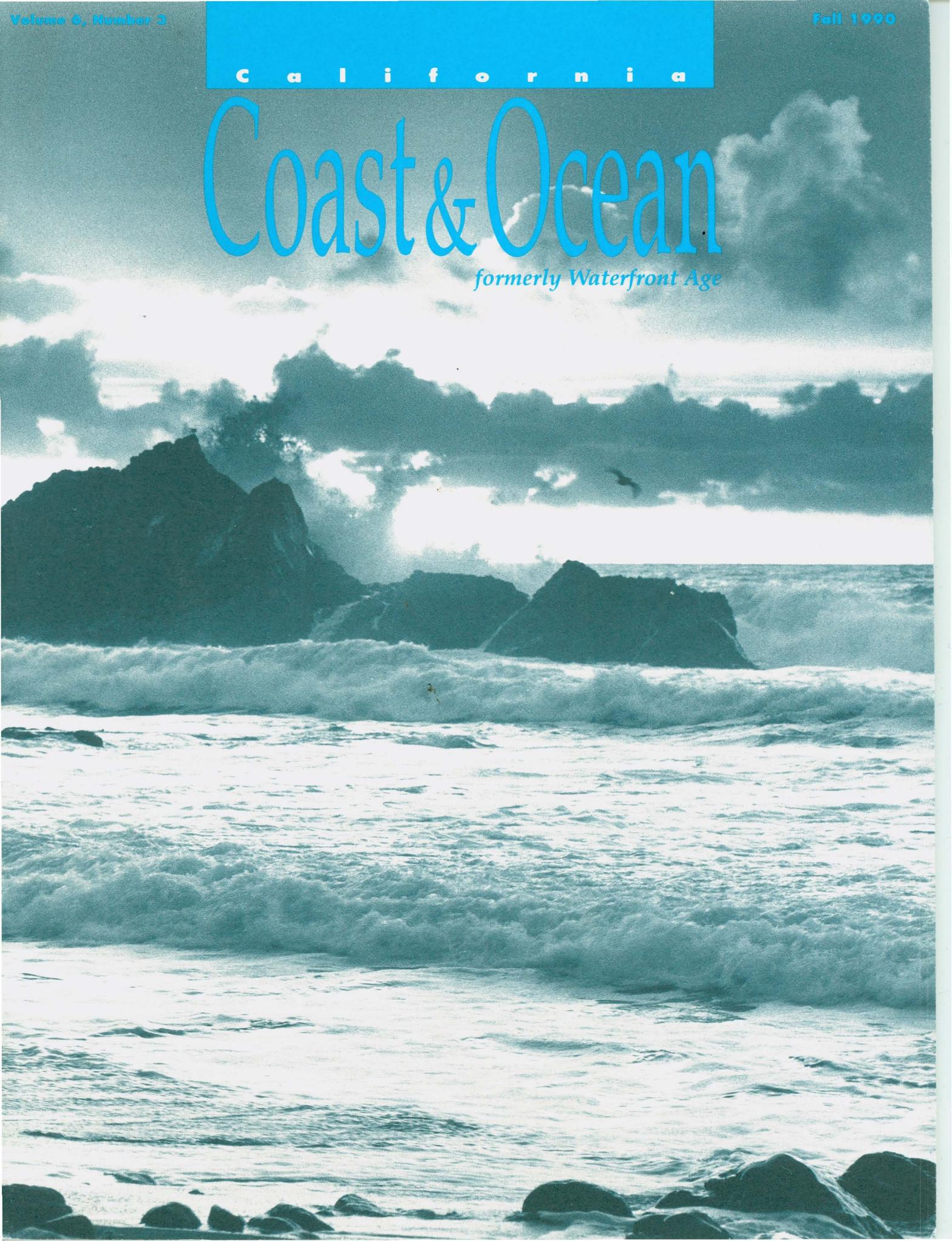


C a l i f o r n i a

# Coast & Ocean

*formerly Waterfront Age*



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### Departments

### Features

- 2 From the Executive Office**
- 3 Ebb and Flow**
- 7 Conference Log**
- 42 From Other Shores**
- 45 Book Reviews**
- 48 Letters**

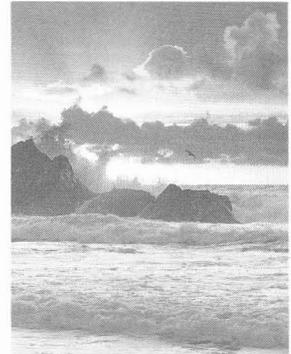
- 9 Local Land Trusts as Farm Protection**  
*Dick Wayman*  
Land trusts provide effective barriers to urban encroachment on scarce farmland
- 16 Close-Up: Coastal Farming: Great View, but Many Pitfalls**  
*Regina McGrath*  
Farming off Highway 1 not always a plus; pests show no respect for viewsheds

- 18 The Art of the Rural Trail Deal**  
*Don Coppock*  
Patience is needed when negotiating public rights of way across private farmland
- 22 Organic Farming: Standards: Yes; Research Money, No**  
*Regina McGrath*  
Delivering organic produce to consumers will require larger investment in research

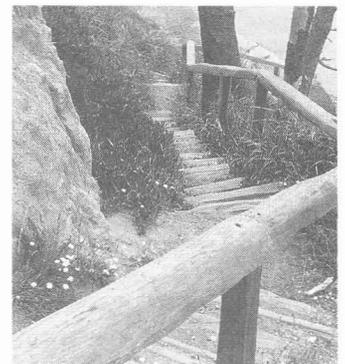
- 23 California's Pier Pleasures**  
Where can you get away from it all without your own yacht? Special pull-out map
- 27 Determining Public Accessway Costs**  
*John Maciuika*  
Just how much does it cost to provide public access? Going rate for a boardwalk?

- 36 Operations, Maintenance, and Liabilities: The Rest of the Story**  
*John Maciuika*  
Not all stairways are created equal when it comes to long-term upkeep

- 38 Dream Hatchery**  
*Joy Dorst and Rasa Gustaitis*  
Petaluma high school students work to resurrect a stream, fish included



Cover: Winter storm at McClure's Beach, Point Reyes National Seashore. Photo by Marty Knapp.



## From the Executive Office

by Peter Grenell

All the big environmental ballot initiatives and bond acts were defeated at the polls this November, except for the proposal to ban fishing with gill nets. Does this mean that the people—both those who voted and the many who didn't—no longer value the environment, wildlife, coastal protection, and parks? Is there special significance in the fact that the Coastal Conservancy, for the first time in its very productive and successful 14-year history, received no new funding? Or was Proposition 149, the \$437-million park bond issue that contained \$15 million for the Conservancy, simply caught up in the general electoral discontent and disgust? What are the implications for the future, especially for 1992?

Review of various election results and commentaries suggests several thoughts. First, people are impatient with the recent lack of productive leadership and action (with few exceptions) regarding major environmental concerns. The felt need for bolder action helps to explain the recent proliferation of citizen-sponsored environmental initiatives. In 1988, for instance, when Proposition 70 passed, no parks, coastal, and wildlife bond act had emerged from the Governor and the Legislature, although the Legislature had considered more than one and a bond act was needed, in keeping with the four-year funding cycle that had been established for more than a decade. The parade of initiatives continued into the last election. Though the important Lempert-Keene oil spill legislation had passed, we had "Big Green" and "Forests Forever" and their industry-backed counter-initiatives. These initiatives were in many respects poorly drafted, confusing, reflected narrow political concerns, and were essentially not very good government.

The vote reflected the feeling that the initiative glut has perhaps gone too far. On the other hand, a general anxiety about personal, as well as the state's, fiscal condition helped to defeat all but two bond acts on the state ballot, including Proposition 149, which, as modest an act as it was, would have provided urgently needed funding for several important park, wildlife, and coastal programs—and which *was* a product of the legislative process. (Some commentators have also suggested that had Proposition 149 been on the June ballot, or even simply higher up on the November ballot, it would have passed.)

It appears reasonable to conclude, therefore, that the election demonstrated that voters have gotten wise to the shortcomings of the initiative route as an alternative way of doing business—at least for the time being; and that they are indeed concerned with the uncertain financial outlook for the future and want to move cautiously.

These positions are not inconsistent, although some may find them so. People are still looking for decisive leadership and positive action on the environment from their elected leaders, both in the Governor's office and in the Legislature. Such action must be well thought out, especially as regards its financial implications; and that, of course, is precisely the business of government.

Some cautious optimism is not out of order. On the local level, people and governments are beginning to come together to form new arrangements, such as joint powers authorities, to address environmental and related growth management problems that local communities are not able to deal with separately. In some cases, local bond acts have been proposed to help fund these activities. Regional river park groups are now active in several coastal and other locations. Broader geographic and

functional viewpoints are also reflected in the increasing interest in identification and management of wildlife corridors and regional ecosystems. And the Legislature has voiced support for such efforts in the past.

Governor-elect Wilson's recent proposal for a riparian conservancy, drawing upon the experiences and approaches of the governmental Coastal Conservancy and the nonprofit Nature Conservancy, represents a continuation of such thinking at a potentially very influential level.

These efforts suggest a basis for positive state government action on a host of critical environmental concerns, including coastal ones, in concert with local government and nonprofit groups. They offer the promise of cooperation, rather than contention; performance, rather than paralysis. Building on the basis of such arrangements could provide the momentum and restored confidence needed for the broad public support of the fiscal and other measures that the state really must have in 1992.

In the wake of the defeat of all but two bond measures in November, considerable anxiety exists as to the future of this form of public financing for capital projects and programs. The deficit must of course be dealt with. A round of fiscal belt-tightening is in order. Yet all those bond proposals did go down, reducing any immediate further threat to the state's excellent bond rating; and a recent Legislative Analyst's Office report clearly pointed out the advantages and legitimacy of bonds for funding long-term capital improvements. No doubt new sources of finance will have to be developed to complement a reduced level of bond funding. More imaginative problem-solving with existing resources will also be required. And the public will have to realize that now, as never before, there's no free lunch. □

# Ebb and Flow

## Recent Conservancy Actions

### **Point Cabrillo Acquisition**

After many years of patient effort, the Point Cabrillo headland, with its historic light station, is about to become a park. The Coastal Conservancy in September approved \$3,037,000 for the acquisition of 85 acres of private lands and the 35-acre U.S. Coast Guard Point Cabrillo Light Station, to be added to 186 acres previously acquired.

Three miles north of the town of Mendocino, the headlands include about two miles of ocean shoreline, with small pocket coves that are now informally accessible. The land slopes from a partly wooded area near Point Cabrillo Drive down two terraces of open grassland to the ocean bluffs and rocky ledges. Three perennial streams run west across the land, and there are numerous seeps and springs, supporting abundant freshwater marsh and riparian vegetation.

The lighthouse structure and three Victorian-style clapboard houses that constitute the light station stand against the wind-swept grassland and rocky shore. The only state marine reserve in over 100 miles of the county's coast is along the shore.

In this final acquisition phase of the project, the Conservancy allotted up to \$1,607,000 for acquiring 85 acres, up to \$1,375,000 for acquiring the light station itself, and up to \$55,000 for immediate repair and reconstruction of fencing along the perimeter, and the removal of dilapidated structures and accumulated debris. The Conservancy will seek agreement with the Department of Parks and Recreation on a transfer of Point Cabrillo to the department as a unit of the state park system. Final disposition of the property will require further formal action by the Coastal Conservancy.

### **Mendocino Gardens Restoration**

Permanent protection for the Mendocino Botanical Gardens was assured last September when the Conservancy approved a restoration plan and allocated up to \$2 million for the Mendocino Coast Recreation and Parks District to acquire about 35 adjacent acres that had been part of the original 47-acre Gardens park and preserve. The restoration plan, prepared with \$50,000 from the Conservancy, recommended the acquisition to protect the Gardens, which are managed by the nonprofit Mendocino Botanical Gardens Preservation Corp. and drew nearly 30,000 paying visitors in 1989. The Conservancy has been involved with this unique coastal resource for a decade.

### **Cullinan Ranch Acquisition**

In a unique cooperative effort made possible by the Conservancy's participation, the U.S. Fish and Wildlife Service has teamed with the Conservancy and the Solano County Farmlands and Open Space Foundation to acquire Cullinan Ranch, expanding the San Pablo Bay Wildlife Refuge by nearly 1,500 acres.

The ranch, a former tidal marsh, is one of the largest undeveloped shoreline properties on San Francisco Bay and has long been viewed as the highest priority wetland acquisition in the north bay. It lies along Highway 37, and is bounded by the Petaluma River to the west and the Napa River to the east. In the mid-1980s, it became the object of a court battle, with resource agencies and environmental groups winning a court fight against a proposal to annex the ranch to the city of Vallejo and allow its development with some 4,500 homes along artificial lagoons.

The Fish and Wildlife Service recognized a unique opportunity to restore this property as a tidal marsh and identified it as a priority acquisition. Last year, Congress appropriated \$3 million, less than half the appraised value. The landowner agreed to sell for \$6.5 million, but was unwilling to enter into a binding agreement until sufficient funds for the purchase were secured. To preclude sale to a private buyer, the Conservancy in June authorized \$3.5 million to enable Fish and Wildlife, working with the community-based foundation, to lock up the property. The Conservancy will be reimbursed after Congress appropriates the balance of the purchase price needed.

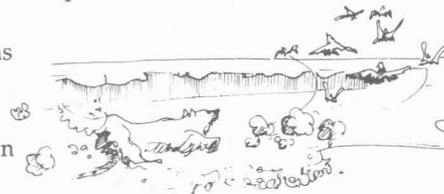
### **Rush Ranch Management Plan**

After the Solano County Farmlands and Open Space Foundation acquired the 2,070-acre Rush Ranch with \$1.5 million from the Coastal Conservancy in 1988, questions arose about possible conflicts between cattle, waterfowl, and wildlife. The foundation prepared a management plan, using Conservancy funds and with the participation of several concerned interests, including the California Waterfowl Association, Suisun Resource Conservation District, Solano County,

California Department of Fish and Game, San Francisco Bay Conservation and Development Commission, and

the Conservancy. In June, the Conservancy approved the plan and authorized up to \$444,147 to the foundation for implementation.

Conservancy funds will be used to build all public access improvements, including parking, trails, overlooks, visitors' station, picnic tables, signs, and fishing platforms; to improve tidal circulation and freshwater flows; to



implement an upland and riparian pilot planting program; and to monitor ranch activities and improvements for five years to ensure that activities on the ranch are compatible with the purposes of the acquisition: for wildlife habitat, public access, and range management. The foundation will fund all rangeland improvements and ranch operation and maintenance from grazing fees and other revenues.

### **Berkeley North Waterfront Park Completion Funded**

After many years of effort, Berkeley will be able to complete North Waterfront Park, with up to \$2 million authorized by the Conservancy in August. The funds enable the city to complete an all-weather, handicapped-accessible pedestrian and bicycle path along the

shoreline, providing access to 50 acres of open space and linking this park with trails in the marina, along University Avenue, and with shoreline trails planned for Emeryville and Albany, all parts of the Bay Trail system. The park will provide the most significant new regional public access to the East Bay shoreline.

### **S.F. Bay Trail Workshops**

In the next stage of work on the Bay Trail, the Conservancy and the Association of Bay Area Governments (ABAG) will convene five regional Bay Trail workshops, using up to \$60,000 in Conservancy funds approved in August. The forums will help the Conservancy to obtain consensus on Bay Trail priorities, routes, and design issues to be resolved in implementing future trail projects.

### **Garcia River Watershed Planning Begins**

In the first move to start another major watershed project, the Conservancy allotted \$100,000 to the Mendocino County Resource Conservation District toward a comprehensive watershed enhancement plan for the Garcia River. This river's natural systems are in a state of crisis. Chinook salmon have not been seen for many years and other fish vital to commercial and sport fisheries are declining. The decline is attributed to heavy logging in the 1950s and 1960s, which scarred many steep slopes. During heavy winter rains, the river channel has been choked with sediment and debris, and its water quality is deteriorating.

Conservancy funding will enable the Mendocino County RCD to study the causes of the river's declining habitat values and to propose solutions to enhance them. The RCD will work closely with landowners in the watershed, including R & J Timber Co., which owns nearly 20 percent of the land and will contribute \$15,000 toward the study. It is hoped that a comprehensive plan will result to help restore this watershed and serve as a model for other North Coast streams.

### **San Diego's Mission Bay**

A former landfill will be transformed into a 97-acre shoreline park with new beach access and recreational opportunities for an estimated 15 million people who visit Mission Bay yearly. The Conservancy authorized up to \$1 million to the city of San Diego for the project, in the second phase of its involvement with the bay. The money will be used to build a new boat basin and a ten-lane boat launch ramp and related facilities, and to create 96,000 square feet of new beach. The city will fund the construction of shoreline pedestrian and bicycle paths,

### **Pier 7 Opens**

*After several years of planning and fund raising, this reconstructed pier on San Francisco's northern waterfront was opened to the public.*



Frederic Larson, San Francisco Chronicle

parking, restrooms, landscaping, picnic tables and benches, a children's play area, a nine-acre salt marsh, and a seven-acre sand dune. The city will also cover all remaining construction costs, as well as park operation and maintenance.

### **Low-cost Tijuana River Sewage Treatment Project**

In September the Conservancy approved \$88,000 to the Environmental Defense Fund (EDF) to complete construction of the second phase of a demonstration low-technology wastewater treatment plant in Tijuana. Combined with more than \$60,000 donated by Mexican and U.S. institutions, the funds will help complete a demonstration of a low-cost alternative solution to the sewage problem plaguing the Tijuana River and estuary.

EDF is building this plant on property leased by El Colegio de la Frontera Norte, an academic institution. The project will benefit the Tijuana Estuary, and testing and analysis of this alternative technology will provide useful information to all entities seeking solutions to border sewage problems.

### **South Central Coast Fisheries**

Under the Vessel and Gear Staging and Repair Space Program element of the Local Marine Fisheries Impact Program, the Coastal Conservancy authorized the following disbursements this past June:

- \$150,000 to the Ventura Port District to build a commercial fishing gear storage area within Ventura Harbor;
- \$40,000 to Ventura County to improve an existing dock and wharf facility in the Channel Islands Harbor to facilitate gear haul-out and repair;
- \$110,000 for on-site operation and management of property to be leased for commercial fishing gear storage in Santa Barbara and to contract for engineering



Photos: Dewey Schwartzburg

### **Wheelchair Access Guide Appears**

*The Coastal Conservancy's publication of the first coastal access guide for the Bay Area designed specifically for wheelchair riders was celebrated with a visit to the tidal ramp at Crab Cove, at Crown Memorial State Beach in Alameda. Above: Supervising Naturalist Paul Ferreira of the East Bay Regional Park District introducing visitors to creatures that inhabit the tidepools. Below: The Conservancy's Peter Grenell, the East Bay Regional Park District's Janet Cobb and guide author Erick Mikiten. For a free copy of A Wheelchair Rider's Guide to San Francisco and Nearby Shorelines, call or write the Conservancy.*

and construction of site improvements;

- \$100,000 to the Port of Los Angeles to build a commercial fishing gear storage area within Los Angeles Harbor.

The required environmental and planning assessments for two sites in Morro Bay and Port San Luis are underway.

### **Other Conservancy Actions:**

- Approved up to \$230,000 in August to the city of **Morro Bay**, in San Luis Obispo County, to complete construction of the third phase of **Tidelands Park**, the **Centennial Stairway**, and a restroom facility as part of the Morro Bay water-

front restoration plan previously approved by the Conservancy, the city, and the Coastal Commission.

- Authorized up to \$150,000 to the county of **Santa Cruz** to build 2.84 miles of **bike lane** along **San Andreas Road** for bicycle access to coastal areas in southern Santa Cruz County, between Manresa and Sunset state beaches. This bikeway will connect to one built in 1984 from Highway 1 to Ocean View Drive. San Andreas Road, with sweeping views of farms and ocean, is heavily traveled by cyclists. The Conservancy's funds, approved in September, augment the \$270,000 the county has for the project.

• Deleted the reimbursement requirement for \$150,000 allocated in 1987 to the **Moss Landing Harbor District** in Monterey County for construction of a bulkhead on the west bank of **South Harbor**. Public harbor facilities at Moss Landing were significantly damaged by the October 17, 1989 earthquake and the district has consequently been under heavy financial pressure.

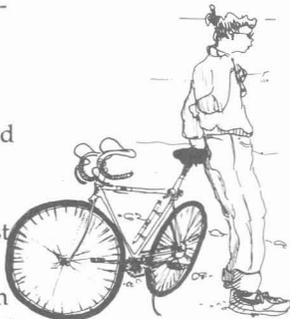
• Authorized \$4,000 for the **Santa Monica Mountains Recreation and Conservation Authority** to hasten the completion of a crucial three-mile section in the **Santa Monica Mountains Backbone Trail** in time for November opening ceremonies. This trail section links the 1,655-acre Circle X Ranch, acquired with Conservancy funds in 1987, to the coast. It is part of the 65-mile trail that will traverse the mountains in Los Angeles and Ventura counties.

• The Conservancy authorized up to \$50,000 to the East Bay Regional Park District to prepare an enhancement plan for the **Union City Marsh** and the **Hayward Seasonal Marsh** in Alameda County. Construction of dikes has reduced tidal flows to these marshes, which together cover more than 400 acres, and mosquitoes find a habitat here in dry summer months. Conservancy funds approved in August will be combined with funds from the park district, the Alameda County Flood Control District, and the Alameda County Mosquito Abatement District to develop a plan to control the mosquitoes without harming habitat and wildlife.

• In August, the Conservancy authorized \$80,000 to the county of Humboldt to prepare an enhancement and management plan for 3,460 acres of **beach and coastal dunes west of Humboldt Bay**. The funds will be used together with

funds from the Department of Parks and Recreation Off Highway Vehicle Program. The planning area includes a wide variety of habitats, supporting a range of wildlife and some rare plant species, and it is used for diverse recreational activities. Two broad sand bars stretch from the mouth of the Mad River south to Table Bluff County Park. Conflicts between recreational users and local residents led the county to convene a Beach and Dunes Management Committee to oversee preparation of a management plan for the dunes. The enhancement plan will be part of this management plan.

• Also in August, the Conservancy approved the city of Capitola enhancement plan for **Soquel Creek Lagoon** and authorized disbursement of \$116,000 to implement it. The lagoon has been the focus of Capitola's recreation-based economy since the 1870s. It is also an important habitat for fish and invertebrate species and migratory birds. The plan promises to enhance both



the recreational and natural resource values of the lagoon. In addition to design improvements and relocation of feral ducks, the plan calls for a campaign to enlighten residents and tourists about the ecological value of the lagoon and proper behavior toward it.

• To enable wheelchair riders to use three popular trails on the **Point Reyes National Seashore**, the Conservancy authorized up to \$128,000 to the Point Reyes National Seashore Association. Parking and restrooms will be modified and trails will be regraded for wheelchairs at **Abbott's Lagoon**, **Estero**, and **Chimney Rock** in the northern section of the seashore. The National Park Service is contributing \$62,000.

• In September the Conservancy authorized up to \$20,000, matching an equal sum committed by the city of Sausalito, for engineering and site design analysis to restore the **Napa Street Pier** and redevelop **Dunphy Park**. The improvements proposed by the city would serve more people and provide important regional facilities on San Francisco Bay.

• Also in September, the Conservancy approved the **Inverness Foundation Marsh Enhancement Plan** and authorized up to \$29,950 for resource enhancement and public access in Inverness, Marin County. An historic marsh will be restored by removing most of an old landfill, and public access will also be improved on a three-acre parcel owned by the foundation. Public access will also be increased on a nine-acre parcel in the center of the community.

### **Now Available:**

For a copy of the Conservancy's **Annual Report 1989-90** call (415) 464-1015, or write to the Conservancy.



### **Beach Cleanup**

More people than ever before participated in this year's annual Coastal Cleanup sponsored by the Coastal Commission. Over 16,000 volunteers helped clean up the beaches on September 22, collecting over 306,000 pounds of trash, almost 47,000 pounds of which were recycled. Alameda and Contra Costa counties together had the most volunteers (2,400) and collected the most trash (100,000 pounds). For information on how you can help next year, call the Coastal Commission at (415) 904-5421 or write 45 Fremont St., Suite 2000, San Francisco, CA 94105-2219. □

## Conference Log

### To Think Beyond Borders

In landscape ecology, "the lesson... is to think beyond the borders," as research geneticist Constance Millar observed at the October 3-5 conference on "The Landscape Dimension," sponsored by the University of California Extension at Davis.

Borders are drawn across landscapes delineate property ownership, government jurisdictions, parks, and preserves, usually without regard to natural habitats. Failure to look across such artificial delineations has often caused disasters, some of which were vividly described at this conference.

National forests and national parks often exist side by side, separated by a boundary that may, for instance, cut across a watershed. Water diversion projects in the national forest can devastate fish and wildlife, as well as recreational resources in the national park. Fire suppression policies in the national park can contribute to wildfires in the national forest. Animals that may not be hunted in national parks fail to develop prey survival skills and are easily killed across the border, where hunting is allowed.

In pre-Columbian America, such artificial borders did not exist. The landscape was a mosaic of habitats, with transitions, and it was governed by complex life processes. An elegant example of plant and animal interdependence, characteristic of precolonial America, was offered by The Nature Conservancy's biologist Robert Holland. He told of a vernal pool flower that co-evolved with a particular species of bee. The bee harvests pollen from the flower, digs a hole nearby, buries an egg with some pollen. The larva survives by consuming the pollen. The young bee emerges from its larval stage at the exact time when its pollen is gone and the host flower is in bloom, ready for pollination.

The continent's indigenous people understood such interrelationships and knew that their own well-being was linked to them. Current boundary lines, however, tend to ignore habitats and provide no transitions between them. What happens when you build a house next to a vernal pool? Where does the bee lay its egg? What happens to the flower?

Though such reflections may strike some as the dying gasps of 1970s holistics trying to make a last stand, the conference showed clearly that something new and exciting is going on. Landscape ecology has emerged within the halls of academia, revealing the beginnings of what Alan Savory, director of the Center for Holistic Resource Management in Albuquerque, New Mexico, refers to as a major

paradigm shift in scientific thought: from mechanical, linear, objective models to interconnectedness, relationship, wholeness. This shift, according to Savory, is absolutely necessary if our own species is to avoid extinction:

"Humankind is achieving marvelous things. However, when we look closely, our achievements are all in the area of technology... When we look at the real

world which sustains us—oceans, forests, grasslands, rivers and air—we find increasingly recognized and expanding failure... [W]e find ourselves without a scientist in the world who understands the complex relationships in the life of a cubic inch of soil... [In] or... the daily maintenance of the balance of gases in a cubic yard of the air we

breathe. These relationships are vital to the very survival of humankind and all higher life."

Although the conference dealt with diverse topics, a common thread ran throughout: the urgently felt need to take a broad approach to land planning and management. Many participants advocated a regional approach, going beyond arbitrary political boundaries to incorporate, for

example, entire biogeographic regions, so that biodiversity can be maintained and even improved in spite of development pressures.

Savory made a case for "holistic resource management" as a way to conserve natural resources. He described his successful work with farmers in West Africa to change cattle range management practices to simulate conditions



*The law protects pedestrians of all types in Moline, Illinois. This mama duck nested in a planter in the grassy median strip of a busy avenue. A barber in a nearby shop kept an eye on the family. When mama decided to lead her brood across two major avenues to the Mississippi River, he called the Moline police to provide an escort.*

*Photo by Terry Herbig, Moline Daily Dispatch*

existing in the wild, where large herds of ungulates mass together for protection from pack predators. When cattle were managed to graze in dense herds, instead of being allowed to randomly spread out on lands that had been turning to desert, he reported, the native perennial grasses increased, annual exotics decreased, more fertile topsoil was retained, and beef production was higher. To implement such range practices, transboundary planning would be required in many situations.

Some participants recommended changes in government structure and procedures. Many thought that a larger view could be achieved through regular meetings between government agencies, property owners, and others sharing land boundaries. Some advocated the creation of a new government entity with authority over all resource issues. Others hailed the sophisticated computer Geographic Information Systems as a tool to provide landscape analyses that land managers could use in decision-making. Foresters discussed the need to take long temporal and large spatial perspectives to develop harvest plans that will maintain biodiversity.

Although no major steps toward saving the planet were taken, this conference demonstrated that landscape ecology has emerged as an exciting field of study, with a fresh perspective that could help right the wrongs of the past and chart a sensible course for the future.

*Carol Arnold*

### **Where to Put the Spoils?**

The Port of Oakland predicts that if the shipping channel in San Francisco Bay is not deepened by dredging, the Bay Area will lose 17,000 jobs and \$12.2 billion by the year 2000. But no major dredging is possible until an acceptable disposal site for dredge spoils is found. Disposal sites in the bay are near capacity

and already threaten the health of the estuary. Efforts to place the spoils on land or in the ocean have foundered in controversy.

In an attempt to find ways out of this impasse, the San Francisco Estuary Project held a public meeting at the Army Corps of Engineers' Bay Model in Sausalito on October 13. Tom Wakeman, director of the Bay Model, and chairman of the estuary project's technical advisory committee, explained that until 1972, there were 11 in-bay disposal sites. Six had closed by 1975, and only three exist today. Of the 8 million cubic yards of spoils going into the bay annually, half are dumped off Alcatraz Island. The rest go to sites near the Carquinez Straits or into San Pablo Bay.

Dr. Douglas Segar, senior scientist at the Romberg Tiburon Centers, suspects that the spoils placed off Alcatraz Island are responsible for the decline of fisheries in the central bay. In July 1989 about 100 fishing boats blockaded Alcatraz for a day in protest against continued use of this site. Fishermen blame toxins in the spoils for a severe decline in striped bass. The Bay Conservation and Development Commission, one of three agencies with permitting authority over dredging, has stated that "in-bay disposal is only to be used as a last resort." BCDC has sent out letters to the Army Corps of Engineers, the Navy, the Port of Oakland, and other major dredgers, asking them to defer all major dredging projects—both maintenance and new construction—until 1993, by which time a new place for disposing of sludge will hopefully be found. But opposition also exists to an ocean disposal site, as was shown by the outcry from fishermen when an attempt was

made a few years ago to dispose of bay dredge spoils near Half Moon Bay.

The Environmental Protection Agency recently stepped in as the lead agency in searching for a new ocean site and is now mapping and studying potential sites. The National Oceanic and Atmospheric Administration is applying to have Monterey Bay designated as a marine sanctuary, and has proposed five different boundaries for it, two of which would abut the southernmost boundary of the sanctuary off Point Reyes. This would eliminate most likely nearby ocean sites. Deep ocean disposal would be more costly than offshore dumping,

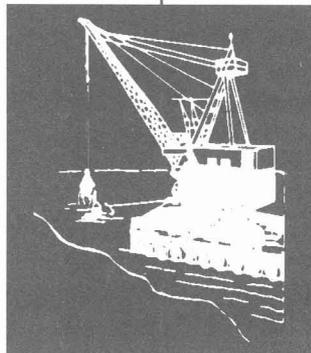
which is already estimated as eight to 15 times more expensive than dumping off Alcatraz.

If the spoils are found to be toxic-free, they could be used on upland sites for daily capping of landfills, levee maintenance, construction, and other purposes. Some spoils might be used to

restore wetlands in the Sacramento River Delta now threatened by subsidence. And the Coastal Conservancy is considering the use of some dredge spoils to create a seasonal wetland in the Sonoma Baylands.

One of the participants in the meeting was Jim Shanks, the manager of M & T Staten Ranch on Staten Island in the delta. He said he was eager to have the clay-type soil from the bay to help him maintain the levees on the 9,000-acre corn and wheat farm. The levees, built with advice from the Audubon Society and others, help create an optimum environment for some 60 species of birds that visit Staten Ranch as they migrate along the Pacific Flyway.

*Continued on page 47.*



# Local Land Trusts as Farm Protection

*Land trusts are  
protecting open spaces  
and the nation's  
rural heritage*

*by Dick Wayman*

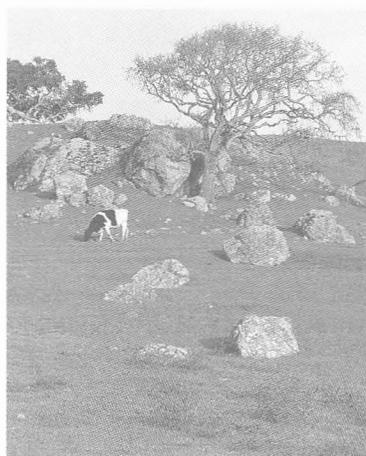
**F**or over a century, dairy cows grazed contentedly in the rolling hills of Marin County, where the cool coastal climate keeps pastures green much of the year. San Francisco and other Bay Area cities provided a close market for the milk and butter produced by the herds. The bucolic and the urban were in harmony, with the cities' needs balancing the needs of the ranches.

As urban populations grew, this balance was upset. In 1937, the opening of Golden Gate Bridge brought Marin closer to San Francisco. By 1940, houses were growing on pastures, pushing dairy ranching back to the less-accessible western part of the county. By the 1960s, plans for a new freeway from San Rafael to Point Reyes Station threatened agriculture in West Marin, too. Urban development was

driving—inexorably, it appeared—toward the Pacific shore.

Then, in 1980, an unusual coalition of local interests took a stand. Some ranchers, environmentalists, and local residents opposed to urban encroachment joined in forming the Marin Agricultural Land Trust (MALT), dedicated to keeping farmland in farming. Using funds from both private and public sources, including the State Coastal Conservancy, MALT has since acquired conservation easements on several large sheep, cattle, and dairy ranches. These conservation easements legally restrict certain uses of the land that remove its potential for agricultural production, such as housing development.

MALT is one of a growing number of land trusts springing up around the na-



*Photos by Marty Knapp*

tion in response to urban development pressures on agricultural land. Roughly 1,000 such land trusts are now operating nationwide. Collectively, they have protected hundreds of thousands of acres. The need for such protection is increasingly urgent.

### **Prime Farmland Is Vanishing**

Over a million acres of agricultural land are taken out of production each year in the United States. In the Northeast,



**Pasture near Abbott's Lagoon, Point Reyes National Seashore.**

the small farms that used to provide fresh fruit, vegetables, and dairy products to city dwellers are being swallowed by urban development. Vermont has lost 75 percent of its dairy farms over the last 30 years. In the South, agricultural tradition is being challenged by a boom in housing and industry. At stake are Florida's citrus groves, Georgia's peach trees, and the bluegrass fields of Kentucky. In the Midwest, farm bankruptcy rates have reached levels not seen since the Great Depression of the 1930s.

In California, the nation's leading agricultural state, about 44,000 acres of cropland are being converted to urban uses yearly, according to the American Farmland Trust (AFT). Most of this lost farmland was highly productive: Most cities began in areas that had the best soils. The Los Angeles basin used to be one of the finest strawberry-growing regions in the world. Orange County was named for the groves that began supply-

ing the nation in the late 19th century. Remnants can still be seen, green islands within paved landscapes, representing perhaps one-twentieth of what bloomed and fruited there in the 1940s.

Once land has been developed for housing or industry, it is lost to agriculture forever. Soils that have supported development cannot again be made to support crops, primarily because they become too compacted. No amount of plowing can restore such damaged soils to their original condition.

### **Is All that Farmland Needed?**

To many people, urban development is the most valuable crop that farm acreage can produce. Politicians see it as generating tax revenue, developers and construction workers look to it as income, and, after all, an expanding population needs housing. And just how threatened is the U.S. food supply, anyway?

Bill Wood, an extension economist at the University of California, Riverside, says that from a nutritional standpoint, the United States will be able to produce enough to feed a growing population for the foreseeable future. What *is* at stake, he says, is consumer choice and cost. Americans now enjoy an immense selection of high quality foods, at prices below those in most of the world. The conversion of farmland to other uses will mean that we may have to settle for fewer choices, and spend a larger share of our budget for food. New lands brought into production will partly offset the loss of historic farmlands, but they will tend to be less productive.

The loss of historic farmlands has other implications as well. It means the loss of open space that all can enjoy, and of a rural way of life that is part of the country's tradition. Also lost to regional economies are the many jobs and income generated by support industries, such as suppliers of farm equipment, seeds, and fertilizers, and packers, freezers, shippers, distributors, processors, and wholesalers. It also has an impact on public services and the world economy. According to the AFT's Jim Riggle, West Virginia farmland takes back only 18 percent of every tax dollar it generates; in Connecticut, the return is only six cents. Agriculture also plays a vital role

in international trade. It is one of the few U.S. economic sectors that regularly generates a positive trade balance.

### **How to Protect Farmland?**

A consensus that a healthy agricultural economy is essential to national well-being has led to various efforts to protect it. Government regulation has been a primary tool, but it has seldom provided more than short-term solutions. General plan policies, zoning restrictions, and urban limit lines have in some instances slowed down farmland conversion. Many farmers oppose such measures, however, arguing that they place the entire cost of protecting farmland on farmers while preventing them from obtaining the true market value of their land. In response, some regulatory techniques have been designed to provide a return to the farmer in exchange for agricultural land protection. California's Williamson Act of 1965 gives farmers significant tax benefits for entering into ten-year contracts to keep their land in agriculture. Oregon's Farm Tax Deferral program, initiated in 1963 to lessen the tax burden on farmers, encourages them to keep their land in agriculture. Such measures are necessary components of the struggle to protect farmland, but they have not sufficed.

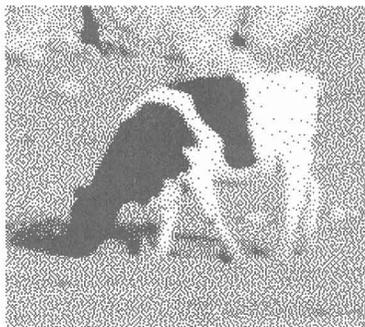
In recent years, nonregulatory state government measures have assumed increasing importance. The California State Coastal Conservancy has the power to buy farmland outright to prevent its loss to other uses; to buy and consolidate small parcels into larger, economically viable units; and to buy and sell conservation easements. Pennsylvania's recently approved \$100 million Agricultural Conservation Easement program is designed to compensate farmers for restricting their land to farm uses. Several other states, mostly in the Northeast, have programs in which state funds are used to buy development rights to keep farmland in production. The effectiveness of these nonregulatory measures has been limited, however, by inadequate funding, some

farmers' reluctance to deal with government agencies, and occasional conflicts between statewide policies and local community interests.

Private nonprofit land trusts provide an alternative to the public sector role in farmland protection, and they can offer much that government cannot provide. Free of government bureaucracy, private land trusts can move quickly to counter immediate threats to the farming sector. A local land trust may be first to recognize a local problem and may be the best equipped to design a solution. Farmers who mistrust government agencies will often work with a private local land trust. MALT is a case in point.

### **MALT's Tale**

In 1971, Marin County planners submitted a Preliminary Countywide Plan to local government bodies and the general public for review and discussion. This plan, adopted two years later, called for limited residential and commercial development in rural West Marin. Most farmers initially opposed the zoning regulations that accompanied the plan, fearing that their land values would plummet. Hearings on the plan brought together farmers, environmentalists, and community leaders, so that each was given an opportunity to learn the legitimate concerns of the others. Through these de-



bates environmentalists, already aware that farmers protected vast amounts of the county's open space, were introduced to the problems and needs of the dairy community.

The environmentalists and county officials responded with support for the farmers. When the state enacted rules that forbade any discharge of dairy wastes into surface waters, the county provided direct financial assistance to ranchers so that the wastes could be collected and later applied to fields as fertilizer. When the 1976-77 drought threatened to drive farmers out of business, the county paid part of the cost of hauling water by truck to the dairy ranches. And when hearings

***Agricultural land trusts in California have only been on the scene since the mid-1970s, but they have already helped to protect over 50,000 acres of land. The greatest successes have been achieved by the land trusts that have been around the longest. It seems likely, therefore, that many of the newer trusts will also show successes once they have gained public recognition and the acceptance of local farmers and landowners.***



Dairy ranch, Point Reyes  
in background.



Robert Holmes

were held in Sacramento on the issue of raising the price of milk, the interests of Marin dairy farmers were strongly supported by a broad coalition of environmental organizations, including Friends of the Earth. According to Phyllis Faber, a biologist and founding member of MALT, the psychological implications of these support measures were critical in the farmers' gradual willingness to work with the environmentalists on the issue of farmland protection.

MALT has been blessed with talented and dedicated leadership. One of its founding members, dairyman Ralph Grossi, is a former director of the county's Farm Bureau and current president of AFT. He played a key role in convincing his fellow dairy farmers that agriculture had a future in Marin County. Another early leader, County Supervisor Gary Giacomini, an attorney, first ran for office because of his concern about a proposed subdivision and freeway into West Marin. He is credited with first pulling together ranchers and environmentalists to work for a common goal. Dairy farmers Ellen and Bill Straus were considered mavericks in the 1960s because of their work to protect the environment and their support for measures to restrict development.

Now many of their neighbor ranchers have come around to their point of view. MALT was made possible largely due to the efforts of these individuals and a few other farmers and environmentalists.

Since its incorporation, the land trust has acquired easements that restrict development on nearly 13,000 acres of farmland. Funding for the purchase of these easements has come from several sources, including the State Coastal Conservancy, which provided over \$1.3 million for easements on about 2,800 acres. This Conservancy/MALT project demonstrates how government and land trusts can work together toward resource conservation. MALT continues to lead the fight for farmland protection in Marin and provide a forum for farmers and environmentalists to discuss their concerns. No freeway has been built from San Rafael to Point Reyes Station.

For the future, MALT's Phyllis Faber sees a need to develop a long-term strategy for land protection, with a focus on areas closest to city borders. She believes it is important to keep the ranchers' interest in MALT alive, especially now that Ralph Grossi is away in Washington, DC, presiding over AFT. She also believes that MALT needs to work closely with its neighbors to the north, in Sonoma County, where efforts to protect agricultural land and to unite farmers and environmentalists have not been as successful as they have been in Marin. This expanded scope is necessary, she says, because "unless Sonoma's agriculture survives, Marin's is gone, too."

### Components of Success

The Conservancy recently completed a study of agricultural land trusts in California, requested by the state legislature. It included an examination of MALT, the Peninsula Open Space Trust of San Mateo County, and the Sonoma Land Trust. It found that land trusts can successfully protect farmland if they are provided with:

- Financial support
- Receptive local agricultural leaders and landowners
- Supportive governmental policies
- A committed and competent land trust board and staff
- Access to information about long-term agricultural protection techniques.

Marshall, on Tomales Bay.



Unfortunately, all land trusts are likely to experience problems with one or more of these issues. There is also the discouraging factor of time: It takes time to organize a land trust, establish a successful track record, and bring individual projects to fruition. Clearly, land trusts are neither for the flighty nor the faint of heart.

### **Public/Private Partnerships Can Work**

Private land trusts cannot do all that is required without help from others. They have neither the power nor the financial resources. According to Bob Berner, executive director of MALT, they cannot replace intelligent government land use planning. If private efforts are to succeed,



**Haying in Olema.**

local government policies must support farmland protection. In Marin County the average price paid for conservation easements is now about 35 percent of the market value of the land, and the price of purchasing conservation easements on all agricultural land in the county would probably top \$100 million. Funding at this level can only come from the public sector.

MALT is one of several land trusts the Coastal Conservancy has been involved with in projects aimed at protecting agricultural land. In fact, in its 13-year history the Conservancy has not completed an agriculture project where there was not a locally based nonprofit organization to help with the details of the transactions.

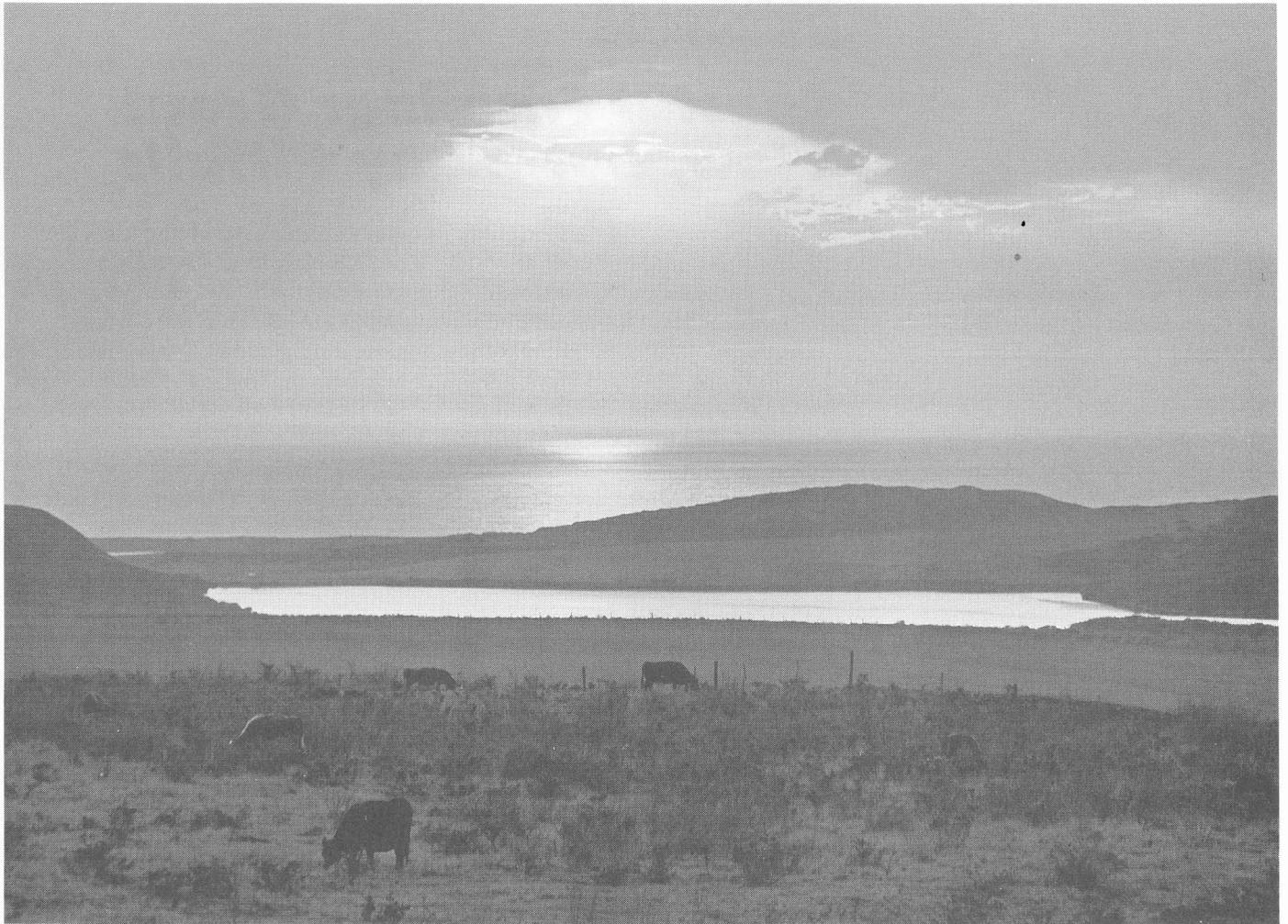
Collaborations between the Conser-

vancy and land trusts have also brought about benefits beyond the protection of agricultural land and the preservation of open space. Previous joint efforts have resulted in enhanced wildlife habitat and new and improved public access to recreational and scenic areas. In 1986 Peninsula Open Space Trust (POST) purchased the 13,000-acre Cowell Ranch, which lies along the coast on the southern end of the city of Half Moon Bay in San Mateo County. In 1989 the Conservancy acquired conservation easements over 1,172 acres of the agricultural lands on this property for a cost of \$3.7 million, and sale of the land to private agricultural producers is expected to take place soon. The Conservancy also acquired easements over 77 acres of bluffs and beaches, for eventual transfer to the Department of Parks and Recreation, for an additional cost of \$1.4 million. As a result of this joint effort between the Conservancy and POST, the farmlands of Cowell Ranch have remained and will continue in production, formerly private beaches will be opened to the public, and an effective limit to the southward growth of Half Moon Bay has been established.

### **The Outlook for Land Trusts**

Nonprofit land trusts operate on both national and local levels. The best known nationwide land trusts are AFT and the Trust for Public Land (not counting The Nature Conservancy, which is not formally a land trust). Local land trusts are generally organized on a county-by-county basis. They may be dedicated to specific issues, such as agriculture, open space, or wetlands, or they may direct their energies toward multiple concerns. In the fight to protect farmland, the most successful seem to be those that are organized to address agricultural issues exclusively.

In California, about two new agricultural land trusts have been formed per year for the past 13 years. The first appeared in coastal counties, but by now there are several in the Central Valley and in the Sierra. Not all are dedicated exclusively to preserving farmland. POST, for example, which operates in Santa Clara and San Mateo counties, was founded in 1977 and has been directly involved in the protection of over 20,000 acres for agricul-



ture, open space, and public recreation. Lassen Land and Trails Trust, while having an interest in agricultural land, was formed in 1988 largely to promote the establishment of a hiking trails network. The influence that agriculture has on a county's economy seems to have little effect on whether or not land trusts are formed. The Conservancy's study on agricultural land trusts could find no clear or measurable differences between those counties that have agricultural land trusts and those that do not. □

*Dick Wayman is an agricultural economist working for the State Coastal Conservancy.*

#### **Pasture, Abbott's Lagoon.**

*The State Coastal Conservancy is dedicated to helping land trusts become established and to working with existing land trusts. The agency provides publications designed to assist land trusts in their strategic objectives and financial organization, as well as more specific information or advice. It also provides funding for a wide range of projects. The benefits that can come from collaborations between the Conservancy and private land trusts already have been proven, and the future of these joint ventures looks bright.*

*Publications on land trusts available free from the State Coastal Conservancy (1330 Broadway, Suite 1110, Oakland, CA 94612):*

*Evaluation of Agricultural Land Trusts  
The Nonprofit Primer: A Guidebook for Land Trusts*

*Public Beaches: An Owners' Manual  
Limitations on Liability for Nonprofits  
(Technical Bulletin No. 1989.1)*

*Nonprofit Accounting Procedures  
(Technical Bulletin No. 1989.2).*

## Coastal Farming: Great View, but Many Pitfalls

**J**on Hudson had always wanted to live on his grandfather's Coast Ways Ranch, perched on the edge of the Pacific just south of Año Nuevo State Reserve. So when the family invited him to take over as ranch manager, he gladly agreed. Farming would be a challenge, he figured, would allow him to be his own boss and earn a living in a decent manner, within sight of the ocean.

He had no experience in farming. As credentials he could offer only a B.A. in geology, a year's work as foundation engineer, and two years more in a hospital to fulfill his alternative service as a conscientious objector. The invitation from his family reached him in Spain, while he was on a tour of Europe, pondering what to do next.

Now, 17 years later, Coast Ways Ranch is a diverse, inventive enterprise that has survived—better some years than others—by means of patience, persistence, and imagination. Although its story is unique, it illustrates issues confronting farmers on California's coast.

Like some other coastal farms, Coast Ways is ideal for You Pick and roadside stand sales: It is on the coastal highway, near the entrance to a major attraction (Año Nuevo's elephant seals), within easy reach of major urban areas. Coastal soils and climate provide ideal conditions for a variety of specialty crops. On the other hand, however, coastal land use is strictly regulated. Coastal farm operations are limited by scenic and other considerations. Hudson may not put up as many signs as he would like to attract people to the roadside stand, for instance, and he is barred from building a stand in sight of motorists along the highway. Only after one turns into his driveway does one see his colorful displays of flowers, fruit, and vegetables.

This part of the coast has long been known for its Brussels sprouts, artichokes, pumpkins and flowers, often grown by families of Italian or Portuguese descent. Most of the farms are now gone, but some, like Coast Ways, have been given a new lease on life by a new generation, with fresh ideas. Because the Coastal Act protects agriculture, their survival prospects may be better than those of inland farmers in areas under urban development pressures.

The 476-acre ranch has been in Jon Hudson's family since 1917 and had been used primarily for cattle grazing. A tenant farmer introduced Brussels

sprouts about 21 years ago.

He had just harvested his last crop when Jon Hudson arrived from Spain.

Hudson opted for artichokes instead of Brussels sprouts because, he says, "we could keep fewer people employed for a longer time, rather than having to get 20 people at harvest time and then send them away." For advice on how to grow the big thistles he drove to

Castroville, known as the world's artichoke capital, and was fortunate to meet Gene Boggiato, a packer, who put his arm around the new farmer, showed him into his office, and revealed the basics. And, on the advice of another farmer, Hudson decided to cultivate kiwi fruit and Olallie blackberries.

Today Coast Ways Ranch is a corporation run by eight family members, farming the 64 arable acres of the 476-acre farm. Last season there were seven acres in blackberries, six in kiwis, two in pumpkins, three in Christmas trees, 46 in artichokes and 40 to 50 in pasture for about a dozen beef cattle. Jon's wife, Katie Hudson, manages the marketing for the You Pick program, including a 6,000 name mailing list. His brother, Tim

Hudson, drives the tractor, tends the cattle, lends a hand elsewhere. His aunt, Mary Clayton, is the family's legislative liaison and also staffs the weigh-out stand during You Pick season, along with help from the Hudson's three daughters. She regularly attends meetings of the San Mateo County Planning Commission, the Coastal Commission, the Pescadero Council, the Farm Bureau, and California Women for Agriculture to keep up on legislation that could affect farming, such as density credits, trespassing, pesticide rules, coastal access, and endangered species protection. From March to October, Hudson hires at most six field workers, some of whom have been returning for 15 years.

The blackberries, kiwis, pumpkins, and Christmas trees are mostly marketed on a You Pick basis, which permits the farm to get a better price than packing houses offer, saves the cost of harvesting, eliminates the need for transport, and also offers the consumer a fair price. Up to 15 percent of the You Pick income goes to advertise the program in local newspapers. Picking season starts with berries in June and July; resumes in October with pumpkins, kiwis in November and December, and Christmas trees from Thanksgiving to December 22.

### **Pests vs Farmer**

To arrive at harvest time, however, requires a constant struggle against a wide variety of pests, ranging from moths to deer to humans. The plume moth is a major pest of artichokes. "I don't like to use chemicals, but I will if I need to," says Hudson. In the late 1970s he tried to forego pesticides entirely, but lost three-quarters of the spring crop. Another season he tried to trap the moths with pheromones, chemical substances excreted by some insects to attract the opposite sex. He suspended bits of plastic impregnated with female pheromones over a bucket of water with a film

***To arrive at harvest time requires a constant struggle against a wide variety of pests, ranging from moths to deer to humans.***

of oil on top. Males attracted by the females' chemical scent fluttered around the bait and eventually were trapped in the oil film. This labor intensive method, however, resulted in a rise in his spring cull rate from six to 25 percent.

Hudson now sprays his fields two or three times a year with a synthetic pyrethroid, Asana. He needs less than the six to nine sprayings farmers in the Castroville area apply because no other farms are in his vicinity. Still in search of alternatives, he is now keeping an eye on a test plot in Castroville where nematodes are being used to eat moth larvae. These round worms search out the moth larvae by following their carbon dioxide trail, enter them, and lay eggs. Hudson thinks he may try them along with the pheromones.

Insects are only one of many pests, however. Hudson has to contend with the microtis field vole, which eats artichokes from the roots up, the white-footed deer mouse, which chews through stems and topples the plants, as well as slugs and snails, which eat foliage, pigeons, which eat berries, and deer and humans, which eat most anything.

Pigeons ate about a fifth of his berries one season, but because some of them are federally protected band tail pigeons, he could not shoot them. The next season he solved that problem by putting nets over the bushes. But no such mechanical solution has yet turned up for the vole or the mouse. Fumigation is impractical because mice from adjacent areas would repopulate treated fields. Fencing out deer would be prohibitively expensive.

"I would never have gotten the kiwi to grow if the deer had been this bad when I started," he reflected. In 1988 he lost his entire winter production from one field of artichokes to deer, who graze on the buds. They also eat the Douglas fir before they get a chance to be Christmas trees, and scratch the velvet off their antlers on the Monterey pines, breaking

branches. The deer problem has worsened, probably because of drought and a decrease in hunting.

Human thieves can be costly and dangerous as well. Since a park ranger caught two men filling a bag with artichokes and was beaten up when he tried to stop them, Hudson has been more cautious when he approaches intruders. Theft is fairly rare, but it does happen sometimes in winter when artichokes sell for about a dollar each.

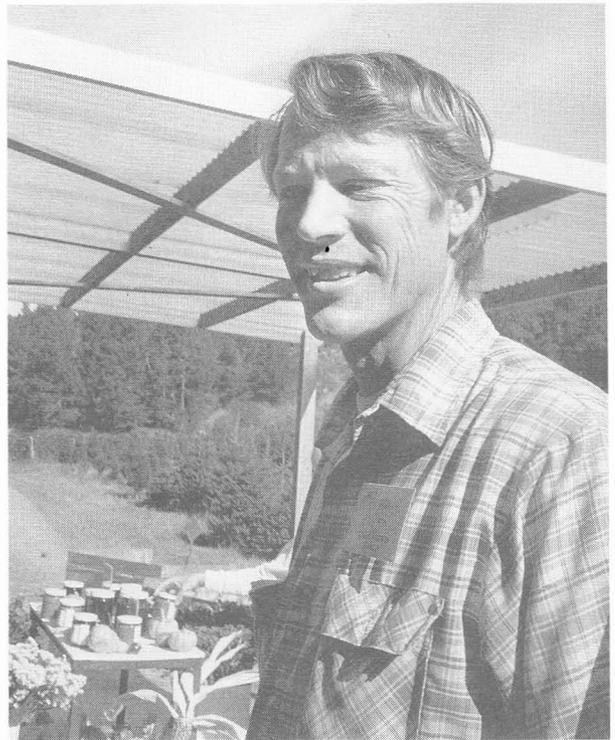
### **A Cliffhanger**

Unlike many inland farmers, Hudson does not worry about encroachment by developers. San Mateo County's zoning laws protect coastal agriculture. Nevertheless, "it's been a cliffhanger," he reflected, looking back on his 17 years in farming. "I've kept things going and haven't had to sell out, but we get maybe one good year in eight. Our last was 1985. Now we're in the fourth year of a drought and the domestic water supply is gone. We pump agricultural water up to the house and let it settle before we use it." The farm relies on surface water. A pond holds 100 acre feet. This spring, Hudson was so worried about having enough to last out the season that he delayed watering his artichokes for six weeks.

He has turned down offers to sell parts of the ranch, even though there is no extra cash to buy a sorely needed fork lift (\$10,000 to \$15,000 used) or a new tractor (about \$20,000). Interest payments on a \$100,000 loan mean delaying maintenance and investment, which lead to a general decline in the farm.

The weather may change, but other clouds have also gathered on the horizon.

Two farmers in Lompoc are experi-



*Jon Hudson on his Coast Ways Ranch.*

menting with thornless artichokes that can be grown from seeds annually. Hudson and most other farmers cut plants back every spring and replant every four years. The thornless artichokes can grow closer together and be harvested in winter when the price is highest. The inventors of the new seeds would be as likely to sell them to other farmers as "Coke would be inclined to sell its formula to Pepsi," Hudson remarked.

Right now, Jon Hudson is not sure whether he can continue the struggle to survive as a family farmer. He and others in the family have talked about diversifying by building some visitor-serving cabins on nonarable land—although it's not something they are likely to rush into. "The money-making prospects are good, and there are no facilities like this between Santa Cruz and Half Moon Bay," he says. But under today's midday sun, neighboring elephant seals lounge, the crew sets out slug traps, and Hudson mulls over his next strategy in the perpetual challenge that is coastal farming.

*Regina McGrath*

The  
*Art*  
of the  
*Rural*  
*Trail*  
*Deal*

*by Don Coppock*



Mark Wheatley

*The following article is based on a presentation at the seventh annual Trails Conference, Asilomar, California, held March 19, 1990.*

Let's face it, there is little communication between trail advocates and farmers. Told of a proposal to build a public trail near his fields, the farmer predicts vandalism, fires, crops trampled and stolen, gates left open with cattle loose on the road, and the death of agriculture—all this besides the unwarranted intrusion on his privacy. To trail proponents, such apprehensions tend to seem paranoid. To them, farmers are people out to pillage and pollute the environment who are willing to poison children with toxic chemicals if left to their own devices.

Yet if trails are to be created through the countryside, on the coast or elsewhere, farmers' cooperation is essential. Such stereotypes have no place at the negotiating table.

To negotiate trail rights of way and easements in agricultural areas successfully you need to take time to build a good long-term relationship with the rural community and make reasonable proposals that make sense to farmers.

At first, you may face opposition from political associations that represent farmers, for example, the Farm Bureau and the Cattlemen's Association. But keep in mind that they do not represent the views of all farmers. Different points of view may be heard from the California Association of Family Farmers, or the governing board of your local resource conservation district. And if you take the time and trouble to become acquainted with individual farmers, you would find that some of them are amenable to talking about public trails that could be built

without disrupting their lives and the local farm economy that they depend on for their livelihood.

### **Do Not Hurry**

Negotiating deals with farmers takes time. I have a friend who worked for the Countryside Commission for England and Wales. One of his responsibilities was to negotiate the purchase of easements for the Pembrokeshire Coastal Trail with Welsh farmers. One farmer rebuffed his introductory letter but then, on a rainy Christmas Eve, phoned to say he wanted to talk. So my friend drove out to the coast and spent Christmas Day talking about the farming operation and intestinal parasites in sheep. In the end the farmer said, "I'm not ready to sign."

The next year, again on Christmas Eve, the farmer called and again my friend left his wife and children to drive out to see the farmer who still was not ready to sign. By the third year, detecting a pattern, my friend called the farmer before Christmas Eve and said, "It's that time of year again." Again no success. Finally, after four years, he wrote a letter telling the farmer, "I'm being promoted, I'd really like to wrap this deal up, shall I come out again?" A few days later a package arrived, post-marked Pembrokeshire, with a note: "You're a nice enough lad. You've got some crazy ideas but the next bloke they send out probably won't listen so well. Keep your money, it doesn't mean that much to me. Here's your trail easement."

You can't negotiate with real farmers the way you would negotiate with developers or other landowners. Developers have a short time frame. They have to get a project approved and built quickly because they lose money on interest payments with every delay. So with develop-



ers you can go in, make a strong case, and hope to come out with an easement. But you can't expect long-term farmers to make snap decisions about their land. Farmers have a connection with land that can stretch back several generations and many intend to pass that land on to heirs. Not only are they tied to the particular piece of land they farm, they also tend to have strong bonds to a close-knit farming community. Word of mouth travels fast, reputations are important, rumors abound. When you introduce a new land use, like a riding or biking trail, into an agricultural area, you must also think about establishing a long-term relationship with that rural community. And when such a relationship—like a marriage—goes sour, everyone knows.

### ***Work Through a Local Person***

It helps immensely to have one responsible person in the farming community represent trail users' interests. A

faceless bureaucracy is not what you need. Three examples will illustrate the benefits of a long-term presence.

Coastwalk, a nonprofit organization founded in Sonoma County, promotes a coastal trail within sight and sound of the Pacific Ocean and hosts an annual walk along the shoreline. It gets permission from each private landowner before walkers cross his property. The farmer who grants permission knows that next year, at about the same time, Coastwalk will ask again. Any problems that occur this year will be remembered. With that in mind, all involved stay on their best behavior.

Another example is, again, from Britain. The Countryside Commission funded a project in the agricultural Bollin Valley on the outskirts of Manchester and hired a warden for trails that passed through private farmland. He patrolled the trails, saw to it that weeds did not get out of control, looked after fences, gates, and stiles. Farmers knew who to call when a bull got out or a fence needed fixing, and the warden

would take care of the problem. This program was not expensive but reports are that it worked wonders in building good relations between the trail-using public and the farmers.

Closer to home is the example of John Wade, land counselor of Peninsula Open Space Trust (POST). He has worked on conservation projects on the San Mateo County Coast for 15 years and can tell you who owns every parcel of ground on that coast. He is there to help the farmers when they need him. For example, if a permit is held up at the county courthouse, John can figure out what's wrong. Through John, POST has built a long-term positive image among coastside farmers, which makes him a valuable trail advocate.

### **Sensible Programs**

Theft and vandalism are of great concern to farmers when you talk about trails. Incidents do happen. Though I feel they are often blown out of proportion by rumor, they require a careful answer from trail advocates. Last year, Nando Muzzi, who farms the Coastal Conservancy's Cascade Ranch property in San Mateo County, saw some men taking artichokes from our field and tried to run them off. They pulled a gun and shot at him. A story like that gets around.

One major way to prevent vandalism and trespass, and to ease the fear of it, is by building buffers between active agricultural uses and major trail routes. Often this can be done simply by siting trail alignments sensibly. Put the trails around the edges of fields, not through the middle. Use changes in topography to separate uses, or use that most useful of California native plants, poison oak, to keep people on the trail. In some cases a fence might be needed. Whenever the State Coastal Conservancy funds an access project in an agricultural area, it does its best to make sure that buffers are included and is willing to fund them.

A good example will go a long way to exorcise negative impacts of the bad. We need, in every jurisdiction, a demonstration project that shows that trails and agriculture can coexist. In Humboldt County one example may be the Hammond Trail, which runs alongside farm roads flanked

by dairy pasture. Early fears that the trail would interfere with dairy farming did not materialize. At times, bikers and hikers actually mingle with cows on their way to the milking barn. We still need many more successful models.

### **Educate Trail Users**

Those who use public trails must know basic etiquette for rural areas. Again, the best example I know is from Britain, where the public has been walking through farmers' fields for centuries. In every publication put out by the Countryside Commission there is a little reminder, "The Countryside Code." It resembles the backpacker's "Ten Essentials," or the Ten Commandments of the Bible:

- "Enjoy the countryside and respect its life and work.
- Guard against all risk of fire.
- Fasten all gates.
- Keep your dogs under close control.
- Keep to public paths across a farmer's land.
- Leave livestock, crops, and machinery alone.
- Take your litter home."

There are a few more. You may think of others. To sum up, if we want to persuade farmers to allow the public to cross their land, we need to discard stereotypes, be respectful and patient in negotiations, work through a member of the community when possible, acknowledge the farmers' concerns and make sensible proposals that respond to them, and we must educate trail users. If and when farmers grant rights of way or easements, they should be assured that common courtesies will be observed. If we do this, we will create the examples we need to show that farming and the hiking, biking, riding public can coexist peacefully along a widening network of trails. □

***A good example will go a long way to exorcise negative impacts of the bad. We need, in every jurisdiction, a demonstration project that shows that trails and agriculture can coexist.***

*Don Coppock is the Coastal Conservancy's program manager for agriculture.*

# Organic Farming: Standards: Yes; Research Money, No

**F**or some coastal farmers, especially those struggling against urban development pressures, the rising demand for organic products offers one avenue for survival. While about 100,000 acres of California's farmland are lost each year, some growers of high-value certified organic fruits and vegetables, which they generally deliver to consumers close to home, have survived and even done well.

The demand for organically grown food has been rising, fed partly by urban encroachment into agricultural lands. With more former urban dwellers residing next-door to farmers, objections arise to long-standard practices, such as aerial spraying of pesticides. Awareness of chemical hazards has also grown generally, nationwide. At the same time, for economic reasons, more farmers are seeking ways to cut down on pesticide use and are showing an interest in sustainable agriculture, including organic techniques and integrated pest management, which combines chemical and biological controls.

Progress in this direction has been impeded, however, by a lack of generally accepted standards and, more importantly, by a dearth of government support for research on farming techniques that do not rely on synthetic chemicals.

This year, some progress toward the development of standards was achieved with the passage of federal legislation establishing a certification and monitoring process, and of a state law requiring public information on materials used on all farm-grown products.

The DeFazio Amendment to the 1990 federal farm bill sets a three-year transition period for obtaining organic certification; creates a national materials board to rule on whether naturally derived materials, such as nicotine, may be used to control pests; and requires mandatory inspections of organic farms

to ensure that no synthetic pesticides are used. The U.S. Department of Agriculture is required to hold hearings to determine if the public wants organic standards for livestock as well. In August the California legislature passed a bill requiring all farms to record materials they apply to crops and make these records available to the public, but not providing for inspections. The federal law goes into effect in October 1, 1993, the state law on January 1, 1991.

Neither law, however, provides any research funds for nonchemical pest-control methods. In fact, because of budget cuts affecting the University of California, state programs researching integrated pest management and sustainable agriculture will be reduced.

"Most research [now funded] is designed for specific projects, like pest eradication, and is not oriented toward interactive systems, like organic farming," said Bob Scowcroft, executive director of California Certified Organic Farmers, who played a role in passage of both the federal and the state bills. "Funds committed to sustainable agriculture and/or organic agriculture research are a drop in the bucket compared with current commitments to specific projects desired by conventional agriculture interests," he added.

Extension agents, who are funded jointly by the federal, state, and county governments, can seldom provide much advice to farmers seeking to go organic. "The agents don't have enough research reports, and there are only a few of them to cover an entire county. Who are they supposed to spend time with? Conventional growers, who usually have the largest farms, or the smaller organic farmers?" commented Jackelyn Lundy,

assistant director of the Agroecology Program at the University of California, Santa Cruz.

Of California's 85,000 farms, 750 are certified organic farms and another 550 probably would qualify as certified.

The budget of the University of California's Department of Natural Resources and Agriculture suffered the largest percentage cuts of any department in the University system, about \$6

million for the next fiscal year. The budget for the University's Sustainable Agriculture Research and Education Program will decline from \$1.035 million to \$892,760, according to the program's director, Bill



Liebhardt. The program already has "a tremendous lack of resources," he said. "Society is setting a new goal for agriculture: produce food and fiber but don't destroy the resource base in the process. These changes require new information, technology, and resources. And yet when we go through the legislative process, the budget is less than the year before."

California Certified Organic Farmers, with a 1990 budget of \$360,000, received no public funds last year except for about \$2,000 left over from a two-year \$12,000 grant awarded in 1988 by the University's Sustainable Agriculture Program. Almost all of the organization's revenues come from member dues, grower assessments, and the sale of its literature. Last summer, this farmers group established the Organic Farming Research Foundation, hoping to find and redirect funding for the research needed to better understand organic production.

*Regina McGrath*

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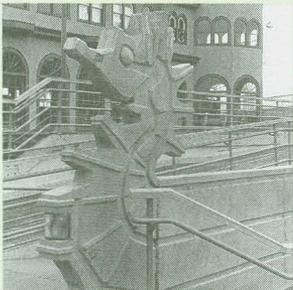
# California Pier Pleasures

Where can you get away from it all, if you don't have time or money for a camping trip or a cruise? Where can you go for an offshore view of the coast, if you don't have a boat? Where can you fish without a license?

California's public piers offer these and other pleasures, all without charge or reservation. They allow you to leave the land and enter the oceanscape, without either boarding a boat or getting wet. More than 75 piers extend into the state's coastal and bay waters, offering respite and diverse enjoyment to millions of residents and visitors every year. No two are the same.

The first piers were built for shipping and whaling. Windship schooners docked alongside, and in the 1880s were succeeded by steam schooners. Later, seaside resorts and luxury hotels built piers as promenades over the waves. Amusement piers were constructed in Avalon, Santa Monica, and Santa Cruz. Ferries carried passengers from connecting trains that stopped at piers.

Most of the original uses have since disappeared. Storms and fires destroyed many of the piers, while others were abandoned, rotting on city waterfronts. Since the early 1980s, however, several piers have been rebuilt by local governments, often working with state agencies. They include Stearn's Wharf in Santa Barbara and piers in Santa Monica, Oceanside, Imperial Beach, Pismo Beach, Capitola, Santa Cruz, San Francisco, Point Arena, and Crescent City. Plans are underway to rebuild several more, including piers in Huntington Beach, Ventura, Venice, Manhattan Beach, Port Hueneme, and Redondo Beach. There is a strong commitment in California on the part of both local and state agencies to provide essential funding for the development of important coastal recreational facilities. In the past decade, the State Coastal Conservancy has provided significant funds for pier restoration and development.



Gail Rosen

SANTA MONICA



Gail Rosen

SANTA MONICA



Reed Holderman

OCEANSIDE



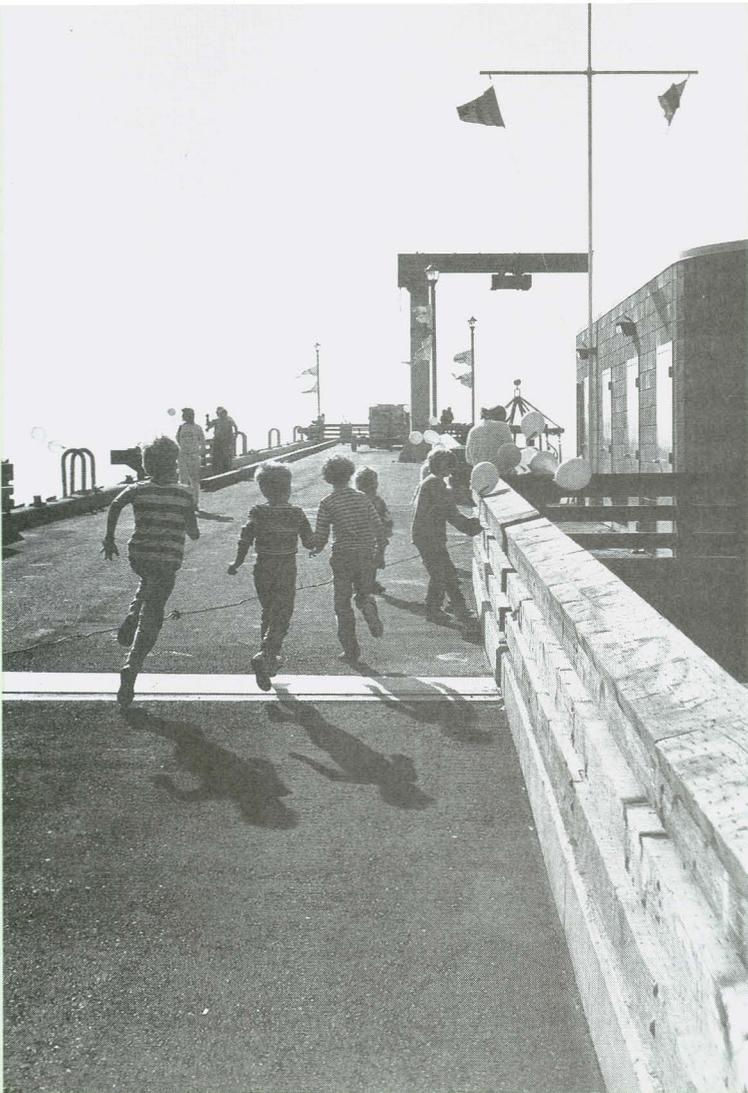
# California's Public Piers

A guide to public access piers along California's coast and bays.



Map design by Eureka Cartography, Berkeley, CA

Urban Waterfronts Program, State Coastal Conservancy, 1990

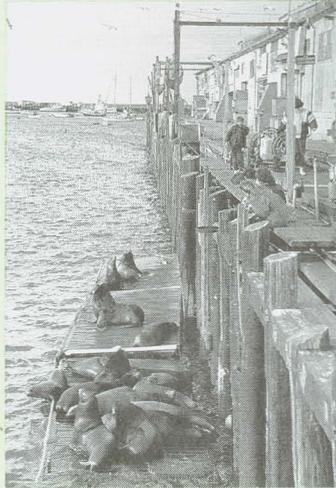


**POINT ARENA**



Marc Beyeler

**MANHATTAN BEACH**



Marc Beyeler

**MONTEREY**

## New Conservancy Publication

The State Coastal Conservancy's *Guide to California's Public Piers* shows the location of all existing coastal and bay piers open to the public, and provides directions to them and to related facilities. To order copies of the guide (free of charge), write to the State Coastal Conservancy, Urban Waterfront Program, 1330 Broadway, Suite 1100, Oakland, CA 94612.

Other publications related to urban waterfronts available from the Conservancy (free of charge):

- *A Pocket Guide to Los Angeles Area Beaches*
- *A Wheelchair Rider's Guide to San Francisco Bay and Nearby Shorelines*
- *A Guide to Public Financing for Waterfront Restoration* (forthcoming)
- *A Survey of Commercial Fishing Facilities in California.*

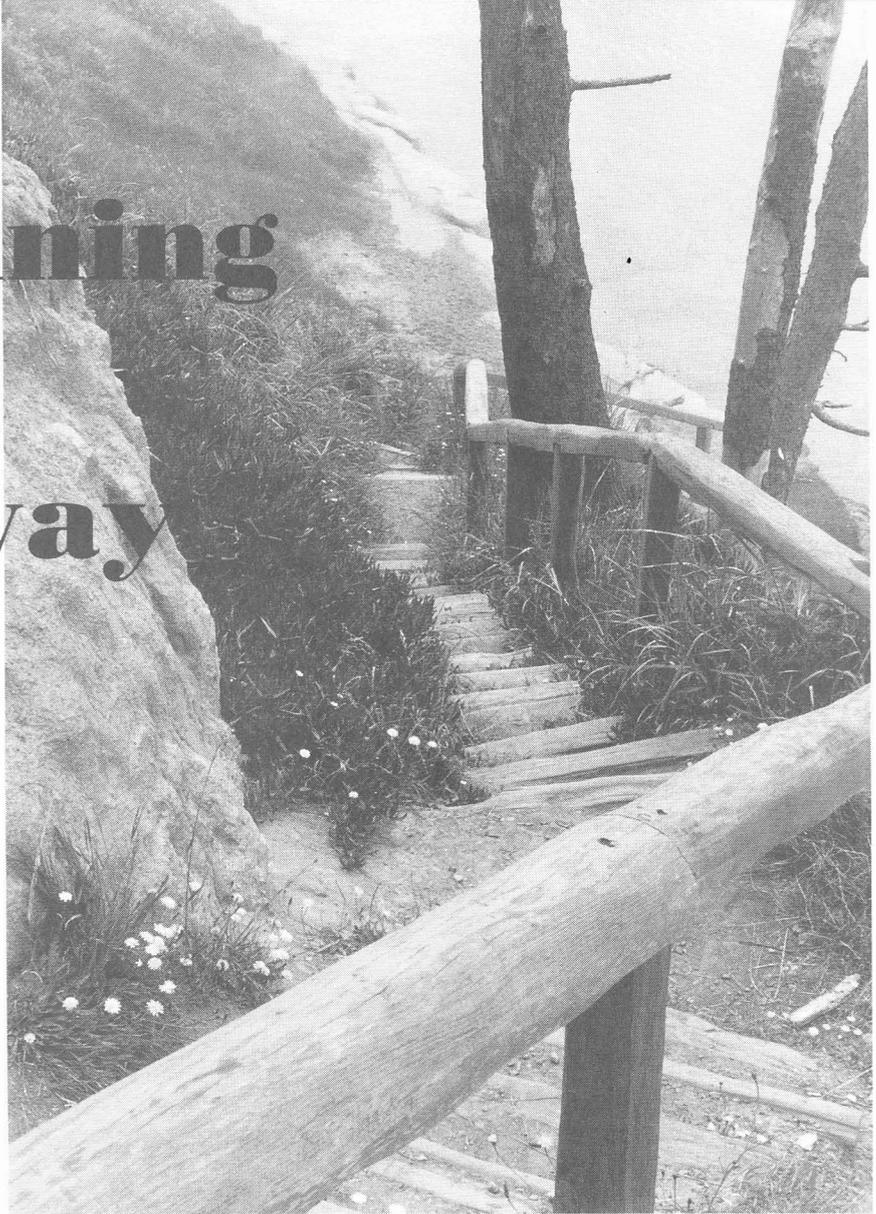


Marc Beyeler

**SANTA CRUZ**

# Determining Public Accessway Costs

by **John Maciuka**



John Maciuka

**T**he California State Coastal Conservancy has helped scores of coastal communities and agencies increase public access to the shore through financial and technical support in the construction of bridges, stairways, trails, bike paths, and other accessways. After 14 years of successful efforts along the 1,100-mile coastal zone and on San Francisco Bay, however, an essential policy question remains unanswered: What is a fair price to pay for public access?

The question has no easy answers.

Access projects along California's shorelines are often unique and site specific. Costs also differ by region. A fair price in Humboldt County may be too low for San Mateo or Orange counties. Any attempt to analyze expenditures for access without considering these and other variables would yield misleading conclusions.

Nevertheless, the Conservancy has gathered cost information on some of its recently completed projects, in hopes of helping local governments, agencies, and nonprofit organizations make better in—

**Conservancy access projects come in all shapes and sizes, but a few rules apply to all. Clockwise from top, East Beach Foot Bridge, Santa Barbara; Camino Pescadero, Santa Barbara; Lime Point, Marin County; 41st Avenue stairway, Santa Cruz.**



John Maciuka



John Maciuka



John Maciuka



Richard Retecki

formed decisions on their projects. We examined the costs on 13 construction projects: three bridges, three trails, five stairways, and two wheelchair accessways. The six discussed here represent a variety of solutions to different access problems.

The results of our study, while far from definitive, provide important baseline data about costs per linear foot for different project elements. They also show the different ways that funding for access are used to cover labor, materials, startup, and equipment costs from project to project. All figures in the text have been rounded off, while detailed costs can be found in the tables. With further research, these data could easily be developed into a model of cost ranges, against which the costs of future projects can be evaluated.

### **Engineers' Estimates, Bidders' Estimates, and Actual Costs**

Cost estimates by engineers, contractors, and public finance officials often differ widely. At East Beach in Santa Barbara, for example, an engineer from the city of Santa Barbara Public Works Department estimated total construction costs for the East Beach Pedestrian Footbridge (including labor and materials) at \$33,300, with an additional \$2,400 for engineering, surveying, and inspection time. Adding 10 percent to the construction subtotal to cover change orders and contingencies, the total estimate for the bridge was \$39,000 as of January 20, 1989.

Bids from five private contractors in May 1989 sharply differed from the city's estimate: They ranged from a low bid of \$61,800 to a high of \$92,200. These bids followed the same specifications as those listed in the engineer's estimate. Actual costs for the bridge project were higher than both the engineer's estimate and the contractor's bid. The total amount due for bridge construction was only slightly higher than the winning low bid. However, city engineering costs turned out to be more than six times higher than the engineer's estimate (\$15,000 rather than the estimated \$2,400). Total cost for the bridge project came to \$78,500, more than twice the city engineer's estimate. There

was a considerable discrepancy between the original cost estimate and final project costs, even though the basic design remained the same. Change orders for the project amounted to only a little over \$1,000.

What accounts for the huge difference between the actual cost for the bridge and the city engineer's estimate from a few months earlier? The experience of some State Coastal Conservancy project managers suggests that engineers' estimates routinely come in low because they focus on construction costs and do not take into account all of the "soft" costs associated with a project: administration, design, mobilization, and contingencies. In this case, the engineer for Santa Barbara also said that city estimates are carried out using standard materials specifications, whereas the East Beach bridge included significant amounts of custom ironwork and stonework, which led to a great increase in cost.

Differences between engineers' estimates and final project costs also seem to rise exponentially with the complexity of a project. (In perhaps the most ambitious of all access projects, the Eurotunnel between England and France, a cost estimate of \$7.9 billion in 1987 had risen to \$12.3 billion by April 1990.) As a rule, project managers can expect obstacles to drive up costs at any time.

### **State Funds, Local Costs**

Because local jurisdictions use diverse accounting and billing practices, it is difficult to compare costs between components. The Conservancy records each outlay and contract, but it is most often third party work performed by a contractor for a local government, nonprofit, or regional park district. One jurisdiction might accept monthly progress billing reports on a lump-sum basis for several accessways grouped as one project; another might account for project costs using materials invoices and labor time sheets alone; a third might rely on a bid agreement listing lump-sum unit prices. In each case, costs for each component have to be determined differently; no "set" methodology can be applied in all cases.

Differences in accounting render labor

***Differences between engineers' estimates and final project costs also seem to rise exponentially with the complexity of a project.***



and materials costs particularly hard to distinguish. In most projects the cost percentage for labor and materials differs from one component to the next, leading most contractors and jurisdictions to rely on an overall figure for each project component. While in some cases bids and billing statements separated labor and materials costs, in this article a single figure is used for the sake of consistency. Readers interested in more detailed breakdowns may request the complete Conservancy technical bulletin.

In light of these differences in accounting methods, and with the aforementioned

caveats, we present information on two footbridges, two trails, and two stairways. Keep in mind that none of these projects, by itself, represents a general rule.

### **Santa Barbara's East Beach Pedestrian Footbridge**

In January 1989, the city of Santa Barbara began constructing a 56-foot-long footbridge over Sycamore Creek, a few yards downstream from the busy Cabrillo Boulevard bridge, to provide safe pedestrian and wheelchair access to popular beaches. The Conservancy contributed \$45,000 to build the bridge. The total cost of the project, completed in November 1989, was \$78,500. The city covered the additional \$33,500.

The project had three phases: engineering and design, site preparation, and construction. Engineering and design costs on the site, performed by city engineers, totaled \$15,600, or about 20 percent of project cost. Site preparation, which involved clearing and grading the site, came to \$8,300, or 10 percent. Purchase and installation of the prefabricated wooden bridge cost \$54,600, or about 70 percent.

Our analysis showed that the East Beach bridge cost \$1,400 per linear foot. Materials accounted for about 75 percent of project cost, labor for 25 percent. According to Phil Hodgson of Hodgson Construction Co., labor costs were relatively low because the bridge was prefabricated.

### **East Bay Regional Park District's San Lorenzo Creek Bridge**

The East Bay Regional Park District built a 220-foot-long, 10-foot-wide, pile-supported bridge across San Lorenzo Creek in San Lorenzo, Alameda County, on park district trail lands just east of San Francisco Bay. Also part of the project was a 1,200-foot section of a levee road leading to the bridge, which would connect bayside trails in San Lorenzo and Hayward and would become a link in the Bay Trail sys-

**Table 1: East Beach Bridge.**

Site preparation	Amount (\$)	% of Project
Mobilization	535	0.7
Clearing and grubbing	1,239	1.6
Grading, excavation, and backfill	3,418	4.4
Grouted rock slope protection	2,676	3.4
Change order: boulder placement	408	0.5
<b>Subtotal, site preparation</b>	<b>8,276</b>	<b>10.5</b>
<b>Bridge construction</b>		
Two concrete abutments	7,420	9.5
Wooden bridge	13,826	17.6
Four stone pillars	13,130	16.7
Two railings	11,510	14.7
Concrete ramp with bollards	3,834	4.9
Painting	3,475	4.4
Cleanup	740	0.9
Change order: metal grates	661	0.8
<b>Subtotal, bridge construction</b>	<b>54,596</b>	<b>69.6</b>

Source: City of Santa Barbara request for disbursement, 1/31/90; Hodgson Construction Co. final billing.

**Table 2: San Lorenzo Creek Bridge.**

Project element	Amount (\$)	% of Project
Wooden bridge	68,540	71.0
Two 417-cubic-foot A.C.-paved bridge approaches	8,510	9.0
1,200-foot A.C.-paved levee road	14,628	15.0
Service gate	225	0.2
Soil engineering	2,770	3.0
Structural engineering	668	1.0
Administration	728	0.8
<b>Grand total</b>	<b>96,069</b>	<b>100</b>
<b>Grand total, 1989 dollars</b>	<b>112,400</b>	

Sources: San Lorenzo Creek Bridge cost summary and final billing, James H. Darby Construction Co. to East Bay Regional Park District, April 1983 and March 1984.

tem. Plans and specifications prepared by the park district required that a portion of the bridge be removable for dredging and maintenance.

Although billing for the bridge was done on a lump-sum basis, the request for proposals from the park district specified that labor and materials costs should be estimated at 50 percent each as guidelines for bid preparation purposes. Consequently, the cost breakdown for this project reflects a similar 50-50 split for labor and materials costs (Table Two). The project was completed in 1983, and the costs listed below are in 1983 dollars. The updated costs below the "total project cost" are in 1989 dollars and rely on the Composite Construction Cost Index of the U.S. Department of Commerce (December 1989 *Construction Review*).

The bridge cost \$436 per linear foot (\$511 in 1989 dollars) when completed in 1983. The asphalt-concrete-paved levee road cost \$12 per linear foot in 1983 dollars (\$14.26 in 1989 dollars). A change order greatly simplified the paving job and made it significantly cheaper after the East Bay Regional Park District decided that only light service vehicles would use the levee road. It thus was possible to eliminate the planned 2-foot gravel shoulders from the roadsides and replace planned underlying base rock with asphalt concrete. The thickness of the levee road remained 3.75 inches. According to Susan Williams, grant specialist with the park district, these changes, and the fact that the contractor did most of the work himself and therefore had low overhead, brought the project in at \$96,000, which was \$29,000 below the original Coastal Conservancy outlay of \$125,000. The funds were freed for use on other projects.

### East Bay Regional Park District's San Lorenzo Creek Trail

The earliest project to be included in the Conservancy cost study, the San Lorenzo Creek Trail, completed in 1982, includes a gravel-paved parking lot, buildup of a bayside levee, construction

**Table 3: San Lorenzo Creek Trail.**

<b>Parking lot</b>	<b>Amount (\$)</b>	<b>% of Project</b>
Demolition	492	0.3
Gravel paving	3,608	2.4
Parking bumpers	167	0.1
Chain link fence	1,993	1.3
Bollards	136	0.1
<b>Subtotal, parking lot</b>	<b>6,396</b>	<b>4.3</b>
<b>Subtotal, 1989 dollars</b>	<b>7,611</b>	
<b>Levee work</b>		
Levee buildup	569	0.4
Slope protection (riprap)	27,072	18.3
Change order: more shore protection	3,541	2.4
<b>Subtotal, levee work</b>	<b>31,182</b>	<b>21.1</b>
<b>Subtotal, 1989 dollars</b>	<b>37,387</b>	
<b>Trail work</b>		
Clearing and grubbing	14,359	9.7
Trail realignment	11,357	7.7
Welded wire mesh fence	919	0.6
Wood rail fence	273	0.2
Gates	1,293	0.9
Four steel bollards	536	0.4
One wooden bollard	68	0.05
Change order: more fill, grading culvert, and fencing	13,045	8.8
Change order: install culvert	390	0.3
Change order: more grading	2,868	1.9
<b>Subtotal, trail work</b>	<b>45,108</b>	<b>30.6</b>
<b>Subtotal, 1989 dollars</b>	<b>54,084</b>	
<b>Bridge work</b>		
Bockman Channel Bridge	25,031	17.0
Sulphur Creek Bridge	33,840	22.9
<b>Subtotal, bridge work</b>	<b>58,871</b>	<b>39.9</b>
<b>Subtotal, 1989 dollars</b>	<b>70,586</b>	
Bid ads	395	0.3
Engineering and design	5,685	3.8
<b>Grand total</b>	<b>147,637</b>	<b>100</b>
<b>Grand total, 1989 dollars</b>	<b>177,017</b>	

Sources: Quico Corp. bid proposal, cost summary, and final payment request, 2/82-7/82. EBRPD contract change orders and as-built drawings, 4/28/82.

of 1.02 miles of new trail, and construction of two service vehicle bridges across two waterways, the Bockman Channel and Sulphur Creek. The total project cost was \$147,600, of which \$125,000 was provided

by the Conservancy (Table Three). The project site is just south of San Lorenzo Creek and is part of the San Lorenzo to Hayward trail in the East Bay.

More than half of the approximately 2.5 miles of trail for the San Lorenzo Creek project required no work or improvements at all. The 1.02 miles of new trail constructed on landfill, however, posed some special problems that required change orders for additional fill, grading, and trail realignments. The final cost per linear foot of the 5,385 feet of trail was \$8.37 (\$9.97 per linear foot in 1989 dollars). This contrasts with \$14 per lin-

ear foot for the more difficult Coastal Trail Link segment of the trails at East Fort Baker, completed in 1988.

The gravel-paved parking lot cost 80¢ per square foot in 1982 dollars, or 94¢ per square foot in 1989 dollars. Levee buildup cost \$3.25 per cubic yard for 170 cubic yards of fill; the price in 1989 dollars is \$3.90 per cubic yard. Riprap for slope protection cost \$4.17 per square foot for protection of 6,500 square feet of levee slope using 12- to 18-inch-diameter rocks. The Bockman Channel Bridge, a wooden, pile-supported structure 105 feet long and 6 feet wide, cost \$238 per linear foot in 1982 dollars (\$286 per linear foot in 1989 dollars). The Sulphur Creek Bridge, also a wooden, pile-supported structure, 107 feet long and 10 feet wide, cost \$316 per linear foot in 1982 (\$379 per linear foot in 1989 dollars). Like the San Lorenzo Creek Bridge, Sulphur Creek Bridge included a removable 35-foot center section to facilitate channel dredging and maintenance.

Labor and materials costs were once again estimated at 50 percent each in the request for proposals and in drawings and specifications. For levee buildup, however, labor was estimated at closer to 30 percent by the contractor in payment request documents.

**Table 4: GGNPA's East Fort Baker Trails.**

<b>Furniture</b>	<b>Amount (\$)</b>	<b>% of Project</b>
Picnic tables and benches	31,996	9.3
Trash receptacles	2,712	0.7
<b>Subtotal, furniture</b>	<b>34,708</b>	<b>10.0</b>
<b>Subtotal, 1989 dollars</b>	<b>35,813</b>	
<b>Lime Point parking lot</b>		
Wheel barriers	2,422	0.7
Parking barriers	1,173	0.3
Guard rail	868	0.2
Bollards	1,340	0.4
Drains	778	0.2
Wheelchair ramp	18,032	5.0
"Turnpike" walkway	20,013	5.0
Exotic species removal/cleanup	790	0.2
Picnic pad	1,738	0.5
Equipment rental	7,500	2.0
<b>Subtotal, parking lot</b>	<b>54,654</b>	<b>14.5</b>
<b>Subtotal, 1989 dollars</b>	<b>56,394</b>	
<b>Trail work</b>		
Clearing and grubbing	1,607	0.4
Coastal trail link clearing and grubbing	94,960	26.3
Railings and retaining walls	15,153	4.0
Fencing repair	4,502	1.2
Stairways	81,332	22.1
<b>Subtotal, trail</b>	<b>197,554</b>	<b>54.0</b>
<b>Subtotal, 1989 dollars</b>	<b>203,844</b>	
GGNPA project management	20,000	5.4
30 signs and posts	11,652	3.0
Cleanup	28,900	8.0
Design costs and site checks	10,000	2.7
NPS technical supervision	10,000	2.7
<b>Grand total</b>	<b>367,467</b>	<b>100</b>
<b>Grand total, 1989 dollars</b>	<b>379,168</b>	

### **Golden Gate National Park Association's East Fort Baker Trails**

The East Fort Baker Trail project, completed in 1988, is a system of trails at the foot of Marin Headlands, connecting San Francisco to the Point Reyes National Seashore. Some 4,700 feet of trails lie immediately to the east of Highway 101 and are centered around Horseshoe Cove, a quiet and attractive man-made beach. The trails are mostly "improved" trails, that is, they make use of existing paths and roadways. They lead to spectacular bayside views atop old gun emplacement sites on this former military installation. The Lime Point Trail provides wheelchair access out to the old Lime Point Lighthouse directly beneath the north side of the Golden Gate Bridge and affords one of the closest and best views of ship traffic passing through

the Golden Gate. To the west of Highway 101 lies one other trail: the 6,600-foot, freshly cut Coastal Trail Link, which connects East Fort Baker to the vast network of trails throughout the Golden Gate National Recreation Area and north to the Point Reyes National Seashore.

The cost breakdown for this project is unique for several reasons. First, it relies exclusively on invoices from the nonprofit Golden Gate National Park Association for an account of materials costs and on the figures and estimates provided by the Marin Conservation Corps for labor. Moreover, the Conservancy's grant of \$170,000 was only one of many sources of funding for the project. The Marin Community Foundation provided \$136,500 to help fund labor costs; the National Park Service added \$30,500 for equipment, supplies, and signage; and the Golden Gate National Park Association contributed \$20,000 to pay for project management. Total funding for East Fort Baker was \$367,500 (Table Four).

Per unit costs break down as follows: gravel-paved parking lot, \$85 per square foot; average trail cost, \$26 per linear foot; Coastal Trail Link, \$14 per linear foot. The latter is the only freshly cut trail, and it is 2 feet wide instead of 5 feet wide like the others. The Battery Cavallo, Battery Yates, and Vista Point trails also included much more retaining wall, stairway, and fencing work than the Coastal Trail Link. Retaining walls with an average height of 2 feet cost \$17 per linear foot. Six-foot-wide stairways cost \$493 per linear foot. Fencing, which involved laying new Cyclone fencing over existing posts, cost \$30 per linear foot.

### **Santa Cruz County Stairways at 13th, 20th, 38th, and 41st Avenues**

Bluff-top stairways in Santa Cruz County serve a dual purpose: They protect cliff and bluff faces against erosion, and they provide safe public access for thousands of beach-goers each year. The four stairways at 13th, 20th, 38th, and 41st avenues cover a range of accessway de-

signs, from straight staircases to complex and costly stairways that twist and turn among ramps, riprap, and retaining walls. Beginning at 13th Avenue and extending south over two miles of ascending coastline, each stairway is more complicated and costly than the previous one.

The 13th Avenue stairs, which cost \$38,600 to construct, are made up of a 35-foot-long and 5-foot-wide stairway along with a 15-foot-long and 5-foot-wide con-

**Table 5: Santa Cruz County Stairways.**

<b>13th Avenue</b>	<b>Amount (\$)</b>	<b>% of Project</b>
Stairway and ramp construction	33,000	85.4
Riprap	700	1.8
Change order: add handrail	680	1.8
Change order: add drain	446	1.2
Erosion protection	1,622	4.2
Stairway design and engineering	2,130	5.5
<b>Subtotal, 13th Ave. stairs</b>	<b>38,578</b>	<b>7.2</b>
<b>Subtotal, 1989 dollars</b>	<b>39,736</b>	
<b>20th Avenue</b>		
Construction of stairs	21,700	33.7
Riprap	34,300	53.3
Change order: add pier	2,548	4.0
Add handrail	247	0.4
Erosion protection	2,980	4.6
Design and engineering	2,620	4.1
<b>Subtotal, 20th Ave. stairs</b>	<b>64,395</b>	<b>12.0</b>
<b>Subtotal, 1989 dollars</b>	<b>66,327</b>	
<b>38th Avenue</b>		
Construction of stairs	62,900	34.4
Riprap	54,000	29.6
Cribwall	58,231	31.9
Erosion protection	4,435	2.4
Design and engineering	3,174	1.7
<b>Subtotal, 38th Ave. stairs</b>	<b>182,740</b>	<b>34.1</b>
<b>Subtotal, 1989 dollars</b>	<b>188,222</b>	
<b>41st Avenue</b>		
Construction of stairs	44,700	17.9
Riprap	198,000	79.1
Erosion protection	4,435	1.8
Design and engineering	3,174	1.3
<b>Subtotal, 41st Ave. stairs</b>	<b>250,309</b>	<b>46.7</b>
<b>Subtotal, 1989 dollars</b>	<b>257,816</b>	
<b>Grand total</b>	<b>536,022</b>	<b>100</b>
<b>Grand total in 1989 dollars</b>	<b>552,102</b>	

Sources: Granite Construction Co.'s progress billing documents and certificates of payment as submitted to Santa Cruz County.

crete ramp. The 20th Avenue stairs, at \$64,400, are 32 feet long and 6 feet wide and have a concrete landing that is 5 feet long and 6 feet wide. Both the 13th and 20th Avenue stairways run straight down the bluffs. Unlike the 13th Avenue stairs, however, the stairway at 20th Avenue required more than 500 tons of riprap to support the structure and protect it from storm damage. The stairs at 38th Avenue are more complicated, with 53 feet of 6-foot-wide stairs, a 6 x 6-foot concrete pier, a curved 16 x 6-foot concrete ramp, a supporting crib wall, and a 16-foot-long sea wall that is 2 feet high. The total cost of the 38th Avenue stairs was \$182,740. Lastly, the 41st Avenue stairs twist and turn more than 78 feet down a steep cliff that is sheltered by cypress trees. The stairs are 6 feet wide and include a 14 x 6-foot wooden ramp. The entire structure cost \$250,300 and is supported by more than 2,600 tons of riprap.

The total cost for the four stairways, completed in 1988, was \$536,000. Determination of accurate costs for individual stairways was hindered by the fact that all four stairways were built by the same contractor, Granite Construction Co., which submitted lump-sum progress billings encompassing all work performed. While the progress billing figures did not separate labor and materials costs, it was possible to calculate labor costs from certified payroll forms submitted to the county of Santa Cruz by the contractor. To approximate labor costs for each stairway, each stairway was assigned a total labor cost that was proportional to the overall cost of the stairway in relation to total project costs. These labor costs were then distributed within the cost breakdown for each stairway as a percentage of the cost of each project element. The remainder of each stairway's costs from the progress billings was then distributed to approximate materials costs. Cost breakdowns for the Santa Cruz County stairs can perhaps best be regarded as a cross between a breakdown and a projection (Table Five).

Based on the above cost information the costs per linear foot of the four stairways are as follows: 13th Avenue, \$772 per linear foot; 20th Avenue, \$1,740 per linear foot; 38th Avenue, \$2,437 per linear

foot; and 41st Avenue, \$2,721 per linear foot. This averages out to \$2,110 per linear foot if one divides the total project cost by total linear feet of stairway constructed. The wide variation in per-linear-foot costs is largely attributable to the difference in amounts of riprap needed to support the different stairways: 13th Avenue, which used very little riprap, came in at the lowest cost, while 41st Avenue, which used 2,625 tons of riprap ranging from 6-inch-diameter rocks to 4-ton boulders, came in highest. Other costs include riprap at \$71 per ton, and erosion protection at \$53 per linear foot.

### ***Santa Barbara County's Camino Pescadero Stairway***

The 75-foot-long Camino Pescadero Stairway in Santa Barbara County was built on the site of an old stairway that was demolished to make way for the new wooden stairs. Set at the end of a bluff-top path, the new stairway resembles the old in that it runs straight down the bluff and then turns sharply to the left, using the old stairway support pilings as a foundation. The new staircase was completed in 1989.

The Camino Pescadero Stairway was another lump-sum accounting project. Its cost breakdown was calculated using the contractor's bid agreement with the county. Labor and materials costs for the project also are a reflection of contractor's estimates (Table Six).

The total cost of the stairway was boosted by a few changes that were necessary when the new stairway was built atop the old foundation. In particular, the stair had to be lengthened to adjust for a change in the rise-run ratio of the new stairway, the foundation had to be enlarged, and an additional handrail and stair backing were required to complete the project. Some of these extra costs were offset by savings due to the construction of a drop inlet that simplified drainage at the stairway site. With all of these changes the 75-foot-long stairway cost \$497 per linear foot.

## Weighing the Options

What conclusions can be drawn from all these numbers and charts? While it is difficult and perhaps irresponsible to make generalizations that apply equally to every project, some observations bear mentioning.

First, it is important to remember that estimates are just that; it is likely that these ballpark figures will differ from actual costs by 10, 20, even 30 percent. Even after a bidder has been selected, change orders will likely be placed, significantly altering costs. These changes, like the many changes observed in the projects discussed, reflect the surprises one must expect when constructing or remodeling.

Change orders can save money, too. If an engineer's design for a bridge is sturdy enough for a tank but will only be used by bicyclists and pedestrians, then it is important to take stock and adjust the project accordingly. In the Camino Pescadero Stairway project, the awareness that drainage was going to be problematic and expensive prompted an innovative construction measure that greatly simplified the problem and reduced project costs.

It is also important to balance the cost of initial construction outlays against future maintenance costs. For example, the decision to eliminate base rock and gravel shoulders from the levee road at San Lorenzo Creek may have saved money initially, but maintenance for cracks and road settling could prove costly in the future. Once again, the decision was based on the East Bay Regional Park District's judgment that the road would be used mainly by pedestrians and bicyclists in the park area. Consequently, the park district saw no reason to spend money on preparing the roadway for heavy truck travel.

Finally, project managers who really want to understand how much their projects cost must insist on a breakdown of costs at the end of construction. As can be seen from the analyses in this article, project costs can be broken down in a number of ways and are subject to change throughout the proposal, bidding, and construction processes. By being aware

### Table 6. Camino Pescadero Stairway.

Site preparation	Amount (\$)	% of Project
Demolition	4,600	12
Grading and drilling	3,600	10
Rental of drilling equipment	2,000	5
<b>Subtotal, site preparation</b>	<b>10,200</b>	<b>27</b>
<b>Construction of stairs</b>		
Construction	14,000	37
Change orders:		
Enlarge foundation	1,500	4
Stair backing and additional handrails	845	2
Additional bulkhead	1,105	3
Additional stairs and landing	1,495	4
Drop inlet for drainage	1,170	3
<b>Subtotal, stair construction</b>	<b>20,115</b>	<b>53</b>
Engineering and design	5,666	15
Signs	1,809	5
<b>Grand total</b>	<b>37,790</b>	<b>100</b>

Sources: Santa Barbara County bid agreement, change order forms, and billing statements.

of how similar projects compare in cost, and by carefully assessing the needs that an accessway are expected to serve, project managers will be in a better position to build public accessways in a cost-effective manner. □

*John Maciuika is a Coastal Conservancy intern and former research analyst for the Pennsylvania Economic League Inc., in Philadelphia.*

*Readers interested in obtaining detailed breakdowns of the costs summarized in this article should contact the California State Coastal Conservancy's Coastal Access Program at 1330 Broadway, Suite 1100, Oakland CA 94612, and should request "Cost Breakdowns for Selected Coastal Access Projects Constructed in the 1980s," completed in April 1990. The study includes three cost breakdowns omitted from this article and goes into much greater detail, providing labor and materials costs, detailed specifications, and illustrations of projects.*

# The Rest of the Story

Once a public accessway has been built, the responsibilities of maintaining it begin. Several important questions must be addressed: Who will operate and maintain the accessway? How will the accessway be insured and at what cost? A brief survey of arrangements on the local, regional, and state levels shows that each jurisdiction handles these issues differently, depending on resources and needs.

Maintenance costs are determined by a number of factors: location and terrain, level of usage, type of accessway, and proximity to rural or urban environments. Well-designed projects that are sensitive to operations and maintenance considerations may cost more initially but require less maintenance in the long run. Projects that cost less to build may require more money for maintenance over the life of the project. A \$40,000 stairway may last for 10 to 15 years with little maintenance, while a \$10,000 wooden stairway may require considerable upkeep every few years. The decision to build the former or the latter depends on a number of factors, including aesthetics and the availability of funds over the short term and long term.

In light of all these factors, how much does maintenance cost? The Coastal Conservancy inquired into several different kinds of maintenance programs and discovered the following costs. This sampling provides no comprehensive answers but may be useful to access providers.

For the county of Santa Cruz, the cost of one person patrolling four large stairways four to five times per week was about \$30 per week, or \$1,560 a year. This figure covers labor costs for a person spending about half an hour per stairway per day to pick up trash from receptacles and sweep stair treads free of sand. The weekly cost may be slightly higher in summer, when stairways receive the most use. Extra expenses such as stair

replacement are taken care of on an as-needed basis.

At the Santa Monica Mountains Conservancy, a maintenance job that comes up repeatedly is the clearing of the eight-mile Solstice Canyon Trail, which surrounds the Conservancy's main office and runs along roads for about four miles and as a separate trail for another four miles. After a storm, when trees and branches have blown down, two well-trained people require one week of eight-hour days to maintain the trail. This includes cutting back the trail where necessary, using a chain saw to clear fallen branches, and generally restoring the trail. The estimated cost of clearing the trail is \$1,000 for the week at \$25 per hour for labor and the use of a truck and tools. The \$25 per hour figure, the Mountains Conservancy reports, is very close to the figure used in its service contracts for two men and a truck for other trail maintenance jobs.

One of the most comprehensive maintenance programs of any coastal area is the State Parks and Recreation Department's Monterey District. Maintenance chief Ben Hale's 16-person staff oversees beaches throughout the district with a \$75,000 annual maintenance budget. Budget figures for individual facilities are arrived at by estimating the number of labor hours of work per year plus the amount of money that will be required for materials. Labor hours are listed to keep track of staff time and labor requirements; materials figures are the only specific dollar figure given. Examples of maintenance at Moss Landing State Beach are given below:

**1. Sand ladder construction—cost \$6.00 per linear foot.**

Sand ladders are made of 3- to 4-inch-diameter peel logs spaced 2 feet apart. They are drilled with holes and connected with 1/4-inch steel braided cable, with nickel cadmium U-clamps to keep steps from sliding once the sand ladder

has been laid in place. Sand ladders require a good deal of maintenance because peel logs wear from the effects of salty air, wind-blown sand, and use. A typical 65-foot sand ladder at Moss Landing has an annual maintenance budget figure of \$40 per year for materials and 12 worker hours per year. It is estimated that two workers will have to make several visits per year for checkups and work.

**2. Boardwalk construction—cost \$11.67 per linear foot in 1987, under contract.**

Two-inch-thick, 8-foot-wide boardwalks are supported by 2 x 4-inch rails. A top rail serves as a bumper for wheelchairs, while additional 2 x 4-inch rails (known as "caps") line boardwalk edges to prevent wheelchair wheels from slipping off the walkway. These barrier-free access measures comply with California Access Code specifications and are viewed favorably by park users and managers alike.

The current budget for a 760-foot-long, 5-foot-wide boardwalk at Moss Landing is \$150 per year for materials and 24 worker hours for miscellaneous repair work. The caps along the boardwalk edges require an additional four labor hours per week (208 hours per year) for sand removal, but this additional work is seen as a small price to pay for complete access to the beaches.

**3. Cabled (board) walks—construction cost unavailable.**

Cabled walks have cabled tie-downs every 50 feet to allow for new boards to be inserted. The annual maintenance budget for a 245-foot-long, 5-foot-wide cabled walk is \$75 for materials and an estimated 20 hours of work. The barrier-free cabled boardwalks at Moss Landing include another feature designed to minimize maintenance. Kicker plates along the walk are screwed to rails with special "fast tap" screws. These screws are chemically treated to withstand

wearing effects of salt and sand. As a result, these walkways have required "little or no maintenance" since they were installed in 1987.

A valuable feature of Ben Hale's maintenance operation is the Work Order Program in effect for all facilities in the district. Ranger staff and visitors are invited to note any maintenance problems they notice on forms posted on bulletin boards in kiosks at key locations. All these order forms are routed to the maintenance manager for review so that major jobs and safety-related maintenance problems can be treated immediately. Ben Hale says this information-gathering allowed his district to minimize safety hazards and keep better track of maintenance needs. An additional benefit of the program is that it encourages park visitors to participate as stewards of a public space.

At the East Bay Regional Park District, trails coordinator Steve Fiala said that flexible maintenance arrangements allow the park district to maintain trails within its jurisdiction in the most cost-effective way possible. Trails near parks, for example, have arrangements in which park staff take care of trail maintenance, with costs absorbed in the park's operating budget. On the other hand, more than 80 miles of trails in Contra Costa County are maintained by the "Contra Costa Trail Crew," which is responsible for all mowing, tree-trimming, trash cleanup, patrolling, and the maintenance of fences and bollards along the trails. The district employs seven full-time workers who have their own maintenance equipment, including tractors, a dump truck, and other tools. Crews work at rates ranging from \$13.62 per hour to \$15.00, depending on experience, in shifts that spread them over weekdays as well as weekends, when trails receive heavier use.

In a similar arrangement with a similar pay scale, the Alameda Creek



**Pathways atop cliffs may collapse in winter storms.**

Trail System is maintained by the district using a full-time four-person work crew. Its responsibilities include upkeep of 13 miles of trails, clearing around several ponds, trimming and clearing around tree groves, and maintaining picnic facilities scattered around the trail system. Steve Fiala reports that he is very pleased with the district's full-time crews, and that pay is competitive with civil service and private sector rates under contract.

The East Bay Regional Park District also relies on volunteers. Working with the East Bay Conservation Corps, juvenile volunteer programs, and alternative work programs, the district has found East Bay residents willing to contribute to their own community while helping to lower the cost of in-house maintenance for the park district.

### **Insurance**

Insurance arrangements are as diverse as maintenance arrangements, varying according to jurisdictional needs and resources. The state self-insures Department of Parks and Recreation accessways through the Office of Risk Management, which pays out losses from the general fund. Santa Cruz County is self-insured for losses up to \$100,000, covering higher losses through private insurers. Smaller cities with relatively fewer resources are

banding together to form insurance pools that obtain more competitive rates for group insurance. The East Bay Regional Park District, like the county of Santa Cruz, combines self-insurance with carefully brokered private insurance to insure its 46 parks. David Clovis, risk manager for the East Bay Regional Park District, oversees two main methods of minimizing exposure to liability suits: designing and planning to maximize safety, and taking precautions (such as putting up signs) after facilities are built to limit the park district's liability. Because this park district maintains so many facilities (46 parks), it has found that the costs associated with aggressive risk management are minimal when compared to the millions of dollars saved in potential liability suits.

As with accessway construction, accessway maintenance and insurance depend on the needs, resources, and flexibility of the jurisdiction in charge. The most important issue for a jurisdiction is to examine its options for maintenance and insurance and realize the costs and benefits of each arrangement. Pooling resources, contracting, and using volunteers for lower-cost maintenance are all effective in different ways, but it is up to the individual jurisdiction to decide which approach can be used to the best advantage.

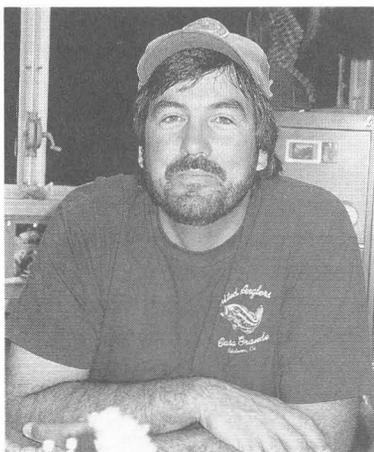
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# The Dream Hatchery

by Joy Dorst and Rasa Gustaitis

**A**bove a door of the unfinished building beside Petaluma's Casa Grande High School, a hand-carved sign announces: "Our Hatchery—Our Dream." The dream is that steelhead will once again run in Adobe Creek across the road from the school, and the hatchery is a key to its realization.

To envision that this is possible requires powerful creative thinking. All around the 1,200-student school, streets and houses have covered once-fertile farmland. The creek was diverted long ago near its headlands in the Sonoma Mountains and has been classified as "dry" by the State Department of



Photos by Rasa Gustaitis

**Tom Furrer.** Fish and Game. Only during wet winter months does it flow. There have been reports of steelhead still finding their way up, but so rarely that people refer to them as "ghost runs."

Yet for more than six years now, groups of students led by an exceptional teacher

have been working to restore life to this creek and save its anadromous fish population from extinction. This hatchery embodies their hopes, their efforts, and a determination to do better in taking care of their planet than their elders have done.

The hatchery will serve as an "artificial creek" where fish can grow, to be released in the wet months into this and other creeks so that they might find their way down into the Petaluma River, from there to San Francisco Bay and the ocean, and then return to the same stream to spawn, continuing the ancient cycle. It will demonstrate to students here and in other schools how fish are raised and serve as a hands-on classroom for biology and other subjects. It may also raise young striped bass for release into San Pablo Bay.

Casa Grande students have collected an astonishing \$260,000 for this 2,300-square-foot building thus far. Though some \$130,000 more is required before the hatchery is operational, they have already proven they will not be deterred by obstacles that would defeat almost everyone else. If they succeed, they will have the first student-run hatchery in the contiguous United States. (There is one in Skagway, Alaska.)

This amazing story began in 1984, when natural resources instructor Tom Furrer

decided he could not go on simply teaching about endangered species and the misguided behavior that was destroying the natural world his students would inherit. He had noticed an intensely frustrated look in their eyes. "They could see what's being done is foolish, bordering on the idiotic," he said. "And they wanted to know, what could *they* do?"

Furrer, 36, understood. That same need to act on what he perceived had led him to become a teacher ten years ago, after working for the Fish and Game Department and as state park ranger. He sees his students as "the pivotal generation. With them, we either come back to normal or things get a lot worse. Right now, their kids' future does not look too bright."

He considered the options. Recycling? A Saturday litter brigade? Not enough. "I wanted to do something long-range that showed in-depth what it takes to make a difference and that would be a useful tool for them later on," he said. "So I decided to adopt Adobe Creek. It's one heartbeat away from being put into tubes and forgotten forever, but I knew that it used to be a substantial run of fish. You can do this kind of project with anything—a plant, a bird, but I happen to love fish."

The fact that he teaches what he loves is one reason why students line up to take Furrer's wildlife and forestry classes. Those who come too late to get a seat perch on a log by the door of the classroom, which—in itself—would draw a crowd. It smells of sugar pine, with fresh branches tacked above the door. Creatures living and stuffed line all the walls and stand in



corners—a huge grizzly bear, a polar bear, a wild turkey, a beaver, various tanks with smaller living wildlife. A bulletin board is crowded

with snapshots of students on field trips to Yosemite, to a loggers' convention. As a teacher Furrer ranks "killer" status with Stephen Rochlin, a senior. "He is the best I ever had." Others echo the sentiments.

So in fall, 1984, Furrer gave an assignment: Study Adobe Creek. Find out why it's dry and what it would take to revive it. The class took a year to do it. Students walked its three-mile length, saw where it had been degraded to a trench filled with trash, observed that much of the streamside vegetation was gone. "They learned where the fish hatch, where the spawning gravel is, how weather affects it, where the water will go," Furrer said. They looked up city records and surveyed all creekside landowners they found. "I would say we know this creek almost rock by rock," he said. Then, in spring of 1985, a group organized as United Anglers of Casa Grande High School, a student affiliate of the sportfishing group. Their goal: save the habitat and bring back the fish.

For two years they cleaned up the creek, planted trees in and alongside it, repaired upstream fish ladders. "Many times it was very frustrating going down to a spot you just cleaned up Monday, and Wednesday it was full of garbage again," recalled Darcy Hamlow, United Anglers president 1989-90. "Practically everything you could imagine was down there." Twenty truckloads of stuff were hauled away.

***The hatchery became a symbol of student empowerment and showed that "hard work can bring life back to an area that has been extinct."***



**Anglers Amy Jacobsen and Stephen Rochlin.**

Fish and Game staff, highly supportive, advised the Anglers to focus on habitat and explained that to rescue fish and put them back into the stream directly would be futile, even counterproductive. So in 1987 the Anglers converted an abandoned greenhouse on the school grounds into a hatchery. They raised 2,000 trout fingerlings and released them, as well as 500 catfish, which went into a pond. This project "brought out the most docile of students," recalled John Conley, a Casa Grande graduate. It became a symbol of student empowerment and showed that "hard work can bring life back to an area that has been extinct."

If Furrer wanted a project to show that "making a difference" is not easy, this was it. One day a county public works employee, clearing an in-stream island to improve hydraulic flow, bulldozed some 200 willow saplings the Anglers had planted. Then, in spring 1987, their hatchery was found to be in violation of earthquake safety standards and was shut down.

"It would have been so easy to give up then," recalled Furrer. "But they decided to build another and better hatchery. We drew the plans together, on a chalkboard," with technical advice from four hatcheries. The estimated price tag was unimaginably high, but they sought fi-

nancial aid from foundations, public agencies, legislators, local merchants—and got it. They also held spaghetti dinners, many car washes and candy sales. But after they had exceeded their \$240,000 goal by \$20,000, they learned that they would need at least \$130,000 more.

In the meantime, they kept planting along the creek and hopefully prepared gravel beds where the fish could spawn. And then—"It was a miracle," says Furrer. "So many things about all this have seemed miraculous."

Near every school, urban or rural, there are secret hideaways where students go to escape from supervisory eyes. Such a place exists in the Adobe Creek bed, under Casa Grande Road. The underside of the overpass is bright with graffiti but the place is extraordinarily clean. It was here that the "miracle" happened, on December 6, 1987.

"It was lunchtime, the creek was flowing, I was in my forestry class and this kid came running in, 'Mr. Furrer, there's a big fish in the creek!' I didn't believe him at first. We had been in the creek for two years and no fish. So he ran out and came back a few minutes later with a salmon in his arms. We immediately put it into a tank but it was dead, rigor mortis had already set in. 'There are more there,' he said."

Five king salmon had arrived—the first anyone had seen in Adobe Creek for decades. “All five came back to the spot the kids had intensively cleaned for them,” Furrer said. It was in the gravel at the entrance of their secret hideaway.

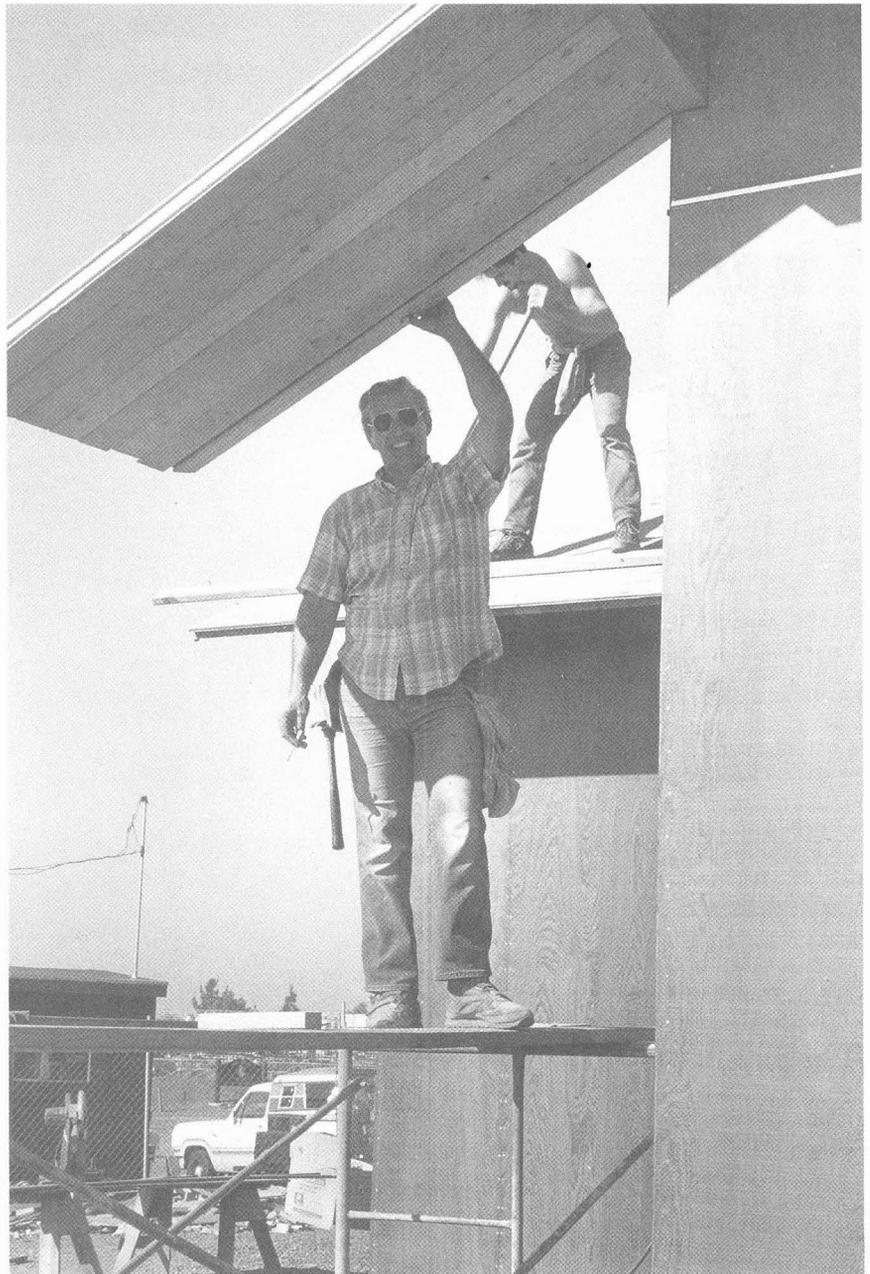
Two of the salmon were spawning. The Anglers set up a round-the-clock watch to protect them from poachers. The story made news. The hatchery project gained enormous new momentum.

This fall, the funds needed to finish the hatchery were still absent. One afternoon, a volunteer group of carpenters from Mare Island spent the day on the rafters, putting on a roof before the rains began. Only one was from Petaluma: Richard Sharke, father of a graduated Angler who was now studying wildlife management and forestry. Grateful Anglers served up a barbecue.

The fact that the hatchery is not yet finished is somewhat troubling to some Fish and Game officials, who provided major funding but encouraged the Anglers to build a smaller hatchery. However, Forrest Reynolds, anadromous fisheries manager for the department, had high praise for the program and said students had done “very good stream restoration.” He added that “I am happy that I was a strong supporter” of this environmental education program.

Whatever the future of Adobe Creek and the students’ hatchery, there is no doubt that the effort to save this stream has made a huge difference in students’ lives and the community. Amy Jacobsen, the current president of the Anglers, had wanted to become a surgeon but now plans a career in wildlife management. “After Tom Furrer’s class I don’t want to fix up people, I want to fix the environment,” she explained. Stephen Rochlin, who plans to become a fireman, intends to keep track of the project, “to make sure the next student generation keeps it going.” And “in the Petaluma area [the project] has perhaps made some members of the community, and possibly the city council, more aware than in the past about the need for better treatment of streams,” according to fishery biologist Bill Cox, at the Department of Fish and Game.

The Anglers, however, are intent on the moment: “We’ll have fish arriving in a



month and a half,” Furrer said in late November. “If we can’t use their eggs, we lose the year.”

“The steelhead in our creek is the only genetic strain of that fish,” added Amy Jacobsen. “We can’t save the African elephant or the grizzly, perhaps, but we can do this.” □

**Carpenter volunteers gave time and skill.**

*Joy Dorst is a landscape architect, State Coastal Conservancy intern and a graduate student in environmental education. Rasa Gustaitis is editor of Coast & Ocean.*

# From Other Shores

## GUATEMALA

### *Rescuing a Rain Forest and its People*

by **Mary Jo McConahay**

Driving through the newly created Maya Biosphere Reserve, ecologist Roman Carrera passes a group of men on the grassy roadside, stops his jeep a few hundred yards away, and quietly returns on foot to investigate. The men—one of them now wears a hood over his face—melt into a wall of green jungle.

Tomb looters? Traffickers in precious orchids or rare birds? Unarmed, outnumbered, frustrated, Carrera retreats. Later he brakes to avoid running over a deadly fer-de-lance, then gently prods it to safety with a stick. "Lucky for you we're conservationists," he calls back, waving goodbye to the venomous, velvety dark snake.

Roman Carrera, assistant coordinator of the reserve, is one of the young, passionate local ecologists battling to save the tropical forests of the Petén, the vast (22,000 square miles) northern region of Guatemala. To succeed, they must change ways of life and thinking before it is too late.

Seen from atop an ancient Mayan temple here, the forest appears to spread unbroken in all directions like an endless green sea. But on the ground, it is obvious that it is rapidly being destroyed. The Mideast crisis means entrepreneurs and politicians are looking with new interest at the oil-rich Petén, where extensive exploration and extraction have been dismissed as too expensive—until now. But resource managers say they worry most about destructive forces already in place.

About 250 settlers arrive daily in the Petén searching for land, or fleeing war-torn economies in neighboring El

Salvador and Nicaragua. Looters carry off anything portable, from birds and plants to skins of jaguars and other threatened animals. Loggers and farmers cut or torch so many trees that if they continue at the current rate, the Petén forests will be gone in 30 years. Any enforcement is difficult: the center of the region is about 300 miles north of Guatemala City, a grueling trip of some 14 hours over mostly dirt roads.

The devastation is not only a loss for the region, but arguably also for the world. As their habitat disintegrates,

thousands of species of tropical plants and animals—some not even inventoried yet—struggle against extinction. The uncontrolled burning not only clouds the air here, but may be contributing to a perilous change in the Earth's climate by adding to greenhouse gases.

If the job of the reserve managers is daunting, it is also dangerous. The coordinator of the Maya Reserve, biologist Hilda Rivera, has received death threats in the wake of her dogged pursuit of illegal loggers and those who would kill or capture "my animals." Rivera's mentor, the renowned ecologist Mario Dary, was assassinated in 1981, but Rivera continues politely to refuse the bodyguards offered by President Vinicio Cerezo, a biosphere supporter. "If I were to back down, or take protec-



*Market day in a commercial center in the northern jungles, where farmers and homesteaders of the Petén buy supplies. More quietly, locals also trade illegally in jaguar and alligator skins.*

*Photos: Mary Jo McConahay*

tion, what will it look like to my forest rangers, who face the same kind of pressures?" she asks.

Cerezo signed laws last April and June to create and protect the reserve, covering almost 3.5 million acres in the region bordering Mexico. The laws are being called a "model" for rain forest protection efforts elsewhere by some international conservationists, including James Nations Nakatsuma, a U.S.

government environment expert. Combined with reserves in Mexico and Belize, the Petén Biosphere will become the largest forest reserve north of the Amazon.

It is the task of Carrera, Rivera, and a few dozen colleagues in the government's low-budget National Council of Protected Areas to acquaint inhabitants of this wild and remote frontier region with the new laws, and with a largely suspect idea called "environmentalism." "Some days it feels like we're the bad guys in the movie," says Carrera.

To spend days with the ecologists as they travel dirt tracks to chat with farmers, oilmen, and loggers, or discuss the importance of not hunting immature animals with residents of a small town gathered at a corner store, is to see their philosophy of conservation in action.

"To be successful we have to satisfy the needs of those who already live here," says Carrera. "We don't say 'don't hunt, don't farm, put up with hunger.'" Residents can hunt, for instance, as long

#### AMONG UNCERTAINTY FACTORS: GUATEMALA'S ARMY

The army, still the most powerful institution in Guatemala despite nearly five years of civilian rule, is expected to play a crucial role in the conservation effort. Biosphere supporters are waiting in suspense, because that role is not yet clearly defined.

Reserve managers say individual

commanders are supportive and helpful. Other sources report that contraband logging continues in areas under army control. Skins, archaeological treasures, and illicit truckloads of tropical hardwoods still cross supposedly policed borders, the wood headed for sawmills in Mexico and Belize.

The northern region of Guatemala, known as the Petén, is one

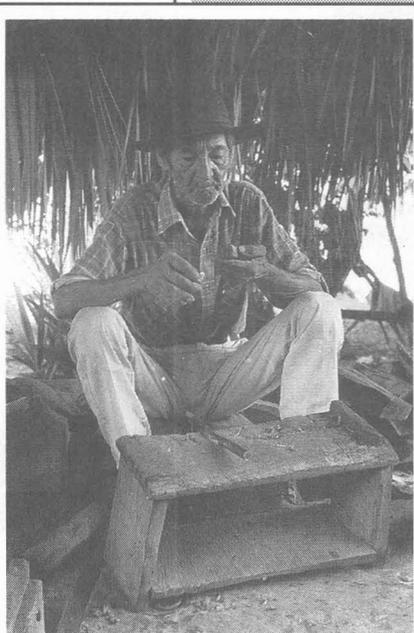
of two regions—the other is in the mountainous northwest Quiché department—where military sources admit guerrilla attacks are on the rise and hard to combat because of "unfriendly terrain." Some ecologists in the field report that army patrols search their camps and treat them suspiciously.

From the late 1950s to 1988, the army ran the Petén as a virtual fiefdom, granted logging concessions, and invited homesteading by slash-and-burn farmers. In that time the population grew from 26,000 to near its current 225,000. There are still more army personnel here than in any other region, and army officers still see themselves as custodians of a ruggedly independent population linked only tenuously to the central government. "There are people here who don't even know the national anthem," complains one officer.

The U.S. embassy in Guatemala City confirmed that in August it funded a new, strong signal radio system for the army in the Petén called "Radio Quetzal," which a military source says is aimed at the local population to develop "love of the nation and respect for its symbols." The army's infrastructure and communications capacity, far superior to that of civilian groups or government entities, could be an important asset on the side of conservationists. Nevertheless, in the field, conservationists face officials not only new to the idea of environmental protection but also driven by the lure of quick money and a history of impunity for members of the military. At one remote range post, for instance, biosphere guards said they recently told army men in civilian clothes to give up blue-crowned royal parrots and macaws they were transporting, but passed them through after the men showed guns.

"This is Gandhian conservation, we don't resist," said a ranger. A local military commander said instructions to men in the field are "firm" to protect flora and fauna.

One thing is certain: the army appears to realize that a pro-conservation attitude is good public relations. Officers are anxious to show visitors sapling projects now mandated on bases, and a new poster called "In Defense of the Environment" hangs on walls. It features a kitten in camouflage uniform happily reforesting with young plants. M/M



*Environmentalists are promoting wood crafts as an alternative to homesteading.*

of two regions—the other is in the mountainous northwest Quiché department—where military sources admit guerrilla attacks are on the rise and hard to combat because of "unfriendly terrain." Some ecologists in the field report that army patrols search their camps and treat them suspiciously.

## From Other Shores

as they consume the meat of the wild animals at home in the biosphere: wildcat, deer, tapir, and tasty tepesquintle, which looks like a 40-pound rat. But they can no longer kill the animals for the hide trade or sell their meat, considered a delicacy in restaurants from the Petén's resorts to the capital. Also, they can no longer help those who will pay to find jungle creatures for their private zoos.

A law signed in June has cancelled all logging licenses in the reserve's seven super-protected "nuclear" zones. The key to the local rain forest rescue vision lies in the biosphere's "buffer" zones, where ecologists are promoting jobs that would allow the Petén's residents not only to survive but also to develop a profound economic stake in keeping the forest alive: controlled harvesting of tree products such as chicle (for chewing gum), allspice, and ornamental palm leaves, which are highly valued by North American and European florists. They are also promoting "ecotourism," tightly monitored logging, and artisan work that enables a family of carvers to live for a year from the products of less than a single tree.

To support the buffer zone vision, the U.S. Agency for International Development has committed \$10.5 million to the Guatemalan biosphere project. In one of its more creative examples of foreign aid, the U.S. government has also required that the Guatemalan government earmark \$7.5 million of proceeds from the sale of donated surplus (P.L. 480) U.S. food, and make it available to the biosphere project. U.S. officials say they are backed by the spirit of amendments (118 and 119) to the Foreign Assistance Act, which say U.S. aid abroad must conserve biological diversity and tropical forests. The aim of aid for the biosphere, said an embassy spokesperson here, is to help develop sound ways to entice

hungry settlers to stay in the peripheral forest region and away from the more strictly conserved "nuclear" areas. "If you don't address economic hardship, they'll continue to use the forest as they're doing now—basically destroying it all," the spokesperson said.

Here near the ruins of a Mayan city where hundreds of chicle-gatherers live in traditional houses made of bamboo, thatch, and mud, a government conservation team thinks it is making progress after three months on the job.

Seventy-six-year-old Francisco Mendez, a community leader who has tapped chicle trees for 55 years, says that at first he was suspicious of reserve officials, as many people here are of anyone who comes from the central government. Now Mendez says, "The law must have a good reason. The mahogany out there is finished, and there is no forest left in some places. We misunderstood a lot."

These words are enough to keep Roman Carrera elated for hours, until he goes with a visitor to a shoe store in the provincial capital, Flores. Out of the back room, a salesman brings the shop's specials, a pair of women's shoes made of soft, striped tigrillo skin (\$41), alligator boots (\$100), loafers from the skin of young, wild deer (\$18).

"All from right here in the Petén," says the salesman proudly.

Carrera leaves the shop with his head down, but insists, "this is not insoluble."

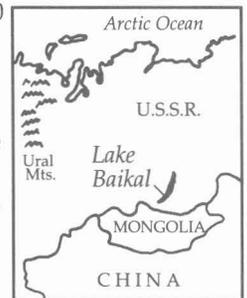
He boards the jeep, off to plan an environmental education project with the schoolteacher of a small jungle hamlet. "Remember, I said it's going to take some time, and we're just beginning." □

*Mary Jo McConahay is associate editor of Pacific News Service and foreign service correspondent for the San Francisco Chronicle.*

### SOVIET UNION

## Lake Tahoe—Lake Baikal Connection

Americans working to protect Lake Tahoe and Soviets working to protect Lake Baikal have found they can help each other by sharing knowledge and experience. Toward that end, plans are underway for a Tahoe-Baikal Institute, which, for starters, plans environmental camps on the two lakes next summer. Lake Baikal, in Siberia, is the world's biggest lake. Amazingly clear and a mile deep, it contains 20 percent of the world's nonfrozen fresh water. Lake Tahoe is one of the clearest large Alpine lakes in the world. Pollution is an issue for both.



In Baikal, the main concern has been discharge from a pulp mill; in Tahoe, nonpoint source pollution and erosion caused by development. Tahoe scientists have spent time in Baikal under sponsorship of the National Geographic Society. Siberian officials, scientists, and environmentalists visited Lake Tahoe under the auspices of the California Tahoe Conservancy, the state Resources Agency, and Direct Connection, a nonprofit youth exchange organization. Plans for the institute began to take shape in September, when a group of seven California officials visited Lake Baikal at the invitation of the Irkutsk Region of Siberia. "The primary focus will be on a youth exchange, at first, with young people working on the technology of research and monitoring," according to the Tahoe Conservancy's executive officer Dennis Machida. "But eventually, we expect the exchange to be broader." □ RG

## Book Reviews

### **Restoration: First Takes**

**Environmental Restoration: Science and Strategies for Restoring the Earth**, by J.J. Berger (editor). Island Press, Washington, DC: 1990. \$34.95 (cloth), \$19.95 (paper), 241 pp

As an emerging subfield of conservation biology, restoration ecology is gaining an increasing following among biologists, engineers, and policy makers. The recent formation of the Society of Ecological Restoration has formalized a field that formerly was merely an offshoot of other professions in wetland, forestry, and aquatic sciences. The restoration or "reclamation" of lands and waters degraded by human exploitation is not new; however, the attempt to restore these areas as functioning ecosystems is. Restoration ecologists use data and theory developed from studies of species extinction, ecosystem function, and species succession to create habitats that not only mimic the structure and appearance of particular localities but also result in self-sustaining systems that support a wide variety of species' needs.

John Berger is a strong proponent and chronicler of restoration ecology. He is the founder of the Restoring the Earth organization, sponsor of the 1988 conference on which these proceedings are based, and author of a book that provides examples of various individuals involved in restoration (*Restoring the Earth: How Americans are Working to Renew our Damaged Environment*, Alfred A. Knopf, 1985; Doubleday, 1987). In the conference, Berger was able to bring together over 1,000 participants and 200 speakers to focus on restoration ecology and policy. This volume contains some of those presentations.

Restoration ecologists come from a large number of backgrounds and include academics, land managers,

consultants, and policy makers. The volume attempts to reflect this broad perspective in offering sections on land use policy and on restoration of land and aquatic systems. The articles within these sections focus on individual projects, theories, and experience. Among habitats considered are rangelands, coastal dunes, forests, watersheds, estuaries, marshes, seagrass beds, and vernal pools. Although worldwide in its intent, the volume draws primarily from the American West, with many examples from California.

For those interested in gaining a broad perspective on the problems and issues associated with restoration ecology, this book is recommended; for those seeking some consistency to the field, it will be a disappointment. Some sections, especially those dealing with coastal dunes or use of mycorrhizal inoculation of container stock, are detailed and would be useful to the practitioner. However, many articles only recite principles or recommendations, or deal with problems so specifically that they have little application outside their locality or subject area. The table of contents is particularly misleading as many topics are strictly abstracts, much too short to determine what was said. In a few instances, these abstracts merely mention that the issues are "summarized" or "discussed," presumably at the time of the presentation. Why include these abstracts when they have so little to offer the reader? I can only conclude that the aim was to provide some "balance" to the book, which otherwise would be very spotty in its coverage.

There are many references in some of the articles, and these could be used to initiate a literature search for someone interested in the topic. What is particularly puzzling is a selected bibliography at the end of the book, compiled from

notes by John Berger. It certainly should not be viewed as complete, and one should be cautious in its use. Some of the articles are in government or agency reports and not readily available; others are not the best or most appropriate to a particular subject. None are annotated.

Overall, when viewed as a proceedings, the book covers the extent and tenor of the meeting. Restoration ecology is an exciting field. However, this volume cannot serve as a primer in the field, nor as an attempt to unify it. We may have a long way to go before ecologists have a common language and approach to the urgent need to restore our environment.

*Reviewed by Michael Josselyn, professor of biology at Romberg Tiburon Centers, San Francisco State University.*

### **To Plant or Not to Plant**

**The Simple Act of Planting a Tree: A Citizen Forester's Guide to Healing Your Neighborhood, Your City, and Your World**, by TreePeople with Andy and Katie Lipkis. Jeremy P. Tarcher Inc., Los Angeles: 1990. \$12.95 (discounts for multiple copies), 256 pp

The number of trees in United States cities is declining. We need to arrest or reverse the decline. For what it purports to do—organizing, energizing, and coordinating group tree planting projects—this book is exhaustive and the result of much experience. If this is what you are looking for, the book is highly recommended. (Although there are no species recommendations because of its wide geographic audience.)

But its basic premise—that indiscriminate planting of large numbers of trees is environmentally constructive—needs challenging. Trees can have negative as well as positive effects and no effort has been made to anticipate them. In an

## Book Reviews

urban area trees need constant attention, and this means money. The record of private and public tree maintenance in U.S. cities is dismal—the first item on the chopping block at budget time. Trees create problems. They block winter sun (important in an energy-short world), obstruct views, shed limbs, topple, intrude on power lines, penetrate sewers, create liability problems, and set neighbor against neighbor. The tree planters would have more credibility if they addressed these problems. Making love is fun. Who is to rear the child?

A more serious criticism is the ecological unawareness exhibited in the book. The emphasis on trees to the exclusion of other life forms disregards the way the natural world works. Most world ecosystems do not contain trees and their planting destabilizes or destroys these systems. Many metropolitan areas have natural areas within their borders. And there is a growing awareness of the ecological value of inviting native wildlife into the city and designing parks and gardens around this. Shrubs, wildflowers, grasses, and reliable small water sources may have more value than trees. Trees shade out or preempt space of these wildlife attractors. Native trees attract and nurture more native wildlife than do exotics, but the books makes only passing reference to native trees or to the wildlife value of what is planted.

Tree planting schemes clash head-on with a burgeoning movement to restore ecosystems. The restoration or re-creation of Midwestern prairies involves large-scale removal of invading trees and shrubs. Similar situations exist along the California coast and elsewhere. The psychology created by the tree planters goes directly counter to this movement.

Further destabilizing already severely damaged ecosystems cannot help. It is no coincidence that a prominent auto

manufacturer is vigorously promoting tree planting. It is a palliative that substitutes for coming to terms with an evolving ecological catastrophe. Embarking on a crash program addressing a single aspect of a complex problem seems to be the way we deal with crises. It reflects the same linear thinking that produced the crisis and avoids confronting it. Will we ever tackle the problem at the foundation? To do so seems un-American.

*Reviewed by Jacob Sigg, president of Yerba Buena Chapter of California Native Plant Society and formerly gardener supervisor of Strybing Arboretum in Golden Gate Park.*

### **Land Trust Successes**

**Starting a Land Trust**, by the Land Trust Alliance, Washington, DC: 1990. \$12.00, 175 pp

With a new land trust forming every week in this country, it's easy to see why a book called *Starting A Land Trust* is in demand. A wide array of questions asked by people eager to form a new nonprofit land conservation organization is addressed: What do we do first? How do we draw up a two-year budget when we don't have any money yet? How can we publicize ourselves when we haven't done anything yet? And, where on earth will our money come from?

This exceptionally helpful book gives not only facts, but also examples. The first chapter—and one of the best—describes week-by-week activities and decisions made by three successful land trusts in their first year. It's easy to relate to the people who made these land trusts happen. Another great part of the book consists of sample publications, including a land trust brochure, a newsletter, an annual report, a budget, land protection criteria, and articles of incorporation

and bylaws.

Until this book was released, there was no one source for land trust success stories across the country. People in California could use the State Coastal Conservancy's *Nonprofit Primer* (available at no charge), which was a prime source for *Starting a Land Trust*, but there was little that showed the broader picture. Now everyone in the United States who wants to use the land trust concept to protect important lands in his or her own community has a first-rate "how-to" guide.

To order, contact the Land Trust Alliance at 900 17th Street NW, Suite 410, Washington, DC 20006-2596. Phone: (202) 785-1410. Add \$3 for postage.

Other recent Land Trust Alliance publications: *Statement of Land Trust Standards and Practices; The Conservation Easement Handbook: Managing Land Conservation and Historic Preservation Easement Programs; Appraising Easements: Guidelines for the Valuation of Historic Preservation and Land Conservation Easements.*

*Reviewed by Janet Diehl, project manager for the State Coastal Conservancy.*

### **Get Away From It All**

**Walking San Diego: Where to Get Away From It All and What to Do When You Get There.** Lonnie Burstein Hewitt and Barbara Coffin Moore. *The Mountaineers, Seattle, WA: 1989. \$10.95, 240 pp*

Some 2.3 million people now vie for the good life in San Diego County and another 32 million visit each year. If you are one of either group, this book is for you. It's a marvelous guide to places where you can find solitude and scenic beauty; it's an indispensable handbook to the tucked away places that still provide San Diego with its unmistakable charm.

## Conference Log

*Walking San Diego* is first and foremost a well-organized guide, with accurate directions, easy-to-follow maps, and concise descriptions. The seasoned southern California traveler will find each walk is keyed to the Thomas Brothers maps! The book includes coastal and inland regions, with well-known and popular places like Torrey Pines and Mission Gorge, and wonderfully obscure places as well.

Far more than a "how-to-get-there" guide, however, this outstanding handbook also includes a wealth of information on geology and natural history and is generously appointed with photographs and drawings. The text provides intriguing historical descriptions linking the contemporary landscape to the very different not-so-distant past. Special chapters include a guide for beachcombers and bird watchers, a "Secret Gardens" chapter, and an aptly named section: "Bayside Ambles, Seaside Strolls." There is a skillfully illustrated appendix on the region's native chaparral flora and a very useful bibliography of other sources of information on the region. If you're intrigued by life in our southernmost coastal county, find yourself a copy of *Walking San Diego*. To order the book, write to The Mountaineers at 306 2nd Ave. West, Seattle, WA, 98119. □

Reviewed by Jim King, who often travels in San Diego County as project manager for the State Coastal Conservancy.

**Editor's note:** A Wheelchair Rider's Guide to San Francisco and Nearby Shorelines by Erick Mikiten is available at no charge from the State Coastal Conservancy, 1330 Broadway, Suite 1100, Oakland, CA 94612. Or call (415) 464-1015 if you would like to receive a copy.

Continued from page 8.

Clearly, the days of easy dredge spoils disposal are over. For information on the San Francisco Estuary Project's next meeting, call (415) 464-7990, or write to P.O. Box 2050, Oakland, CA 94604-2050.

### Conference on Open Space

An overflow crowd of some 600 people packed the 1990 International Open Space Conference held September 22-26 in Palo Alto. Cosponsored by the Midpeninsula Regional Open Space District, the U.S. Forest Service, the National Park Service's Rivers and Trails Conservation Assistance Program, and the East Bay Regional Park District, the conference combined morning seminars with afternoon field trips to view the Bay Area's major open space districts and parks.

Why the burgeoning interest in open space? "We are facing a crisis," commented conference chairman Herb Grench, general manager of the Midpeninsula agency. "Every county in California is projected to increase its human population by 20 percent or more in this decade." As urban dwellers feel an increasing need for open space, land prices rise, making parks harder to site and finance. In the San Francisco Bay Area, which has some of the highest-priced real estate in the nation, the amount of urbanized land could double in the next 30 years, according to one estimate. Speakers from Kenya, Japan, Taiwan, Costa Rica, and the United Kingdom provided their own insights into the open space issue, with emphasis on the close—but not readily perceived—relationship between the northern and southern hemispheres.

Attendees carried home some powerful economic arguments for keeping land as open space. Susan

Harris, of the National Park Service's Rivers and Trails Conservation Assistance Program, has put together *Economic Impacts of Rivers, Trails, and Greenway Corridors*, a resource book that presents examples and suggestions on how to win support for open space on economic grounds, such as: property values near greenway corridors tend to rise; local residents will spend money for greenway recreation; open space presents opportunities for concessions and events, as well as tourism potential; greenways are amenities that attract new or relocating businesses; and they reduce local government costs. To order the free book, call (415) 556-5751.

Sessions on farmland preservation drew a crowd. Although few farmers attended the conference, interest from others present showed that agriculture no longer ranks last—behind recreation, scenic beauty, and ecological protection—as a justification for leaving land as open space.

Topics in other sessions and field trips included the need to resolve conflicts between different recreational uses, especially the thorny issue of mountain bikers vs hikers; how to establish and maintain long-distance trail systems that cross county and sometimes state lines; how the Santa Monica Mountains Conservancy is working to create wildlife corridors, despite freeways; how to negotiate a land acquisition for open space and what to do with buildings standing on it; and what to do with an earthquake zone besides building in it.

The conference concluded with the decision to form Open Space America, a national grassroots group organized to preserve open spaces. For information on next year's meeting, contact Janet Cobb, board member of Open Space America at (415) 531-9300, ext. 2201, or write her at East Bay Regional Park District, 11500 Skyline Blvd., Oakland, CA 94619. □

## Letters

### **Biodiversity and Corridors**

Editor:

Carol Arnold's story (and the comment by Peter Grenell) in the Summer 1990 issue correctly describes the current interest in landscape corridors as a mechanism for enhancing the likelihood that California will continue to contain viable populations of our native flora and fauna. While not disagreeing about the importance of landscape linkages, I think that corridors, alone, will not ensure viable populations of California's plant and animal wildlife. In fact, an over-reliance on corridors will almost certainly defeat the goal of ensuring viable populations.

The primary problem facing many species is loss of habitat. Corridors can alleviate some of the loss by allowing for gene flow and the "rescue effect" of recolonization. When the primary habitat for a species is eliminated, however, corridors cannot avert the loss of that species from the regional biota. Protecting adequate habitat is the first necessity for conserving species.

This distinction is important but can be lost in the discourse about regional conservation planning. As an example, protecting riparian habitat as movement corridors that link larger habitat blocks is a legitimate conservation strategy. This is not the same thing, however, as protecting riparian areas as the primary habitat for many plant and animal species. For example, the Least Bell's vireo is a riparian habitat specialist, and setting aside large blocks of riparian habitat is necessary to ensure the species' survival. While that habitat may function as a corridor, the primary planning goal must be to provide enough habitat to meet the needs of the vireo; the biology underlying that decision has more to do with the minimum area needed for the vireo than with corridors.

The minimum habitat area concept is well understood in conservation biology.

In general, large habitat blocks have more species in them, at equilibrium, than do small blocks. Some of those species are "minimum-area" species and/or "interior" species, which require habitat patches of some minimum size if they are to remain in the landscape. When the large patch is fragmented, these are the first species lost. The best-known examples are migrant songbirds in eastern American forests, but it is very likely that we have our share here in the West (the Northern spotted owl may well be such a species). To retain such species in the American landscape, large habitat blocks must be set aside; not just one or a few, but many such blocks will be needed to ensure viable populations. While it is desirable that the blocks be interconnected by corridors, the first priority must be the habitat itself.

I appreciate the *Coast & Ocean* coverage of biological conservation. Establishing corridors (or "stepping-stone" habitat patches where corridors may be infeasible) is highly desirable, in the coastal zone and elsewhere. Corridors will not, however, solve the problem of eroding species diversity in California landscapes, and readers should persevere in their efforts to protect primary species habitat in large patches.

Chad Roberts

*Chad Roberts is a conservation biologist from Humboldt County.*

#### **Carol Arnold replies:**

I completely agree with Mr. Roberts that linkages and corridors alone will not ensure viable populations of plant and animal species. Identifying habitats and protecting them in sufficient size and distribution to preserve biodiversity should be the goal of any comprehensive conservation program. However,

properly designed wildlife corridors linking core habitats are an important aspect of the larger effort. As Mr. Roberts notes, these corridors, in themselves, can also serve as habitat for many species.

### **Leash the Humans**

Editor:

I read with interest the article on the subject of dogs on beaches and coastal parks (*Coast & Ocean*, Summer 1990). I still feel man is a greater menace to the land, environment, etc., than are dogs.

Rangers give three warnings before citing someone. I ask, why? Make the rules known and if someone violates them, cite them. How many warnings does the California Highway Patrol give before they cite



you for speeding? (I wish they gave three or two, or even one warning.) To the ranger who tells someone to leash their dog then looks in the rear view mirror and the dog is not on leash, cite them. The same goes for not picking up after the dog, or allowing it to destroy something. Rather than punish those who would obey the rules by saying you can't bring your dog, crack down on those who don't abide by the rules. Maybe word would get out and people might pay more attention to the rules.

I might add I support the areas that will allow me to take my dog and have abandoned those that will not. I no longer belong to the California State Parks Association. I now make my contributions to Golden Gate National Recreation Area.

Laura Kalogerou



JOHN MACIUIKA

## **Mystery Photo**

Tell us where one would have to go to consult this modern oracle. And what is Delphi West made of? These two correct guesses will win you the prize of a lifetime, a free subscription to *Coast & Ocean*.

### **Last issue's mystery solved:**

We are gratified to report that our last mystery photo well and truly stumped our readers—we did not receive one guess, correct or otherwise! That is, not one written guess. Our printer's rep, Al Porter, looked at the photo and said, "that could be anywhere. It could be . . . Fern Canyon." Got it in one, Al. But as he used to live in Eureka, he had a distinct and doubtless unfair advantage.



JOHN MACIUIKA

*Sketches on pages 3, 6, 48 by Ken Downing*

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