birds, amphibians and small mammals, as well as native invertebrates. These farmers see the benefits of raptors, owl, bats, beneficial insects and game species, and provide nesting and perching structures.

Sustainable agriculture and the growing interest in organic farming will reduce the pesticide and herbicide load, benefitting wildlife further.

These farmlands will play an essential role in a biologically healthier Valley in the twenty-first century. In return, farmers need policies such as the San Joaquin Valley safe harbor policy. They need to know that habitat improvements, or neighboring preserve lands, will not bring more restrictions on their operations in the future.



Key Protected Areas and Conservation Projects in the Valley

Many current projects focus around riparian woodland. We have lost about 90 percent of this once-dominant ecosystem, but can restore significant acreage in the decades ahead.

Sacramento Valley

The middle reaches of the Sacramento River, between Colusa and Red Bluff, still have extensive riparian vegetation. Here the river migrated to and fro over time, leaving abandoned ox-bows in its tracks. Some migration is still possible, as the river is not constrained within its current banks. The *Consumes River* provides extensive riparian woodland in the lower Sacramento Valley. Land acquisition and restoration projects are underway for both these areas.

The lower Sacramento Valley possesses narrower strips of riparian vegetation along the main river and some creeks and sloughes. Additional areas, such as *Stone Lakes National Wildlife Refuge* south of Sacramento provide opportunities for restoring riparian woodland. On a smaller scale, wildlife friendly farming and flood control projects promise restoration of woodland strips along segments of creeks and sloughs.

Mill and Deer Creeks, tributaries of the upper Sacramento River, flow unimpeded through grasslands and foothills of the Northern Sacramento Valley. A cooperative venture involving landowners, agencies and non-profit organizations may provide effective protection of these key watersheds.

Cooperative Restoration Projects

For many years, wetlands protection and restoration have been a major focus for agencies and organizations. We have lost over 90 percent of historic Valley wetlands, and the flocks of wintering waterfowl are much reduced. The series of wildlife refuges from Glenn to Kern Counties is managed as waterfowl habitat, included foraging fields. Rice farmers are joining in a new conservation program, flooding their fields in winter to provide waterfowl habitat and allow decomposition of rice straw in place of burning.

The 160,00 acre Merced Grasslands Ecological Area includes extensive wetlands along the San Joaquin River between Los Banos and Merced. Currently 75,000 acres are protected as wildlife refuge or private lands with easements. This area demonstrates the need for a watershed approach to conservation. Water and flood control projects have drastically changed the hydrologic regime in the area. Wetlands rely on active management and summer pumping. Meanwhile upstream development around Merced, on the Bear Creek watershed, will likely cause additional problems for the Grasslands hydrology. Flood control authorities resist protection and restoration of riparian woodland along the San Joaquin River.

San Joaquin Valley

In the southern San Joaquin Valley, there is a strong focus on protection of grasslands and alkali scrub habitats. A Nature Conservancy - Bureau of Management Project in the Carrizo Plains, west of the Tremblor Range, protects an intact grassland ecosystem well over 100,000 acres. Several endangered species, as well as reintroduced pronghorn antelope, live here. Publicly owned grass and scrub lands in the southeastern portion of the San Joaquin Valley form the focus for additional preserve systems.

Several Habitat Conservation Plans are under way, covering areas where urban development is proposed in endangered species habitat. An HCP for Metropolitan Bakersfield is complete. Plans are in various stages of preparation for other areas from Kern to Yolo Counties. These are primarily mitigation systems. They will create preserves or lands with permanent easements, using monies paid as development fees. Plans focusing on the Swainson's hawk in the Central Valley mesh well with ongoing row crop farming, since the hawk forages in alfalfa, tomato and other crops fields.

Very little of the grassland and oak savanna along the sides of the Valley is protected. Urban development is occurring in several areas, conversion to vineyards or ranchettes in others. Where there are vernal pools or other wetlands, or listed species mitigation is required, and will result in some smaller protected areas.

The San Joaquin River Parkway - an Ongoing Success Story

Conservation of natural areas along rivers, and provision of public access, provides for protection of biodiversity in urbanizing areas and improves the quality of life. In the mid 1980's, citizens of Fresno and Madera counties began to develop a comprehensive plan for a Parkway along the San Joaquin River. In 1988, they founded the San Joaquin River Parkway and Conservation Trust.

The organization's goal is to preserve the river and provide opportunities for the public to enjoy this extraordinary natural resource. Eventually, there will be a parkway of about 5,900 acres on both sides of the river between Millerton Lake and Highway 99 north of Fresno, with a trail along the entire length. Lands for public use will be acquired from willing sellers or donors.

The Parkway will bring solid economic benefits to the region. The positive impact of greenways and parkways on local economies is well documented by the National Park Service and the Conservation Fund's American Greenway Program. Among the more significant factors are: increased property values, increased revenue for recreation oriented businesses, reduced public costs by avoiding floodplain development, and general enhancement of the quality of life. The latter is a key factor in corporate relocation decisions.

More than 800 acres have been added to the Parkway so far, as a series of natural preserves known collectively as the San Joaquin River Ecological Reserve. The Trust was instrumental in acquiring these lands for public use. They are managed by the Wildlife Conservation Board and the Department of Fish and Game. Acquisition and trail funding comes from a variety of sources, including the California Parks and Wildlife Act of 1988, Fresno sales tax, and the Intermodal Surface Transportation Enhancement Act (ISTEA). In addition, the Trust raises funds from private contributors, including matching funds.

At present there is river access at Fresno County's 300 acre Lost Lake Park. By the end of 1996, there will be an additional four miles of trail along the parkway's eastern bluff for walkers, runners and cyclists. In addition, the California Department of Fish and Game

offers nature walks in the San Joaquin River Ecological reserve. The Trust organizes fields trips and canoe tours.

One goal of the Trust is to protect specific sites. There should be no changes in land use for floodplain areas, riparian zones, wetland, archaeological and historical sites, sand and gravel resources, and setbacks providing essential buffers for sensitive areas. Outside of these areas, the Trust does not oppose or support applications for changes in land use.

The Parkway provides many education benefits. The Trust has an Outdoor Environmental Education program that has served over 30,000 students through an interdisciplinary program of field studies. The Trust has trained hundreds of teachers and recently started school visits to reach more students.

The San Joaquin River Conservancy, a state agency, was established in 1992 to acquire and operate the Parkway. The Conservancy will coordinate the many stakeholders involved and uniformly manage a resource that runs through many agency jurisdictions. It does not have the power of land use authority, taxation or eminent domain. The Conservancy is currently working to develop its long term management plan.

The Trust has taken a prominent role in working cooperatively with landowners who cherish their land, appreciate its unique natural and historical value, and want to protect it from harmful use. It has also sought to incorporate goals and policies for the Parkway into the general Plans of Fresno and Madera Counties.

Building a Parkway is a task that directly involves a great number of agencies and organizations. The San Joaquin River Parkway and Conservation Trust provides an effective example for other river communities throughout the Central Valley. For more information, see www.riverparkway.org

Further Reading

9 *San Joaquin: a River Betrayed*. Gene Rose. Linrose Publishing Co. 1992.

9 *Greenways: a Guide to Planning, Design and Development*. Charles Flink and Robert Searns. Island Press. 1993.

Watershed Management in Central Valley Farmland

The Central Valley floor in western Yolo County is an area of intensive and highly productive row crop and orchard farming, with some grassland areas. To the west lie foothills of the inner coast range, where grasslands give way to chaparral and oak woodland at higher altitudes. The fields of the Valley floor are laser leveled to aid irrigation. Most of the sloughs that flow across the area from the foothills have little or no riparian vegetation along their banks - a single row of trees at best.

This intensive farming has some undesirable side effects. "Ask old timers what the Willow Slough watershed was like when they were growing up, and you are likely to hear similar stories. Wistfully, they will describe the clouds of waterfowl that would come every winter and the pheasants and other wildlife that were frequently seen along the hedgerows and sloughs - many more than today. They speak about these natural areas as a paradise, where many happy days were spent exploring, hunting, and learning about nature. Becoming agitated, old timers will point out that these days are long gone and comment that flooding has gotten worse, too. A quick survey of the hills, channels and roadsides confirms that erosion and sedimentation also appear to have become more widespread" (draft Watershed Management Plan).

The Yolo County Resource Conservation District, together with local government agencies and the California Wildlife Conservation Board, commissioned Jones and Stokes Associates to prepare an watershed management plan for the area centered on the Willow Slough watershed. The plan's primary focus is flood control, but it integrates this with wildlife enhancement, improvement of groundwater recharge, and erosion control. The result is a model plan with details on a range of flood control and habitat enhancement techniques for use on individual farms. The focus is voluntary techniques for interested farmers to use. There are potential pilot projects for specific sites.

Techniques like laser leveling are here to stay. But there is room for certain improvements which, if adopted in enough locations, will significantly reduce flooding and soil erosion, while benefiting groundwater recharge and wildlife. Frequent flood events (2 to 10 year floods) produce most of the cumulative long-term flood damages and have a significant economic impact on

farmers. This plan focuses on ways to reduce these frequent floods. The report identifies the many potential funding sources for individual farm projects. The focus of most funding sources is improvement of either wildlife habitat or water quality, or reduction in soil erosion. Flood control projects need to provide these other benefits in order to gain funding.

Mapping of many key resources allowed identification of areas suitable for different types of projects. For example, soil type mapping provides the basis for determining the previous and potential natural vegetation. This, together with delineation of floodplains, and crop value of farmland, provides a map of the areas most suitable for wetland restoration projects. Wetlands help reduce flooding by acting as reservoirs, and are important wildlife habitat.

A similar process identified areas for riparian habitat enhancement and creation. Returning tall trees to slough banks will reduce shrub growth and the costs of annual channel clearing. These trees will benefit Swainson's hawks and other key species, particularly if the riparian and channel strip is at least 300 feet wide.

Rangeland improvements in the upper watershed and foothills will also help reduce flooding. The value of changing grazing practices is shown by results from neighboring Colusa County. Several years of decreased animal densities on portions of its Stony Creek watershed, together with rotational grazing, have returned year-round flows to small creeks. These grazing changes also increased water infiltration into the soil, so reducing runoff and flooding during storms. After the first few days of rain, creeks in areas with the changed grazing practices still have low flows, while stock ponds are almost empty. Neighboring ranches with unmanaged grazing have high-water streams and overflowing impoundments.

While the plan focuses on a specific locale, the techniques should inspire similar approaches in other areas of the Central Valley.

Contact the Yolo County RCD for further information.
www.yolorcd.org

Information Resources

National

Land Mosaics: The Ecology of Landscapes and Regions.
Richard T. Forman. Cambridge University Press. 1995.
632 pp. \$39.95.

This masterful book provides the conceptual background, evidence, and many scientific examples about landscape scale ecology. The discipline takes a large scale view of the land, which it views as a mix of patches, corridors and matrix. There is a wealth of information on issues ranging from the effect of patch size on biodiversity to factors affecting the ecology of stream and river corridors. The final three chapters provide a detailed exploration of three key topics of human interaction with the land. They encompass land transformation and fragmentation, land planning and management, and creating sustainable communities. With 1961 references, Forman's book is solidly based on scientific data. *Land Mosaics* is essential reading, and a basic reference book, for all concerned about the biological impacts of land management decisions.

Building Livable Communities: A Policymaker's Guide to Infill Development. The Center for Livable Communities. Local Government Commission 1995.

Infill, or development within already urbanized areas, is a crucial ingredient in making cities work for people and using land more effectively. Unfortunately, local regulation and viewpoints, and misunderstanding of the benefits, often stymie infill development. This report summarizes key problems of sprawling urbanization, reviews actions local government can take to promote infill, and provides very useful references. Obtain the report for \$10 from the Local Government Commission, 1414 K. St., Suite 250, Sacramento, CA 95814.

Sustainable America: A New Consensus for Prosperity, Opportunity and a Healthy Environment. The President's Council on Sustainable Development. 1996.

The report of the Council provides overviews of a wide range of issues affecting sustainability, from how we build and use our cities to natural resource stewardship. It sets out national goals and also policy recommendations for various issues. Lists of actions accompany goals and policy recommendations. The report, a result of consensus between business, government and interest group representatives, does present a lot of the problems and solutions. But many will feel its recommendations do not go far enough. More detailed, stronger, reports by various task forces will be available soon for downloading on the World Wide Web. Topics include sustainable communities, sustainable agriculture, eco-efficiency, and energy and transportation.

2004 update: You can download the report, and the subsequent task force reports, from:

<http://clinton2.nara.gov/PCSD/Publications/index.html>

Balancing the Scales: Guidelines for Increasing Biodiversity's Chances Through Bioregional Management. K. Miller. World Resources Institute (1996).

Bioregional management addresses whole ecosystems at regional scales, combining protected areas and the matrix of multiple use lands. It integrates conservation and economic activity. It involves local residents in planning for the region. This book provides an overview of bioregional management, and its relationship to approaches like ecosystem management and biosphere reserves. Kenton Miller's statement of 14 key characteristics of bioregional management, and a chapter providing management guidelines are particularly helpful. The bulk of this book examines nine bioregional projects. They include the La Amistad Biosphere Reserve in Costa Rica, the Greater Yellowstone Ecosystem, and multi-country projects in Europe and Africa. The publication costs \$18.45 (including postage) from WRI Publications, POB 4852, Hampden Station, Baltimore, MD 21211.

Alternatives for Future Urban Growth in California's Central Valley : the Bottom Line for Agriculture and Taxpayers. American Farmland Trust, 1995.

Examines State Department of Finance 2040 projections for urban growth and farmland loss in the Central Valley (see lead article). The American Farmland Trust (AFT) predicts we can halve farmland loss through more compact growth. A summary report contains some basic charts, examining growth, agricultural sales, plus local government costs and revenues by county, under sprawl and compact growth scenarios. A technical volume includes the summary, details of the geographic analysis, and an extensive economic analysis. Obtain summary or full report for \$15 each from AFT at (916) 753-1073.

Making Land Use Work: Rules to Reach our Goals. Little Hoover Commission. 1995.

The Commission's report provides extensive information on issues related to land use, growth, and housing costs. It provides recommendations for solving current problems that include the need for regional strategies to protect water quality, open space, wildlife habitat and other natural assets. It looks at obstacles to compact and mixed use development. Obtain the report for \$5 from the Little Hoover Commission, 660 J St., Suite 260, Sacramento, DC 95814.

California Rivers and Streams : The Conflict Between Fluvial Process and Land Use. Jeffrey F. Mount. California University Press. 1995. 359 pp. \$19.95

An invaluable explanation of how California's rivers function and evolve. There is extensive discussion of key river or fluvial processes such as change in course over time and sediment transport, and an examination of human impacts on the state's rivers over the last 200 years. Chapters on effects of dams, mining, logging, farming, and urbanization. Examines the frequency and magnitude of floods, including consideration of society's myths and misconceptions. Mount looks to the future, considering global warming and how it may effect the rivers.

Myths of Jobs vs. Resources: Environmental Protections and Economic Growth. California Senate Office of Research. 1996.

Examines the relationship between environmental laws and jobs, and finds that environmental regulations are not a significant influence on business decisions to relocate abroad or to other states. Compares economic growth between U.S. states with both strong and weak environmental laws. Analyzes past studies on effects of environmental regulations on industry. Senate Pub. Number 847-S. \$3.50 from Senate Publications, 1020 N Street, Rm B-53, Sacramento, CA 95814.

Curtin's California Land Use and Planning Law. Daniel Curtin. Solano Press. 1995

The standard text on local general plans provides an essential guide for citizens as well as professionals. It explains general plans, zoning and subdivision processes and legal requirements in great detail. There are also chapters on wetlands, the Endangered Species Act, vested rights, findings, development fees and other issues. A new edition comes out each year, incorporating both legislative changes and the results of case law. Order from Solano Press Books, PO Box 773, Point Arena CA 95468. (707) 884-4508. \$48.05

Understanding Development Regulations Merritt and Danforth. Solano Press 1995

Explains California's land use laws, regulations and local planning processes. Covers issues from General Plans to the Subdivision Map Act, to land use initiatives and referenda. Written in question and answer form by two of the state's land use experts. Order from Solano Press Books, PO Box 773, Point Arena CA 95468. (707) 884-4508. \$30.95 Order from Solano Press Books, PO Box 773, Point Arena CA 95468. (707) 884-4508. \$48.05

CNPS Inventory of Rare and Endangered Vascular Plants of California. 5th edition. Skinner and Pavlick, eds. California Native Plant Society. 1994

Provides details on all rare and endangered plants. Includes those listed under federal or state endangered species acts, candidates, and those on CNPS rare plant lists. Lists the species and subspecies present in each county. The electronic version of this standard reference is especially useful - allowing you to make queries for plants in particular areas and habitats. Latter only available for MS-DOS compatible systems. The book is \$22.95, the electronic format \$195, plus tax and shipping. From California Native Plant Society. www.cnps.org

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Forthcoming Workshops

Contact IEH for details on these workshops.

October 11, 1996 in Santa Clarita.

The Santa Clarita Region in the 21st Century - Ensuring a Livable Community

Santa Clarita, CA. How to ensure a high quality of life, a healthy economy and a sustainable society in this portion of the Santa Clara River Basin.

November 2, 1996 in Fresno

Developing a Vision for the Future of the San Joaquin Valley. Fresno, CA.

For individuals from a wide range of organizations and interests across the San Joaquin Valley. Examination of land use, air quality and related trends, and some possible solutions. Small group discussions of participants' vision for the future.



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