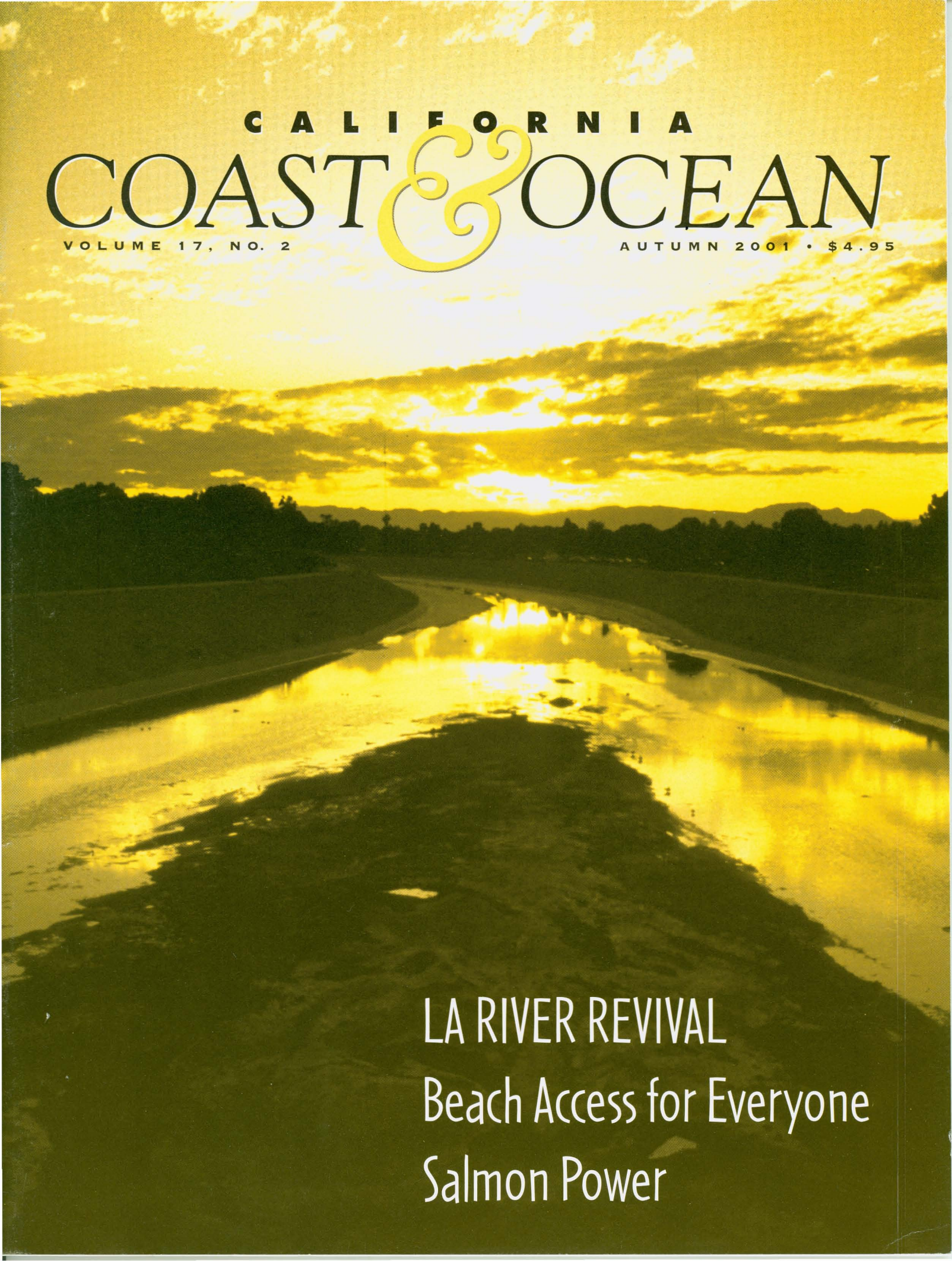

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LA RIVER REVIVAL
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Important Notice

This is the Autumn 2001 issue. A convergence of circumstances made it impossible for us to publish a Summer 2001 issue. All subscriptions will be extended to include the full four issues paid for.

LIBRARIANS: This is Volume 17, No. 2. The next issue will be Volume 17, No. 3, followed by Volume 18, No. 1. There will be no Volume 17, No. 4.

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Cover photo: The Los Angeles River near Reseda. Photojournalist Stacey Rain Strickler has been photographing the Los Angeles River for over five years, and in 1999 documented modifications to the lower reaches for the Army Corps of Engineers. She was the curator and featured photographer of the "And Yet It Is a River" exhibit as part of the grand opening of the L.A. River Center and Gardens in 2000.

Back cover: Coho salmon, drawing by Joseph R. Tomelleri

Coastal Conservancy

The Coastal Conservancy is a state agency that works with the people of California to preserve, improve, and restore public access and natural resources along the coast and around San Francisco Bay.

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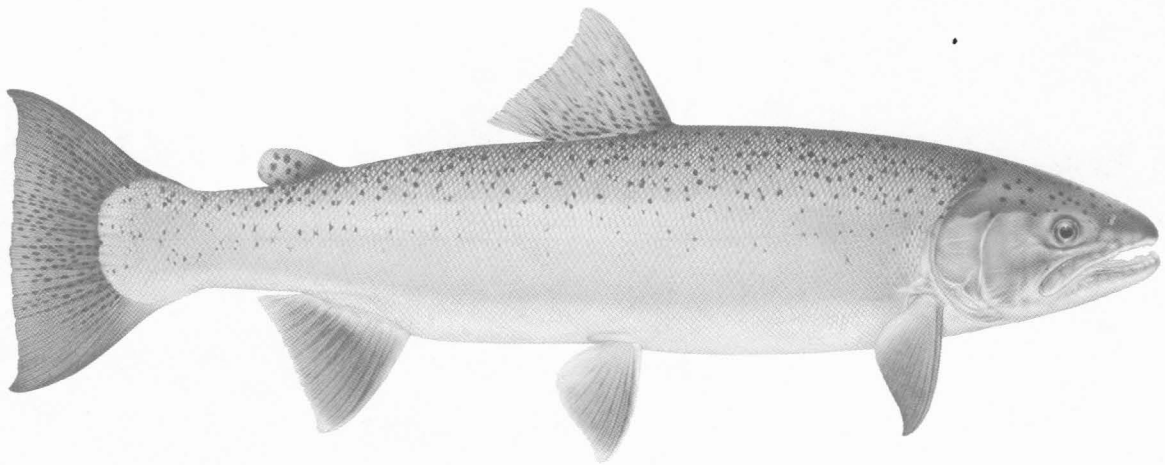
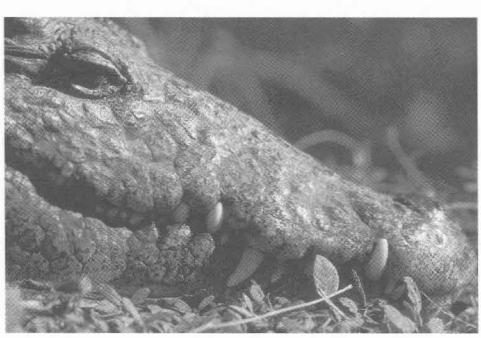


SUMMER STEELHEAD DRAWING BY JOSEPH R. TOMELLERI



ROBERT RATTNER

DEPARTMENTS

PHOTOS THIS SPREAD: STACEY RAIN STRICKLER

A decade ago, the idea that life could be restored to the Los Angeles River seemed about as realistic as a proposal to revive a woolly mammoth buried in the La Brea tar pits. The word "river" was not what came to mind at the sight of the gigantic, highly efficient storm drain carrying runoff to the ocean at freeway speed.

LOS ANGELES RIVER REVIVAL

RASA GUSTAITIS

But that was before the movement to restore urban streams swept the nation and the flood control project that had been an icon for the triumph of man over nature became a textbook example of river abuse.

A few citizens came forward with suggestions that parks be created along the river, and some even dared to dream that the Los Angeles River could become for Los Angeles what the Seine is to Paris: the thread that binds it all together. They imagined a river greenway winding through neighborhoods, linking communities with a natural sense of place.

Undeterred by rebuffs from authorities, river advocates grew in number and pressed their case with passion and patience. Los Angeles has less park space per resident than any other major metropolitan area in the nation, they pointed out. It spends many millions to import water while also spending millions to get rid of what arrives naturally. Why not, they suggested, turn disused riverside railroad yards into parks that could double as stormwater retention basins? Allowing the river to spread into such parks would provide an extra margin of flood protection while also recharging the aquifer and thus reducing the need for imported water. The Coastal Conservancy helped propel the movement by funding studies on recreational needs, flood control alternatives, and wetland restoration options.

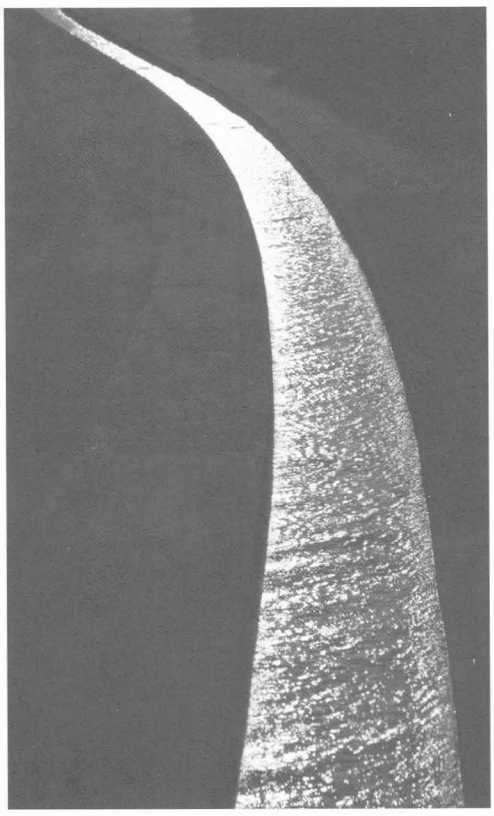
Like rivulets that gather to form creeks that flow into rivers, such ideas gradually moved into the political mainstream, leading to a dramatic change of course. By 2000, the Los Angeles River was the centerpiece of a wide-ranging, officially sponsored agenda designed "to restore balance" to the entire Los Angeles River–San Gabriel River watershed, a "double watershed" that drains 1,460 square miles of mountains and floodplain and is home to more than seven million people.

The political landscape shifted dramatically last year when voters passed Proposition 12, the $2.1 billion Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Act, and Proposition 13, the $1.7 billion Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act. Thanks to Assemblyman Antonio Villaraigosa, then speaker of the Assembly and a principal author of Proposition 12, more than $100 million poured into Los Angeles River projects.

Right away, proposals that had previously seemed unaffordable were translated into action. The governor endorsed the creation of the Los Angeles River Parkway within the State Parks Department and approved funds

Opposite: Bell Creek near West Hills, before it joins with Calabasas Creek, creating the headwaters of the Los Angeles River

Below: Sunglint on the low-flow channel



WORKING ON THE RIVER

Reflections of a Long-Distance Commuter

STACEY RAIN STRICKLER

MY HEART USUALLY SINKS A BIT when the plane begins its descent to LAX or Burbank airport, at that moment when a blue sky becomes hazy brown. Sometimes I see a distinct line across the atmosphere, with puffy white clouds in a clear sky above, thick smoky air, and a concrete landscape below.

When I catch sight of the Los Angeles River, my heart sinks again. It's sad to see at the macro scale what has been done to this great river in the name of progress and flood control. It's an ugly thing. Seeing it from the air is even scarier than looking at it while standing on a levee. That straight line of concrete, cutting through the San Fernando Valley and down from Griffith Park to Long Beach, looks like one of the many freeways crisscrossing Los Angeles, except that this freeway has water in it.

How do you "restore" a river encased almost completely in concrete, with houses, factories, and golf courses built right up to the levees, allowing no room for the river to move? From this aerial perspective, I find it hard to be optimistic.

Back on the ground, I am able to turn my gloom around quickly. Twenty minutes by car from Burbank Airport, my mood brightens as I walk along the banks of the river in Elysian Valley, past the sycamores and the benches and beautiful stone walls of the pocket parks built by North East Trees. In the background is the ever-present roar of the Golden State Freeway (I-5), but below me, in the river channel, is the sound of water rushing over beautiful cobbles brought down from the San Gabriel Mountains, and the sight of thick stands of vegetation and dabbling ducks.

These pocket parks remind me of not only the possibilities but also the new realities of the Los Angeles River. Beauty and a sense of place are being brought back to the river. People talk of the

NORTH EAST TREES

RASA GUSTAITIS

creation of a Los Angeles River Greenway, to weave the river back into the fabric of the neighboring communities. Sitting on a simple metal bench in the shade of a sycamore, I am once again instilled with a sense of optimism about the future.

I have been working on projects related to the Los Angeles River for most of the last decade, as a project manager with the Coastal Conservancy. Among the coastal watersheds with which the Conservancy is involved, this one is in many ways unique. Most of the watersheds my office deals with are far less damaged, though they are certainly changing rapidly or are threatened by development pressures. Saving what's left of these natural landscapes is a major focus for the Conservancy and its partners.

In an odd way, it is a bit of a relief to work in the Los Angeles River watershed, where the worst has already happened. After all, how much worse could it get? Although several years ago a state senator proposed that the river be converted into a truck freeway to relieve traffic congestion—which would certainly be worse—the Department of Public Works nixed the idea, reminding everyone that when a storm hits, this concrete channel fills with floodwaters rushing at freeway speeds to the ocean. I feel lucky to be working in a watershed that can only be improved.

An engineer once told me that the channelization of the Los Angeles River is used throughout the world as a model for flood control efforts. Knowing that provides extra incentive for creating another model for urban rivers: one that focuses on restoring natural values.

In spite of all that has been done to this river, it still lives. It is a river. Birds come, willows grow, fish swim. The *Los Angeles Times* recently reported that it remains very important as a stopover site for birds on the Pacific Flyway; indeed, in sheer numbers of birds the Los Angeles River may rival more intact habitats such as the Bolsa Chica wetlands in Huntington Beach.

The Los Angeles River proves the resiliency of nature. It encourages hope.

—Christopher Kroll

Top left: The Los Angeles River as it flows past Warner Brothers Studios in Burbank

Below are three pocket parks built by North East Trees. Left: Through Great Heron Gate, the path leads into Rattlesnake Park, so named because some snakes had to be relocated during construction. Center: Steelhead Park. Right: The Guardians of the River Gate leads into the Anza Picnic Area.

NORTH EAST TREES

for acquiring two key pieces of land: $45 million for Taylor Yard and $35 million for the Cornfield (a.k.a. Chinatown property). Other parks of varied sizes are in the works or being considered. Meanwhile, Proposition 13 money is funding varied studies and plans related to water quality in the Los Angeles and San Gabriel River watersheds.

"We've planted our flag in the Cornfield. We're working in Topanga Canyon, Taylor Yard," said State Parks Director Rusty Areias. "We're very interested in working with activists who have been in the forefront." Governor Gray Davis has made clear that urban parks are a priority, Areias said, and "we want to be as creative and imaginative as we can with our funding."

As the number of agencies and groups looking for a piece of the action has grown, some turf battles have developed. However, all involved now agree that the Los Angeles River has untapped potential. Although the County Department of Public Works (DPW) still stresses that "the primary purpose of the Los Angeles River is flood conveyance for the Los Angeles Basin," it has established a watershed management division within the flood control district it administers.

"The change in the Department has been nothing short of amazing," commented Dorothy Green, who has been working for reform in water policy for decades, was a founder of Heal the Bay, and is currently president of the Los Angeles and San Gabriel Rivers Watershed Council, which tries to coordinate the activities of many diverse groups in the double watershed.

A flash flood capsized this truck, which had been parked in the dry channel near downtown. Construction workers pondered what to do.

PHOTOS THIS SPREAD: STACEY RAIN STRICKLER

View from Flood Control Central

"If we can treat some of the urban slobber [air and water pollution], we could accomplish some greening," said Vik Bapna, watershed manager for the Los Angeles River at the DPW. Toward that end homeowners are being encouraged to plant trees and shrubs next to driveways, run rainwater from roof gutters into cisterns for use in watering yards, and take other steps that, each small in itself, can add up to big changes, just as raindrops add up to floods.

The 10-acre parking lot around DPW's headquarters in Alhambra will become an example. Three acres of concrete will be replaced with permeable paving, a portion of the rainfall will be retrieved for landscaping, and 200 trees will be planted to absorb water, reduce air pollution, and shade cars that now bake in the sun. The trees should shade 80 percent of the parking lot about a year after they are put in, Bapna said. Of the 1,700 parking spaces, only 60 will be lost. Construction is expected to begin at the end of 2002, but DPW first must find the funds. The price tag for these improvements is estimated at $6 million, mostly for the paving and trees, said Bapna.

Also in the works is a project to retrofit an entire small watershed. "We're looking at ways to see that no water from the Sun Valley watershed goes into the river," Bapna said. "Computer modeling says it can be done, using cisterns, dry wells, and regional retention facilities." The Department's consultant on both projects is TreePeople, a nonprofit urban forestry organization (see p. 8).

These demonstration projects are especially timely now because public and private entities are under pressure to clean up the Los Angeles River. The Los Angeles Regional Water Quality Control Board, which has jurisdiction in 88 cities in Los Angeles and Ventura Counties, has intensified enforcement against polluters and set tougher standards. New building projects must limit urban runoff. A plan has been adopted to completely eliminate trash in the Los Angeles River within 12 years.

Increasingly, many different actions are adding up to watershed-wide changes. For decades the DPW and the Corps of Engineers have dealt with the river on a massive scale, in terms of thousands of tons of concrete. Their responsibility is enormous: to protect a metropolis built in the floodplain from flooding. When it rains, many people who work for DPW can't sleep.

Much of the year the Los Angeles River looks harmless. In the City of Los Angeles it's mostly treated wastewater flowing in the middle, low-flow channel of the 570-foot-wide concrete riverbed (the length of a football field is 300 feet). But one winter storm can send a torrent roaring down that wide channel. The Corps "built" this river, as the engineers put it, between the 1930s and the 1950s to expel rainwater to the ocean at maximum speed. It is so efficient that it's a monster—a monster that sleeps most of the time, waking in a rage only when it rains.

"A raindrop that falls in the San Gabriel Mountains is in Long Beach in 12 hours. There's no time to prepare," said Bapna.

In North Long Beach, the "trash rack" creates a deadly whirlpool. This concrete and steel structure was installed to catch large debris before the river empties into the ocean.

The elevation drop from headwaters to river mouth is the same for this 51-mile river as it is for the 2,250-mile Mississippi, where the raindrop's travel time from Minnesota to Louisiana is more than two weeks.

The River's True Nature

When Spanish explorers first saw this river in 1769, it meandered among springs and wetlands, through green meadows, shrubbery, and dense stands of trees. The streambed was wide and sandy, and during the dry season much of the water seeped underground. In winter the river widened and sometimes overflowed its banks, though major floods occurred only rarely. The Chumash, Tongva and other native people lived accordingly.

The Spaniards founded missions and a pueblo by the river. Soon, water diversions and groundwater pumping began to deplete the natural supply. As cropland and livestock cultivation expanded, trees and wet meadows vanished, replaced by dry grasslands. As the city expanded in the floodplain, demand for water kept rising, and in 1913 the City of Los Angeles built the Owens River Aqueduct, draining Owens Lake. Then it reached farther, to the Sacramento and Colorado Rivers.

Los Angeles grew with no regard to the history of the river's behavior during heavy storms, or of the price others paid to satisfy the city's thirst. "The city mothers and fathers never had a civic thought in their heads when developing the city," said Dorothy Green. "It was always just, 'How do we get the most dollars?'"

In 1930, landscape architects Frederick Law Olmsted Jr. and Harland Bartholomew designed a plan for a network of parkways along the river to connect mountains, beaches, and other parks. Had that plan been adopted, the river would have had room to spread, and Los Angeles would have had a green heart, as New York City does in its Central Park, designed by Olmsted's father. But the plan was quickly shelved, and after disastrous floods in the 1930s, the river was converted to a freeway for water.

Now the Olmsted-Bartholomew plan has been resurrected. Although it can no longer be realized fully, "we're trying to recapture its spirit," said architect Arthur Golding, who has been working for the past dozen years with various task forces and coalitions trying to translate grand visions into specific options and projects in the river system.

Puzzle Pieces

Golding has lived in Los Angeles for about 30 years, but he first became aware of the Los Angeles River only in the late 1980s, when he met landscape architect Emmet Wemple while teaching at the University of

TreePeople's Summer Storm

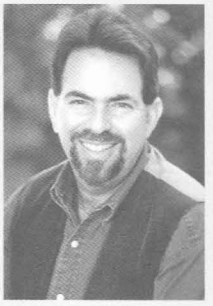
ANDY LIPKIS, president of TreePeople, was on the freeway, en route to a dinner where he would receive an award, but as he was a passenger, not the driver, he was free to talk by cell phone. So he told the story of how he and others persuaded the Los Angeles County Department of Public Works (DPW) that stormwater could be kept out of the Los Angeles River.

The nonprofit organization he founded in 1973 is dedicated to planting, "to improve neighborhoods, heal the wounds of urban living, and capture water," he said. In 1992, two events led the group to consider its work in an even wider context.

The first catalyst was the riot triggered by a videotape that caught several policemen in the act of beating a man named Rodney King. The second was the Los Angeles County Drainage Area (LACDA) proposal by the Army Corps of Engineers and the DPW to build walls on the levees of the Los Angeles River as an extra measure of flood protection for downriver residents.

Both, to Lipkis, were evidence of a severe disconnect. The levee walls would increase the river's capacity to carry stormwater to the ocean, but they would also increase the separation between residents and the river—much the way poverty and unemployment separated those who lived in the riot-torn parts of the city from more prosperous neighborhoods. In the wake of the riots, as the city searched its soul for the underlying causes of violence, Lipkis saw a lack of common sense, and a lack of respect for both people and natural resources.

"I looked at the really simple scenario for Los Angeles," he said. "We receive half the water we need in rainfall, and we throw it away. Then we spend hundreds of millions to import water. We challenged the Army Corps to look at alternatives to the LACDA project." The answer they heard was that no realistic alternatives existed.



MELINDA KELLEY

Andy Lipkis

Lipkis was among those who believed that sustainable watershed management was technically possible and would be economically beneficial. A grant from the U.S. Forest Service, which manages the Angeles Forest atop the Los Angeles River watershed, funded a gathering of engineers, architects, urban foresters, and other experts to write the necessary guidelines. They worked together for four days in 1997 and produced a set of best management practices (BMPs) for the Los Angeles River basin, based on the assumption that stormwater is an asset, rather than a disposal problem.

TreePeople created computer models to demonstrate that if adopted, these BMPs would keep stormwater out of the river. The Army Corps and DPW were not convinced. So TreePeople decided to install water-retention features on a real home in a typical flood-prone neighborhood in south central Los Angeles. The project was sponsored by the City of Los Angeles Stormwater Management Division, L.A. Department of Water and Power, U.S. Forest Service, U.S. E.P.A., City of Santa Monica, and the Metropolitan Water District.

"We put the word out to Mothers of East L.A., Concerned Citizens of South Central, First AME Church, and others: Anyone willing to make their house a demo? Rozella Hall, a friend of one of our volunteers, understood the importance of this to her community. She had a typical L.A. house, 1,200 square feet on a relatively small lot, in an underserved area of the city."

TreePeople installed water-retention features, including cisterns. They graded and bermed the lawns to serve as retention ponds, put in plantings, and covered them with a foot of mulch. They hoped to complete their work by winter 1997–98, so that they could prove the effectiveness of these conservation measures during storms, but by the time they were done it was August.

"So I thought: this is Hollywood," said Lipkis. "We can make a storm."

On a clear day in August 1998, a "hundred-year storm"—a storm so severe that it occurs, on average, only once a century—hit Mrs. Hall's home. With the cooperation of the DPW and other agencies, "we dumped 4,000 gallons of water on the house in 10 minutes." The water retention features worked as expected, and the water that fell on the property was

TreePeople educator Oscar Sánchez guides elementary school children working to green their campus.

TREEPEOPLE

absorbed into the ground. What fell on adjacent pavement ran into gutters, en route to the Los Angeles River.

The experiment demonstrated that "very simple changes, easy to do, have huge implications," said Lipkis. "That was a critical change point, especially for Public Works officials." DPW deputy director Carl Blum decided to work with TreePeople to retrofit an entire flood-prone subwatershed of the Los Angeles River, allocating $42 million that had been earmarked for a conventional flood control project.

The 2,700-acre Sun Valley watershed is "perpendicular to the river and has no storm drain system," said Lipkis. "Creek beds were turned into streets here—Vineland, Tujunga—and when it rains they become rivers again. The watershed is up to two miles wide in places, but at one intersection is squeezed down to 30 feet, a bottleneck for floodwaters." The city had been promising a storm drain system to residents for years. The conventional system it had planned would have taken 11 years to complete. Residents were unwilling to risk further delays.

At one of the monthly stakeholder meetings organized by DPW to help find solutions and determine feasibility for a watershed approach, the planners learned that flooded streets prevented many children from getting to school. "We said, 'We can't stop the flooding immediately, but let's figure out a quick solution for getting your kids to school,'" said Lipkis. In the end the school district paid for the bus, realizing that children's absence from school was causing loss of funds that were contingent on attendance. "Attendance rose," said Lipkis, more than making up for the cost of the bus.

Growing community support encouraged engineers from different departments to designate a set of BMPs that would be suitable for Sun Valley. "The goal was: no water leaves the watershed to the river. Everything is captured, recycled, or stored," said Lipkis.

"We used computer modeling to figure out what the mind can't—what the consequences would be of so many trees, so much paving, so many infiltrators, all kinds of combinations and alternatives. A very complex version was modeled on the [County's] web page. Engineers from a variety of agencies on the County-led feasibility taskforce were able to do calculations on their own, adding trees and other things and seeing the hydrographic changes that result. A cost/benefit analysis showed $175 million in water and conservation benefits. "Our goal is for the retrofit cost to be around $5,000 per household, and our assumption is that the benefits accrue primarily for the community at large, in terms such as water supply, flood control, energy savings, tree-shaded schools, soccer fields, and parks. As such, the retrofits should be financed with public funding, either as incentives, grants, or some such vehicle."

As he came to this point in his story, Lipkis arrived at his destination, the fifth anniversary dinner of the Los Angeles and San Gabriel Rivers Watershed Council, where TreePeople was to be honored for almost 30 years of work to make Los Angeles more livable. The organization now has a staff of 50 and a membership of 20,000; it can rally thousands of volunteers.

At the County public works department, Vik Bapna, watershed manager for the Los Angeles River, talked enthusiastically about the Sun Valley Project. "We're definitely going ahead," he said. About $100 million more in funding will be needed, but the $42 million already allocated is enough for a solid start.

—*RG*

TreePeople's web site is at www.treepeople.org; the Los Angeles County Department of Public Works' site is at DPW.co.la.us.

TREEPEOPLE

It was a beautiful August day and the sky was clear.

Southern California: "I came to know Emmet first by reputation because some of my professional colleagues knew all this stuff about plants. I wondered, how did they learn this? I went to what was supposed to be a very good architecture school [Yale], and we didn't learn anything about plants. Then I got to know him. He was a marvelous man, and he was interested in the river."

At about the same time, in 1989, Golding took part in a series of workshops sponsored in part by the city planning department and the American Institute of Architects, in which architects were invited to propose design solution for various city planning problems. He became aware of the Cornfield. "That led me to looking to recycling these large rail yards. And that led me to looking at the San Gabriel and Los Angeles Rivers together," said Golding.

Twelve years later, the Cornfield is about to be acquired for a state park that will offer residents a glimpse of their city's history. If you stand on the bluff on North Broadway at the edge of Chinatown, below you spreads the mostly empty railroad yard, which was rich farmland in the days of the pueblo. At the moment, the railroad yard is mostly a construction site for the Pasadena Blue Line, which will run through the Cornfield.

The latest conceptual plan for the new park, drafted by a team headed by Golding, includes nature study areas, a new magnet school, a Shaolin temple, and a museum and garden that will preserve the fragment of the historic Zanja Madre, or "Mother Canal," which carried water from the river to the Cornfield. The water flowed through a waterwheel that ran a mill, and on to the pueblo. Golding envisions "water flowing through the site, connected to the river." The waterwheel might be restored as well.

"A lot of people are interested in the idea of archeological excavation becoming a living exhibit as it goes on," Golding said. "This happened at the La Brea tarpits. I think it could happen here too." The specifics of the new park's future will take a while to work out. "It will be downtown's park," predicted Lewis McAdams, founder of Friends of the Los Angeles River (FoLAR).

While the Cornfield does not reach all the way to the river (it's a block away), it is close enough to become part of the River Greenway. The biggest Greenway park now in the works is at Taylor Yard, in the low-income Cypress Park neighborhood. "Taylor Yard is the crucible," says Melanie Winter, director of the River Project and principal organizer for a coalition of community groups. She has been fighting passionately for Taylor Yard's transformation into a park that would connect neighborhoods to the river and provide badly wanted fields for soccer and other active sports, as well as wetland habitat and flood protection. A 62-acre parcel with two miles of river frontage within Taylor Yard is "critical to any effort to restore the river and any nonstructural flood mitigation," according to Golding. A 40-acre parcel fronting on San Fernando Road is crucial for the active sports fields. How much acreage can be acquired will depend in part on the cost of buying development rights on the 40-acre property from the Lennar Corporation. To Winter, Taylor Yard is the test that will show whether the Greenway vision can be realized.

Some river advocates argue that State Parks' role is to preserve natural areas, that it should not be developing sports fields, but Director Areias disagrees. He said the Department understands the need for soccer and other active sports spaces in urban parks and has recently established a recreation division "for the purpose of getting back into active recreation."


RASA GUSTAITIS

Melanie Winter with Taylor Yard in the background

Greenway advocates also have their eyes on the confluence of Arroyo Seco and the river. Golding said "this is geographically and historically a very important place in Los Angeles. We ought to be able to see it. Today that confluence is buried beneath freeways and railroads and highways, and it looks more like a sewer outlet than a

coming together of two bodies of water." A substantial amount of land at the confluence is in public ownership.

The big pieces of the Greenway puzzle will take a while to put into place. Meanwhile, the most visible evidence of its existence is a string of 12 pocket parks, 11 of them built by North East Trees (NET), along the Glendale Narrows, an 11-mile stretch of the river in the Elysian Fields. Here the Los Angeles River actually looks and acts like a river. Willows grow along the banks, and ducks and shorebirds are often seen. The bottom was never paved because "when water comes through here, it hits rock and wells up, and it will dissolve concrete," explained Scott Wilson, the landscape architect and teacher who founded NET.

It is to the Glendale Narrows that poet MacAdams, who was the first to raise his voice in behalf of the river, has often

Top left: Taylor Yard with proposed Lennar development. Light shapes are proposed buildings.

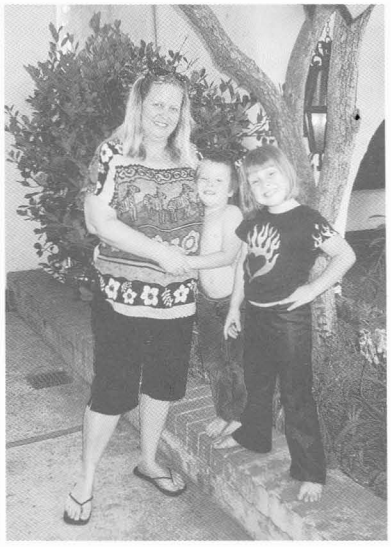
Bottom left: State Parks proposal with active sports fields and wetland habitat, with meandering stream next to the river. Stormwater flow would be allowed to spread here.

Below right: Taylor Yard today, with Dodger Stadium below

AERIAL PHOTOS COURTESY ARTHUR GOLDING & ASSOCIATES

brought people to see the living river since he founded FoLAR in 1986. They no longer have to pass through a diamond wire–studded double fence to get to the levee. Now there is a trail atop the levee, and those walking or riding on it can stop and rest under native trees in the delightful pocket parks.

The tiniest of these, at the end of Riverdale Avenue, is no more than some well-arranged rocks and a bench under a sycamore tree. This writer sat there with Melanie Winter on a late-summer evening, looking at the river as bicyclists and hikers went by. In the adjacent garden, a man was watering plants. He was filling his watering can from the river, walking all the way down the levee to do so.



PHOTOS THIS PAGE: RASA GUSTAITIS

Lynn Dwyer with her children, Sean and Summer

Another neighbor stopped by and asked whether we knew what had happened to the ducks. He had not seen any this year, and a few weeks ago the water had been bubbly and strangely green. Winter told him there had been a toxic spill, and authorities were still trying to find its source. The man said that he comes here often now that trees have been planted. He also brings out-of-town visitors to show them the river and the birds. As early as 6 a.m. people are walking and biking on the trail, and he walks too, sometimes as far as four miles. All this he told us without being asked. Clearly the river and riverside people are no longer strangers to each other.

Just downstream, another pocket park features a set of stations that illustrate some yoga exercises and poses—provided at the neighbors' request. Each little park is different.

Sometimes, NET had to persuade neighbors the parks would not be a safety hazard. When a house used for drug dealing burned down at the end of Oros Street, the Santa Monica Mountains Conservancy bought it for a park, and NET met with neighbors to find out what they would like. The adjacent homeowner asked for a barbed wire fence. "So our sculptor, Brett Gladstone, made steelhead with pointy tail and fin and nose, which did the job of barbed wire but was much friendlier," Wilson said. This little park is now a neighborhood asset, and another model of what Los Angeles parks can be.

Wilson founded NET in 1990, along with two women who joined him in a volunteer project planting trees on a hillside at Occidental College. With one of them, the dynamic Lynn Dwyer, as executive officer, NET grew and now has 24 employees and 80 diverse projects. These include a watershed plan for Arroyo Seco, funded by the Coastal Conservancy and others, to be incorporated in the Los Angeles watershed plan, making projects on this tributary eligible for Proposition 13 funds.

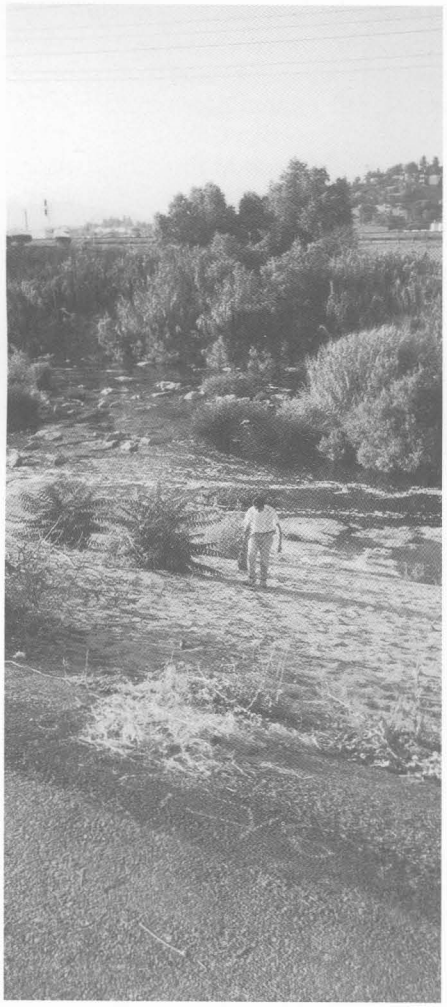
"We work opportunistically," Dwyer said. "We hear of something and we're all over it: How can this make the river more interesting? How can it bring in a new audience?"

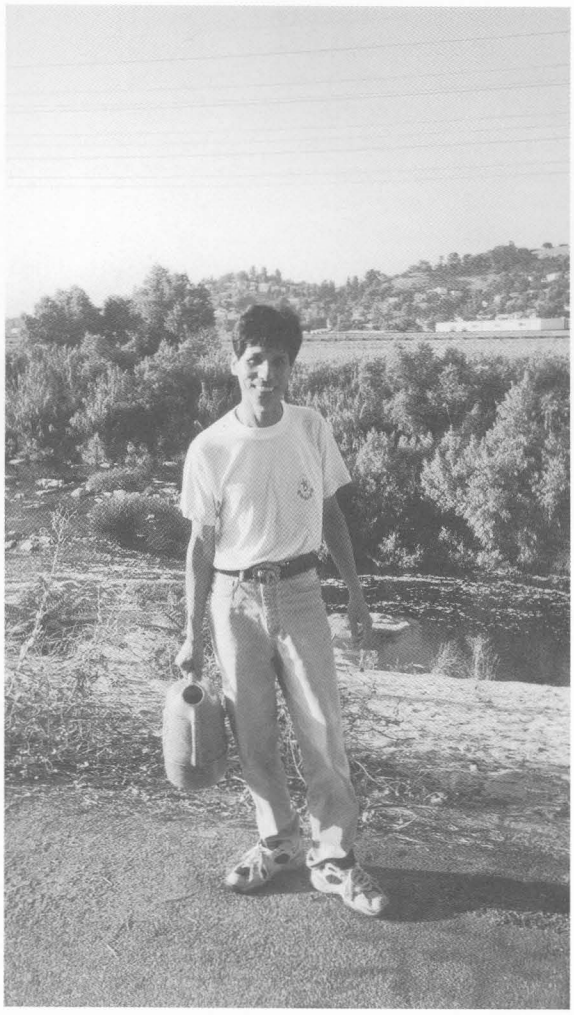
Like a River

In contrast to the way the Los Angeles River control system was built, the current river revival movement is organic, flowing from numerous sources, with meanders, eddies, and occasional rough waters. A substantial and controversial figure on the scene is Joseph T. Edmiston, executive officer of the SMMC since it was established in 1979.

Joe Edmiston

The SMCC manages 50,000 acres, and Edmiston is proud of its programs that bring children and families from economically deprived city neighborhoods to the Santa Monica Mountains. "Our heart is here and





TOP PHOTOS: RASA GUSTAITIS

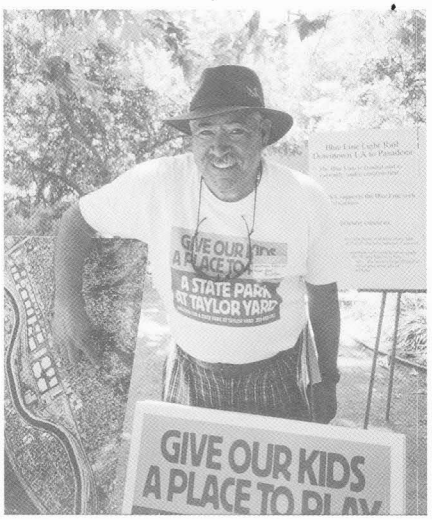
NORTH EAST TREES

Top: A Riverdale Park neighbor brings water from the river to his garden.

Bottom: Zanja Madre Park, off Riverside Drive in Elysian Valley, was completed in 1998 by North East Trees.

the heart of our constituency is here," he said, but the political consensus now is that urban parks should be made a priority, as parklands such as those in the Mountains tend to be enjoyed by mostly prosperous neighbors. The legislature has expanded the SMMC's responsibilities, and "we've been pretty successful with various greening opportunities in park-poor urban areas," Edmiston said. He has teamed up with FoLAR, NET, TPL, and others in park projects.

Using the flexible powers with which the state has endowed its conservancies, the SMMC can quickly buy land, then pass it on to public agencies, such State Parks, that are unable to move quickly. Through the SMMC and a joint powers agency he created, Edmiston has played a major role in river projects. These include the Cornfield acquisition and the transformation of a Spanish-colonial-style complex that used to be Lawry's Restaurant, a favorite site for weddings in Cypress Park, into the River Center and Gardens. Weddings still take place there, and there are new photo opportunities in the garden, where landscape architect Calvin Abe has created a water feature meant to represent the Los Angeles River. NET, FoLAR, and others have offices in the building.



RASA GUSTAITIS

From his home in the foothills of Mt. Washington, Guillermo Reyes looks out over Taylor Yard. He's a fifth generation resident, fighting for a park for his grandchildren.

Edmiston is known for his political savvy, his ability to accomplish what he takes on, and for expansionist tendencies. A territorial conflict flared between the SMMC and the new San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC). Secretary of Resources Mary Nichols, who worked to resolve it, said recently that it has been resolved: "They have agreed that they will work jointly and not attempt to work on projects in each other's territory that the other objects to."

On October 17, the Resources Agency published a report titled "Common Ground from the Mountains to the Sea: Watershed and Open Space Plan, Los Angeles and San Gabriel Rivers." Prepared by the RMC in partnership with the SMMC, it contains guiding principles for the entire double watershed, in particular: "to grow greener, enhance waters, and work together."

The more river advocates look at what seemed hopeless and unsightly, the more potential they see. They may be working with a worst-case example of river abuse, but like water wearing away stone, their vision is shaping a new future for the Los Angeles River. ■

STACEY RAIN STRICKLER

Sunset reflections on the river as it flows through farmland in the San Fernando Valley near Reseda.

Balloon-tired beach wheelchairs may be borrowed at many southern California beaches.

WheelCHAIR RIDING ADVENTURES

ERICK AND ELISA MIKITEN

PHOTOGRAPHS BY MALCOLM LUBLINER

WHEN A WHEELCHAIR-RIDING guy from Texas moves to California and hooks up with a skateboarding gal, the search for wheel-friendly beaches begins. So when Coastwalk and the Coastal Conservancy decided to publish a wheeler's guide to the L.A. and Orange County coast, we jumped at the opportunity to research and write it. The guide, to be published in September, chronicles our search for wheelchair access along 150 miles of coastline in the year 2000.

We drove every mile between Malibu and San Clemente and hiked about a hundred miles of trail. (Yes! We found that many usable trails!) We were prepared to find lots of barriers; instead we found a remarkably accessible shoreline, with many surprises.

In addition to world-famous beaches such as Santa Monica and Venice, which are packed with people, activities, and entertainment, we also found serene plant and wildlife refuges where shorebirds easily outnumbered people. We camped under the stars in a sycamore-shaded canyon at the foot of the Santa Monica Mountains, hiked through the fragrant sage of the coastal scrub at state parks, and dined al fresco in the beachfront town of Laguna.

Erick loved the urban beaches where he could cruise at high speeds on the bike trails in his sporty manual wheelchair. The only way Elisa could keep up with him was to jump onto her skateboard and hold onto the handles on the back of his wheelchair. Elisa's favorite spots were the Upper Newport Bay Ecological Preserve for its geological beauty, and Crystal Cove State Park with its botanical restoration area. Our happy medium was Laguna Beach, which is a charming, walkable town nestled around a coved beach.

What makes this southern California shoreline so accessible? A passion for exercise is part of the answer: concrete bicycle and jogging paths line all of Santa Monica Bay and much of Orange County's southern coastline. They are perfect for exploring on wheels. And if family or friends want to join in, they can rent a set of wheels at one of the many bicycle and skate shops. Erick traded his wheelchair in for a three-wheel recumbent bike for one high-speed afternoon.

Balloon-tire wheelchairs are another contributor to beach access. There has been a

huge effort to place these sand-worthy wheelchairs at public beaches, where visitors can borrow them at no charge. If you've never crossed the sand to the water's edge, the balloon-tired chairs can be a real adventure.

Of course, parks and beaches don't always fall neatly into the simple categories of "accessible" and "inaccessible." So in *A Wheelchair Rider's Guide to the Los Angeles and Orange County Coast,* we tried to include enough detail for readers to make their own evaluation. We described plenty of gentle trails, but also included some wheelchair-riding adventures that resemble mountain biking. The book also describes the features of restrooms and other facilities, since what is "accessible" to one person may not work for another. Maps, photos, and illustrations will help readers pick destinations.

There were more great sites than we could fit in the book, so we expect that people will be writing to us with their discoveries. Also, beach access gets better every year, so there will soon be more places to explore. We found that many new restrooms and ramps had been built on the beaches since Erick first began this research several years ago. And more improvements are under construction.We'd be delighted to tour L.A. and Orange County all over again for a later edition.

Meanwhile, as we write these words and the book is almost finished, we're a little wistful, wishing we had time for one more trip. ■

Erick Mikiten, an architect, and Elisa Mikiten, a planner, have offices in Berkeley.

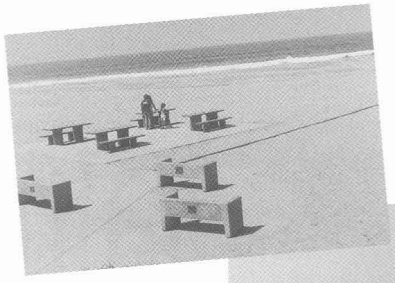
To receive a copy free of charge, write: Publications, Coastal Conservancy, 1330 Broadway, 11th Floor, Oakland, CA 94612, or call: (510) 286-0933.

Wheelchair riders at Bolsa Chica Ecological Reserve, Venice Beach, and the South Bay Bicycle Trail on Dockweiler State Beach (top to bottom)

TIPS FOR HAPPY COASTAL TRAVELING

AS WE TRAVELED, we learned a few things about comfort. First, even southern California beaches can suddenly become cool, especially in the early evening, so windbreakers are a must. Second, you always stay longer than you intend, so bring snacks and especially water. And finally, there's a lot of glare on a sandy beach: sunscreen, sunglasses, and baseball caps are a real help. We stuffed these things into a backpack and hitched it onto Erick's chair. We also brought binoculars for watching birds and whales. Erick likes to wear fingerless weightlifting gloves on longer hikes. Moist towelettes were handy for easy cleanup after dusty trails.

NEW BEACH ACCESS IN OXNARD: One man's dream, realized for everyone's enjoyment



THE ANNUAL PICNIC at Ed Hunt's Rehab Point Project had something to celebrate this year: four newly installed wheelchair-accessible picnic tables. Rehab Point is at Oxnard Beach Park in Ventura County, off Harbor Boulevard north of Channel Islands Harbor. The tables are at the head of a 900-foot paved path that curves around sand dunes to offer views of breaking waves and sunsets. The path continues across the sand as a runway of plastic mats, giving wheelchair users access to the beach.

All this is part of a project inspired by Ed Hunt, who turned a personal disappointment into a dream: to build a path to the beach for people with walkers and wheelchairs. Partly paralyzed by a stroke at age 70, he became a wheelchair user. During his recuperation, he found he could not even see the ocean, his favorite place to relax.

He contributed seed money, solicited donations, and got help from local contractors, the City of Oxnard, and a U.S. Naval Construction Battalion. Four years later, a 70-foot path was in place. Physically challenged but emotionally charged, Hunt kept working for more. He approached neighbors, friends, and organizations for donations to improve the project. Thanks to individual contributors, concrete benches were installed along the path.

"Ed had this vision. He was full of determination, and he wanted his dream to come true. And he wanted it for everybody," said Hunt's sister, Ruth Pambrun, at the July 22 picnic.

"Once my father had set his goal, nothing could get in his way," said Hunt's daughter, Miriam Green, who comes to the picnic each year from her home in northern California.

Among those who attended were veterans in uniform who led a flag salute. Hunt, who served in World War II, died in 1998. He spent his last years mobilizing the volunteer Rehab Point Project to carry on the work. The group strives to improve understanding between people with disabilities and others, and to help the disabled improve their communities. They would like Rehab Point to serve as a model throughout the country.

"When you become disabled and wheelchair-bound, you have to learn how to live again," said Linda Seibel, whose mobility is restricted by complications from diabetes and dialysis. The picnic was "the first time I've been to the beach in a long time," she said. "I tried before, but I couldn't get out on the sand. This is really nice."

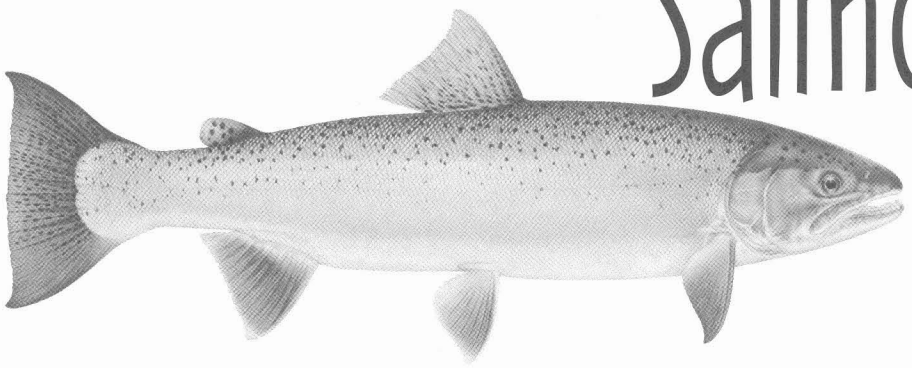
At the dedication Roy Chambers, president of Rehab Point Project, said, "Ed Hunt is probably kicking me now saying, 'Get going! What's next?'" After the official business of the day was over, children on bicycles and scooters wheeled along the path as their parents sat and watched from the new picnic tables. Just as Ed Hunt had dreamed, it was for everyone. ■

—Joanne Cunha

Wheelchair riders can now get close to the ocean at Rehab Point.

PHOTOS THIS PAGE: JOANNE CUNHA

Salmon Power



MICHAEL BOWEN
Drawings by Joseph R. Tomelleri

North Umpqua summer steelhead

A sea change in perception has spread through the state, generating energy and money for steelhead and salmon recovery. Stream activists, older conservation groups, government agencies, and landowners are working in different ways to restore a balance that includes these totem fish in our living communities.

JUST A FEW MILES from downtown Oakland, in the tidal marsh at the mouth of Alameda Creek, adult steelhead are occasionally seen swimming among dumped shopping carts and other debris, finning gently in the water. A more compelling example of nature's staying power is hard to find.

Somehow they come from the briny ocean, through the Golden Gate, to the eastern shore of San Francisco Bay, and arrive at this urban creek mouth. With sea-lice still clinging to their sides, they wait for autumn storms to raise the creek, allowing for a journey upstream to the spawning gravels of the Sunol Regional Wilderness.

Even in the modern era, the steelhead's timeless life cycle continues to unfold. Eggs hatch in headwater gravels, young spend one to three years in the stream of their birth before migrating out to the rich and dangerous ocean environment. After one to three years the adults return to their natal stream to spawn.

Unhappily, at Alameda Creek, as at many other places, a concrete abutment blocks upstream passage. These powerful creatures can jump over a 10-foot waterfall, but this dam is higher. The engineers who built it, to support tracks for the Bay Area Rapid Transit System (BART), apparently did not expect steelhead here. Like most of the five-plus million people who live in the San Francisco metropolitan area, they would have been amazed and distressed to see them languish and die here.

Fishermen had reported seeing steelhead here for years. In March 1998, a local stewardship group, the Alameda Creek Alliance, verified these reports and members began to document what they saw. Three or four adult steelhead appeared at the base of the dam every winter through 2000. With the help of National Marine Fisheries Service biologists, Alliance members have been lifting them over the barrier, thereby freeing them to spawn naturally in the creek's headwaters. Beyond the dam, Alameda Creek flows for many miles through pastures and parkland, winding gently through oak woodlands and cascading over the boulder-strewn canyons of "Little Yosemite" in Sunol Regional Park.

This is no long-term solution, of course. But the presence of the steelhead was inspiring to the Alliance, which is dedicated to restoring the health of the entire 650-square-mile watershed. Plans are now under way to build fish ladders, remove other barriers upstream, and increase water flow.

These events in a small degraded urban creek are emblematic of the enormous challenge facing those who seek to restore California's anadromous fish runs, both steelhead and salmon. Despite the near hopelessness of their cause, these warriors display a stubborn defiance of the odds.

In the good old days, old-timers say, you could walk across California's rivers on the backs of the salmon, and the sound of thousands of fish returning from the sea, churn-

ing the riffles to foam, was like a freight train coming upriver. Now the once enormous runs have diminished to a pitiful trickle, if they have not vanished entirely.

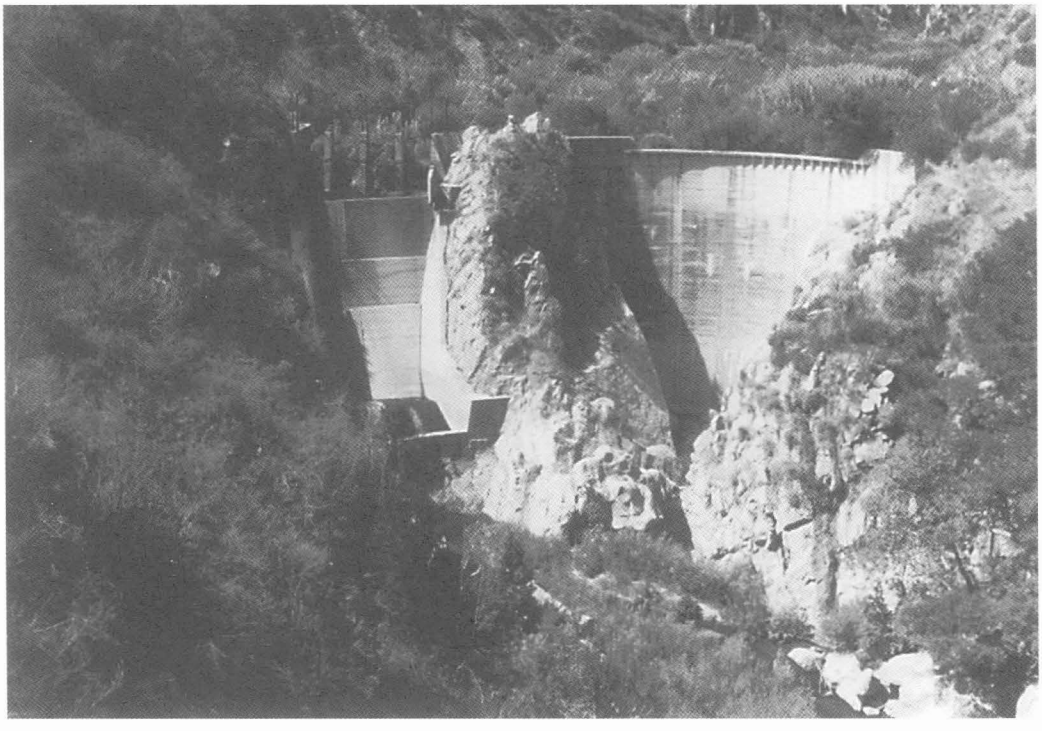
The causes are well known and well documented: careless, ignorant, and unsustainable land use practices, including mechanized logging and instream gravel mining; heavy livestock grazing without stream bank protection; pro-growth policies without regard for collateral damage; dams and diversions to serve agribusiness and development interests, whose voices and contributions have resonated in Sacramento and Washington far more than all the voices raised in behalf of fish.

By 1960, every major tributary of the Sacramento River system had been dammed. Some were completely dewatered. The once stately San Joaquin River even flowed backward at times, subject only to irrigation needs. The general public supported this "progress"; few understood or cared what it meant to watersheds and fish. The consequences are summed up by Dennis McEwan, a biologist at the Department of Fish and Game and author of the 1996 California Steelhead Management Plan: "If anadromous stocks are included, California leads the nation in species loss and impairment. Two-thirds of the native fish taxa in California are endangered, threatened, or extinct. Of the 214 Pacific salmonid stocks at risk in the contiguous United States, 39 occur in California. Of these, 20 were identified as being at high risk of extinction or possibly already extinct."

In the 1970s, a sea change in perception and policy began. Citizens, acknowledging an obviously sad state of affairs, repeatedly approved bond issues and other funding sources in hopes that efforts at fish restoration would not be too little, too late.

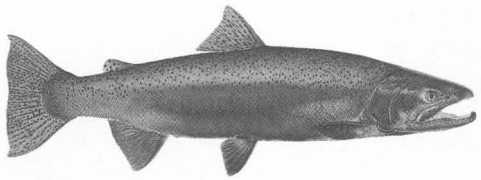
In 1986, Proposition 70 provided $10 million over 10 years for salmon recovery. This was a meager sum in face of the imminent loss of a priceless public resource, but it was an important beginning. In the 1997 budget negotiating process, salmon and steelhead hit a $43 million jackpot when Senator Mike Thompson (D-St. Helena) secured the passage of SB-271, which provides long-term dedicated funding to help restore coastal watersheds and their endangered fishes. This measure was recently reauthorized, allowing for the transfer of $8 million annually from Tidelands Oil Revenues—royalties for oil products extracted from State property—to provide fish recovery funds.

In 2000, Propositions 12 and 13 passed, making available millions of dollars for fish and habitat recovery. Proposition 12, the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act, allocates working capital for salmon recovery to state agencies, which in turn pass funds along to private conservation groups. The Coastal Conservancy now dis-



CALIFORNIA TROUT

Rindge Dam on Malibu Creek is obsolete.



Red steelhead

tributes $8.25 million a year in salmon and steelhead recovery funds. Fish and Game will disburse roughly $23.5 million in fiscal year 2001–2002 through various grant programs.

Nearly every stream with a historic run of salmon or steelhead now has a watershed-based group working to improve habitat, remove obstacles, and change laws and policies in the salmonids' behalf. These groups work with public agencies, private landowners, timber companies, and others. Frequent meetings, conferences, and workshops bring various interest groups together. The growth of observation and planning activity has been exponential.

Are Recovery Funds Being Put to Good Use?

YOU CAN NOW almost cross rivers on the thicket of private and government programs designed to bring the fish back. Yet questions remain: What does all this activity amount to? Are the available public funds being applied in a focused and effective manner toward a common and sensible goal? Or is this money simply generating bureaucratic tangles and paid work for consultants and public officials?

The answer is not obvious. It is obscured by a dizzying array of management procedures, scientific protocols, official policies,

EVER MORE DIVERSIONS

WHILE MILLIONS OF DOLLARS flow into restoring salmon and steelhead habitat, is enough water flowing downstream to support these fish? If a streambed is dry, the large woody debris carefully placed in it will be of no help.

California's gargantuan appetite for water has long been cause for major strife. The state consumes 25 percent of the nation's available fresh water supply, with 80 percent going to agriculture. Much of this water is sold at far below the dollar price it requires to deliver it, to grow subsidized crops.

Further exacerbating the potential for future water wars is anticipated population growth. By 2020, half again as many people are expected to live in California as do now. As urban sprawl extends into dry, rural landscapes, demand for residential water will also grow. Anything that depends on instream flows for survival will face ever greater competition for an already scarce resource.

Who gets water is determined by the State Water Resources Control Board, which can either deny or grant applications for water rights. The traditional rules of western water law, and the Board's implementation of those rules, have contributed greatly to a system that leads to altered and depleted stream flows that are not favorable to fish. Efforts to reform California's arcane water rights process seldom succeed in Sacramento.

By definition, an applicant for water rights or a permit from the Board seeks permission to divert water from instream. Little environmental analysis is required from applicants, and the Board does little to address the cumulative effects of withdrawals on instream flows and aquatic ecosystems.

Lately, the burgeoning wine industry has aggressively sought new water rights permits. Leapfrogging from the Napa Valley to the Alexander Valley to the Anderson Valley, and now to almost every coastal watershed, vineyards are spreading along California's coastline. In addition to deforesting oak woodlands, this new land use pattern is much more water intensive than such previous uses as open pasture or timberland management.

Given that it is always easier to seek forgiveness than permission, many water rights permit applicants build storage and diversion works prior to Water Board approval, then seek post-construction permits for what is by definition an illegal diversion. According to Stan Griffin, water rights advocate for the conservation group Trout Unlimited, more than 100 such applications for water rights and diversions within the Russian River are pending before the Board. In a July 1998 staff report, the State Water Resources Control Board identified 121 reservoirs without any apparent water rights on the Navarro River, a condition that vastly diminishes important fish flows but that the board has chosen to address through "watershed stewardship programs," which are generally uninvolved in water rights issues. In other words, no corrective action has been taken.

Even while conservationists attempt to work with the State Water Board, the National Marine Fisheries Service, and the Department of Fish and Game to halt the dewatering and over-appropriation of streams through the permitting process, water development in the coastal zone continues. Diversion from headwater streams and tributaries damages habitat essential for the recovery of endangered fish species, including listed salmon and steelhead. The critical question—still unanswered—is, How much water needs to remain in the streams to maintain viable and functioning ecosystems?

Under current water law, water can be claimed only for diversions. California Trout once applied for water to be kept in the stream where it would best protect fish and wildlife. The State Water Board obtusely rejected the application because no plans for a diversion were included. The decision was appealed, but the State Supreme Court upheld the Water Board's decision. In an eloquent dissent, Justice Cruz Reynoso argued that if instream water rights were recognized, then groups like California Trout would be on an equal footing with other appropriators and wouldn't have to jump in and participate with every application process to ensure that enough water was set aside to protect fish and wildlife resources.

—MB

funding requirements, and sheer verbiage. Landowners blessed with remnant runs of salmon grumble that they seem more like a curse because of all the gobbledygook they have to wade through to get anything done. Citizens working on restoration have complained that it takes so long to get permits for projects that time windows close, plans expire, and independent contractors cannot afford to carry on.

"A couple of years ago the high scrutiny on instream restoration efforts delayed and even killed some good projects," says Doug Simmonds, of the Gualala River Watershed Council. "Permit streamlining has allowed that work to proceed," he adds.

Exacerbating the situation is the short staffing at agencies mandated to distribute and use funds. The Department of Fish and Game and other agencies have been overwhelmed by proposals and simply cannot process applications as quickly as grantees expect.

In considering how recovery money is being spent, it helps to remember that we are trapped in the ignorance of our own time. A case in point: In the 1970s many restoration dollars went into removing large woody debris from streams to help salmonids upriver. Now large woody debris is being placed in streams to provide "habitat complexity" and protect juvenile salmonids. Habitat restoration is still in its youth, and we learn as we go.

Today many of the Department of Fish and Game's disbursements go toward closing old logging roads on private timberlands to diminish the flow of eroding sediment into streams. Some critics question the use of public money on private land to repair damage resulting from destructive forest management. Others argue for more diverse approaches to restoration, such as dam removal and landslide stabilization.

More informed policies and practices might grow out of the Citizens Advisory Council established in 1983 by the California Senate to help sort out priorities. Its 11 members include commercial and sports fishermen, fisheries scientists, Native Americans, and members of the public. They bring together a wealth of experience, but only recently has enough funding materialized to implement the recommendations they make.

To assure maximum benefit for salmonids, however, citizens must stay vigilant, participate in the shaping of policy and distribution of public funds, and work toward the recovery those funds are meant to secure. As they undertake projects and seek funding, they are also pressing for higher standards. In July California Trout—a nonprofit group that works to protect and restore salmonids and their habitats, and to provide quality angling adventures—issued a white paper calling for strict accountability in the area of steelhead recovery, including the establishment of clear baseline information, goals and objectives, and a schedule for accomplishing the lofty goal of species recovery.

HELD POAGE LIBRARY

Loggers from the old Gualala Mill take a lunch break on a log skid road that had been a salmon stream, circa 1905.

Few Saw What Was Coming

BACK IN THE 1940s, those lucky enough to fish for steelhead had their pick of bucolic settings. Herbert Hoover liked to cast his fly on Woolley Creek, tributary to the mighty Klamath River. Chief justice and former governor of California Earl Warren must have cast his line at the mouth of the Gualala River, for a photograph of him, proudly displaying two sizeable steelhead, hangs in the Gualala Hotel. Far to the south, Ed Henke, before earning 49er football fame, took his share of southern California steelhead from Matilija Creek.

California's unusually diverse landscapes and climates supported scores of runs and varieties of steelhead and salmon. Steelhead, in particular, thrived in wildly different habitats statewide, from the desert washes of the southland to the rugged Smith River near the Oregon border, from the Sierra Nevada peaks to the Golden Gate, and in nearly all coastal watersheds in between. The biological wealth returning home from the sea each year was staggering. Among Ventura County's cobble-bottomed, deep-pooled streams, Matilija Creek alone hosted nearly 5,000 fish in 1943. In Humboldt County, the Eel River's legendary runs approached one million salmon and steelhead.

Anglers stood at fog-shrouded, redwood-lined banks throughout Humboldt and Mendocino Counties in their pursuit of the "silver ghost." The meals, accommodations, and services they purchased generated important revenue for coastal economies increasingly dependent on tourism.

Few saw what was coming. By the 1960s, the good old days were just a memory. Any local businesses dependent upon anglers withered and died. Today, the entire population of southern California steelhead is about 500. The Eel's runs are in the low thousands.

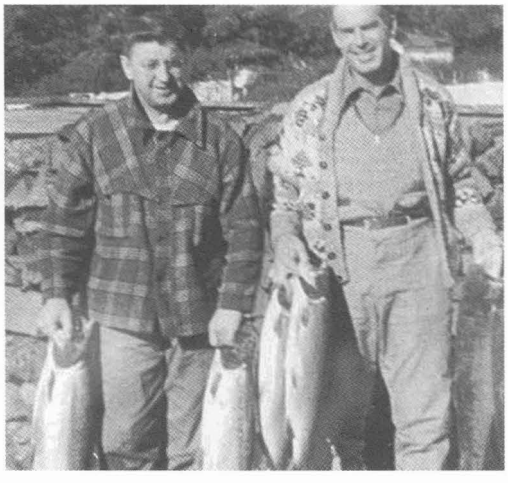
The wholesale collapse of the coho salmon, a species sharing many of the same habitat needs as the steelhead, reflects this alarming trend. The estimated statewide spawning population has fallen from the 1940s number of at least 200,000, perhaps as much as 500,000, to well below 5,000 in 2001. As of early September, the Fish and Game Commission had not yet decided whether this decline warrants species protection under the California Endangered Species Act, and if so, how that decision will affect regulations for various land use practices.

When the devastation first became apparent, and as the situation continued to deteriorate, public forums were organized to see what could be done. These gatherings often degenerated into blame games in which Indians pointed at fishermen, fishermen returned the favor and blamed seals too, loggers blamed merganser ducks, and environmentalists blamed everyone but themselves. From the riverbank to the state capitol, the blame shifted and rotated. This pattern provided state and federal officials with a convenient way to avoid, at least publicly, the inevitable conclusion that only substantial changes in land use practices would reverse the downward spiral.

Citizen groups continued to organize, however, and attempted to attack the basic causes, especially the inexorable tide of development. They scored a stunning victory in the early 1970s against the Los Angeles Metropolitan Water District juggernaut by defeating the proposed Dos Rios dam, which would have turned the Eel River into a series of flatwater ponds, capturing wild green coastal waters to send south.

Meanwhile, state and federal officials continued to follow their standard recipe for ameliorating habitat destruction. Can't stop the dam or regulate the flows below it? Build a hatchery at its base. Timber harvest too tough to regulate? Give locals hatch boxes to place in streams increasingly choked with sediment washing down from inappropriately constructed roads and landings in timber harvest zones. It was convenient to have blind faith in fish culture, unsupported by quantitative analysis of results.

Salmonid populations continued to collapse, causing citizens to question the original mission of the hatcheries: replacing natural with artificial production at equal or greater levels. Only recently has the hatchery system received significant scientific and financial scrutiny. Hatcheries have been found to be costly and with low productivity relative to healthy river systems. More importantly for the long-term survival of the species, they are incubators for disease, and are likely diluting diverse gene pools and interfering with genetic codes that have allowed fish populations to survive since the last Ice Age despite disease, inhospitable conditions, and even the heavy hand of mankind.



PHOTOS COURTESY GUALALA HOTEL

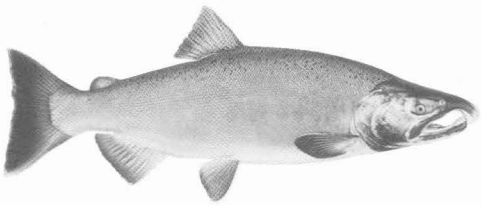
Above: Chief Justice Earl Warren had reason to be pleased. Right: Actor Fred MacMurray (right) went fishing with a friend.

What, Then, Is Being Done?

IT IS NOTHING SHORT of miraculous that populations of salmon and steelhead remain, though hanging on by their fins. Californians have acknowledged the severity of the problem, largely dispensed with the unproductive process of fault finding, and provided funds for recovery work. Collaborations between various agencies and citizens groups are increasing and expanding.

At the Department of Fish and Game, new biologists have been hired to conduct environmental analysis at levels necessary to ensure that proposed development projects do not unavoidably disturb salmonid habitat.

At the North Coast Regional Water Quality Control Board, staff has grown from 60 to 135 within the past two years, and a new Regional Watershed Management Division has been created. The Board is now better able to protect and maintain water quality, monitor land use practices, and assist landowners in meeting the complex legal requirements of the Clean Water Act.



Coho salmon

Among major problems facing these efforts is extreme short-staffing in the enforcement division of the Fish and Game department. A combination of low pay, staff attrition, and ensuing recruiting difficulties—all of which stem from a lack of support in the capital—have crippled the division. Despite the dangerous nature of their work, which includes everything from arresting armed deer poachers to stopping illegal water diversions from streams, 240 wardens are expected to cover the entire state—with only one-third of them working at any time. They receive roughly half the pay of the average police officer, and 39 percent less than Highway Patrol officers. At a time when highly capable and well-educated candidates are most needed to deal with increasingly complex resource issues, a new warden can expect only $34,000 per year. That's not very enticing, especially since the first assignment is usually to a major metropolitan area, like Los Angeles, where the cost of living is high.

In considering priorities for public investments, interesting value questions arise. Should millions of dollars be spent in a southern California stream where fewer than a hundred adult steelhead remain, or should those funds go to the north coast, where those dollars may buy more because fish populations are more robust and the chances for full and rapid recovery are much better? Put another way, is it reasonable to measure success in terms of cost per fish recovered, or should our priorities favor such factors as genetic diversity or species range?

Although these questions remain unanswered, this increased activity and scrutiny has led to unexpected partnerships and coordination between landowners, government agents, and concerned citizens.

Northern California fishery interests joined with some San Joaquin Valley growers recently to oppose a water grab by the Westlands Water District that would have taken Trinity River flows, subsidized their delivery south, and then provided them to Westlands at subsidized prices to grow subsidized crops on land that is highly contaminated with selenium and other substances.

Far to the north, the little town of Fieldbrook, in Humboldt County, secured a grant to assess the merits, difficulties, and effects of redesigning local plans and ordinances to conform with geographical watershed boundaries rather than arbitrary political boundaries. Such a bold step would allow local governments and concerned citizens to take charge of their watersheds and manage them holistically.

On the Mendocino coast—scene of frequent battles between large commercial timber operators and local residents—a new spirit of cooperation is visible.

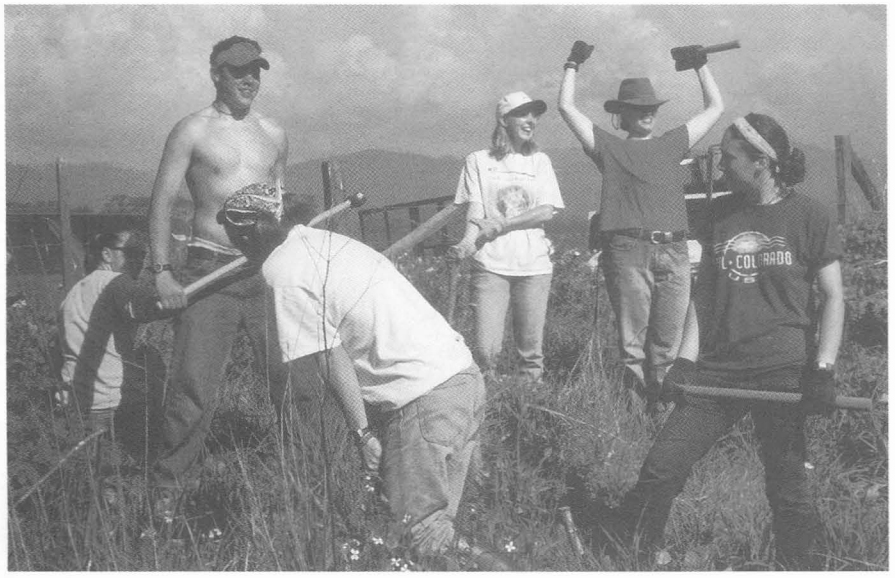
For years land ownership and politics in Mendocino County were closely related and straightforward: Louisiana-Pacific (LP) and Georgia-Pacific (GP) owned most of the commercial timberland, and, well, money talked while other things walked. LP and GP had provided jobs and benefits for as long as people could remember. Of course, cynics claimed that the timber company CEOs were more interested in dividends and quarterly performance than

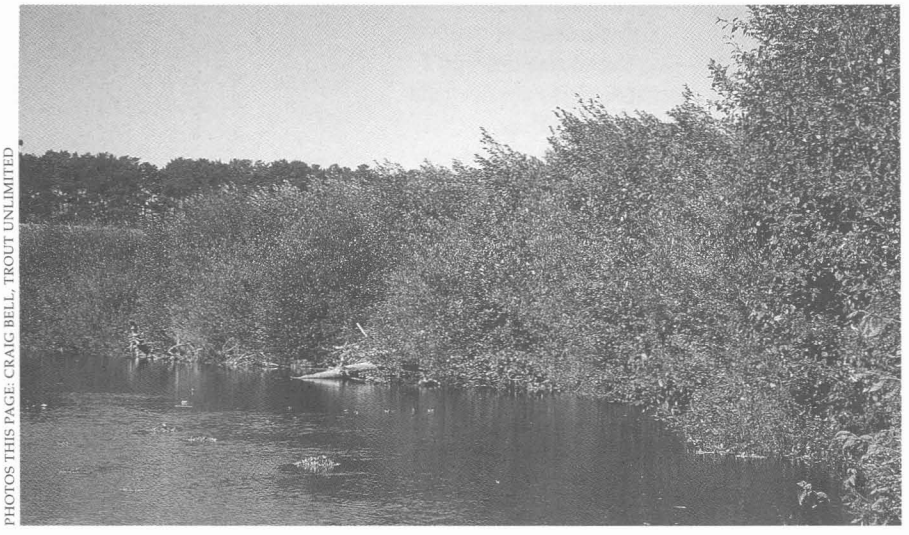
TOWARD A NEW SALMON ECONOMY

FOR ALL THE TROUBLES they face, salmon still inhabit the soul of the Pacific Northwest. Even though humans play awkward midwives to many salmon—barging them around dams to reach the ocean, or slicing them open to incubate their eggs in plastic cages—the fish leave their imprint on the place where we live. In diminished numbers they still connect ocean denizens and land dwellers in a bond that has been recognized since the days of the first peoples. Just as salmon once brought food for bear, human, and fir tree to the furthest reaches of our watersheds, they tantalize today with a dream of a place in which people can harvest what we need and stand back while the rest of the wild fulfills its own destiny.

That dream of living with the salmon and healing the relations between our species has motivated hundreds of initiatives by citizen groups and entrepreneurs throughout the fish's range. It has spawned watershed councils, fish-rearing projects, and bronze sculptures, and led otherwise sedentary individuals to spend Saturdays pulling brush and planting trees. It has moved some fishermen to handle their fish like gifts instead of cargo, and fish-buyers to value the difference between a factory fish and a wild fish. These broad-based efforts offer the most hope that humans can again show respect for the salmon in the fabric of our way of life, and work out mutually beneficial terms for sharing the North Pacific basin with them. By doing so, we can begin to develop the principles for cooperation with one another and the rest of creation that will allow not only salmon but salamanders and spruce trees to make their way in the world on a fair footing with Homo sapiens.

—Seth Zuckerman
from Salmon Nation: People and Fish at the Edge, *Ecotrust, Portland 1999; www.salmonnation.com*





PHOTOS THIS PAGE: CRAIG BELL, TROUT UNLIMITED

Top: Years of cattle-grazing denuded the bank of the Garcia River.

Center: A North Coast AmeriCorps planting crew worked on the riverbank.

Above: Garcia River bank after restoration

in sustainable harvest practices. Like strip miners, when claims played out they would pull out. As harvestable redwood diminished, it began to seem that the cynics might be right.

And so they were: within three years of each other, both LP and GP sold their land base and walked away from what at least one registered professional forester has described as a "boneyard."

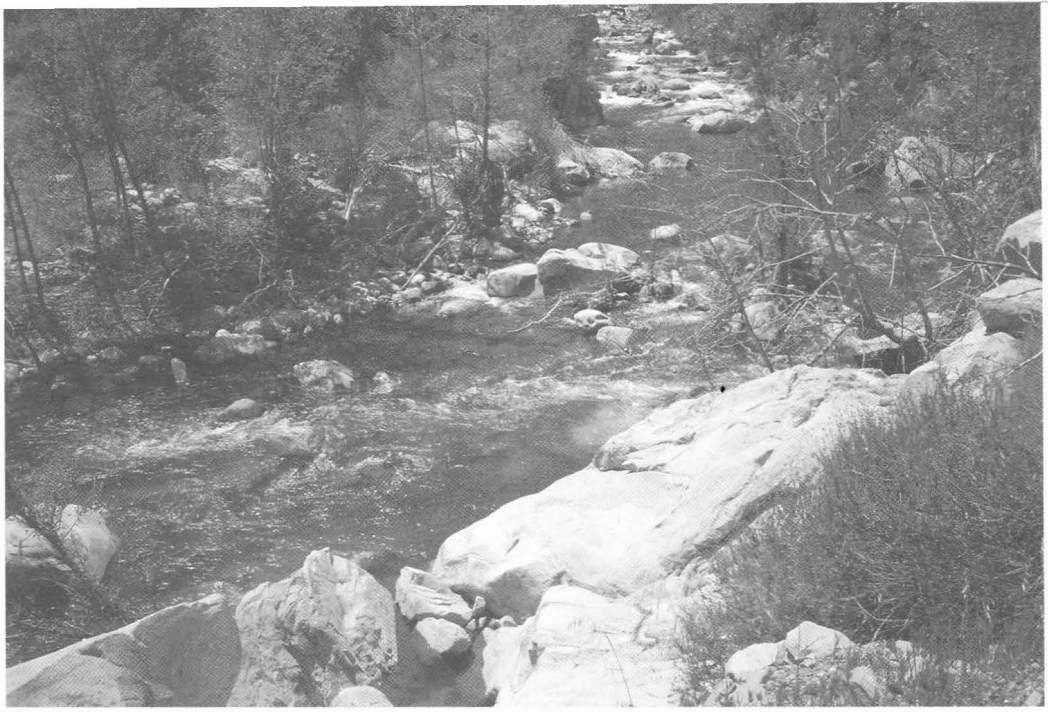
Many local residents feared that the stripped timberlands would be sold to developers, generating a development boom on this rugged and coveted coast. Instead, LP and GP sold to dark horse timber companies, including the Mendocino Redwood Company (MRC) and Hawthorne and Campbell Group. MRC had been formed by Donald Fisher, cofounder of the Gap clothing store chain, expressly for the purpose of acquiring LP's holdings. To say that these new landowners were in a difficult position would be a gross understatement. They had acquired a severely degraded land base with little salable timber, and what there was to sell would have to go to a depressed market. Moreover, the distrust earned by their predecessors has come with the title to the land.

Yet these companies, led chiefly by the MRC, have brought a corporate philosophy to their operations that is different from the one long familiar here, and have defused much ill will by launching some serious recovery efforts. In an article in the May/June issue of *Fly Rod and Reel* magazine, Ted Williams tells how MRC helped Trout Unlimited (TU) improve fish habitat on the Garcia River:

> In its first year of existence MRC spent $3 million moving and stabilizing fish-killing roads, then committed $4 million for fiscal year 2000. . . . MRC gave Trout Unlimited unlimited access, handing over all maps, all road-maintenance data, all fish records, all temperature records, all sediment-assessment records. I asked [Craig] Bell [TU's restoration coordinator] how that compared to the cooperation he'd received from the previous owner, Louisiana-Pacific. . . . [Bell] said that he had gotten no access to uplands, roads, data, or documents, no encouragement, not even a kind word, just "a stern lecture at the gate to stay in the streams."

[LP's] total cash commitment over ten years amounted to about $200 for redwood seedlings to be planted by TU volunteers. Roanne Withers, a local activist, and long a thorn in the side of LP and GP, is now helping to bring together MRC, Hawthorne and Campbell Group, the City of Fort Bragg, and others in a Noyo Watershed Alliance. This group will seek to cooperate in efforts to improve water quality and fish habitat within the river system, which provides drinking water for Fort Bragg as well as important refugia for coho salmon.

All this does not mean, of course, that



CALIFORNIA TROUT

Matilija Creek would be prime steelhead habitat if adult fish returning to spawn could get past dams downstream.

the timber wars have ended, even in the case of MRC. Enforcement of environmental regulations is generating substantial friction as the new landowners attempt to maximize the profitability of their holdings. For example, MRC is directing much harvesting attention to the Albion River and Greenwood Creek, where genetically pure populations of coho still remain. This has some fish advocates concerned that the last, best habitats are on the chopping block.

Nevertheless, recent events suggest a new approach, one consistent with a growing public desire for forest practices that provide for resource use while rejecting resource abuse. MRC's actions have created a new standard for behavior on the coast that other firms such as Campbell-Hawthorne are feeling the need to meet.

As new watershed stewardship groups continue to form, the Coastal Conservancy serves as a source of seed money and a place where new groups can get their feet wet in the complex field of watershed recovery. The Conservancy has been working for more than 25 years with resource conservation districts (RCDs) and other groups to restore stream habitat in coastal watersheds. In 1990 the Conservancy provided funds to the Mendocino County RCD for an assessment of the Garcia River watershed's health and the development of a watershed enhancement plan. In this plan, one action item stands out in its elegant simplicity.

The lower seven miles of the river, bordered by pasture, had been severely degraded by grazing. The denuded banks provided no cooling effects for young salmonids and regularly sloughed off, muddying the water. The enhancement plan recommended that riparian vegetation, including redwoods, be planted. The RCD's Advisory Group enlisted the support of landowners and dairymen. Local citizens and AmeriCorps volunteers replanted nearly one mile of riverbank between 1995 and 1998 at a total expense of $5,000. Now mature willows and alders overhang the river, providing shade and a constant source of insect life to hungry and growing young salmon and steelhead below.

This first project has not only led its participants into a brave new world of comprehensive watershed planning, it has allowed the group to complete northern California's first Water Quality Attainment Strategy for a river designated as "impaired" under the Clean Water Act. This approach, which considers a watershed subbasin by subbasin, seeks out the last and best places where salmonids thrive and prioritizes these refugia. This allows restoration to be undertaken in an orderly and focused manner.

The growth of the movement to recover our salmon and steelhead rises out of a change in societal values. Ultimately, the future of these great fish depends on individual and cooperative efforts to diminish human impacts on the landscape—past, present, and future.

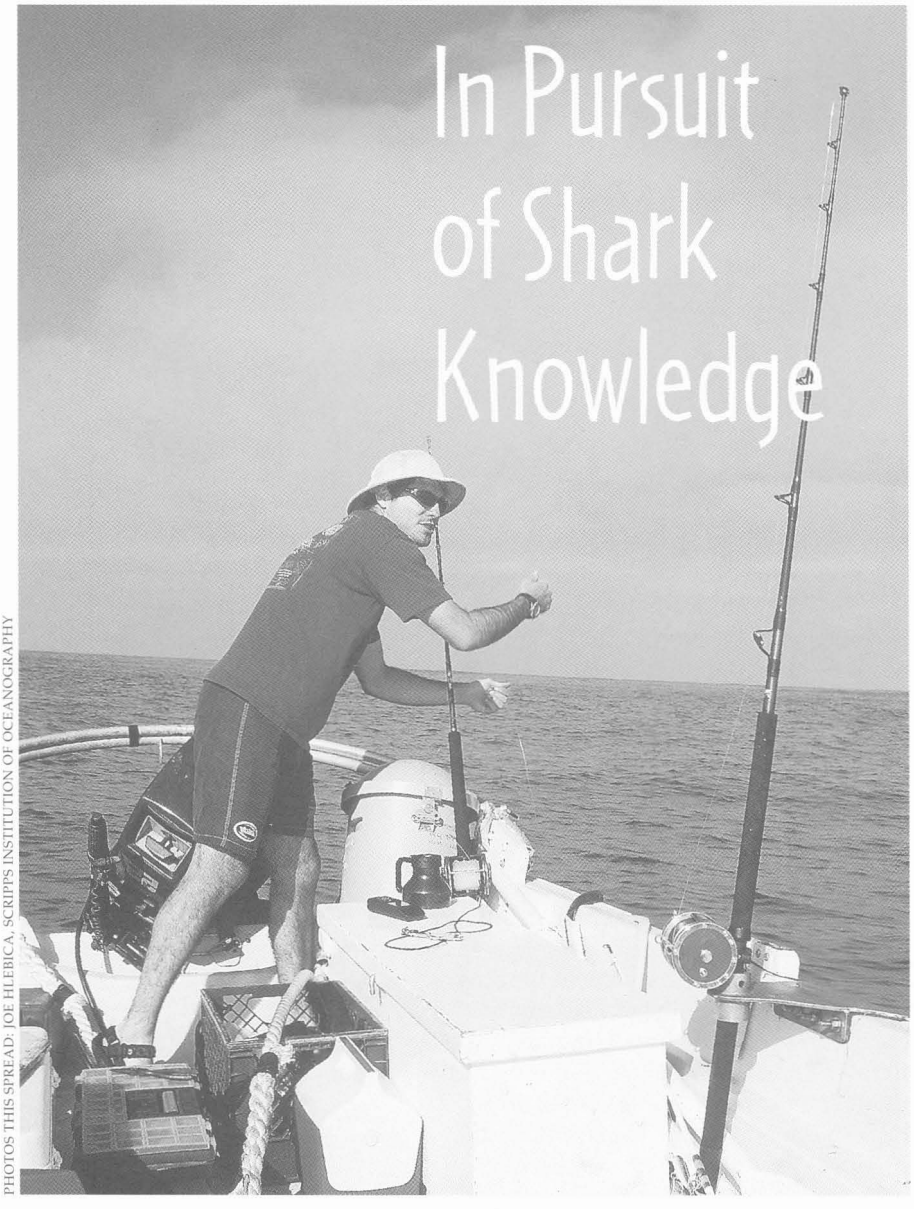
The adult steelhead at the BART dam on lower Alameda Creek represent a powerful effort to recolonize lost habitat. Their presence is nothing less than life force in its purest form.

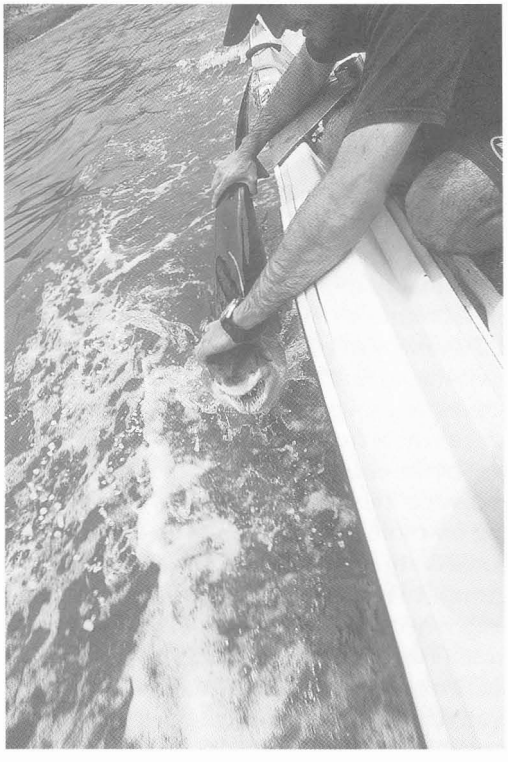
What has happened since they were first noticed is heartening. If current plans are realized, the winter rains of 2004 could bring bright, shiny steelhead blasting up from the Bay unobstructed and ready to perpetuate their species. ■

Michael Bowen works in the North Coast Work Group of the Coastal Conservancy. His fascination with anadromous life forms began at an early age when, while quietly chasing steelhead smolt with a fly, he was chased from the streamside by a rapidly approaching lamprey eel. After collecting his breath, he ran back to watch, and has tried not to avert his eyes since.

Sacramento River Chinook salmon

In Pursuit of Shark Knowledge





PHOTOS THIS SPREAD: JOE HLEBICA, SCRIPPS INSTITUTION OF OCEANOGRAPHY

JOE HLEBICA

IT'S 6:00 A.M. in La Jolla, California, and the end of Scripps Pier is shrouded in mist. A light swell lifts and lowers a small boat lying next to the pier so that Diego Bernal must brace himself against the outboard motor while he rigs his fishing rods. He looks like any of the seasoned anglers who stalk these waters, but looks can be deceiving. His preferred quarry is knowledge. But first he must capture a shark.

Bernal is a doctoral candidate at Scripps Institution of Oceanography, in his final months of study with researcher Jeffrey Graham, a noted authority on the physiology of sharks, tunas, and other fishes. Along with colleagues at Scripps' Center for Marine Biotechnology and Biomedicine, and at California State University Fullerton, they are researching the swimming mechanics and the respiratory and cardiovascular physiology of mako sharks.

Like many sharks, makos need to keep swimming to maintain their cardiorespiratory functions. They are known as "ram ventilators:" as they swim with mouths slightly open, water is forced over their gills and blood is pumped through their bodies by a combination of heart function and tail movement. Because makos need to swim in open water, researchers have had little success studying them in captivity. Graham

met this challenge by designing and building a unique machine with the futuristic name "elasmotunatron" (see sidebar).

Warm-blooded fishes

"A MULTI-LEVEL ANALYSIS of swimming has not been done for *any* shark species previously," says Bernal, "and working with makos has the added advantage of allowing us to look at the similarities between them and tunas."

Perhaps most remarkable of these similarities is a phenomenon known as endothermy, or warm-bodiedness. The layman may be surprised to learn that there are warm-bodied fishes, but in fact tunas and some sharks can regulate their body temperature from within.

The mako is a member of the *Lamnidae*, a small family of highly specialized sharks that includes some of the ocean's most voracious predators, among them the great white shark. All lamnids, including the two species of mako, are large, stout, fast-swimming fishes with athletic bodies and appetites to match.

Depending on the species, lamnids can raise the temperature of their muscles to a level 4–12°C above water temperature, an adaptation they share with tunas. According to Bernal, the exceptional swimming performance made possible by a warm-bodied metabolism is one of the reasons these top predators are able to compete so effectively in their endless search for food.

Warm-bodied animals heat themselves from the inside out. In general, as temperature rises, chemical reactions accelerate, including those that take place in blood and muscles. The increased metabolic capacities of the muscle tissues of endothermic fishes allow them to swim faster than other fishes—provided they get plenty to eat. Appetite is a strong motivator, and few creatures in the sea are faster than a tuna or a mako in hot pursuit of prey.

These fishes warm their own blood through a system of interwoven veins and arteries called countercurrent heat exchangers. In most fishes, heat energy generated by activity is lost to the water as the blood passes through the gills, just as a car radiator dissipates engine heat. Countercurrent heat exchange, on the other hand, conserves heat generated by muscular activity. Through this mechanism, lamnids can store heat in their visceral cavities, brains, and red muscle tissue. It is an extraordinary adaptation, and surprisingly similar in two unrelated groups of fishes—sharks and tunas.

His lines set, Bernal revs the motor and pulls away from the pier, heading into the open ocean to begin trolling.

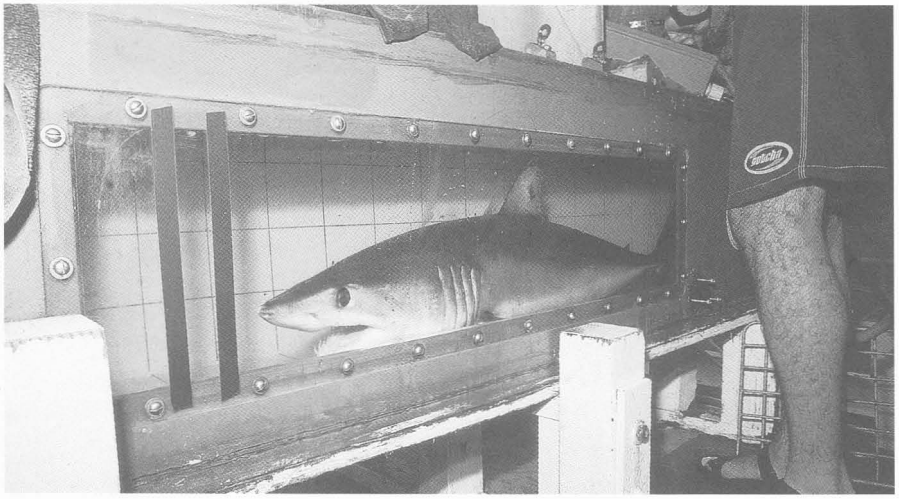
SOME WILL SWIM IN A TUNNEL, SOME WON'T

THE ELASMOTUNATRON, usually called "the swim tunnel," consists of an oval loop of large-diameter plastic conduit that contains sea water circulated by a motorized propeller. One section of the tunnel is an aquarium in which a shark (and in previous studies, tuna) can been monitored while swimming more-or-less naturally.

As water velocity is increased or decreased, the fish, always swimming upstream, adjusts its speed. As water temperature is raised or lowered, the thermal effects of the fish's performance are examined. Though the elasmotunatron is the only machine yet devised in which live makos can be studied in an active state, not all makos are candidates for the swim tunnel. "It takes a while to learn how to swim in this thing," says Diego Bernal. "Some do and some don't."

If the shark's capture has been especially stressful, or the transfer from ocean to shore in an open boat has taken too long, the surprisingly delicate mako can be difficult to revive, or can have problems adjusting to its new confines. In that case, Bernal will usually carefully release the fish rather than risking its life. "Some people just dump a shark when they release it," he laments. "That's not good enough. The fish probably doesn't survive if it's not released in a healthy, active state."

To ensure that the tagged-and-released sharks survive, Bernal transfers them back to the ocean while administering shark CPR—pumping the shark's tail by hand to keep its blood moving, since it cannot swim on its own while confined. Once Bernal has reached the offshore release point, he lifts the shark out of its tank and gently places it in the water. Grasping it by the head and tail, he then "walks" the shark alongside his slow-moving boat to ventilate its gills with sea water. When it has fully revived he lets it go.



SUSAN GREEN, SIO

"I've learned that everything we know about sharks *doesn't* apply to makos; they're more like tunas with teeth," he says. Not that tunas lack teeth, but theirs hardly compare to the mako's, which are long, curving, and daggerlike.

"You can't be too careful when handling makos," he emphasizes, "We once had a sluggish one in the swim tunnel [elasmotunatron] and one of us was holding its head and tail, manipulating it to get the blood moving again after its capture and transfer. Our guy's hand slipped a little and grazed the shark's open mouth. When he pulled his hand out, it was scored with tiny slices. Fortunately, he didn't lose any fingers."

With a young family at home, Bernal is keenly aware of the risks. He doesn't take chances, and stresses safety. He and his fellow students often wear special gloves of chain mail, developed for the fish-canning industry, when handling the sharks.

"Grim Reapers"

DIEGO BERNAL, a 29-year-old native of Mexico, grew up fishing in the Gulf of California. A graduate of the Autonomous University of Baja California, which has long cooperated with Scripps in the study of marine resources, he is also interested in thresher sharks.

Once called "the grim reaper of the sea," the thresher is one of the most distinctive of the more than 350 species of modern sharks. Its caudal (tail) fin features a scythe-like upper lobe that can be as long as its head and body combined. Reports of 16-foot threshers are not unusual. It is believed they use this formidable tail both to herd prey fishes into manageable clusters and to stun or kill them. Threshers are powerful predators and, though not known to attack humans, are potentially dangerous in close contact. A grisly story of a fisherman decapitated by the flailing tail of a very large thresher has never been confirmed by a reliable authority, but Bernal recounts a personal experience that might lend it some credence.

"I had a small thresher on my line next to the boat. I was lucky to be wearing my sun helmet, because the shark smacked me over the head with its tail, and the blow was strong enough to force the hat down over my eyes."

Although his work can be dangerous, Bernal, like many scientists, believes the risk is balanced by the need for baseline data on shark physiology and populations—information that might well benefit both humans and sharks. Studies of the biochemistry of muscle activity in such optimum performers as sharks can lead to a greater understanding of physical performance under stress by many other organisms, including humans.

Most of the threshers Bernal hooks are released unharmed after he has taken a blood sample and tagged them. (Threshers can't be transferred to the swim tunnel because of the length of their tails.) Tagging aids in the conservation and management of these and many other fishes. Tag-and-release programs are now in place throughout the world of saltwater sportfishing. This allows fisheries biologists to gather data on the numbers and distributions of important food fishes, while fishermen can continue to enjoy their sport without killing off the resource.

Although sensational headlines allege "man-eating sharks," scientists fear that too many sharks are being eaten by people. There has long been concern about overfishing in Mexico, where several shark species are harvested for their fins for Asian markets. Both makos and threshers are in demand in the marketplace, and are aggressively fished in southern California, where they often end up in fish tacos. Research such as Bernal's may help to determine whether or not they are threatened.

Threshers are also warm-blooded fish, of the family *Alopiidae*. Bernal harvests tissue samples in order to investigate their endothermy and to determine how they may be evolutionarily related to the lamnid sharks.

"It's really amazing," he says, "but nature seems to have come up with three

independent but identical solutions to the same problem in the evolution of the tunas, lamnids, and alopiids. The problem was colder water as the oceans changed, and the solution seems to have been endothermy."

These three groups of fishes evolved during the millions of years when continental drift caused drastic changes in the geography of the oceans, interrupting warm circumglobal currents and creating cooler oceanic conditions. Naturally, predators that were able to adapt to these changes developed an edge in the competition for prey.

By studying blood-enzyme metabolism, red-muscle mass and function, and swimming mechanics, Bernal and his colleagues hope to establish a parallel emergence of endothermy, and a strong case for convergent evolution among the fishes he studies.

While evolution tends to produce a broad array of specializations resulting in diversification of species, there are many examples of convergence, wherein unrelated species exhibit similar adaptations. Though the ancestors of lamnids and tunas diverged 400 million years ago, similarities in the morphology, anatomy, and physiology of their modern descendents are convincing evidence of convergence.

The One That Got Away

THREE HOURS AFTER Bernal set out, not a single shark has nibbled at his bait. Suddenly, one of his rods bends into a steep arc, and line drags off the reel in short jerks. He grabs the pole and almost immediately surmises "It's a thresher."

As the taut line shoots up out of the water and the light boat swings around from the force of the shark's pull, a large thresher lunges from the ocean's surface thrashing its tail.

"I don't think I've hooked one this big before. I'd say it's over 120 pounds," he says. He has caught enough sharks to be able to make quick and reliable estimates of their size. By the time he has fought this one up to the boat—a struggle that takes about fifteen minutes—it is clear that his estimate is very close. The shark appears to be about six feet long.

His arms sore from the fight, he lets the rod go slack for an instant, and quickly realizes he has made a big mistake. The fish is off the hook and gone into the deep blue water with a quick lash of its tail. This is disappointing, but it has happened before.

Unlike the gaping maw of the great white in *Jaws*, the thresher's mouth will accommodate only small prey. Bernal uses palm-sized pieces of mackerel to bait his special "circle hooks"—nearly closed loops that do much less damage to fish than conventional, open-shank hooks. On the other hand, they hold catch less securely, and sharks—like the prize that just got away—often escape before they can be tagged or sampled. The sharks may prefer this, but it makes researchers' work more trying.

Bernal and his colleagues are a determined lot, though. They are willing to spend long hours in small open boats, rolling over heaving seas through cold, wet, and sometimes stormy conditions in pursuit of knowledge of these mysterious and misunderstood creatures.

On the long ride back to the pier, Bernal is philosophical about the one that got away. "Oh well, it's good to know they're here," he concedes. His work may help ensure that they remain. ■

Shark enthusiast Joe Hlebica is a science writer and editor at Scripps Institution of Oceanography, UCSD. He is a regular contributor to Scripps' Explorations *magazine, and is publication coordinator for* OnBoard, *the quarterly newsletter of the Birch Aquarium at Scripps.*

JOE HLEBICA, SIO

MY FIRST STARFISH

ANNE CANRIGHT

THE FIRST FISH I ever caught was not a fish: it was a starfish. Besides that, it had twenty-one legs. Can't get much more unfishlike than that.

I was with my father on a pier in northern California, the rocky coast of Mendocino County. My father had stuck a big piece of raw fish on a hook for me, part of a fillet we'd had for dinner the night before, a milky-white piece of fresh-caught rockfish. He'd stuck it on, then handed me the pole, a pole meant for stream fishing, since that's the only sort of fishing he usually did, a pole with a small reel and light line. He said, "Hold on tight and let's see if anything bites."

I held on very tight, digging the end into my stomach, not wanting to disappoint, not at all sure what to expect. Would the pole surge out of my hands if something did bite? What would I have to do? My father had given the reel a quick spin, and I had listened to the sharp, rapid ratcheting sound as it caught. He'd help me if anything bit. He wouldn't make me do it all by myself.

So I stood there for a while, the pole nestling into my soft, sweater-covered belly, looking down at the deep blue-black water, the surging surface rippled with white streaks of foam. Then, tiring of standing, I awkwardly sat down, clasping the pole securely in my hands all the while. I dangled my legs over the edge of the pier, bright red sneakers, bought special for the trip, out of sight beneath my dungaree-covered knees. I waited expectantly, anxiously.

Suddenly I felt a dull lurch. That was all, just a single lurch. Nothing flamboyant, nothing that required my strength to hold. I looked up at my father. He was gazing out over the water, up at the cliffs. "Papa," I said, "I think I caught a fish. Something grabbed." He looked down at me, then quickly he crouched down, gave the reel a tug. "Yep," he said, after a testing moment, "something seems to be on there. Let's pull it up and see." He sat behind me, the lower ribs of his chest close against my shoulders, his thighs hugging mine, his long legs dangling alongside mine. He let me keep holding the pole but grabbed it himself as well, cupping my hands in his big strong grasp, and slowly started reeling the thing, my catch, my prize, in. When it broke the surface he stood and lifted the pole above my head. The fish that wafted up before my eyes was bizarre-looking, a dull yellowish-orange thing, lumpily slimy, all squirming, writhing, tentacles.

"I caught a *fish!*" I cried as I jumped to my feet.

"You sure did, honey," he said, and as he did, the thing, the fish, dropped one of its tentacles. *Thump* it went, on the wooden pier.

"Ew!" I screamed and jumped back.

"Don't worry, sweetie, it's okay. The fish is okay. It's just stressed. How would *you* feel if some string with a hook on it came down out of the air and grabbed *you* up?"

I looked at him uncertainly. "I wouldn't lose my arms or my legs, would I?"

He laughed. "No, honey, you wouldn't lose anything—not even your pretty little head." He ruffled my hair with his big hand. "In fact, the chances of anything at all like that happening are pretty slim, so don't worry about it, don't worry about a thing."

I knew from his laugh that things were okay, they were really okay, even for the fish. He wouldn't laugh if the fish were in *actual* trouble. He'd throw it back in. Either that or he'd put it on a bed of grass, like he did with trout in the mountains, a little coffin filled with grass for the fish that would be our dinner. But this one he just watched wriggle on the planks of the pier.

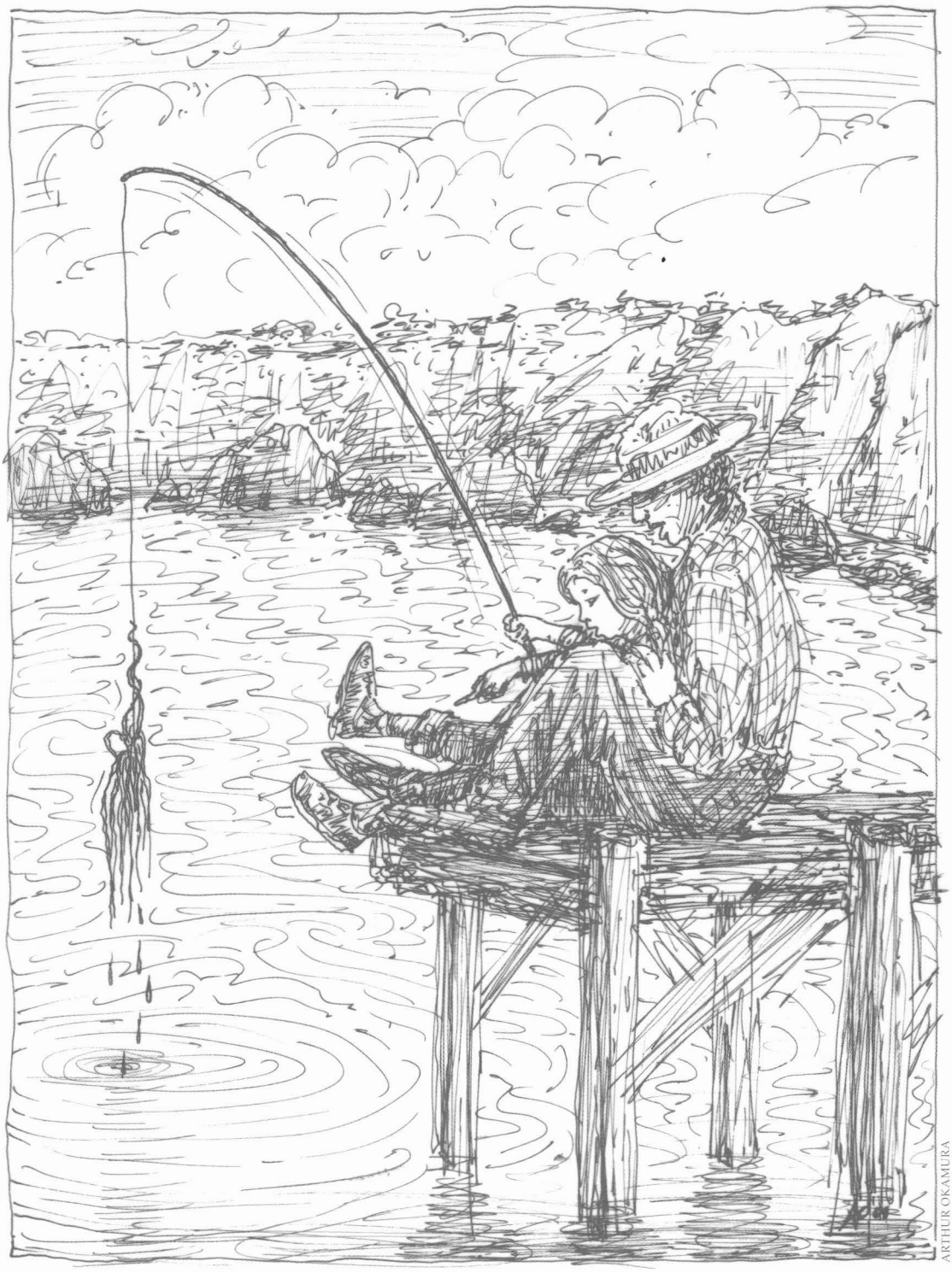
"What kind of fish is it, Papa?"

"It's not really a fish, sweetheart. It's a starfish. You know what a starfish is; remember the ocher stars we dried last year? Those are like this one, even though they look different."

I thought of the two dead, leathery, perfectly shaped orange-brown stars studded with white nobbly spines that my father had had in his study, propped on the windowsill, until the stink got so bad that my mother made him throw them away. We'd found them during our vacation the year before, pried them off the rocks, and my father had weighted them down somehow—I don't remember how, and I don't know how he got them to hold their postures so perfectly, so perfectly straight and stiff, since all the living starfish I'd ever seen were curled and flowing and tucked into themselves.

"But how come it has so many arms?"

"It's just a different kind, sweetie. This one lives on the bottom and prowls around for food. It uses all those arms to smell with, and to hold on to its prey with." He turned it over so I could see its feet—he called them "tube feet"—which were writhing in an ecstatic chaos. "Let's count how many arms this one has, what do you say?" And so we did, together we counted them, our voices harmonizing high and low. I performed the very important task of keeping my finger on the first arm we counted so we wouldn't lose track. I felt its tiny tube feet—toes, really—grab on to my finger, gently sucking at it. They felt alive and delicious. We got to twenty, and looked for the arm that had fallen off, but it had already crawled over the edge of the pier, back into the water. "Twenty-one," we both said, as one. My father laughed again, delight in his voice, and he picked up the animal. "Ready?" he said. Ready for what, I wasn't sure, but I nodded, because he obviously expected me to. And with that he tossed my first fish back into the sea.



ARTHUR OKAMURA

During the rest of our time on that rocky, rugged shore, I would think often of that starfish. I would lie in my narrow bed in our woodsy cabin, my eyes closed, listening to my parents doing their evening-time things—washing dishes, reading the paper, discussing plans for the next day, or just sitting quietly together, gently rustling as they shifted position—and I would think of that star crawling around the bottom of the sea, sniffing, sniffing, trying to find that twenty-first leg, and wondering what had happened to it, wondering if it would ever find it and be whole again. ■

Anne Canright hasn't caught a fish in years, but enjoys looking at seastars in their natural habitat. She does volunteer work at the Monterey Bay Aquarium, and is a contributing editor of Coast & Ocean.

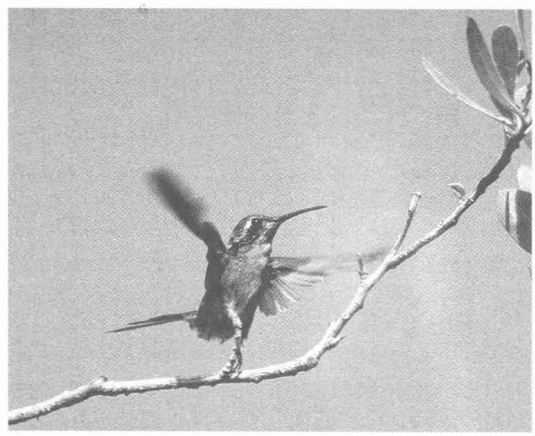
Cuba and the United States: A Green Partnership Emerges

WESLEY MARX

PHOTOGRAPHS BY ROBERT RATTNER

DESPITE A UNITED STATES trade embargo against Cuba, a substantial exchange progam between the two nations still flourishes. Ducks and songbirds by the thousands migrate from the forests and prairies of North America to winter in the wetlands and cloud forests of Cuba. Fish larvae from the coral reefs of Cuba can wind up in the shallows of Florida Bay. Sea turtles hatched on lonely Cuban cays can hitchhike along the Gulf current and enter U.S. coastal waters.

This environmental exchange program is not limited to animals. Citizens of the two nations are working together on projects to help protect this shared heritage. The U.S. Treasury Department can issue permits to conservation organizations in the United States to fund projects in Cuba acceptable to the Cuban government.



The National Audubon Society is one of the groups involved in these joint "people to people" projects. According to Alejandro Grajal, the director for Latin America and Caribbean programs for Audubon, the organization funds both field research and environmental education projects. One field project involves the ivory-billed woodpecker. This large woodpecker no longer exists in the United States because of loss of old-growth forests in the southern states. However, there have been reported sightings in the rugged Sierra Maestra of southeast Cuba. Moreover, some native pine stands exhibit large rectangular holes thought to have been pecked out by the rare bird. "We don't know if these holes are recent because we can't age the holes," explains Grajal as he serves as a guide for an Audubon excursion into Cuba. To determine if indeed this bird still survives, Audubon supports annual field surveys by bird experts into the steep, sometimes rain-drenched wilderness. The mountains contain Pico Turquino, the Caribbean's tallest peak at 1,974 meters. "Audubon has used digital technology to clean up a recording of the ivory-billed woodpecker made over 60 years ago. We have transferred the recording to a CD that investigators can play to hopefully attract any birds that may still exist," notes Grajal.

If the bird is spotted, the surveys will provide information to establish a protected habitat area. Cuba has already established two national parks here that contain virgin woodlands. Ironically, the woodpecker survey area overlaps a portion of the area where Fidel Castro established his rebel operations and defied search-and-destroy missions by the Batista regime. Concerned that another rebel group might emulate this successful strategy, the Castro government has limited access in certain mountain areas. Local bird-spotting scientists have explored here, but under military escort. This year, after two years of trying, Audubon finally received permission from

Cuba for U.S. bird experts to enter these sensitive areas.

Woodpeckers play an important role in the island ecology. The tree holes they produce as they grub for insects become nesting sites for owls, parakeets, and parrots. Audubon also supports the work of Professor Luis Melián of Santiago, who is identifying habitat that sustains another large woodpecker, Fernandina's woodpecker. As pine forests and palm groves have given way to the ax and, finally, sugar cane fields, this woodpecker has found shelter in a habitat shared with farmers. In the hills that overlook Melián's home city and the blue Caribbean, farmers cultivate coffee shrubs shaded by flower-blooming trees. "Shade-grown coffee farms have become important habitats for Fernandina's woodpecker," explains Melián as he maintains his balance on a steep slope. Besides sparing native trees, the coffee growers plant citrus and banana trees for more profitable shade. Their tree plantings can restore logged hillsides whose siltloads damage nearshore coral reefs and turtle grass beds. Amid the dense green growth, songbirds trill, parrots squawk, and woodpeckers tap, tap away. Melián invites the writer to look into a bird scope. A bird with bright red, blue, and white feathers greets the viewer. "That's a Cuban trogon, the national bird," says Melián in Spanish. "Its colors are identical to the Cuban flag."

Melián carries a small canvas bag. Inside is a ruddy quail dove liberated from a bird cage. Melián detests the penchant for collecting wild birds and displaying them in cages. He pauses next to a green hillside and carefully removes the dove from the bag. The dove is released and disappears into the shrubbery as a small audience of Audubon birders looks on approvingly.

Farmers have declared war against one wild bird: the red-tailed hawk, which has been known to prey on young chickens. As a remedy, the farmers may tether a chick to a sharp metal stake. A hawk that dives on the chick becomes impaled on the stake. However, the hawk is highly adept at preying on an animal that Melián's countrymen detest, the rat. "Kill off the hawks and you help the rats," says Melián, shaking his head.

In Santiago, the Audubon Society is working with Professor Nidia Garcia-Sarmiento of the Pedagogic University to develop training workshops for teachers. "We plan to prepare a guide to the local natural history of eastern Cuba, including the Sierra Maestra," notes Grajal.

Botanic gardens in Cuba are important partners in environmental education. In the past, these gardens featured exotic plants from throughout the world. (Cuban naturalist Alfonso Silva Lee notes with chagrin that Cuba's national flower, the butterfly lily, is an alien species.) Now the emphasis is shifting to native flora. "We are working with botanic gardens throughout the Caribbean to catalogue and cultivate rare and endangered endemic plants," says Dr. Angela Leyva, director of the National Botanic Garden of Cuba, near Havana. Here visitors view a solar oven that is being used to roast peanuts. Such ovens reduce the need to ax pine trees for cooking fuel. The botanic garden also encourages organic farming practices that are friendly to the environment.

El Bambú, the restaurant at the botanic garden, serves all-vegetarian meals. "We

Top: Zoologist Xiomara Gálvez encourages rural communities to leave parrots and other birds in the wild rather than trap them for the captive bird trade.

Bottom: The tree holes pecked out by the Cuban red-bellied woodpecker provide nesting habitat for other bird species.

Opposite: Cuba's birdlife, including the emerald hummingbird, attracts ecotourist groups from the United States and Europe.

Top: Lanier Swamp serves as habitat for the endangered Cuban crocodile.

Bottom: To reduce dependence on costly pesticides, Cuba turns to organic farming practices. Wildlife benefit from reduced exposure to toxic chemicals.

buy all our produce from organic farmers who do not use pesticides or artificial fertilizers," explains Madelein Valquez, the restaurant manager. Many farms have turned to organic practices because of the expense of importing farm chemicals. On shade-grown coffee farms the absence of pesticides is another plus for the birds. Neighborhood organic gardens have also been sprouting up to augment fruit and vegetable supplies. The Cuban government supplies free seeds to urban gardens.

Artists contribute in their own unique ways to environmental education. In La Union Hotel in Cienfuegos, a painting depicts water rising around a coastal building, atop which a sign reads "SOS." A power plant in the background emits a smoky plume. This is artist Adrian Rumbaut's take on global warming and the threat of rising sea levels.

Environmental awareness of a limited sort has even spread to Cuba's number-one industry: tourism, primarily from Canada and Europe, has supplanted sugar cane production as the country's top revenue generator. Marketing efforts have focused on beach resorts and "fun in the sun" activities. There are even beachside personal massage stations. More recently, Cuba has been playing up its ecotourism attractions, including dives on coral reefs, adventure hikes into the Sierra Maestra, and safaris into the Zapata wetlands—home to the rare Cuban crocodile and the world's smallest bird, the bee hummingbird. (Cuba also claims the smallest orchid and the smallest frog.)

The degree to which this environmental awareness spills over into proactive environmental policies remains to be seen. The growth of general tourism already poses key challenges to natural resource protection and, consequently, to eoctourism. Tourist demand for tasty lobster and grouper intensifies pressures on Cuba's fishery resources. A 2000 report by J. A. Baisre of the Cuban Ministry of the Fishery Industry revealed a 25 percent drop in the spiny lobster catch and a 75 percent drop in the shrimp and grouper catch. As a result, those advertised coral reefs can come up short on large, eye-catching fish for discriminating divers to view. The Cuban government has consequently tightened its fishery regulations; shrimp boats are no longer supposed to trawl in coral reefs, turtle grass beds, and other critical nearshore habitats. But the recovery process, as elsewhere in the world, promises to be a lengthy one.

In the Playas del Este area east of Havana, dunes and beach plants have been removed to accommodate resorts. Left exposed to beach winds, the sandy shore generates drifts that deter beachside massages and bury service roads. The Tulane University Law School, with support from the Center for Marine Conservation and the MacArthur Foundation, has been offering environmental workshops to Cuban coastal officials interested in better land use practices.

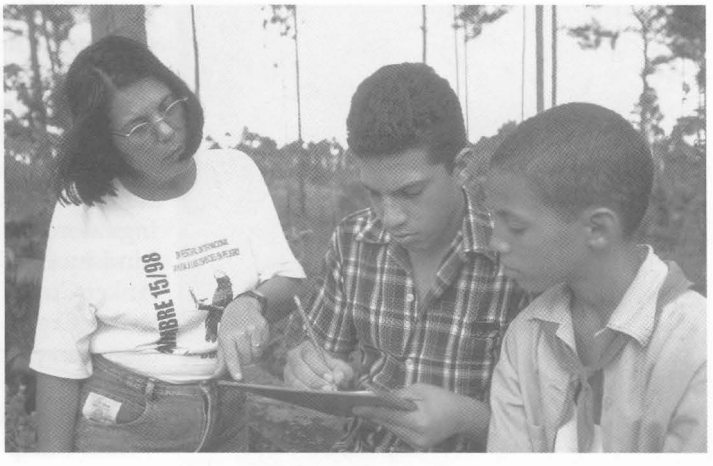
To open up the Sabana-Camagüey Archipelago to resort development, Cuba built a causeway that slices through important habitat for flamingos, a bird featured in ecotourism pitches. Tarballs and debris from shipping traffic wash up on the archipelago beaches. Acting on a request from Cuba, the International Maritime Organization has designated the archipelago a Particularly Sensitive Sea Area in order to limit nearshore dumping by international ship traffic. The only other marine area granted this designation is Australia's Great Barrier Reef.

Some 1,000 islands that encircle Cuba serve as key regional habitat for sea turtles and seabirds; these islands will inevitably become candidates for more resort devel-

opment. If and when U.S.–Cuban relations are normalized, the pressures to open up these islands and the 3,000-mile-long Cuban coastline to time-shares, boutiques, golf courses, and marinas will be enormous. Much of the Caribbean has been saturated by high-density, high-decibel tourism. Cuba offers an abundance of "raw" land to perpetuate this buildout spree.

Such specters underline the importance of today's joint efforts between U.S. conservation groups and Cuban naturalists and educators. The children who participate in the bird counts, the wildlife poetry contests, and the mountain field trips will eventually be shaping decisions on the fate of their country's remarkable natural heritage. Then we will know how much they—and we—have learned. ■

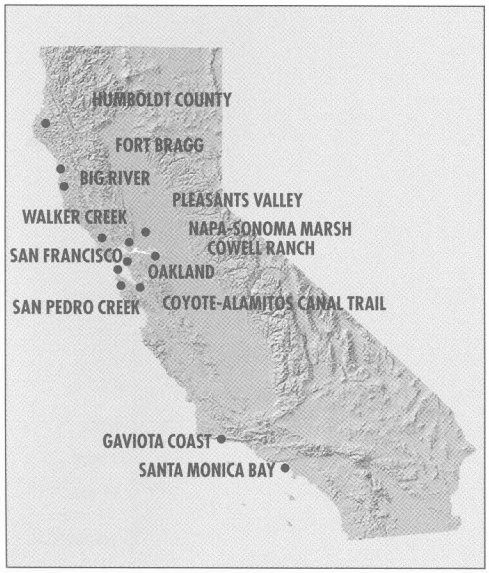
Contributing editor Wesley Marx is author of The Frail Ocean. *He can be contacted by e-mail at* wmarx@primenet.com.



Top: Mangroves in Zapata Swamp

Bottom: Zoologist Xiomara Gálvez tours rural communities to teach students and their parents about wildlife conservation. The National Audubon Society helps to fund such outreach programs. Cuba promotes the Zapata wetlands, an important wildlife habitat, as a prime ecotourism destination.

COASTAL CONSERVANCY NEWS



PROPOSITION 12 FUNDS GO TO WORK

VOTERS APPROVED about $250 million to the Coastal Conservancy in Proposition 12, the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000. By late August, the Conservancy had allocated a substantial amount of these funds to projects along the coast and on San Francisco Bay. Described below are some of the projects approved in June and August. Many, though not all, will be funded thanks to voter approval of Proposition 12.

BIG FUTURE FOR BIG RIVER

THE EFFORT TO PRESERVE 7,300 acres of the highly scenic Big River watershed in Mendocino County moved a big step forward when the Conservancy awarded a $1.3 million challenge grant to the Mendocino Land Trust. The Land Trust is working with the Trust for Wildland Communities, a private foundation, to acquire the entire 8.3-mile-long Big River estuary—Northern California's longest unprotected estuary—and associated redwood forestlands.

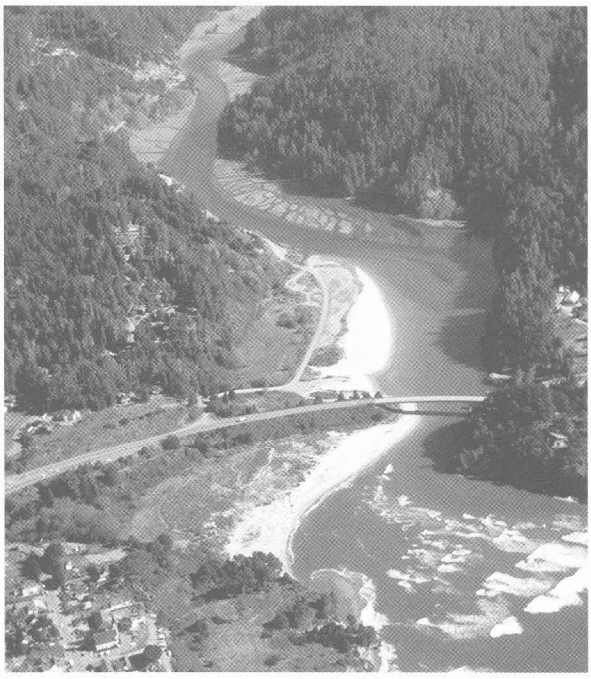
Extending from the Highway 1 bridge at the Town of Mendocino eastward, and linking Mendocino Headlands State Park, Jackson State Demonstration Forest, and Mendocino Woodlands, the property provides critical rearing habitat for steelhead and coho salmon, as well as for a multitude of waterfowl and other wildlife.

The purchase will also provide valuable recreational opportunities. Kayaking and canoeing on the river are popular activities, but because the shoreline is privately owned, the banks have been off-limits to boaters. It is expected that the Big River acquisition will be added to the State Park system. Of almost $20 million needed for this purchase, about half has been secured thus far.

COASTAL TRAIL BILL SIGNED

GOVERNOR GRAY DAVIS has signed SB 908, a bill by North Coast Senator Wesley Chesbro, which formally establishes the Coastal Trail and requires the Coastal Conservancy, in cooperation with the Coastal Commission, State Parks Department, and California Conservation Corps, to develop a plan and cost estimates for its completion. This trail is to run over 1,000 miles along the shore between Oregon and Mexico, linking to inland trails. It will have alternative routes to accommodate various users and to ensure protection of sensitive resources. The governor previously approved over $7 million from Proposition 12 funds for the Coastal Trail and to buy rights-of-way.

Big River Estuary



DAVID RUSSELL

TAKING OUT FISH BARRIERS

THE CONSERVANCY awarded $105,000 from Proposition 12 funds to Humboldt County for removal of stream barriers that block passage of coho salmon, steelhead, and coastal cutthroat trout to historic spawning and rearing areas in seven coastal streams. The barriers—typically old, corrugated metal culverts—will be removed, the original stream channels restored by excavation, and federally approved natural-bottom culverts installed. The project will increase anadromous fish habitat by at least 7.5 miles.

High flow velocities and excessive heights between culvert outlets and discharge pools now limit or prevent fish passage. Fish congregate in the discharge pools, where they often fall prey to predators or poachers. The culverts all lie within county-owned rights-of-way at road crossings along Sullivan Gulch, Lindsay Creek, North Fork Anker Creek, South Fork Anker Creek, Ryan Slough, Stansberry Creek, and Clear Creek.

The sites were chosen with the help of the Five

Counties Salmon Conservation Effort, a consortium of the state's five northwestern counties. The work is expected to take place this summer.

Almost $600,000 will come from the Department of Fish and Game, and $35,000 from the county. The Conservancy's grant will remedy a county budget shortfall that has delayed start of the work.

NEW PUBLIC ACCESS AT FORT BRAGG

BECAUSE VIRTUALLY all shoreline land in and around Fort Bragg is privately owned, the public has had little access to the shore. That is about to change. The City of Fort Bragg is buying 19 acres of bluff land just south of Noyo Harbor with $2 million approved by the Conservancy this year. The City, which will manage the property, expects to complete the purchase in October.

Of the total, $1.5 million is from the federal Transportation Enhancement Activities Program administered by Caltrans; the rest is from Proposition 12. The Conservancy approved almost $1.5 million for the purchase of 15 acres in June; an additional $550,000 for four acres was granted in April. The purchase will also allow for a new link in the California Coastal Trail.

ADDING TO A MENDOCINO BEACH

THE CONSERVANCY awarded $180,000 of Proposition 12 funds to the Coastal Land Trust for the purchase of 6.5 acres adjacent to Seaside Beach, about ten miles north of Fort Bragg in Mendocino County.

The property, owned by Lowell and Barbara Smith, has a coastal stream, seasonal wetlands, and grasslands east of Highway 1, and a sliver west of the highway next to a wide sandy beach. This addition could be used for expanded parking, permanent restrooms, a nature trail, and scenic viewpoints. A wide variety of plants and animals are found in and around the stream.

The County suspended review of a development proposal pending the proposed sale to the Land Trust, which expects to complete the purchase before the end of the year. The Conservancy gave the Land Trust $26,000 for management of Seaside Beach in 1998.

HELP FOR MARIN'S WALKER CREEK

WALKER CREEK once supported strong runs of both coho salmon and steelhead trout, but now both are rare. The 76-square-mile watershed lies almost entirely in Marin County and drains into the northern end of Tomales Bay. In 1998 it was listed as an impaired water body by the San Francisco Bay Regional Water Quality Control Board due to the presence of sediment, excessive nutrients, and high levels of fecal coliform bacteria.

In June the Conservancy voted to provide $300,000 to the Marin County Resource Conservation District (RCD) to reduce erosion and to improve fisheries and wildlife habitat. Gullies will be repaired, native plants will be put in along the banks of the creek, and fences will be installed and repaired to keep cattle out of the streambed.

In a related action, the Conservancy, working with the Tomales Bay Watershed Council to assess the ecological status of the bay and the effects of human actions, awarded $62,000 to the RCD. This assessment will consolidate the results of previous studies and recommend policies and actions.

PROTECTION FOR HISTORIC RANCH

THE SOLANO COUNTY Farmlands and Open Space Foundation will buy a conservation easement on about 367 acres of the 408-acre Hoskins Ranch in Pleasants Valley, northwest of Vacaville. The Conservancy approved over $700,000 toward the purchase. The ranch serves as a wildlife corridor between the English Hills and Blue Ridge. The U.S. Fish and Wildlife Service has found that at least 60 different animals, including golden eagles and western pond turtles use habitat there. Members of the Pleasants family, the original homesteaders, have owned the ranch since the late 1850s. The foundation expects to buy the easement before the year's end, and to reimburse the Conservancy almost half of the purchase cost within a year. The landowners will reserve 41 acres not covered by the easement for a second homesite.

FUNDS FOR SAN FRANCISCO BAY TRAIL

THE PROPOSED 400-MILE shoreline trail around San Francisco and San Pablo Bays moved $1.5 million closer to completion when the Conservancy approved Proposition 12 funds for 14 projects. The San Francisco Bay Trail Project and the Conservancy selected the grantees and projects from 50 applications. See the *Coast & Ocean* web site (www.scc.ca.gov/pubs) for a list of the projects.

The San Francisco Bay Trail Project will seek Conservancy approval for another $5.9 million, mostly for construction, in the near future.

PONDS FOR NAPA-SONOMA MARSH

DUCKS UNLIMITED, INC., will receive $315,000 from the Conservancy to construct eight freshwater wildlife ponds on 120 acres of former hayland in the Napa-Sonoma Marsh Wildlife Area along San Pablo Bay and to repair levees. The ponds will be filled by seasonal runoff, streams, and in the case of one pond, a well. The levee repairs will protect the saltwater habitats of two ponds along Highway 37, which are popular with birders.

Most conservation efforts on San Pablo Bay have focused on improving salt- and brackish-water habitats, so the new ponds will add to habitat diversity. Work on the project is expected to begin late this year and be completed by spring 2003.

In a related action, the Conservancy approved the payment of $1.2 million to continue its partnership with the U.S. Army Corps of Engineers for the second phase of a restoration feasibility study, analyzing alternatives for restoration of almost 10,000 acres of wetlands and associated habitats within the former Cargill salt pond complex within the Napa-Sonoma Marsh.

CONTRA COSTA OPEN SPACE

A $13.5 MILLION fundraising effort took off when the Conservancy awarded $3 million of Proposition 12 money to the Trust for Public Land (TPL) toward the purchase of almost 3,900 acres of the 4,441-acre Cowell Ranch.

STEPHEN JOSEPH, COURTESY TRUST FOR PUBLIC LAND

Cowell Ranch

The ranch borders Brentwood, one of the state's fastest-growing cities; it also adjoins the Los Vaqueros Reservoir watershed, owned by the Contra Costa Water District, and Round Valley Park, owned by the East Bay Regional Park District. It is expected to link an assembly of wildlife habitats that has been built up over the last 20 years. Not included in the purchase are 473 acres for a Brentwood housing development, 30 acres for a future community college, and 70 acres for a Highway 4 bypass.

A 1993 survey identified 157 plant species and 54 different animals on the ranch, including several listed by state and federal agencies as threatened or of special concern.

TPL obtained a two-year option to purchase the ranch land from the S. H. Cowell Foundation a year ago and is working with the Conservancy and others to secure the rest of the required funds. Who will hold title to the property and manage it will be decided after discussions among TPL, partner organizations, and the public.

Funding is also expected from California State Parks, Wildlife Conservation Board, and Caltrans. State Parks owns the John Marsh homestead, a 14-acre inholding on the ranch, and will contribute $3 million for land that may eventually allow the creation of a historic park.

FUNDS FOR OAKLAND PARK

THE CONSERVANCY has been working for three years with the City and Port of Oakland, the Unity Council, and the Trust for Public Land to create the nine-acre Union Point Park on the Oakland Estuary shoreline, at the edge of Oakland's Fruitvale and San Antonio neighborhoods. These densely populated districts have the lowest proportion of parks and open space per resident.

In June, the Conservancy approved $1.17 million to enable the City of Oakland to begin the construction, tranforming a former industrial site into a unique green space and recreational asset. The City has committed $1.4 million for the project, which will include a link in the San Francisco Bay Trail.

CAROUSEL RESTORATION

THE EAST BAY Regional Park District will be able to restore the deteriorating machinery of the popular Tilden Park carousel thanks to a $197,000 Proposition 12 grant from the Conservancy. This carousel is listed in the National Historic Register. Its hand-carved figures and the larger of its two band organs, which play perforated paper roll music, are regarded as among the finest built in the U.S. It was built in 1911 by New York's Herschell-Spillman company and was installed in Tilden Regional Park in 1948. It was privately owned unti 1976, when an extensive grassroots campaign led to its purchase by the Park District.

NEW PUBLIC PIER IN SAN FRANCISCO

THE PORT OF SAN FRANCISCO will receive $400,000 in Proposition 12 funds from the Conservancy toward the construction of a public pier at the foot of Mission Street, just south of the Downtown Ferry Terminal. The fully accessible 600-foot pier will extend from the Embarcadero Promenade into San Francisco Bay atop a 515-foot offshore breakwater constructed earlier this year to protect ferries from winter storm surges. An 85-foot trestle will span the open water between the breakwater and the shore. Construction is expected to begin in the spring of 2002 and to be completed within a year. Estimated total cost is $1,206,000. The Port is expected to chip in $300,000, the Association of Bay Area Governments $200,000, Caltrans $200,000, and the Resources Agency $106,000.

GLEN CANYON PARK IMPROVEMENTS

MOST OF SAN FRANCISCO'S streams have been buried by development, but the North Fork of Islais Creek still flows openly near its headwaters in Glen Canyon Park. Along the creekside trail, overgrown with blackberries and willows, there are places where you can imagine yourself in the wild. At the lower edge of the park the creek disappears under pavement, then resurfaces before emptying into San Francisco Bay near Hunters Point. A small park at Third Street has opened the creek's estuary to public enjoyment. Now the upper watershed is about to get some attention.

The Conservancy voted in June to provide $250,000 in Proposition 12 funds to the San Francisco Recreation and Park Department for erosion control and habitat restoration along 3,300 feet of Islais Creek, and for trail improvement, all in Glen Canyon Park.

The work will be done by young people employed by the San Francisco League of Urban Gardeners, the San Francisco Conservation Corps, and Shelterbelt. Working with volunteers

and the park department, they will replace invasive alien plants with native species, and install willow cuttings and other erosion control measures.

The City will match the Conservancy's grant with $250,000 from Measure A, San Francisco's Neighborhood Parks Bond, approved by the city's voters last year.

SAN PEDRO CREEK ENHANCEMENT

THE CONSERVANCY approved $1.1 million in June to enable the Pacifica Land Trust to buy 1.1 acres at the mouth of San Pedro Creek next to Pacifica State Beach for habitat restoration, recreation, and flood control. The Land Trust will transfer the property to the City of Pacifica, which owns an adjacent 0.4 acre and will undertake the improvements as part of its flood prevention effort.

The City plans to remove a house that has repeatedly suffered flood damage, plant native wetland vegetation, and widen the creek channel and its floodplain. This will allow the creek to meander before it enters the Pacific Ocean, allowing higher floodwater flows and slower flood currents. The City expects to complete the restoration by October, and to monitor the results of its efforts for five years to make sure that new plantings survive and thrive.

San Pedro Creek is habitat for belted kingfishers, black-crowned night herons, green-backed herons, snowy egrets, and three endangered or threatened species: steelhead trout, San Francisco garter snakes, and California red-legged frogs.

The project will particularly benefit steelhead, which adjust from seawater to freshwater in the lagoon at the creek's mouth before they migrate upstream. The San Pedro Creek Coalition has counted thousands of juveniles and nearly 300 adult steelhead there during the spring run. Fisheries biologists are intrigued by the return of so many fish to this creek year after year, despite numerous obstacles.

The upper watershed of San Pedro Creek is relatively undisturbed. The project will provide a continuous habitat corridor to the ocean for steelhead, birds, and other wildlife.

The City will reimburse the Conservancy $300,000 from its next budget, and will provide $500,000, matched by the U.S. Army Corps of Engineers. The Conservancy has been involved with San Pedro Creek since the early 1990s. Part of its current contribution comes from Proposition 12.

COYOTE-ALAMITOS CANAL TRAIL

WITH THE HELP of $394,000 approved by the Conservancy in June, the City of San Jose will develop a master plan for the 4.5-mile Coyote-Alamitos Canal Trail, which will link Almaden Lake City Park and Santa Teresa County Park to the Coyote Park Chain. The trail will eventually serve a large urban population of joggers, walkers, skaters, bicyclists, and equestrians; will improve access to parks; and will connect to the planned 100-mile trail network in urban San Jose. In a related action, the Conservancy approved $200,000 for the Bay Area Ridge Trail Council to improve a 30-year-old Ridge Trail section along Coyote Creek.

GAVIOTA COAST PURCHASE

THE COASTAL CONSERVANCY voted to provide the Trust for Public Land (TPL) with $1.6 million to acquire 2,500 acres of El Capitan Ranch on Santa Barbara County's Gaviota coast.

This project will complete the Conservancy's use of a $5 million appropriation provided in the 1999–2000 state budget for acquisitions (in fee and easement) along the 70-mile Gaviota coast, one of the last stretches of undeveloped and unprotected coastline in southern California, lying between Coal Oil Point and Point Sal. A total of 3,960 acres has been protected with these funds. $2 million in Proposition 12 funds for the Gaviota coast are still available.

El Capitan Ranch extends from El Capitan State Beach, nine miles west of Goleta, to Los Padres National Forest. The purchase will protect diverse natural habitats on the 3,100-acre property and will allow trails to be built from the beach to the mountains. A campground and an equestrian center will remain in private ownership. TPL intends to transfer the land to California State Parks, which is expected to contribute $5 million for the purchase.

SANTA MONICA BAY RESTORATION

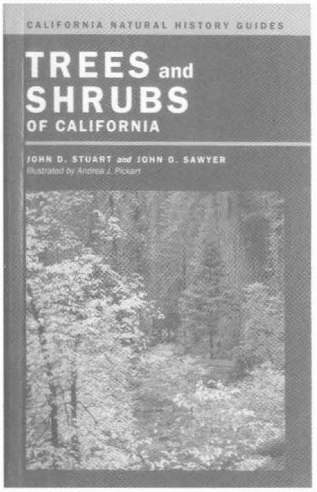
THE CONSERVANCY approved $3.9 million in Proposition 12 money for 16 projects to improve the water quality and natural environment of Santa Monica Bay. These projects are all part of the Santa Monica Bay Restoration Plan, selected by the Santa Monica Bay Watershed Council, working with Conservancy staff, from 63 applications. See the *Coast & Ocean* web site (www.scc.ca.gov/pubs) for a list of these projects.

LIZA RIDDLE

View of Gaviota Coast

Trees and Shrubs of California, *by John D. Stuart and John O. Sawyer, illustrated by Andrea J. Pickart. University of California Press, Berkeley, 2001. 479 pp., $45 (hardcover), $22.50 (paper).*

WHEN I FIRST MOVED to California in the early 1970s, one of the biggest surprises was that most of the trees were very different from those I knew in the Midwest and on the East Coast. I'd expected to see redwoods in the north and palms in the south, but was unprepared for either the tremendous diversity or the startling unfamiliarity of most of the state's trees, shrubs, and other plants. This, as much as anything, kept reminding me that I was a long way from home. Even now that California has long displaced the familiar landscapes of my youth in mind and heart, I often feel I'm in a Wonderland when surrounded by native plants and trees. As enchanting as this disorientation may be, I'd like to be able to identify the plants and have an orderly system through which I can understand their place in the landscape. This new addition to UC Press's California Natural History Guides is a great tool to help make this happen. The book's organization and format are clear and convenient; the color photos, line drawings, and range maps are outstanding; the text is thorough and straightforward. It may take some practice to become familiar with the identification keys, but then they should be handy and effective. This is a most welcome addition to our bookshelf.



—*HMH*

Guide to California's Marine Life Management Act, *by Michael Weber and Burr Heneman. Common Knowledge Press, P.O. Box 316, Bolinas, CA 94924, 2000. 133 pp., $5 (paper).*

TO IMPROVE MANAGEMENT of California's marine fish stocks, the State legislature passed the Marine Life Management Act in 1998. The Act seeks to make fishing sustainable and not subject to depletion of one stock after another.

This guide introduces the reader to the basics of the Act. It discusses the use of science, adaptive management, and constitutive involvement in working toward the goal of sustainability. Some 30 pages of text are linked with extensive appendices, including the text of the Act itself, useful web pages, and information on commercial fishing gear and methods. Michael Weber is a marine advisor to the California Fish and Game Commission; Burt Heneman is chairman of the California Marine Life Management steering committee, which advises the Commission.

—*Wesley Marx*

C'MON IN, THE WATER'S FINE (OR IS IT?)

DO YOU WONDER, as you dip your toes in the fringes of the Pacific, whether it might not be such a good idea? You've heard about pollution from industrial discharges or urban and agricultural runoff. You may have headed eagerly to the beach, only to find it closed, with health warnings posted. Now you can check online the latest water quality monitoring results for much of the California coast—and for watersheds, streams, and other water bodies here and nationwide. Several web sites provide regularly updated information on water quality—some with extensive scientific detail, others geared more toward casual beach users.

Surfrider's Blue Water Task Force trains volunteer water monitors who test water quality in conjunction with local Surfrider chapters. So far, results from Laguna Beach and San Clemente (soon to be joined by Santa Barbara) are posted at www.surfrider.org/programs/bwtf.htm.

Heal the Bay's web site at www.healthebay.org offers both an annual review of water quality at beaches from Santa Barbara County to San Diego County and weekly report cards for those beaches. You can get quick readings for individual beaches by pointing at them on a map, or click for more detailed text descriptions. This site stresses the difference between dry and wet weather as a key factor in beach safety.

The U.S. Environmental Protection Agency's Scorecard site, www.scorecard.org, provides lots of information about all kinds of environmental pollutants, including problems and status of sites under the 1998 Clean Water Act, searchable by state, county, or watershed. The EPA also has a site where you can "surf your watershed" at www.epa.gov/surf3. Here you can find a wide range of water quality data, as well as information about restoration projects and links to local environmental websites.

In July the U. S. Geological Survey launched an online National Water Information System at water.usgs.gov/nwis that has data from 1.5 million USGS surface and groundwater data collection stations. This vast data bank includes historic information for many sites, as well as real-time readings. It covers rivers and streams, lakes and aquifers, but not beaches and seawater.

Tree

It is foolish
to let a young redwood
grow next to a house.

Even in this
one lifetime, you will have to choose.

That great calm being,
this clutter of soup pots and books—

Already the first branch-tips brush at the window.
Softly, calmly, immensity taps at your life.

—Jane Hirshfield
from *Given Sugar, Given Salt*
HarperCollins, 2001
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Coastal Conservancy

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