



## ECOLOGICAL BENEFITS FROM RURAL LAND STEWARDSHIP

**P**rivately owned cropland and rangeland is critical to the ecological health of many regions in the United States. This is particularly true in California, where foothill, coastal and valley landscapes are primarily private land. Many habitat types and species, including a number of rare or endangered species, only occur in these private land regions. Most of our rivers and streams flow through private rural lands for a significant part of their lengths.

The ways in which landowners manage their land have major impacts on biological diversity, ecosystem processes, water quality and soil maintenance. Farm practices on cropland, grazing practices on rangeland, and the setting aside of some acres from agricultural production are all key components of stewardship for ecological benefits.

In some areas many landowners manage their land in ways that provide significant benefits. But over the years there has been a shift to a style of intensive farming, including use of the entire landscape for production and maintenance of bare soil along waterways and field edges, that minimizes benefits to the environment.

The provision of ecological benefits often costs landowners time and money, while acreage taken out of production reduces the yield of marketable agricultural products. Economic incentives for landowners who provide these ecological benefits can ensure that existing benefits continue and expand, and encourage additional landowners to change their practices.

Furthermore, we are in an era of economic hardship for much of the agricultural industry, with prices for some crops at thirty year lows due to factors ranging from international competition to the amalgamation of buyers into a very few distributors and supermarket chains. Cattle ranching, currently the only alternative to housing developments and rural ranchettes in many foothill landscapes, is economically marginal at best. Additional income is essential to maintain the economic viability of many family farms and ranches. Payments for good stewardship could play a significant function in ensuring the future of the agricultural industry and the ecological benefits it can provide. This approach could play a major role in halting the spread of metropolitan sprawl, by giving farmers and ranchers a viable alternative to selling to land speculators.

Historically, the federal government has provided funding to assist landowners with a growing array of activities. Initially the focus was on soil erosion, promoting the

retirement of highly erodible soils from crop production and use of farming techniques that reduce erosion. This approach was highly successful, as the total extent of soil erosion in the U.S. decreased by nearly 40 percent between 1982 and 1997, a reduction of 1.2 billion tons a year.

In recent years, Congress has steadily broadened the incentive programs, to encompass provision of wildlife habitat, buffers or filter strips along streams, and a variety of management practices. The usefulness of these programs is geographically skewed, however, depending on their operational details. Thus the Conservation Reserve Program, which retires over 30 million of acres of land from crop production for 10-15 year periods, is used mainly in the Mid West and South East.

Currently there are debates in the nation and in Congress as to which direction to take federal payments. Options include expansion of existing programs and the establishment of new programs such as a grasslands reserve program and a Resource Conservation Agreement system pioneered in Florida. These debates are intertwined with the re-authorization of the Farm Bill, and consideration of a major price support system that only addresses a handful of crops. A variety of entities, including the Bush administration, key lawmakers, environmentalists, and some agricultural interests, seek a shift from traditional price supports to an increased focus on payments for stewardship. This issue of *Linkages* explores some of the incentives and also the ecological values of certain farm and ranch practices.

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# News from IEH

## Views from the Board

We are running a brief item where each director explains why she or he is involved in IEH. Cattle rancher Dave Forrest started in the last issue. Our directors come from a wide array of backgrounds, interests and views and these statements help give our readers a better flavor of our organization.

### Ron Bottorff, conservationist

I am a retired aerospace engineer living in coastal Ventura County next to the largest metropolitan area in our state. Soon after I retired in 1992, I was present when John Hopkins gave a talk to our local Sierra Club group concerning biological diversity in California. I remember being very impressed, and saddened, by the threats to our unique combination of plant and animal life and the risk of losing entire ecosystems. After some thought about the rapidity and manner in which our state was developing, and considering the priceless ecosystems at risk, I decided I simply had somehow to get into the fight to protect this invaluable natural heritage.

Shortly thereafter I became aware of a huge array of threats to a river near my home, the Santa Clara, which begins in Los Angeles County and discharges to the ocean near the city of Ventura. John assisted me in forming Friends of the Santa Clara River, a group dedicated to protecting and restoring this "last wild river" in southern California. Eight years later we are still at it, and I think we've actually made a difference.

When several concerned individuals formed the Institute for Ecological Health in 1994, I was one of the founding members. We saw the need for an organization in the state that understands and works to preserve our natural heritage while at the same time promoting a vision of the future that protects human quality of life. There is no doubt in my mind that this was the right decision. I have been proud to continue to serve IEH as a board member over the years and believe the need for our organization is today greater than ever.

### Nearby Nature for Urban Residents

As mentioned before, in 2000 we produced a toolkit on Ecological Planning and Urban Villages, in a joint project with UC Davis' Community Design and Planning Services (CDPS). The key idea behind this toolkit is that Nearby Nature is important for the quality of life of urban residents and that there are opportunities to provide natural areas with useful biological values in urban landscapes. Stream corridors and detention basins doubling as wildlife ponds are two of the best examples. Now we have a follow-up joint project with CDPS, funded by a Great Valley Center grant to CDPS. We will be making presentations to local governments, including elected officials, planning commissions and agency staff, and providing short how-to materials on key elements for the toolkit.

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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.

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# INCENTIVE PROGRAMS FOR AGRICULTURAL LAND STEWARDSHIP

Financial incentives are essential for the promotion of conservation practices on farm and rangeland. Many landowners are glad to provide effective wildlife habitat, minimize soil erosion, reduce water consumption and improve water of nearby streams. But many others cannot afford the management costs of conservation practices, or the costs of retiring some land from production. So conservation easements, both term and permanent, and assistance with costs of installation & management are key features for promoting stewardship of the agricultural landscape. In addition, easements play a vital role in curbing the spread of metropolitan sprawl.

There is a wide range of programs that provide financial incentives for stewardship practices by farmers and ranchers. These include U.S. Department of Agriculture (USDA) programs, easements purchased by the U.S. Fish and Wildlife Service or state fish and game agencies, and programs of non-profit groups like Ducks Unlimited.

However, these programs do not provide nearly enough money to meet the current level of funding requests by agricultural producers. In addition, there is a severe economic crisis for many farmers as the selling price for their products falls or fails to keep up with increased production expenses. As a result, more individuals in the agricultural industry are interested in developing payments for the environmental benefits agriculture can provide.

## U.S. Department of Agriculture Programs

At the present time there is great interest in the federal programs managed by the USDA, prompted by the reauthorization of the 1996 Farm Bill, which expires in a year. There are proposals in Congress, together with Bush administration support, to greatly increase the level of funding for existing USDA programs, and to shift financial resources from a system of price supports for a handful of grains and cotton to conservation and stewardship across the entire agricultural landscape. In addition there are proposals for new approaches, such as Resource Conservation Agreements which have been developed in Florida and included in the Farm Bill just passed by the House as a "Farmland Stewardship Program".

There are a variety of programs administered by the

Natural Resources Conservation Service (NRCS) and the Farm Service Administration (FSA) (see box on page 4.) Both NRCS and FSA have local offices in rural counties. In California they work closely with local Resource Conservation Districts (RCDs), entities established under state law to promote resource conservation and administered by local landowners. This structure allows USDA to promote its programs directly to individual farmers, although often this does not happen nearly as effectively as needed.

The total money available for these programs, however, is far less than that needed to fund applications. According to the Environmental Working Group there is a backlog of over two billion dollars in unfunded requests.

The USDA programs have two basic approaches. The first is payment for easements or contracts to take farmland out of production and use it for various conservation practices. Historically the focus was on retiring cropland with highly erodible soils and converting those areas to grassland. This was the foundation of the Conservation Reserve Program (CRP), which now covers 33.6 million acres in 10-15 year contracts. In recent years CRP has been expanded to cover a variety of environmental benefits, including filter strips and riparian woodland along waterways, and restoration of wildlife habitat patches.

A second CRP expansion has been the development of the Conservation Reserve Enhancement Program (CREP), where USDA partnerships with individual states address state-specific objectives. In California, the CREP program goal is the extension of conservation practices to 12,000 acres of irrigated croplands in the northern portion of the Central Valley. A key focus is buffers along streams, sloughs and wetlands, but the project also includes conversion to grasslands or wildlife habitat.



## Conservation Assistance Through Key USDA Programs

Program	Main Approach	Key Goals	Approximate acres enrolled U.S.	California
Conservation Reserve (CRP)	10-15 year land retirement contracts	Reduce soil erosion. Provide buffers & wildlife habitat	33.6 mill	140,000
Conservation Reserve Enhancement (CREP)	Cooperative programs with individual states	State specific	150,000	(new)
Wetlands Reserve (WRP)	30 year and permanent easements	Assist federal no net loss of wetlands policy	1 mill	47,000
Environmental Quality Incentives (EQIP)	Establishment of conservation practices	Improve water conservation and quality. Provide wildlife habitat	*	*
Wildlife Habitat Incentive (WHIP)	Establishment of conservation practices	Provide wildlife habitat	*	*

\* Measured in number of contracts / year - total acreages not available

Another program that focuses on land retirement is the Wetlands Reserve Program (WRP), which helps to achieve the federal policy of no net loss of wetlands by purchase of 30 year and permanent easements for seasonal wetlands. Nationwide, the WRP now protects over a million acres of wetlands. In California, the program protects just over 60,000 acres, including over thirty thousand Central Valley wetland acres protected by permanent easements.

The other fundamental approach of USDA programs is to provide cost sharing for the expense of installing conservation practices, from drip irrigation to riparian buffers and filter strips. This is the approach of EQIP, the Environmental Quality Incentives Program, funded at \$200 million a year under the 1996 Farm Bill and very popular.

EQIP provides cost sharing and technical assistance, as well as incentive payments, for farmers establishing conservation practices under 5 and 10 year contracts. These include practices that reduce water consumption or improve water quality, as well as provision of wildlife habitat and wetlands. There are a large number of priority areas in California, including most of the Central Valley, the Santa Ynez Valley in Santa Barbara County, the

Elkhorn Slough area on the Santa Cruz / Monterey County line, large areas of the North Coast ranges, much of San Diego County, and portions of the Sierra Nevada.

The much smaller Wildlife Habitat Incentive Program (WHIP) provides a one-time cost share for establishing conservation practices that benefit wildlife on farmlands. The WHIP program in California has six priority habitats: riparian area and stream corridors; endangered species habitat; rangeland upland habitats; wetlands; farmland compatible habitat such as vegetation along field borders or ditches; and anadromous fish habitat in coastal streams.

Some new NRCS goals utilize a variety of the existing programs. A good example is the National Conservation Buffer Initiative. This started in 1997, with a goal of helping landowners create two million miles of buffers by 2002 through programs of both NRCS and many non-government organization partners. It takes a very broad view of buffers, going beyond vegetated strips along waterways. It includes other buffers that will halt movement of pollutants and soils across the agricultural landscape, such as vegetated field borders & hedgerows.

Many of these programs are under-represented in California. For example, only 137,000 of the CRP's 33.6 million acres are in California, with over half of those in San Luis Obispo County. There are only 2,200 acres of RP riparian buffers in the state (which would provide a 50 foot strip on each side of 183 miles of stream) and 983 acres of wildlife habitat. A prime reason is that program's payments are relatively low, especially in relation to the rents for irrigated farmland. The Conservation Reserve Program payments, for example, are based on local dryland rents. One program that provides greater benefits is the new California CREP. It has an extra incentive payment of \$160 an acre for irrigated rice lands and \$100 an acre for other irrigated land. Also, the state provides a lump sum payment of \$200 an acre.

## The Farmland Stewardship Program

This new approach was included in the 2002 Farm Bill (HR 2646) that passed the U.S. House of Representatives in October 2001. It is based on Florida's Resource Conservation Agreement program and is championed by Rep. Putnam of Florida and the Florida Stewardship Foundation (FSF). The basic method is a service contract between a local agency and a farmer or rancher who acts as a vendor, providing agreed-upon environmental benefits. Competitive bidding or equivalent private sector charges determine the fee for a contract.

The Farmland Stewardship Program (FSP) includes protection of open space and productive farmland, as well as standard USDA program benefits such as conservation of soil, water quality and wildlife habitat. Rather than a rigid, nationally structured, program it will "tailor and target existing conservation programs to the specific conservation needs and opportunities presented by individual parcels of eligible agricultural lands." It can utilize conservation programs of other federal agencies, and those of state and local governments and administer



the program in partnership with these entities. The USDA may also allow local entities, such as a Resource Conservation District or a nonprofit organization, to enter into contracts with local farmers.

The FSP as passed by the House of Representatives does not provide any additional funding. Instead, it may use the existing funding of other programs that is earmarked for conservation easements, as well as any funding in four programs - the Wetlands Reserve Program, the Wildlife Habitat Incentives Program, the Forest Land Enhancement Program, and the Farmland Protection Program.

## Other Proposals in Congress

In the House, Rep. Kind and others introduced HR 2375, the Working Lands Stewardship Act, which would have provided much greater funding for conservation programs. But Congress defeated an amendment Rep. Kind offered to the Farm Bill. However key concepts of the Kind bill could still appear in Senate legislation.

The provisions of HR 2375 included major increases in several programs, significantly above those in the House passed Farm Bill. WHIP would have received \$500 million over a six year period, annual WRP enrollments risen to 250,000 acres, and the CRP expanded to 45 million acres. The Kind bill provided \$100 million a year for practices that improve the ecological health of private grazing lands, and a program to protect 3 million acres of grasslands and shrub lands through easements. It also allowed state and local governments to submit plans that used funding from the full range of federal programs to address a set of local priority issues.

When the Senate takes up the Farm Bill, it may well take a very different approach than the House. The Senate shows more interest in providing more funding for conservation programs and less for traditional price support. The Bush Administration called for a similar approach as it criticized the House-passed Farm Bill.

Senator Harkin, the Chair of the Senate Agriculture Committee, introduced S932, the Conservation Security Act (CSA). This would provide funding for a broad array of environmental benefits, including cover crops, water conservation, rangeland management, and conservation buffers. It would provide the greatest support for "integrating a full complement of conservation practices to foster environmental enhancement *To Page 7*

# PLANNING FOR QUALITY OF LIFE

## A Renaissance for Mixed Use Development

The term Mixed Use Development is heard frequently these days. One basic form of mixed use development is a vertical mix of uses, such as apartments above street level retail. This type of mixed use is very common in older communities and is the heart of the type of vibrant urban communities described by Jane Jacobs in *The Death and Life of Great American Cities*. Her Hudson Street in Manhattan and the North End in Boston are successful in large part because of this vertical mix of uses.

A second type of mixed use is horizontal but fine grained - an urban district where even a single block of a street has a mix of residential, retail, amenities, offices and the all-important public spaces. It often includes vertically mixed use buildings.

This fine grain of mixed use is essential for a successful downtown or a city or urban village center. It ensures that there are people around at all times of the day, it provides customers during the day and in the evening, and it provides jobs, shops, restaurants and other amenities within walking distance of people's homes. This is the fundamental nature of the vibrant urban district that Jane Jacobs described. You find it in Sacramento's Mid Town, in Oakland's Rock Creek area and in many fine neighborhoods across San Francisco.

Building codes and zoning systems of the second half of the twentieth century often outlawed both vertical mixed use and the fine-grained mixed use neighborhoods. "Something as traditional and common sensical as allowing people to live in apartments above shops - this was no longer allowed in America, as evidenced by every one-story mini-mall from sea to shining sea" writes Kunstler in *The Geography of Nowhere*. Zoning rigidly separated residential, retail and business. It gave us a sea of subdivisions, dotted with

shopping centers and business parks, all separated by arterial roads and totally beholden to the automobile.

There is growing understanding of the necessity of both vertical mixed use and fine grained mixed use urban areas. We are seeing new buildings or conversion of old buildings that include retail, office and residential. Residential and live/work loft space is popular in cities across the country.

In Orange County, an examination of aging shopping centers showed a tremendous potential to house the population growth expected over the next 20 years. Each of these centers has one or two large stores, one story strips of smaller shops and vast areas of surface parking. Redevelopment of the shopping center would retain the large stores but replace the strip commercial and the parking asphalt with multi-story, mixed use buildings and multi-story parking. A team from The Planning Center found over 700 of these areas in the County, many dying as viable commercial tracts. Retrofitting several hundred of these would provide all the County's needed housing for the next 20 years.

Over the past several decades there seems to have been a general assumption that there was no market for residential units in vertical and fine grained mix use, that everyone wanted to live in low density, single family, residential subdivisions. Now we realize this is not the case. The housing market must cater to a wide variety of interests and needs comprising over 60 different groups. The "couple with children" scenario is often a minority. There are many people eager to remain in or move to urban areas. New housing opportunities in existing urban neighborhoods, including mixed use projects find eager customers. It is time for a mixed use renaissance.

## Incentive Programs. *From Page 5*

and the long-term sustainability of the natural resource base of an entire agricultural operation.” In August, Senator Lugar, ranking minority member of the Senate Agriculture Committee, introduced the Farm and Ranch Equity Act of 2001 (S 1571). This would increase EQIP program funding to two billion dollars a year.

The increased interest in funding for various stewardship programs shown in these legislative proposals is encouraging. We hope that the final version of the 2002 Farm Bill signed into law will provide very significant funding increases for USDA programs, the concepts of the Conservation Security Program, and also more flexible approaches such as the Farmland Stewardship Program. The final levels of funding, however, will still depend on annual appropriations bills and the overall condition of the federal budget. Current trends toward deficit spending suggest that it may be very hard to appropriate additional funding in the next few years.

### Further Information

#### Farmland Stewardship Program

[www.privatelands.org](http://www.privatelands.org)  
Florida Stewardship Foundation  
621 NW 53rd St. Suite 240  
Boca Raton FL 33487

#### USDA Programs:

Natural Resource Conservation Service  
[www.nrcs.usda.gov](http://www.nrcs.usda.gov)

Farm Service Agency [www.fsa.usda.gov](http://www.fsa.usda.gov)

JA Zinn (2001) *Soil and Water Conservation Issues*. Congressional Research Service  
<http://cnie.org/NLE/CRSreports/Agriculture>

#### Federal Legislation

<http://thomas.loc.gov>

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## PROVIDING FOR NATURE IN CROPLAND AND RANGELAND LANDSCAPES

Our private land agricultural croplands can provide a great deal of wildlife habitat, depending on whether or not they retain or restore some key landscape elements, on the particular crops grown in an area, and on management practices. Rangelands have tremendous habitat value, but again the presence or restoration of key habitat elements and management practices are critical. California's privately owned rangelands include most of the state's oak woodland, oak savanna, grasslands, vernal pools, much of the chaparral scrub, and countless miles of streams and riparian habitats - all immensely important habitat types essential for a large number of the state's huge variety of wildlife species.

### Habitat in Field Crop Landscapes

The key landscape elements for wildlife in field crop dominated landscapes include the presence of trees and shrubs alongside streams and sloughs, maintenance of reeds and other low vegetation along many of the

drainage ditches, native grasses or other suitable vegetation around field borders, patches of wetlands, fallow land or woodlots, some fields lying fallow, and some areas of pasture lands. This landscape provides for a number of "farm friendly" animals, including various birds, snakes, amphibians and mammals. It also provides essential habitat for a variety of beneficial insects that help control agricultural pests.

It is possible to restore these landscape elements, on an ownership by ownership basis, to regions where they have largely disappeared. But some features such as riparian woodland usually are not appropriate to certain very arid regions such as the Southern San Joaquin Valley.

Several studies in Europe have shown that progressive intensification of agriculture, when accompanied by destruction of key habitat elements like hedgerows and woodlots, results in a severe diminution of wildlife. In California, "clean farming" techniques produced the same results. Landscapes where the streambanks and field edges are devoid of vegetation provide *To Page 9*

# Sustaining Agriculture

## A New Column

*This new **Linkages** column will explore key issues relating to sustaining agriculture and the health of our crop and range landscapes. Many future columns will be written by individuals in agriculture and associated activities*

The long term conservation of farm and range lands is a major concern of the Institute for Ecological Health. One component of this, the protection of agricultural land from sprawling development, gets a great deal of attention in California. There is strong support for the conservation of farmland threatened by metropolitan sprawl. This includes state funding for the purchase of agricultural easements, local land conservancies with a major focus on agricultural land conservation, ballot measures to protect farmland, and support for farmland conservation by a growing number of local governments. Initially the focus was on irrigated agriculture in the Central Valley and key coastal counties. Now the interest is spreading to rangelands.

An equally important issue is maintaining or restoring the economic viability of family farms and ranches. Cattle ranching has long been a marginal industry across much of California's 17 million acres of private rangeland. In recent years, the fiscal problems have spread to a variety of field crops, some of which have been selling at 30 year lows. The reasons behind these low prices are complex, but include cheap imports and the amalgamation of wholesale buyers. Most of these fiscal concerns are outside the scope of IEH but they are crucial to the health of agriculture. We need to be aware of them, understand their consequences, and be supportive of essential reform efforts.

Another issue is the maintenance of the agricultural support infrastructure, including food processors and providers of farm supplies. For

example, recent closures of tomato canning and sugar beet plants in the southern Sacramento Valley and the failure of Tri Valley Growers, caused huge problems for many farmers, and led to changes in the crops planted, sometimes to the detriment of wildlife.

These issues transcend local government boundaries, yet we lack regional mechanisms to address and solve the problems. For example, we have heard from several sources that various agriculture infrastructure facilities in the city of Woodland in Yolo County will come under severe economic pressure and could well go out of business if urban development spreads across the Natomas Basin in Sacramento and Sutter Counties. This will impact not only the Woodland businesses, but also the viability of Yolo County agriculture.

Some key topics, in particular water supply and some laws and regulations, tend to put many environmentalists and farmers on opposite sides. The issues are complex, and we need to both safeguard and restore our natural environment and ensure that agriculture is viable. This is a time for dialog between interests, for understanding these different interests and needs, and for seeking effective solutions to seemingly intractable problems.

In addition to sustaining the economy of agricultural operations and infrastructure, we need to sustain the soil and the land. Soil erosion, loss of carbon from the soil, the importance of beneficial insects nurtured by native plant hedgerows and the presence of pest eating bats and raptors are all key issues for sustaining agriculture.

We look forward to exploring this wide range of topics and possible solutions to key problems in future issues of *Linkages*.



## Nature in Agricultural Ecosystems. From page 7

virtually no useful wildlife habitat and often result in significant non-point source pollution of the waterways. Extensive areas of orchards and vineyards will only have useful habitat values when natural features such as riparian vegetation along streams are retained or restored.

In the Central Valley of California a habitat-studded cropland landscape provides for a large population of wintering hawks, for breeding Swainson's hawks, white-tailed kites, western kingbirds, common king snakes, tree frogs and many others. In some southern San Joaquin Valley areas, patches or corridors of fallow land, including fields that lie fallow for several years, often provide vital habitat for several imperilled ground-dwelling animals.

Some individual crops play important roles for particular species or groups of species. In mid-winter, the rice fields of the Sacramento Valley harbor nearly all the Valley's Pacific Flyway shorebirds. These fields also provide critical habitat for waterfowl and for the federally listed giant garter snake. Pasture lands are key for the colonial-nesting tricolored blackbird, a species in rapid decline and only found in California. Wintering sandhill cranes utilize a mix of grain fields and pasture lands for foraging. In the

### Yolo County Resource Conservation District - Promoting Wildlife Friendly Farming

For number of years, the Yolo County RCD has been in the forefront of promoting farmland conservation practices that benefit wildlife. These are based on local examples at John Anderson's Hedgerow Farms and other properties in the county. They include hedgerows, cover crops, tailwater ponds with wetland areas, riparian and roadside vegetation, and range management.

You can find basic information at the RCD's web site, [www.yolorcd.org](http://www.yolorcd.org), or you can phone (530) 662-2037.

In addition, the Yolo County RCD publishes *Bring Farm Edges Back to Life! How to Enhance Your Agriculture and Farm Landscape with Proven Conservation Practices for Increasing Wildlife Cover on Your Farm*. This provides detailed information on how to establish a range of practices.

spring, grain and hay fields are important nesting areas for several ground nesting birds like mallards, pheasants, northern harriers and short-eared owls, providing harvesting waits until mid July so that the young birds can fledge.

## Practices Benefiting Both Farming and Nature

A variety of practices benefit both agriculture and nature, including maintaining and restoring various habitat elements in the landscape. The Yolo County RCD's publication *Bring Farm Edges Back to Life* provides details on establishing and managing an array of features. One key example is the fostering of beneficial insects, a wide array of predatory and parasitic species including various wasps, lacewings and hoverflies. They need particular plant species around the fields, where they live and breed and provide a pool to move into young crops before pest species build up. Examples of suitable native species are buckwheat, needlegrass, holly-leaved cherry, California coffeeberry, toyon and coyotebush. These and other useful plants can be grown in hedgerows, between riparian woodland strips and field edges, and in various other locales.

In many regions, management of field and roadside edges provides a good opportunity to benefit both agriculture and nature. Farmers keep these edges clean because they want to reduce the supply of weed seeds that can spread into their crops. This often requires periodic discing, which is expensive and time consuming. The edges along the public roads are either ignored, and become a weed factory, or are treated with herbicides. An alternative, promoted by the Yolo County RCD, farmer John Anderson and others, is to plant native perennial grasses along these edges. Once they are established they need no weed control and virtually no maintenance, other than a single mowing or burning every two years or so to remove buildup of dead thatch.

The planting of hedgerows along some field edges "provides an astonishing number of benefits, starting with weed control and reduction of weed seed banks in uncropped areas; most important of all are integrated pest management advantages," says the Yolo County RCD. Farmers use a mix of native trees, shrubs and grasses to start hedgerows. They are easy to maintain and provide habitat for a variety of insects and vertebrate animals that are effective pest predators. *Continued on Page 11*

# NEEDS OF NATURE

## The Importance of Context

The larger landscape context is a critical determinant of a natural area's value, both for conserving particular species over the long term and for provision of ecological processes and services. The most dramatic context variable for a natural area is the degree of neighboring human development. A 100 acre vernal pool landscape may be an integral part of a large ranchland landscape, a habitat patch surrounded by field crops or a vineyard, a patch in a sea of five acre ranchettes, or a patch surrounded by houses and shopping centers.

In the first case, this vernal pool landscape provides the full variety of plant and animal species that would be expected to occur. It has proper hydrological functioning, there are occasional grass fires, and cattle prevent very damaging invasive exotics like medusahead grass from moving in. Animals that need large rural areas, like coyotes and ferruginous hawks and, ideally, pronghorn will appear from time to time. Waterfowl and shorebirds will utilize vernal pools. There is no disturbance by cats and no natural excess of small predators like racoons and possums.

Change the landscape context, surround the 100 acre vernal pool area by field crops, and there are significant biological changes. The patch no longer has complete subwatersheds, altering its hydrology and allowing pollution and summer irrigation runoff to enter from the croplands. Affected vernal pools may well cease to function properly and over time lose many of their unique plants and animals. Visits from many waterfowl and shorebird species will diminish, reducing opportunities to share seeds and cysts with other vernal pool areas. If a particular species is lost from the patch (extirpated) it is much less likely to recolonize. Invasive exotic weeds move in, the 100 acre patch is probably impracticable for cattle grazing, and humans work to avoid fires, and push out some native species. Species that use large

grassland landscapes never visit, while there may be a greater number of small predators which will prey on ground-nesting birds & other local fauna.

Change the context again, shifting from field crops to the five acre ranchettes. In addition to the changes outlined above, there will be visiting cats and dogs which further diminish native wildlife.

Finally, shift to the 100 acre patch bordered by housing and a shopping center. The extent of biological degradation over time is now very severe, unless humans spend a very large amount of time and money managing and restoring the habitat patch. Unique vernal pool species will likely disappear over time. The coyotes, ferruginous hawks, various wintering waterfowl and shorebirds will not appear. Cats and small urban-friendly wild predators will utilize the entire area, so nesting birds like horned larks, killdeer and grasshopper sparrows will be absent. The area will likely become a weed field.

### What are the lessons from this picture of changing context?

Native species and properly functioning ecosystems need large areas with minimal intrusion by human habitations. Habitat areas in cropland landscapes need to have minimum sizes to conserve desired biological values over the long term. For example, a 50 foot woodland strip alongside a farmland slough will provide some natural biological values, but a 500 foot wide strip many more.

Habitat areas in urban, suburban or rural-residential settings will likely have very altered species composition and ecological functions over the long-term, and be very expensive to manage. Natural areas in these developed contexts, however, do provide for some wildlife species and provide essential Nearby Nature to improve people's quality of life.

## Nature in Agricultural Ecosystems. *From page 9*

The conservation or restoration of native vegetation along streams and sloughs also provides a variety of benefits. Those bare banks require periodic treatments to battle noxious weeds. They erode, creating siltation problems and sometimes requiring re-grading. Native plants provide bank stabilization, weed control and habitat for a wide variety of animals, including beneficial insects. A slight levee setback, even on one side, can provide room for riparian woodland next to the summer flow and increases the flood flow capacity. However, this type of project does require various government permits.

## Rangeland as Habitat

Our private rangelands are one of the most important wildlife resource, and provide very large areas of rural land. But ranches need to remain economically viable if we are to keep this resource - otherwise they give way to rural residential development and metropolitan sprawl. There are various approaches to range management that provide for the conservation of wildlife habitat, and also improve forage so that over time the stocking levels can increase.

Furthermore, cows can act as agents of restoration in areas where there has been serious degradation from historic overgrazing (often the damage resulted in the nineteenth or early twentieth centuries) or from lack of stewardship of leased lands. Vernal pool grasslands in California's Central Valley provide a good example of the compatibility of native biodiversity and grazing. Remove the cows and the result is an influx of invasive exotic plants like medusahead grass, which crowd out the existing natives.

The California Cattlemen's Association and its California Rangeland Trust have provided a number of examples of habitat conservation and restoration in their recent publication *Grazing for Change*. This describes operations on eight ranches around the state, and on The Nature Conservancy's Vina Plains Preserve - a vernal pool area in Butte County. The ranches are businesses, managed to improve their long-term economic health. But improving their economic health requires improving ecological health. The most frequent activities are rotational grazing, restoration of riparian areas, and restoration of native perennial grasses.

Chet Vogt's 5,000 acre Three Creeks Ranch in Glenn County is an excellent example. When he purchased the ranch in 1992 it had suffered from absentee ownership, 50

years of "let the cows out on the range", and was in very bad condition. His goal for the ranch was "to create a landscape diverse in both fauna and flora that allows for maximum harvest of grasses and forbes for livestock."

An IEH and U.S. EPA group visited in the spring of 1999 and was amazed at the fine state: clear streams and abundance of wildlife and native plants. Willows and mulefat grew along the streams, and there was an abundance of young oaks. A slope once infested with medusahead grass was now a wildflower carpet - the change achieved by deliberate and very localized intensive grazing. A variety of native grass species had reappeared across the ranch. In the years ahead the riparian vegetation will increase, there should be development of oak saplings and then young oaks, and both native grasses, overall forage and stocking capacity should increase.

Chet Vogt's recipe for achieving this dramatic improvement was intensive management based on rotational grazing. This approach is promoted West-wide by Allan Savory, while in California Stan Parsons runs a "Ranching for Profit" school that takes a similar approach. Division of the Three Creeks Ranch into 30 paddocks allowed the cattle to be in any one paddock for only 13 days a year. Streams and riparian areas are fenced off and only grazed for one day a year. Active management along the streams includes planting of willows and mule fat.

Another example of change in grazing management is the Orme Ranch in Arizona, a large operation that utilizes both private and public lands. Here the holistic goals include return of perennial flows to streams and improving the state of native biodiversity. Management issues include ensuring the health of a local pronghorn herd. A team of people representing various interests and including IEH Board member Dave Forrest meets periodically to determine future management directions.

## Conclusion: A Future for Agricultural Lands as Wildlife Habitat

Promotion of these types of practices on both croplands and rangeland promises an ever-improving picture for wildlife habitat in agricultural landscapes, and ways to address future challenges such as reduction in non-point source water pollution. But the changes in management practices require time and money. Public understanding and fiscal incentives are essential components of this change. These changes also offer the opportunity to

increase the financial health of both farming and ranching, essential steps for conserving our rural landscapes over the long-term.

**Further Information**

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