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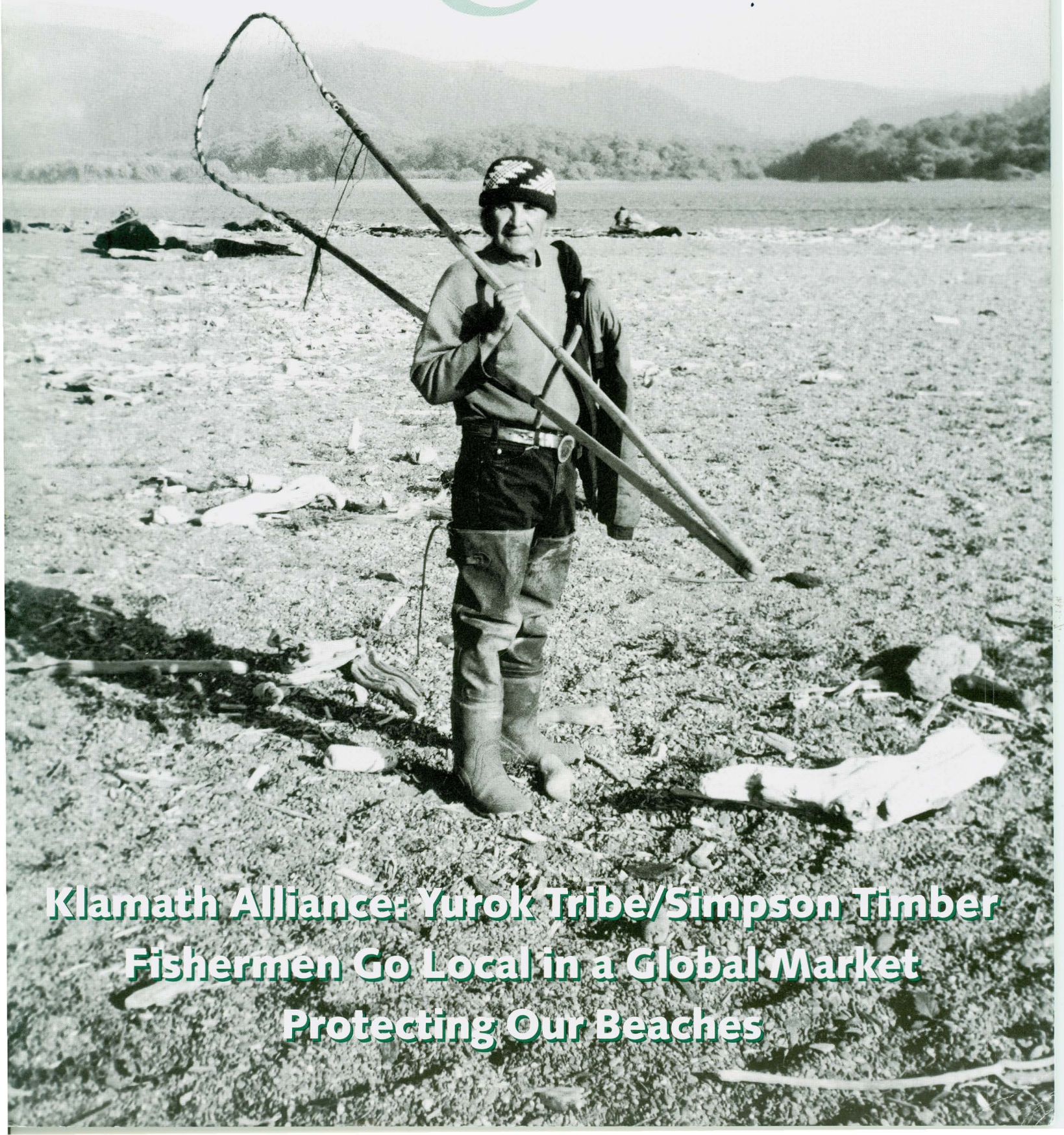

Klamath Alliance: Yurok Tribe/Simpson Timber

Fishermen Go Local in a Global Market

Protecting Our Beaches

Year of the Ocean Web Sites
It's still the Year of the Ocean, and the network of groups and people sharing oceans of information keeps expanding. Check out the United Nations web site: www.ocean98.org; two sites from the National Oceanic and Atmospheric Administration: www.yoto.com and www.yoto98.noaa.gov; and the site of the Intergovernmental Oceanographic Commission and UNESCO: ioc.unesco.org/iyo for Year of the Ocean links all over the planet.

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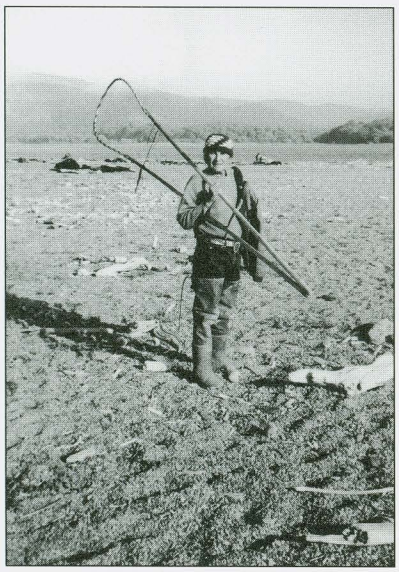

Cover photo: Desmond "Merkie" Oliver, Yurok tribal fisherman, on the Klamath Estuary. The chinook he caught in his dipnet is being carried by a friend, off camera. Photo by Mark Wheetley.

Back Cover photo: Alan Hopkins

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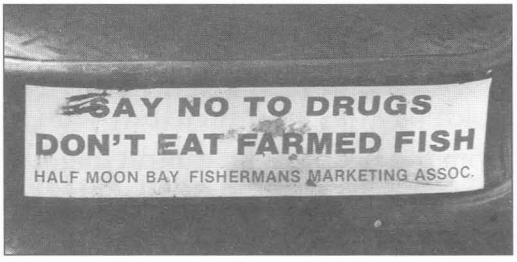
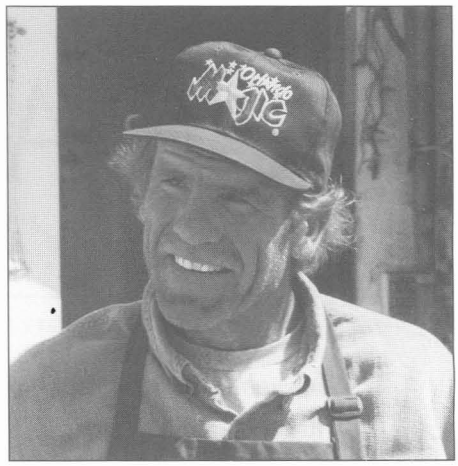
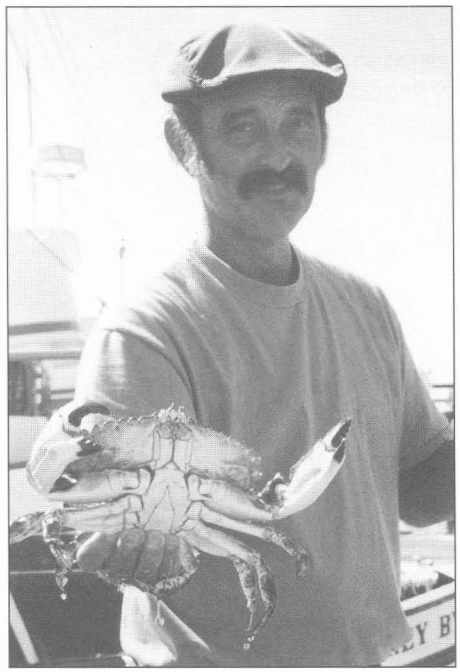


WESLEY MARX

Fishermen Go Local, Selling Dock-to-Table



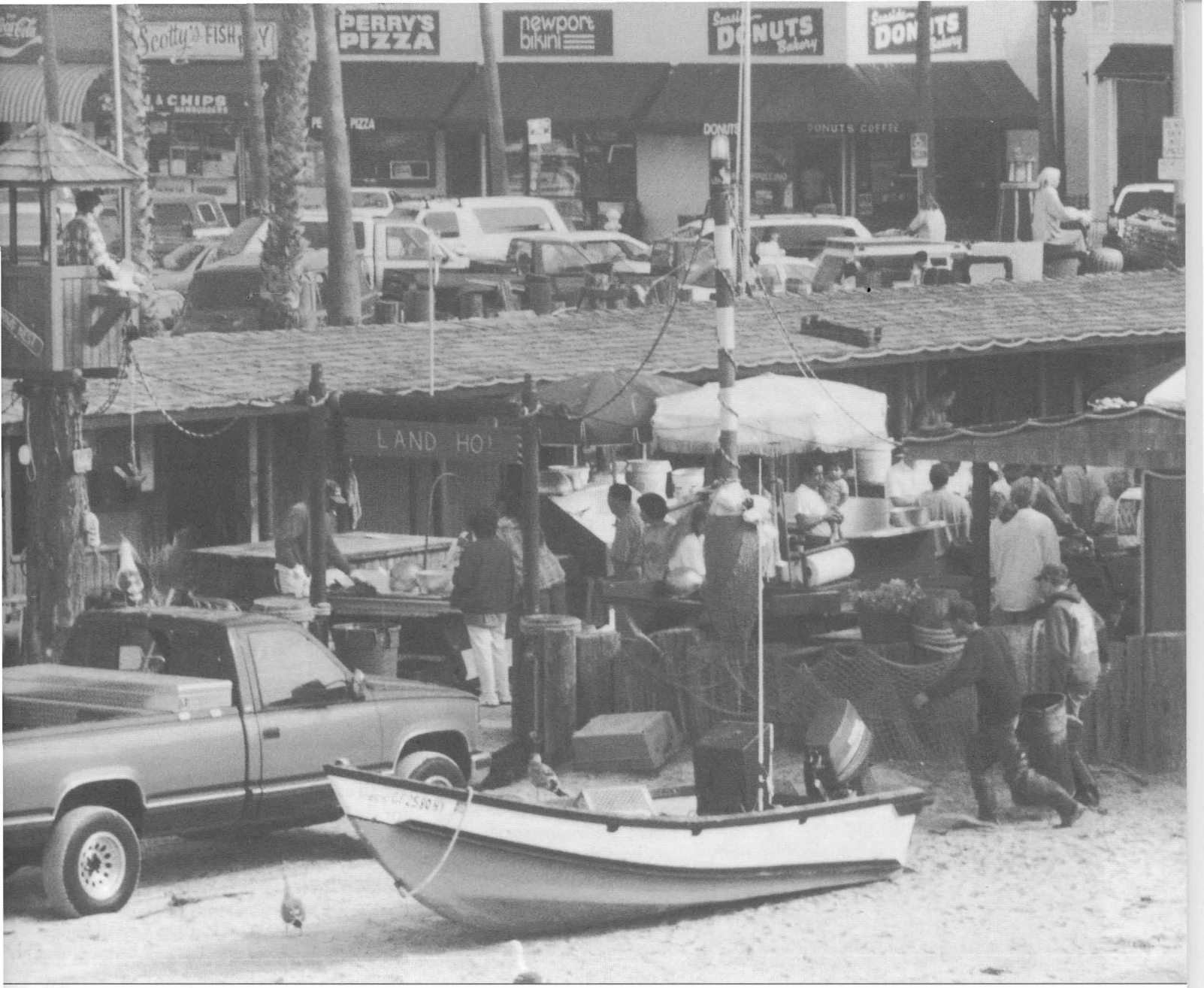


TEXT AND PHOTOS BY WESLEY MARX

DUNCAN MACLEAN selected four salmon from the ice chest in the back of his fishing boat, weighed them, slipped them into plastic bags, and handed them to a smiling customer. In May he had been about ready to walk away from his life as a commercial fisherman: wholesalers were offering $1 a pound for fish that had fetched $3 or more in years past. "We couldn't even cover our costs at this price," he said. "We were driven to bankruptcy." Now, he hopes to hang in by bypassing the brokers and selling dock-to-table. At $3.50 a pound the gorgeous silver-scaled fish were a good deal, both for the consumer and for MacLean.

"This is better for you and it is better for us," said his customer, Carolyn Fujimoto. Other seafood lovers have flocked to harbors up and down the coast from Newport Beach to Humboldt Bay this autumn to buy wild fish directly from the people who caught them.

More and more commercial fishermen are learning to market their catch directly to



appreciative consumers in an effort to survive the crunch of global forces that drive down the value of their harvest. This crunch is particularly severe for California salmon fishermen like MacLean. On the one hand, they must abide by strict restrictions on when, where, and how many king salmon they may catch. These restrictions have been imposed not because of overfishing but because dams, water diversion projects, and logging have destroyed spawning habitat. The more habitat is lost, the stiffer the regulations are on fishermen.

On the other hand, the fishermen are facing competition from salmon producers in Norway, Chile, Washington's Puget Sound, and elsewhere who raise their fish (mostly Atlantic salmon) in pens or cages suspended in coastal bays—without having to worry about dams, ocean storms, or salmon quotas. Chile alone, a country with no native salmon, now exports to the United States, by cargo plane, 30 thousand tons of farmed salmon a year. Compare that to the annual catch of king salmon in California, which ranges between two and seven million pounds.

Many supermarkets prefer this fish even when wild salmon is available because farmers can supply it in large volume at predetermined sizes year-round. And as salmon farms proliferate, so do the packaged spinoffs for the "grab-and-go" shopper: salmon patties, salmon hot dogs, and, yes, salmon baloney.

As farmed salmon undercuts the price of wild salmon, California fishermen become pawns rather than players in the global fish market. This year the vise tightened. With

Top left: Duncan MacLean
Middle left: Jim Salter holds rock crab that will be bagged and sold.
Bottom left: Chris Sallie holds an albacore at Pillar Point Harbor.
Right: The dory fishermen's market at Newport Beach opened in 1891.

Can Salmon Farmers Clean up Their Act?

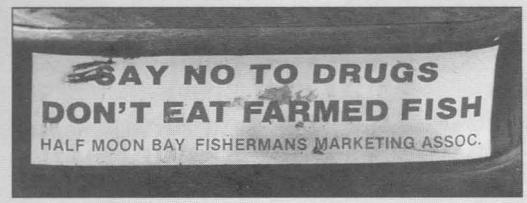
IN SCOTLAND, RUNS OF WILD SEA TROUT recede, weakened by a debilitating parasite, the sea louse. The source: salmon pens, where sea lice multiply among captive salmon.

Coastal fishermen around the world are becoming increasingly concerned about the threat salmon farms and other forms of marine aquaculture pose to their stocks (see *Coast & Ocean,* Summer 1998). Some governments that once encouraged this industry are now having second thoughts.

Fish farmers, like their land-based counterparts, use antibiotics to control disease outbreaks. Heavy drug use can cause bacteria to develop resistant strains. A 1998 report by the National Research Council, *The Use of Drugs in Food Animals,* found that such strains can be passed from food animals, including fish, to humans. The number of cases of human sickness linked to such transfers is low, but the report warns that much more research is needed to determine the public health risks.

Atlantic salmon that escape from pens pose more than just a disease threat to native stocks. Arthur Whitely, a zoologist with the University of Washington, has been predicting since 1990 that escapees from pens in Puget Sound and British Columbia would compete with native stocks for food and habitat. Consultants retained by salmon farmers ridiculed Whitely as an eco-crank. But by 1996, Atlantic salmon had been found in 30 streams, dining on wild salmon eggs and other natural fare. Not to worry, responded the consultants: the aliens would not reproduce and would die off. On September 23, 1998, the *Vancouver Sun* reported that 12 juvenile Atlantic salmon had been found in the Tsitika River on Vancouver Island—the first firm evidence of successful reproduction in the wild. With 60,000 Atlantic salmon escaping from pens in British Columbia each year, this region now has a voracious pest, another threat to declining native salmon stocks.

Coastal fishermen also worry about fallout from other practices. Captive salmon, shrimp, and other farmed marine species are fed protein-rich fishmeal produced from sardines and other small fish—the very same small fish that wild fish, seabirds, and many marine mammals subsist on. During the 1997–98 El Niño year, when warm temperatures depressed populations of small fish off Chile and Peru, salmon farmers shifted to vegetable proteins. But this resulted in inferior fish with a gelatinous texture.



Because of these and related concerns, British Columbia has placed a ban on new salmon farms while it assesses the need for stronger controls. Washington State has classified escaped farmed salmon as a "living pollutant" that must be regulated. Up to 300,000 salmon a year have escaped in Washington.

Some coastal states have concluded that the environmental risks posed by pen culture can never be adequately controlled. Alaska, Oregon, and California do not permit commercial salmon farming in pens. In British Columbia, the Sierra Club Legal Defense Fund and Greenpeace want to ban pens from coastal waters and require that salmon be raised in "tank farms," closed systems on land.

The aquaculture industry claims such bans are instigated by commercial fishermen to shut out seafood competitors. But some members of the industry think it's time for serious reforms. Some salmon farmers in New Zealand and Europe certify their crop as organic—stocking lower densities without drugs or pesticides. A United Nations agency, the Food and Agriculture Organization, has developed guidelines for sustainable aquaculture which include these key points: no more loss of natural habitat, and more reliance on closed systems and on farm fish that do well on vegetable proteins, such as catfish, tilapia, and mollusks. —*WM*

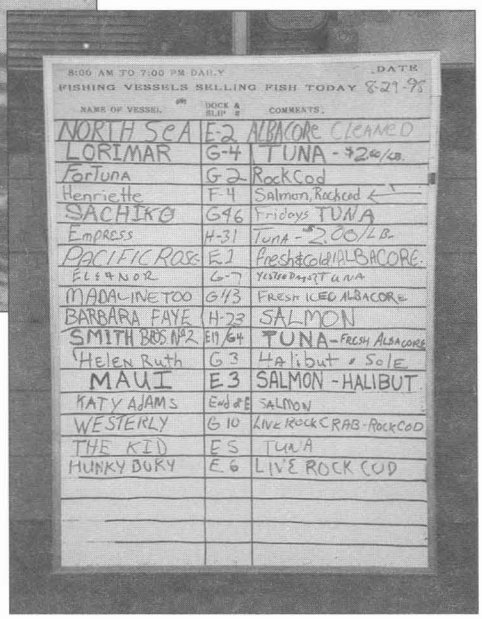
Asian economies in trouble, the demand for seafood imports in those countries dropped, and salmon farmers from Chile to Norway stepped up exports to the United States. Wholesale prices for wild salmon in California have gone into freefall.

Traditionally, fishermen sell their catch to wholesale fish buyers or brokers, who in turn, sell to supermarkets and restaurants. When they heard this year's prices, some decided to try carpentry or truck driving for a living. MacLean, president of the Half Moon Bay Fishermen's Marketing Association, was among those who took another tack.

Seeing that people were paying $7 to $8 a pound in supermarkets for salmon raised in pens halfway around the world, the Association decided "we could offer salmon that was fresher and better-tasting at half this price if we cut out the middlemen." All they needed was a retail venue. They found it right beneath their feet: on the sterns of their berthed vessels. To use it, however, they also needed commercial activity permits from harbor authorities. In Pillar Point, that meant approaching the San Mateo County Harbor Commission.

The Commission charges fish brokers $225 a year for such permits to help offset

Left: Bumper sticker on a car at Pillar Point Harbor
Top: Salmon farm pens in Puget Sound, Washington State
Below: Daily roster of vessels and fish each is selling at Pillar Point Harbor



8:00 AM TO 7:00 PM DAILY — DATE

FISHING VESSELS SELLING FISH TODAY 8-29-98

NAME OF VESSEL	DOCK & SLIP #	COMMENTS
NORTH SEA	E-2	ALBACORE CLEANED
LORIMAR	G-4	TUNA - $2.00/LB.
FORTUNA	G-2	Rock Cod
Henriette	F-4	Salmon, Rockcod
SACHIKO	G-46	Fridays TUNA
Empress	H-31	TUNA - $2.00/LB.
PACIFIC ROSE	E-1	Fresh & Gold ALBACORE
ELEANOR	G-7	Yesterday's TUNA
MADALINE TOO	G-13	FRESH ICED ALBACORE
BARBARA FAYE	H-23	SALMON
SMITH BROS No. 2	E-11/G-4	TUNA - FRESH ALBACORE
Helen Ruth	G-3	Halibut & Sole
MAUI	E-3	SALMON - HALIBUT
KATY ADAMS	E-6 & E	SALMON
WESTERLY	G-10	LIVE ROCK & CRAB - ROCK COD
THE KID	E-5	TUNA
HUNKY DORY	E-6	LIVE ROCK COD

harbor maintenance costs. In this case, though, it decided to waive the fee and grant emergency permits to the down-and-nearly-out fishermen, for $1 a year. "They already pay berthing fees to help defray these costs," explained Peter Grenell, general manager of the San Mateo County Harbor District. Indeed, the well-being of the harbor is linked directly to that of the fishermen. Their berthing fees represent the harbor district's largest source of revenue.

With permits in hand, the fishermen faced another test. Would enough people in the area drive to Half Moon Bay to buy fish? "We had no ad budget to let consumers know we even existed," said MacLean. "We needed free media coverage." On an outside chance, the fishermen contacted CNN. "We were lucky. It must have been a slow news day," says MacLean. "We were on national TV news and received exposure no supermarket ad money could ever buy."

Customers came by the hundreds. On the first day, some fishermen sold their weekly catch of 60 salmon in three hours or less. In the next nine days they sold over 10,000 pounds of fish. "We were back to making a living," said MacLean.

Clearly the fishermen have made a market discovery: all salmon are not considered equal. "I don't like my salmon raised in overcrowded pens prone to disease," one Pillar Point customer said. "To me, the wild has more flavor and a firmer texture," said another. Wild salmon have higher levels of omega-3 fatty acids than farmed salmon, and this higher oil content imparts a bolder, more robust flavor. Mrs. Fujimoto is among those who will go a long way for wild salmon. Last year she paid $10 a pound to have some air-freighted from Seattle. Now she gets it fresh out of the ocean for $6.50 less by driving from her home in Santa Clara to Half Moon Bay. "I don't mind the 30-minute drive," she said. "It's a treat to walk around the harbor."

The harbor's seaside ambiance obviously appeals to shoppers tired of the vast indoor caverns of the impersonal supermarket. No salmon patties in shrink-wrap here. Entire families, from grandparents to babes in arms, survey and select for the dinner table. Some stop for a snack or a cup of coffee before heading home.

Because of health regulations, dockside fishermen only sell whole fish or fish that

are gilled and gutted. A local fish market does a bustling business cutting whole salmon purchases into fillets and steaks. "The dockside sales have had a very positive impact on overall harbor operations," said Pillar Point harbormaster Dan Temko.

Encouraged by such acceptance, the fishermen want to continue selling fish here year-round. On October 21, the Commission extended their emergency permit to March 31, 1999.

Fishermen have also been selling boat-to-table in Santa Barbara, Morro Bay, Santa Cruz, Moss Landing, San Francisco, Bodega Bay, and Humboldt Bay. In Newport Beach, dory fishermen have been selling their daily catch from beachside stalls since 1891.

Farmers' Markets Showed How

AT SAN FRANCISCO'S Fisherman's Wharf, a customer has to be both well informed and determined to get to the fishermen. Parking in the vicinity is nearly impossible, and the dock is hard to find among the souvenir shops and glass-walled seafood emporiums. But enough people figure the effort is worth their while. "A jogger came by to take a ten-pound salmon," said Jason Salvato, who caught the fish off Point Reyes.

With the presence of working fishermen selling salmon and other fish from local waters, "the Wharf gets a whiff of authenticity amid its T-shirt tackiness," the *San Francisco Examiner* commented. The fishermen are working with the Port of San Francisco on guidelines to govern permanent dockside sales.

Like the farmers on the city's fringes who discovered that people appreciate fresh, local food and so organized farmers' markets, the fishermen are working to expand their direct-to-consumer sales and diversify. In fact, farmers' markets have become venues for some. While Jim Salter and his son Todd were selling rock crab at Pillar Point Harbor, his wife and two daughters were at the Alemany Farmers' Market in San Francisco with more crab. The Salter family has sold their harvest year-round at five different markets for a decade.

Another Half Moon Bay fisherman, Pietro Parravano, sells in the upscale farmers' markets in Menlo Park and Palo Alto. He and his wife, Joan, cut the whole salmon into customer-friendly steaks and fillets and pack them in plastic zip-lock bags with their private label. Customers clutching sunflowers, melons, and vegetables line up six and seven deep to buy fish from the *Anne B.*, Parravano's 37-foot vessel. The atmosphere is festive. A harpist is nearby, playing Celtic selections. Customer loyalty enables Parravano to sell up to 400 pounds of fish a day from the rear of his pickup truck. Waiting in line, Barbara Clark, a regular, said: "I like to know where my fish comes from and I like to talk with the person who caught it."

Parravano also enjoys the chats, and they're not always idle. One September Sunday morning, a customer reported that the butcher at a local market was claiming the wild salmon season was over and that only farmed salmon would now be available. Parravano shook his head. "We have a month to go," he said. This writer decided to visit the seafood counter in question. A butcher materialized in front of a tray of salmon fillets labeled as farmed. He told me that wild salmon was "unavailable" and that the season was "just about over." (Ironically, this upscale market advertised "free-range and locally grown poultry.") I returned to Parravano's modest fish stall and discovered another reason why his customers are so loyal. He was selling his wild salmon at $1 a pound less than the going price for pen-raised salmon.

Parravano used to be a high school biology teacher. Now he is educating the public on fishery matters. When a customer wondered if he catches his salmon in nets, he

Dory fishermen at Newport Beach

was happy to set the record straight. "Unlike the big industrial fish fleets, we don't use huge nets that capture unwanted or endangered sea animals. As trollers, we hook these salmon one by one, and we release undersized fish immediately. We use a barbless hook that reduces fish stress and bleeding." When public issues arise concerning the protection and restoration of salmon spawning habitat, Parravano is able to mobilize his customer base to write or e-mail to state and federal officials.

Working for the Future

COMPETITION FROM fish farmers is growing. They plan to raise more coastal marine species, including halibut and other flatfish. But their ability to resolve environmental problems will determine to what degree mass-produced fish will be a part of our seafood future (see page 4).

California coastal fishermen are also learning other ways to influence their future. Parravano, as president of the San Francisco–based Pacific Coast Federation of Fishermen's Associations, works with the Sierra Club, the Natural Resources Defense Council, and others to protect salmon habitat. "Unlike the so-called Wise Use Movement, we don't want to roll back the Endangered Species Act and other environmental laws," he said. "As fishermen, we want these laws implemented to protect habitat."

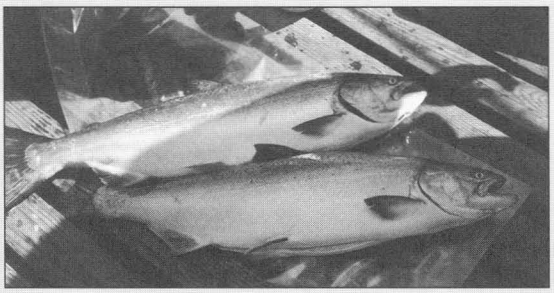
The Association also works with coastal fishing groups around the world that are concerned about habitat loss and overfishing by large industrial fleets. On November 21 they plan a World Fisheries Day, during which "coastal fishing groups will make these concerns known to the communities they serve," Parravano said. Out of necessity, he and his fellow fishermen are becoming players, rather than pawns, in the global fish market. ■

Wesley Marx has written widely on fishery and marine conservation issues. His e-mail address is wmarx@primenet.com.

For information on **World Fisheries Day** events, call the Pacific Coast Federation of Fishermen's Associations at (415) 561-5080.

King Salmon in Search of a Future

OF THE FIVE SALMON species that occur in California, the king (chinook) is the most esteemed. It can weigh up to 127 pounds. Today's largest king salmon runs occur in the Sacramento–San Joaquin River system, four times a year: in winter, spring, early fall, and late fall. The spawning population of the winter run has declined by 99 percent in the past 25 years, and the National Marine Fisheries Service has listed it as endangered. The spring run is a candidate for similar listing.



The causes of the salmon's imperiled condition are obvious. Only five percent of the Sacramento River basin's historic salmon habitat remains, 300 of 6,000 miles. Dams block the fish from ancestral spawning grounds, river water is diverted for agriculture and urban development, sediment from road cuts and from logged and urbanized hillsides muddies the water. The early fall run is also vulnerable because it depends in great part on hatchery-produced juvenile fish from captive salmon broodstock, which are more susceptible than wild stock to genetic inbreeding and infectious disease outbreaks.

Similar problems have depleted salmon runs on the Klamath and Smith Rivers and on smaller coastal rivers, including the Redwood, Mad, and Mattole.

State and federal resource agencies are funding efforts to restore spawning habitat, to screen irrigation diversion outlets that kill young salmon, and to remove derelict dams. In July of this year, Secretary of the Interior Bruce Babbitt presided over the removal of four small, outmoded irrigation dams on Butte Creek, a tributary of the Sacramento River, reopening eight miles of prime spawning habitat for salmon. In June, the federal Ninth Circuit Court of Appeal ruled that state and federal agencies must include provisions to protect salmon runs in renewing water contracts.

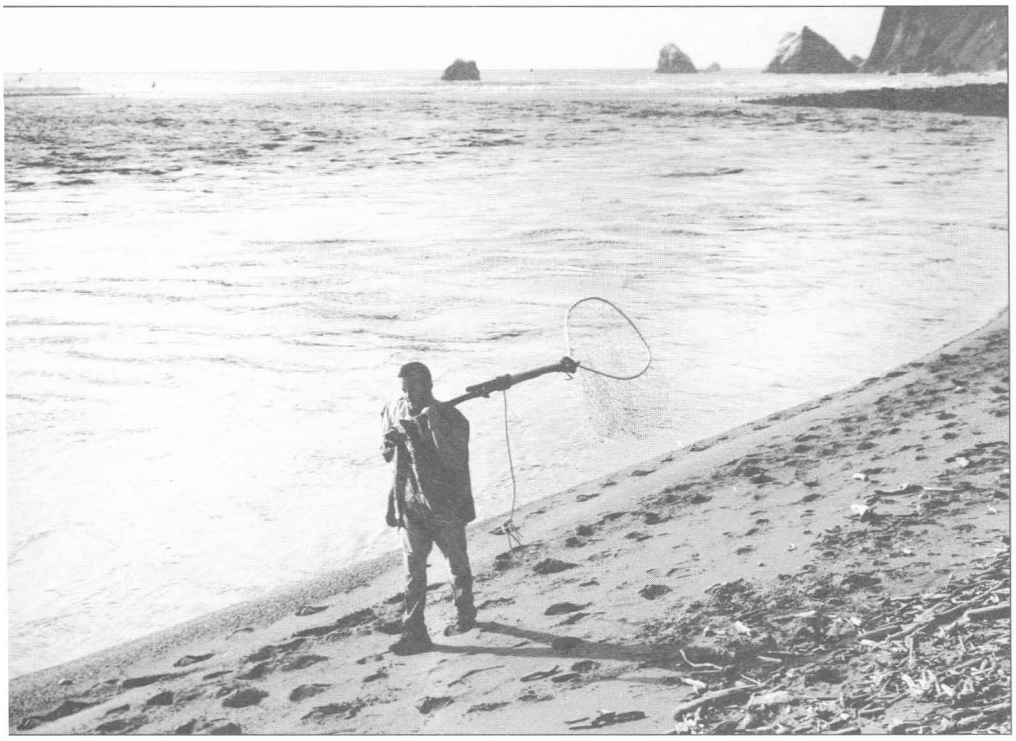
No significant action has been taken, however, to stop the destruction caused by the pumps near Tracy, which withdraw water from the Sacramento–San Joaquin Delta for agricultural use in the Central Valley and urban use in southern California. The pumping system, run by federal and state water agencies, is a "black hole" for fish, says Zeke Grader, executive director of the Pacific Coast Federation of Fishermen's Associations. The massive withdrawals degrade water quality and reduce food supplies for fish. The huge pumps entrain and kill juvenile fish. Changes in the amount and timing of the withdrawals could make the pumping system more fish-friendly and expedite salmon recovery. However, proposals for these changes are enmeshed in a legislative stalemate over how to allocate water supplies.

—*WM*

Mending the Klamath Watershed

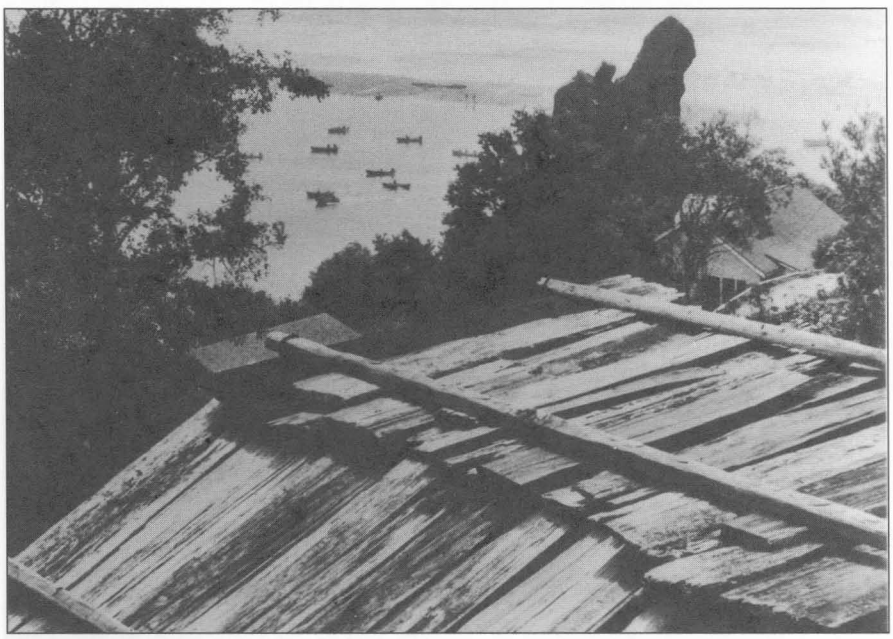
RASA GUSTAITIS

LATE ONE RECENT AUTUMN AFTERNOON on the Klamath River Estuary, shortly after fishing opened again for tribal members, it was easy to imagine that nothing had changed since the time when only Yurok people lived here. The tide was going out, and turbulent water rushed through the channel between two sand spits at the river's mouth. The last of the fall-run chinook were struggling upstream, the coho were expected, and Yurok fishermen stood on both sandbars, casting and pulling in drift nets and dip nets while watching out for the sea lions diving for the same fish. Whenever anyone—sea lion or human—caught a fish, others converged on it too, in a great bubbling frenzy. Above them circled seagulls and pelicans, alert to any morsel that might hit the water. Upstream, in the forests, others would be fishing at ancestral fishing sites. A tribal monitor counting fish on a recent night had reported seeing a bear on every outcropping.



MARK WHEETLEY

The impression of abundance was illusory, however. Coho salmon were recently listed as threatened under the Endangered

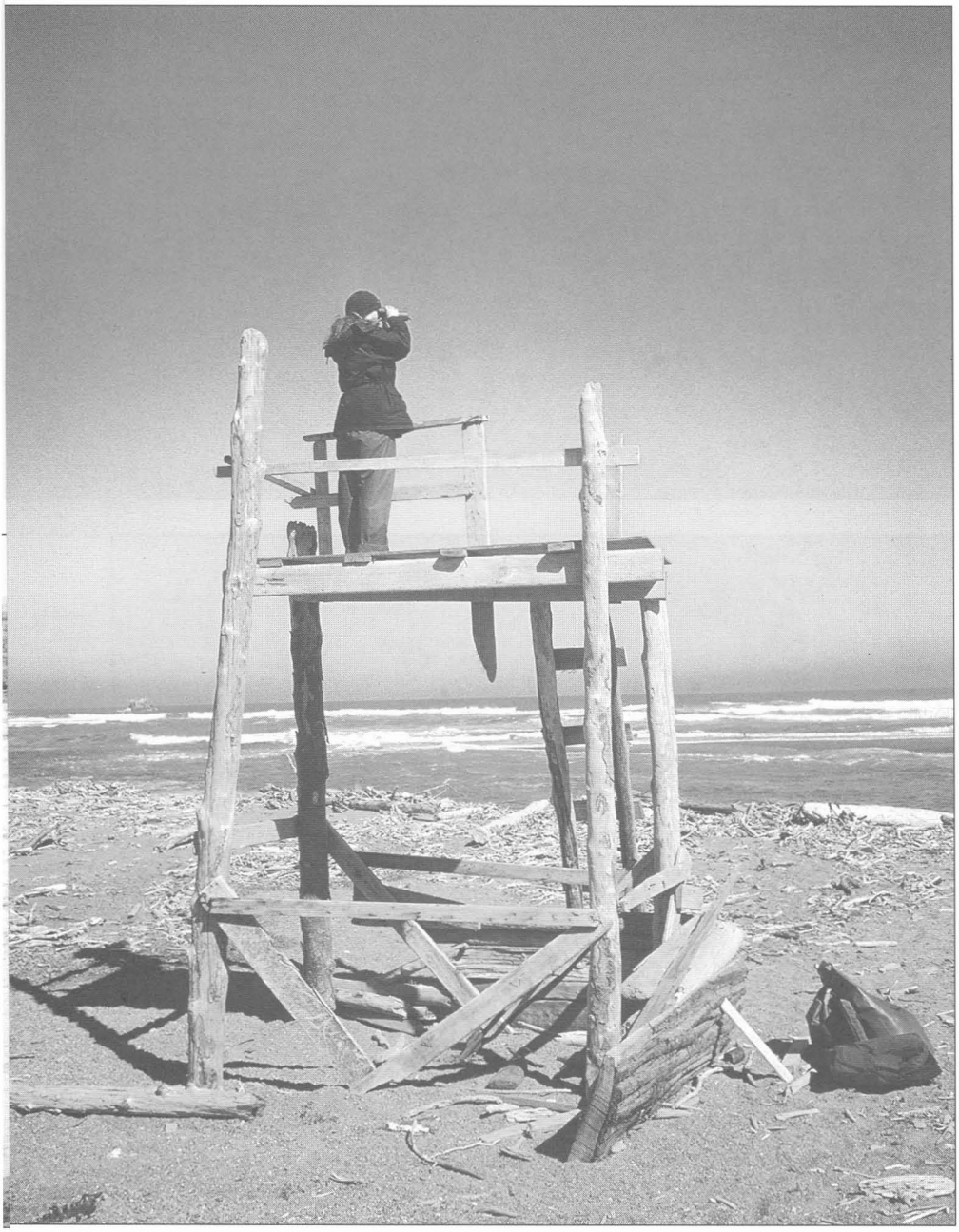


LEFT: PAT HIGGINS; RIGHT: YUROK TRIBE; ABOVE: MARK WHEETLEY

Top: Klamath Estuary, looking south; Bottom left: Gravel and sediment from steep logged-over hillsides have filled the Terwer Creek channel. Bottom right: Looking over a traditional roof towards Oregos and fishing boats, several dozen years ago

Species Act, and steelhead are being considered for listing. In the 1990s, so few chinook returned that the off-shore commercial fishery was devastated. This year, the quota-driven sports fishery on the Estuary was abruptly shut down in the middle of Labor Day weekend, to the dismay of local businesses. Although the Yurok and Hoopa Valley Tribes have the reserved right to 50 percent of the Klamath salmon harvest (of which the Yurok harvest 85 percent), "only once in this decade did our Tribe choose to sell fish," says Troy Fletcher, fisheries manager for the Yurok Tribe. "There has not even been enough for minimal subsistence needs."

Kathleen Williamson on the lookout for pinnipeds eating fish. The Yurok Tribe is studying the extent of pinniped predation on salmon in the estuary.



RASA GUSTAITIS

On the north side of the Klamath River Estuary stands a rock that, from certain angles, resembles a woman with a burden basket on her back. The Yurok know her as Oregos. Legend has it that in times past she would sometimes stretch a leg out across the tidal channel. The people would then gather for a ceremony to persuade her to let the fish pass.

The Yurok have lived on the Lower Klamath for uncounted generations. They continue to do their ceremonies, including the Jump Dance to restore balance to the world. But to bring back the salmon, which are central to their culture, they now use management techniques based on the best available science. The Tribe employs 15 fisheries biologists, three geologists, and 40 to 60 technicians, depending on the time of year. Such expert power is comparable to, and may be "more than the Department of Fish and Game and the U.S. Fish and Wildlife Service have in the area," said Fletcher, a fisheries biologist.

What happened to the salmon is no mystery: dams, water diversions, and a century of logging without regard for the needs of fish or fishers. From the river mouth the forested hills look pristine, but that too is an illusion. They are a maze of tractor trails, abandoned stream crossings, and logging roads—up to ten miles of road per square mile in some areas. Eroded soil moves down into creeks and rivers, blocking the way for fish, filling in pools and spawning beds.

Now, however, efforts are under way to repair the damage, and the Yurok are in the lead. "We can't afford not to be," said Tribal Chairperson Susan Masten. "The Yurok are so intricately interdependent with the salmon that if there weren't any salmon, I'm not sure there would be any Yurok."

Among several tribal initiatives, perhaps the most promising is the Lower Klamath Restoration Partnership, a cooperative endeavor by the Tribe, the Simpson Timber Company, and the Coastal Conservancy. It is designed to accomplish three goals simultaneously: improve the health of the Klamath River and its tributaries, improve the health of the anadromous fishery, and train unemployed tribal members to become experts in the new and growing field of watershed restoration. All three goals are served by reducing sediment flow into streams. In late October, the first group of 16 tribal members, 14 men and two women,

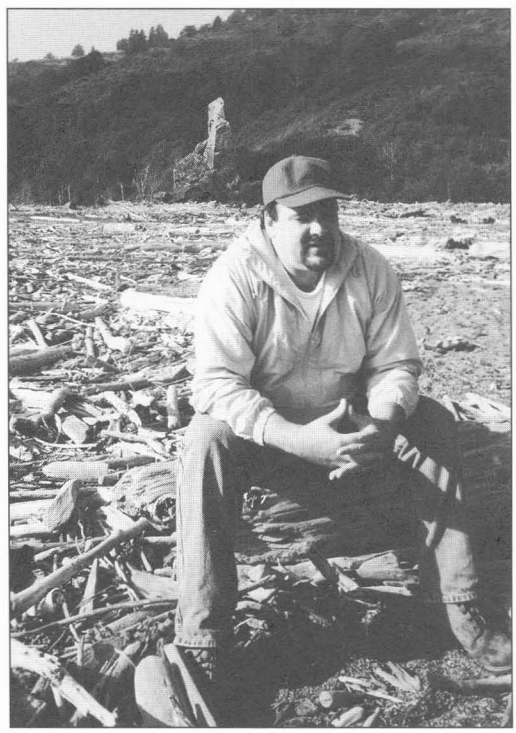
completed four months of intensive training. They acquired the whole spectrum of needed skills, including mapping, recognizing potential landslides, calculating slope, and operating excavators and other heavy equipment. They learned mostly on the job, repairing the logged-over watersheds of McGarvey and Ah Pah Creeks.

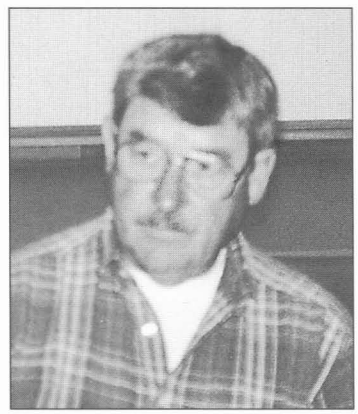
Their job prospects appear to be good. Both public agencies and private landowners on the north coast will be required to adopt and carry out habitat conservation plans for threatened and endangered anadromous fish species. This will inevitably require watershed restoration, and the Yurok will have qualified crews ready to take on the job.

The Yurok Tribe, with 4,000 members, is the largest tribe in California. It was formally organized in 1988 with the passage of the Hoopa-Yurok Settlement Act. The 59,000-acre Yurok Reservation extends 44 miles upstream from the estuary, a mile on each side of the Klamath River, and encompasses more than 24 tributaries, which drain 450 square miles of forest lands. About 80 percent of the Lower Klamath watershed, however, is under the ownership of Simpson Timber.

With the formal organization of the Tribe came the sovereign government's responsibility to manage the Tribe's affairs. The fisheries' resources are one of the Tribe's most impormant assets. However, "it was soon obvious: the tribal right to 50 percent of the fishery was meaningless unless we restored the fishery," said Fletcher. This would require cooperation with Simpson Timber and others.

COURTESY YUROK TRIBE





LOWER PHOTOS: MARK WHEETLEY

Top: Mamie, Leslie, and Minnie Shaffer loading fish into a wooden burden basket several decades ago
Left: Troy Fletcher
Above: Tharon O'Dell

Search for Common Ground

ON THE ISSUE of watershed restoration, "there was no reason for us to be at odds," Tharon O'Dell, timber lands resource manager for Simpson Timber, recently reflected. "The Yurok are interested in fish; we see that our wealth is our soil—it grows our trees. We all want the soil to stay on the slopes. So we had no argument there."

O'Dell, who taught in the forestry department at Humboldt Sate University from 1971–79, knows well why the soil is eroding and what that does to the fish. "Early timber operators—even though they followed what were the best practices at that time—built bridges, 'Humboldt crossings,' with not much thought about coming back." They made corduroy paths by laying logs across streambeds, then dragged the cut trees out with teams of horses and oxen. They built layouts—mounds of earth for trees to fall into—and left them to become sources of sediment. "We inherited many of these, and we built some as well," said O'Dell. "Their lifetime is over."

Simpson is the largest timber company on the north coast, with 456,000 acres in

HUMBOLDT STATE UNIVERSITY LIBRARY ARCHIVES

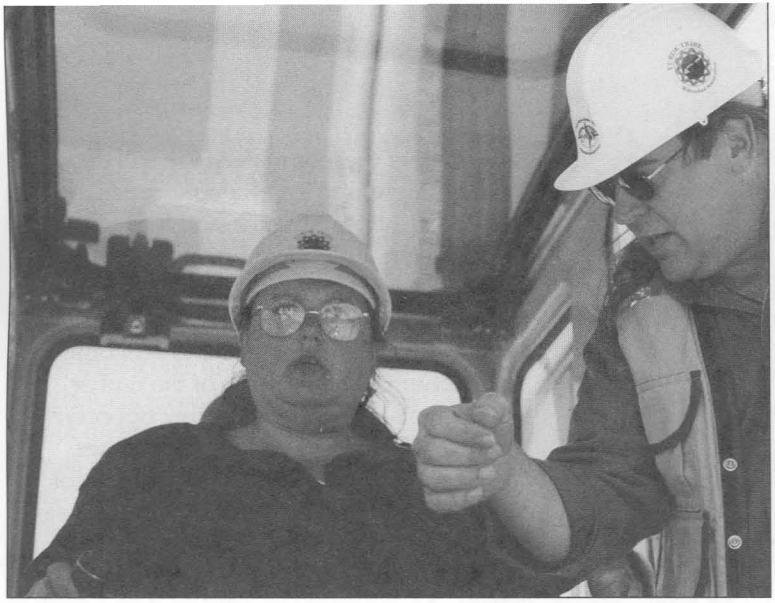
In the early days of logging, corduroy roads were built in streambeds so horses or oxen could haul out ancient trees.

Humboldt, Del Norte, and Trinity Counties. Because it has been family-owned from its beginning in 1890, it is not driven to maximize profits as some publicly-owned timber firms are. "We tend to spend a lot more on rehabilitation, management, tree improvement, and genetics. And our ability to respond to opportunities is better," said O'Dell. After the northern spotted owl was listed as threatened, "we checked if we had these birds and found we did. So we did the biological assessments, wrote a habitat conservation plan, and acquired an incidental-take permit from the U.S. Fish and Wildlife Service so we could continue to conduct our business." This was the first habitat conservation plan for the owl to be adopted and approved in the entire northwest. In autumn 1994, as the coho and steelhead were being considered for listing, Simpson was ready to be even more proactive.

"We know that the public has a big interest in our business," said O'Dell. "The Endangered Species Act has been a very potent force in driving changes in timber practices, and it increased everyone's awareness of public trust resources—air, water, and wildlife. I feel, however, that federal regulators made poor decisions because they were required to act before the complete biological evidence was available."

In the early 1990s, the Coastal Conservancy's north coast representative, Mark Wheetley, approached the Tribe and Simpson Timber with the suggestion that the agency could play a useful role here for everyone's benefit. The Conservancy has helped to resolve many tough land use conflicts up and down the coast by bringing diverse interests together on common ground.

"In the beginning, both were quite wary—not only of each other but also of us," said Wheetley. For a company in the business of cutting trees, neither Indians nor state agencies concerned with conservation were necessarily good news. To many Yurok people, the words "state" and "federal" brought back memories of the 1986 fishing wars. Masten recalls that "agents in full riot gear were on the river to stop Yurok gillnet fishermen, even while non-Indians continued to fish." She recalls a bumper sticker: "Save the salmon: can an Indian." The Tribe now manages its own



LEFT: TERRAWAVE SYSTEMS, INC.; RIGHT: MARK WHEETLEY

fishery. Yet both parties saw merit in Wheetley's proposal.

To build the foundation for a common effort, the Conservancy funded a study by Balance Hydrologics, Inc., that led to publication of *Background Report and Strategic Workplan for Watershed Restoration Planning for the Lower Klamath,* covering all the watershed lands below the confluence with the Trinity River. It confirmed what was already common knowledge: the main cause of impaired habitat in the tributaries was sedimentation—the consequence of intensive logging and road building on naturally fragile slopes in the 1950s–70s.

Because rainfall in the steep-sided Lower Klamath is higher and the soil more erodible than farther inland, 10 to 20 times more sediment runs into creeks and rivers here than upstream, according to the report. This silt fills pools where salmon would have spawned and builds sandbanks at the mouths of most tributaries, preventing the passage of both adults and juveniles.

Many meetings were held before the Partnership was formally entered into in 1996. A goal was adopted: increase habitat for four key species—coho, chinook, steelhead, and cutthroat trout—in the tributaries by reducing sediment flow. The Coastal Conservancy provided $200,000 to the Northern California Indian Development Council, a nonprofit organization based in Eureka, to work with the Partnership to prepare a strategic plan and prioritize tributaries to ensure that the work would begin where the highest return for the investment could be expected. McGarvey Creek was selected as the first restoration site, and the Tribe obtained funding to conduct an inventory.

Pacific Watershed Associates was hired to train tribal staff to quantify the major causes of sedimentation. "A lot of other organizations would hire consultants to do the work for them," said Fletcher. "We wanted the consultants to train our tribal people to do the work from beginning to end." The Partnership used this information in applying for funds for a pilot program—part of a four-month training program for tribal members—that would begin to repair the hydrology on McGarvey Creek. From 11 different sources, the Tribe raised more than $700,000.

So it was that in late September Connie Little, 34, a widow and mother of four small boys, an office worker for 15 years, was driving an excavator on a steep hillside on McGarvey Creek, tearing buried logs out of an old roadbed, scooping up the downhill side of the road with the bucket at the end of the machine's long yellow arm, throwing earth uphill to obliterate the cut. She turned

TERRAWAVE SYSTEMS, INC.

Top left: Connie Little was terrified on her first day, but Richard Duree saw she had the "delicate touch" needed to run an excavator.
Top right: Hector Nett, Little's supervisor (left), Richard Duree, and David Burson on McGarvey Creek
Above: Fallen alders will be laid across closed road; new seedlings will soon grow here.

MARK WHEETLEY

COURTESY YUROK TRIBE

Top: Tribal Councilmember Vlayn McCovey, a journeyman heavy equipment operator
Above: Tribal Chairperson Susan Masten
Below: Connie Little on the job

RASA GUSTAITIS

off the ignition and stepped down to talk.

The first day she climbed into one of these huge earthmovers she had been terrified. Never in her life had she expected to be doing this when she signed up for the training in watershed restoration offered by the Tribe. "Now I get a thrill every time I get on that thing," she said. "You do have some fear; you need it so you don't get overconfident. You have to be coordinated—it's like a joystick on a game board. And that's not the only satisfaction: "The other day I worked on a stream crossing, and when I saw the fish come down after we cleaned it, that felt good." Little had worked at two jobs to make ends meet. Now she expects that one job, with better pay, will do fine. With her new skills, her employment outlook is good.

"So now we have staff that can do assessments, inventories, and watershed maps," said Fletcher. "We have people who can look at a stream crossing and measure the dirt to be removed. We have equipment operators who can survey a site and jump on the equipment to do the work."

The contractors conducting this training are David Burnson and Richard Duree, partners in TerraWave, Systems, Inc., which offers educational programs in watershed management. "What we're doing is hydrological decommissioning," said Duree. "It's not really restoration. We're reforming the earth so that water can go where it wants to go without sediment load." Once that is done, plants and trees will do the rest. He pointed to places where a rivulet of water would eventually cause a landslide, to places that, flattened out to create landings for logs to be felled, now gathered and held water. He looked happily at a stump Connie Little had placed at the former entrance to a road she had closed. "It's a satisfying feeling when you close off a road," he said. "You realize you just gave it back to the bears."

There are about 2,000 miles of road in the 450-square-mile watershed, according to the Tribe's watershed restoration director, Jim Bond. Some are to be closed and hydrologically decommissioned, the rest need stormproofing. With three crews of three people each, (the number trained so far) that's 20-25 years of work, Bond figures. With more crews, of course, the watershed's health could be improved more quickly.

Whether the jobs materialize will depend on willingness to invest public funds to restore fisheries, streams, and forest lands. Some federal and state funds are available under various programs, including President Clinton's Northwest Forest Plan, which aims to generate new jobs and economic opportunities in the wake of the timber industry's decline. But funding opportunities need to be expanded, says Fletcher.

Would Simpson Timber hire the Yurok crews? "I can see that as a possibility," says O'Dell. To those who question the expenditure of public funds to restore private lands, he responds that "it's not just a private problem, it's a much broader issue. The only way we can remediate these watersheds is through cooperation."

O'Dell is pleased with the way the partnership with the Yurok Tribe has worked thus far. It's been successful, he says, because it is a relationship of "equality, ability to discuss issues openly, and ability to stay on the agenda without getting into ancillary issues. They don't interfere with our timber business, we don't interfere with their fishery. It's very important that people working together have mutual respect for each other. Without Troy Fletcher, it likely wouldn't have happened. We hope now we can march right on up to the top of the Lower Klamath."

Desperate Need for Jobs

THE YUROK TRIBE NEEDS jobs. Unemployment is up to 80 percent and there are few jobs available anywhere near. Looking at other options, the Tribe is considering possibilities for marketing value-added salmon and timber products and developing tourist-serving and other businesses, including an RV park, an ecolodge in cooperation with Redwood National Park, and perhaps a casino. "It would be irresponsible of us not to consider casinos. They allow tribes to provide jobs, education, care for their elders," Masten said.

But the heart of the culture is linked to the salmon, and the hope is that salmon can once again become a main means of sustenance. "The more salmon, the better for everyone. What we are doing is for everyone's benefit," said Fletcher.

In Eureka, Jimmy Smith, a commercial fisherman for decades, agrees. On the first day of the autumn chinook season, he

scanned the water for the Humboldt Bay fishing fleet and saw only three boats out. "Now it's all geared up so there are probably 12," he said sadly. "In the '70s, there could have been 300." The California fleet has shrunk from 6,000 vessels licensed to fish to fewer than 2,000, and many of those who hold licenses now don't actually go out on the water. "I don't think people realize the magnitude of the pain," Smith said. As to the future? "It's grim," he said. "The only hope is that someday we will get a state and federal administration that decides it's important to protect some of the resources we all depend on."

He has nothing but praise for the Yurok-Simpson project, and the overall fisheries management by the Tribe. "Not only have they shown they are capable; they've been able to demonstrate they have the staffing, the education, and the ability to implement restoration programs as well as or better than anyone else. I was a skeptic at first. But they'll forge ahead. They won't slow down. They told me that and I believe it."

Humboldt County Supervisor John Woolley sees the Partnership on the Klamath as "a model of major magnitude for restoration of Pacific Coast fisheries, wildlife, and wetlands. As a society we all have to recognize that we can't do much about the past; we have to find ways to work together toward the future."

Looking Ahead

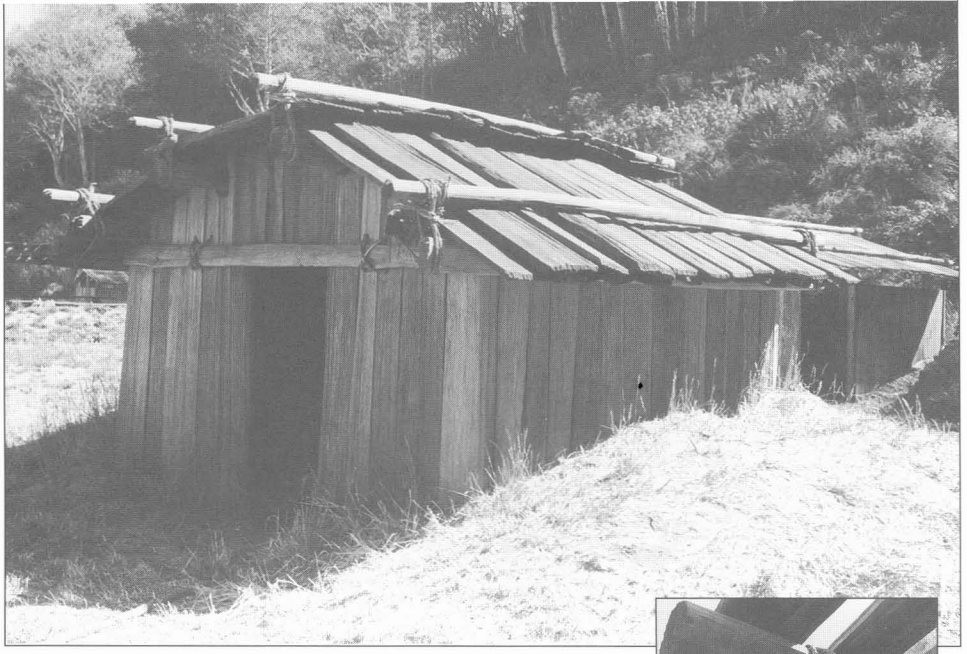
BESIDES REPAIRING WATERSHEDS in the tributaries, the Tribe is working to reclaim for fish some of the water held back by dams, Fletcher said. "There's the potential for removing the dams on the Klamath River. That's got to be the long-range vision so fisheries can be fully restored."

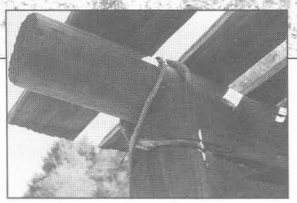
The Tribe depends on fall chinook, spring chinook, coho, steelhead, lamprey [related to the hagfish and known locally as eel]. "We catch eels, even eulacon [candlefish], green sturgeon, and white sturgeon," he added. "All are in the river at critical parts of their life cycle. The Klamath has extra-poor water, especially in dry months—high temperatures, poor quality, insufficient quantity. Water temperatures in the Shasta and Scott can reach 80 or more degrees—too high even for warm-water species. And they're bone dry during some years. It's no surprise that the coho salmon are endangered."

The Yurok, with cooperation of the Klamath, Hoopa, and Karuk Tribes, have asserted tribal rights in an attempt to improve the timing, quality, and quantity of water flows from behind dams. The Bureau of Reclamation failed in its duty to protect a trust asset, Fletcher says, when it built dams cutting off salmon runs. "In the 1960s, the Lewiston Dam took out 200 square miles of spawning habitat for spring and fall chinook and steelhead. Meanwhile, in central Oregon, the Bureau of Reclamation built the Klamath Project, which diverts water at critical times. Five dams—one of them near the state border—block hundreds of square miles of spawning habitat."

The dams on the Klamath and Trinity Rivers interfere with natural river processes that anadromous fish depend on. "Fisheries are a public trust asset. They depend on water, so that's a trust asset. Maybe allocation of water should be linked to the allocation of fish," Fletcher suggests. "If the river isn't producing many fish, maybe there shouldn't be much water to divvy up for nonfishery uses."

Years ago, river water flowing into the ocean was considered "surplus water." That's no longer true. As in geomorphic landscape restoration, the Yurok are on the leading edge of a changing perspective about our natural resources and what makes economic, cultural, and spiritual sense. Perhaps in time, on another beautiful September afternoon, there will be true natural abundance, enjoyed in common, on the Klamath River. ■





RASA GUSTAITIS

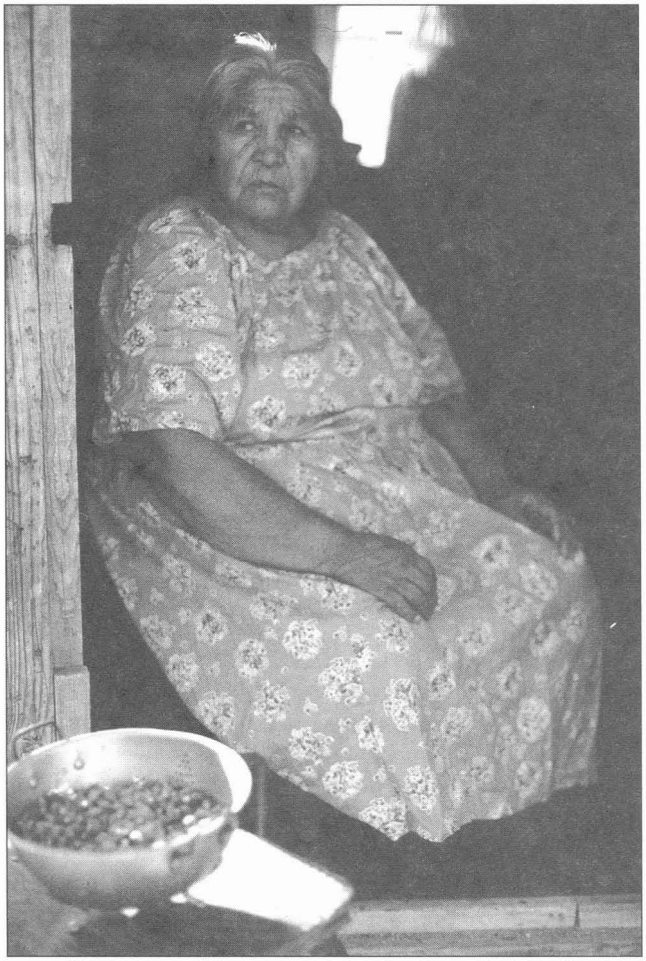
One of the traditional structures at the site of the Brush Dance, a ceremony for a sick child performed each year on the Estuary's south shore.

Promise and Tragedy for a Paipai Village

RASA GUSTAITIS

"Each band had its cave, its waterholes, its mountains, and dwelt there and so further on, others likewise went about living in the same way. They filled this land to the east, to the west, from this place they reached to the south. All the way to the end of the land. Nothing but Indians. . . . The way they lived is still present. The places where they pit roasted agave and ate are still there. Their water jars are still there, their metates are still there."

—*Rufino Ochurte, transcribed by Mauricio Mixco, 1960s*

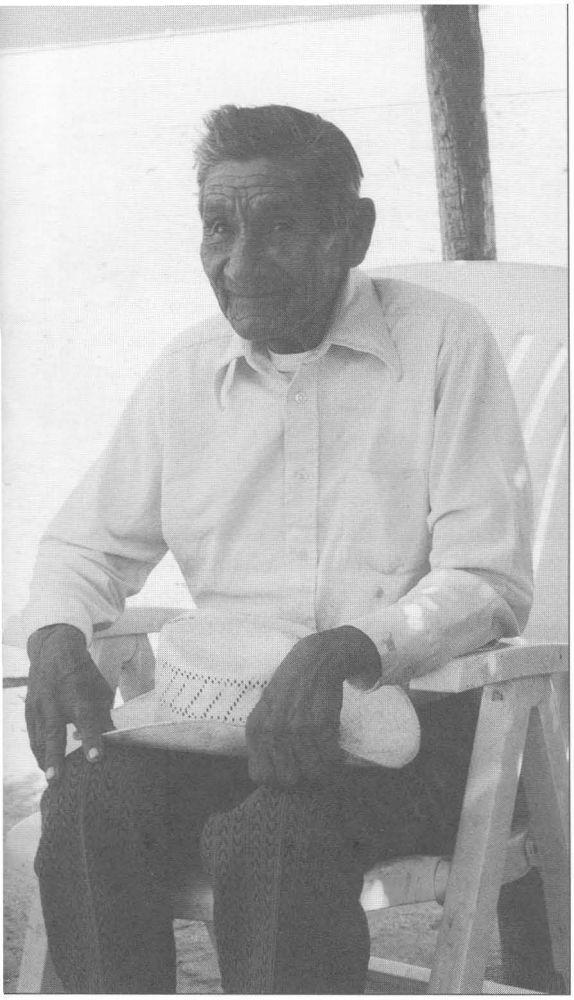


MELVIN M. SWEET

SANTA CATARINA is a Paipai Indian village in Baja California, situated in a wide valley at the western edge of the Sierra de Juarez. A stream runs through it, known among local people as *Jaktbojol* (Water Splashing over Rocks), though it appears on most maps as Santa Catarina Arroyo.

Some of today's elders remember how the Paipai used to move between the mountain valleys and the coast, as well as back and forth across the international border. But as traditional pathways were cut off by property lines, fences, and strict border controls, they became isolated in small, remote communities.

Early in September, the San Diego Museum of Natural History and CUNA (Native



LEFT: TIM CASS; RIGHT: MELVIN M. SWEET

He continued telling us stories about clever but always gullible Coyote, outsmarted by Stinkbug and Fox. That night, at our campsite, we heard Coyote's voice under the full moon.

Opposite: Manuela Aguiar, with acorns
Left: Benito Peralta and his sister Josefina Ochurte, offering fruit to guests at their home
Below: Their new willow house under construction

TIM CASS

Cultures Institute of Baja California), which is based in Ensenada, sponsored a three-day "expedition" to Santa Catarina, to enable a group of Californians to get a taste of Paipai life and, at the same time, boost villagers' meager incomes. The Californians would hear traditional songs and stories, learn about the use of wild plants for food and medicine, visit craftspeople and have an opportunity to purchase some of their work. This trip turned out to be a thought-provoking journey deep into time, and offered us a first-hand view of a tragic modern predicament.

The eleven of us who had signed on met Pat Flanagan, the Museum's education director, near the San Diego Airport, then traveled in a caravan of two cars and a van across the border. On the Mexican side we were joined by CUNA's director and founder, anthropologist Mike Wilken, who has known the indigenous people of this region for more than two decades—and without whom this journey would not have been possible. We moved on together to the Ensenada Museum of History, where Wilken presented some basic information about the people we would be calling on.

The Paipai are a remnant of the Yuman group of peoples who once lived along the coast of southern California and northern Baja California, in the deserts and mountains along the Colorado River, and in large areas of what is now Arizona. Jesuit missionaries who traveled in this region during the 16th century estimated the number of inhabitants as about 50,000. No more than 1,000 of these indigenous people can now be counted in Baja California, which has four native groups: the Kumiai, Cacapá, Kiliwa, and the Paipai, all in northern Baja California. All are related to indigenous groups north of the border, including the Chumash in California and Yavapai in Arizona. About 4,000 Kumiai (or Kumeyaay, the preferred spelling north of the border) live in San Diego County.

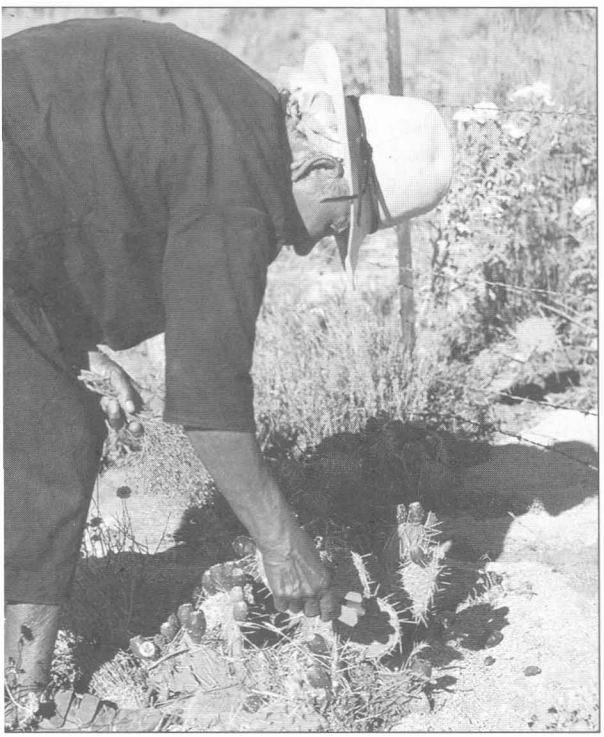
At the museum, we looked at historic photographs and exhibits, knowing that they included things we would soon see in everyday use. As we left, crowds of school children were arriving.

ON SEPTEMBER 18, two weeks after this visit, 18 people were massacred in the El Sauzal suburb of Ensenada. Seven, including five children aged 4 to 13, had grown up in Santa Catarina. Mexican authorities told reporters that the execution-style killings might have been caused by "problems" between drug-smuggling gangs, one of which had allegedly been led by a Santa Catarina native. There are now seven fresh stone mounds in the little village cemetery. Fear and sorrow have swept through the community.

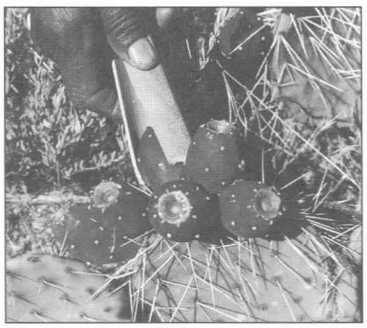
Golondrina is good for washing wounds and rattlesnake bite . . . manzanita berries, jojoba seeds, and juniper berries make refreshing drinks.

Turning inland on a winding two-lane highway, we continued out into the hills, down into the Ojos Negros Valley, and then along an unpaved, unmarked road past cottonwood, seepwillow, and other streamside vegetation to a ridgetop at about 4,000 feet. After setting up camp amid fragrant pinyon and juniper, we descended to Santa Catarina (population 250).

Past a recently built Korean evangelical church, past the older, gleaming white Catholic Church, down to the village we rode. Neatly fenced gardens of squash, beans, and corn were on the stream side of the road, while on the uphill side stood small concrete houses, most of their front doors shaded by willow ramadas.



Yucca leaves have many uses. One is picking prickly pears.
Below: Juan Albañez is the traditional village chief.



TOP PHOTOS: TIM CASS; BOTTOM: RASA GUSTAITIS

Chickens scurried out of our way. Our destination was the home of two elders, Benito Peralta and his sister Josefina Ochurte.

They were ready to greet us, and we settled down in a circle under their ramada. Benito spoke in Spanish with a sprinkling of Paipai, as Mike Wilken translated into English. They were old friends; they shared an easy-going banter.

"Tell about the way you used to go to the ocean," Mike suggested.

The old man motioned toward the misty ridges to the west. "We used to walk down past that bluish mountain," he said. "There's no road, but there's a trail. I went with my uncle and twice with my mother."

We had just driven in from a big city, along the border fence and security installations, through miles of urban sprawl. Listening, we were aware we were in the presence of living history.

Benito recalled the camping places and how, when his family reached the shore, "we'd wait for the tide and then collect abalone. We'd roast them," he said. "Roasted over coals they're so tender. We'd pile them up. The seagulls would come. We were told: you can scare them off but don't throw anything at them or the sea will get mad, come back and take back everything. They don't let us go there anymore," he said. "In the past, everything was free and open."

As property lines were established, the ability of the indigenous people to roam, gather food, and visit relatives became more and more constricted. Benito, Josefina, and many other villagers continued to live here on the 63,000 hectares (155,671 acres) owned by their community, not venturing much beyond.

The valley is beautiful, strewn with granite boulders, surrounded by mountains, and some wildflowers were still blooming on this autumn day among the dry grasses. But life isn't easy here. Santa Catarina has no electricity and no telephones. People still gather acorns to make *atole* (mush), but also to store for bad times. They make pots and baskets for their own use as well as, just recently, for sale. Money is scarce because there are no jobs. Young people leave to work on cattle ranches and some have been enticed or forced into a more deadly enterprise.

Santa Catarina has the misfortune of being situated between the Valle Ojos Negros and the Valle de la Trinidad, about 70 miles from

PHOTOS THIS PAGE: MELVIN M. SWEET

Cars that no longer run are used in many ingenious ways. Margarita Castro stores her pots inside this old coupe.

the border, in an area through which criminal gangs smuggle illegal drugs into the United States. Having survived the Spanish conquest, alien diseases, religious and government oppression, and extreme poverty, this indigenous community is now being victimized by drug dealers. Some young people have been enticed for lack of other economic options, while others have been compelled to cooperate. In at least one case, complaints to authorities were followed by summary execution of the complainer.

The sun was setting. It cast a pink glow on the mountains. Benito grew pensive, then began:

"The story I'll tell you is called *Wakeruk,*" he said. "When a person dies, in a year you have to do a *Wakeruk.* In Spanish it's called 'the crying festival.' They'll cry for a while, then dance and sing for a time. First they have to find a baby eagle, bring it home and raise it there. . . . " He described the ceremony, which centered around the young eagle's sacrifice. The keeper of the ceremonial pipe would blow tobacco smoke into the eagle's face four times, and it would fall dead. "I never saw this myself. My ancestors told me they used to do it," said Benito.

It would have been time to get ready for a *Wakeruk,* were it still practiced today, for it was almost a year since Josefina had lost her grandson. He had been a teacher and a leader, and his grandmother and granduncle's main support. Benito did not speak of him. The Paipai do not speak the names of the dead, lest their spirits be prevented from moving on.

After the European invasion, traditional ceremonies went underground or were stamped out. Even now some missionaries try to discredit them as "devil's work." But today's young Indians, and also non-Indians, want to learn about them.

Benito did not explain why he chose to tell us about the *Wakeruk.* After a pause he continued in a lighter vein with stories about clever but always gullible Coyote, outsmarted by Stinkbug and Fox. That night, at our campsite, we heard Coyote's voice under the full moon.

The next morning Josefina Ochurte took us with her while she gathered prickly pears. Using a yucca leaf tool made on the spot to hold the fruit, she brushed off the prickles with a bundle of matchweed. She pointed out other plants and told us that *golondrina* (euphorbia) is good for washing wounds and can also be taken as a tea for rattlesnake bite; *chumuay* (ephedra) tea is beneficial to kidneys; buckwheat root, in a tea, eases stomachaches and dysentery. Manzanita berries, jojoba seeds, and juniper berries are ground to make refreshing drinks. But when someone asked if pinyon nuts are still gathered, Josefina replied that private landowners who used to allow the Paipai to do so have demanded that they get a government permit, the cost of which is far beyond their means.

Back at the house, as we settled down with Benito for more stories, Josefina went inside with the bucket of prickly pears she had collected, and soon emerged with a plate full of cut and seeded ruby-red fruit. It was cool and sweet. I thought of Josefina's ancestors, who must have sat under willow ramadas much like this one in the heat of the day and delighted in the fruit of the prickly pear cactus.

At our second campfire, Michael Wilken

told how he had become acquainted with the Paipai while studying anthropology at the University of California, Santa Cruz. At that time he had envisioned a career in some faraway place, researching some culture with impressive art or a great architectural history. But when he was looking for a student field project, his grandfather, who was born in Mexico and lived in northern Baja California, introduced him to some Paipai friends he had met while writing a book on the missions.

Mike's plans soon changed. He decided he wanted to work right here, close to home. Although the local indigenous people had no impressive artworks, their relationship with the land, other people, and other creatures drew him in. In 1992 he founded CUNA with the hope of helping these cultures to endure. Among the goals: to restore lost links among related groups; to encourage the dissemination of traditional knowledge of land management, language, and crafts; and to help create a market for indigenous crafts.

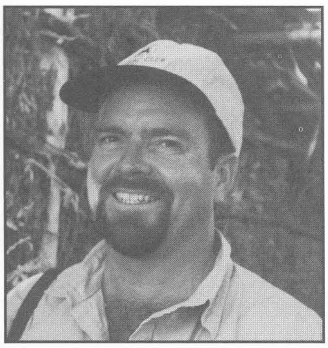
The people in Baja California had not been able to visit related Indian people in the United States since the 1950s, when border controls were tightened. To cross they were required to get a U.S. visa, and that meant they had to show a Mexican passport. For the passport they needed a birth certificate, which they did not have. CUNA helped to arrange some cross-border visits. In 1990, a big gathering of Yuman people from north and south of the border was held in a seaside community near Ensenada. All surviving groups were represented. Some spoke English, others Spanish, but there was much delight in discovering one another and in seeing how their native languages and customs were related.

Visits among communities followed. When a Yavapai woman from Arizona arrived in Santa Catarina, she addressed Don Benito in her native tongue: *"Gamiu?"* (How are you?) Surprised, he answered: *"Han!"* (Fine!) Then he began counting on his fingers: *"shrit, huak, hmuk. . ."* and she was nodding, and they laughed and laughed, Wilken said. Later, Paipai people traveled to Arizona to visit the Yavapai. As they approached Phoenix Benito saw the skyline and asked, amazed: "What mountains are those?" He had never seen high-rise buildings.

Each group found it had something to offer the other. "People south of the border have been able to keep more of their culture alive. People north of the border are able to interface more with the dominant culture," said Wilken. "Now they need each other."

Wilken and others hope that careful ecotourism, such as this trip, can become part of a wholesome economic development for Baja California's indigenous people, counteracting the forces that threaten to destroy them.

Before heading home, we visited several potters, mostly women, each of whom was supporting a family with income from her work. We came away with both tangible and intangible treasures: red clay pots flecked with pyrite, palm and pine-needle baskets, yucca nets, wood carvings, handcrafted dolls, and bundles of sage for purification and blessing. Some of us will remember that the sage can also be mixed with elderberry flowers for tea, that juniper tips also make a good tea, that juniper bark is beneficial to kidneys, and that yucca can be used for shampoo. We will be able to tell children and grandchildren how coyote got that dark stripe on his back, and other things we heard from people whose ancestors were here so very long before ours. And we will hope for their continuance. ■



RASA GUSTAITIS

Above: Mike Wilken
Below: Tirsa Flores (third from right) and visitors holding her hand-crafted work.

MELVIN M. SWEET

Vineyard Sprawl versus California Oaks

JANET COBB

Two great California icons, the acorn and the grape, stand locked in a heart-stopping controversy that threatens the terrain of much of Santa Barbara County forever.

To phrase it simply: On the one side are new vineyards rolling, rolling over the gentle hills like troops of waiters bearing trays to slake the evergrowing thirst for chardonnay and pinot noir. Over them like a cartoon hovers all unseen the force of the dollar: profitability—though some call it greed.

On the other side, even more beautiful, more vital to our world, are the serene oak woodlands, identified for more than 300 years with California's heritage. It is this California landscape that many of us think of as home—without a thought to biodiversity. Unspoken within those oak lands are their immeasurable gifts to the world.

—Margot Patterson Doss

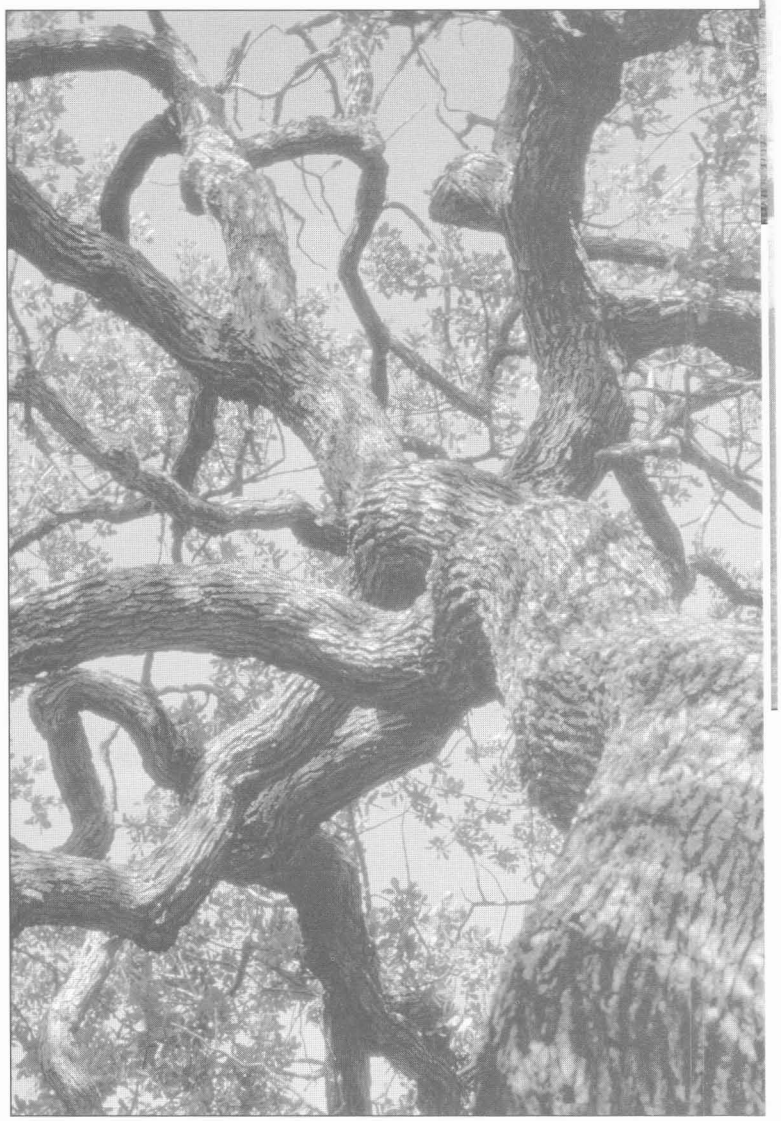


PHOTO COURTESY ACORN

IN NOVEMBER 1997, commuters along Highway 101 near Los Alamos in northern Santa Barbara County were shocked to witness the massive bulldozing of oak trees. The land had been recently acquired by the Kendall-Jackson Winery. Nearly 850 oaks were felled, then dragged into ravines and ditches to await burning, while the hills where they had stood were flattened. It had taken 300 to 400 years for some of these oaks to grow. Some were mature at the time the Declaration of Independence

was written. In only three days they were gone.

Citizens were hit with the realization that such destruction of their natural heritage was legal under County regulations and that no state law or regulation protected oaks in this state. Oaks were being destroyed not only in Santa Barbara County but also in San Luis Obispo, Marin, Sonoma, Mendocino, and Calaveras Counties as new industrial-scale vineyards revised cherished landscapes with no environmental review or oversight.

The California Oak Foundation had been appealing to the California Board of Forestry for statewide protection laws for ten years. The Board had responded by asking counties to take steps to protect oak woodland resources, and 38 of the 48 counties where oaks grow had adopted voluntary measures. When it took its plea to the Resources Agency, the Foundation was informed that oak-related land use issues should be taken up at the local level.

The challenge to protect California's natural resources has spread as hillsides and valleys are made neat and tidy for the rapidly expanding wine industry. Family cattle ranchers, hard hit by falling beef prices, have been selling their land to entrepreneurs intent on maximizing the high profits currently available from grapes. As a result, pastoral landscapes are being violently reshaped.

Wrong Target?

KENDALL-JACKSON Vineyards have been victimized by "misinformed local individuals who needed a villain," says public relations director Jenny Williamson. The owners, Jess Jackson and Barbara Banke, did cut 843 oaks on 540 acres of their 1,310-acre Los Alamos Valley property, but they have permanently preserved 770 acres, with 843 oaks, as natural habitat. They are committed to planting 8,000 more seedlings, under the direction of Wayne Jensen, county director of the University of California Cooperative Extension. The new vineyard will have three wildlife corridors, 300 feet to a mile wide. Many other wine growers have cleared fields entirely before putting in vines, Williamson said. "One small vineyard took out 80 oaks on 20 acres. But nobody saw that. This uproar happened because we cut 25 oaks near the highway."

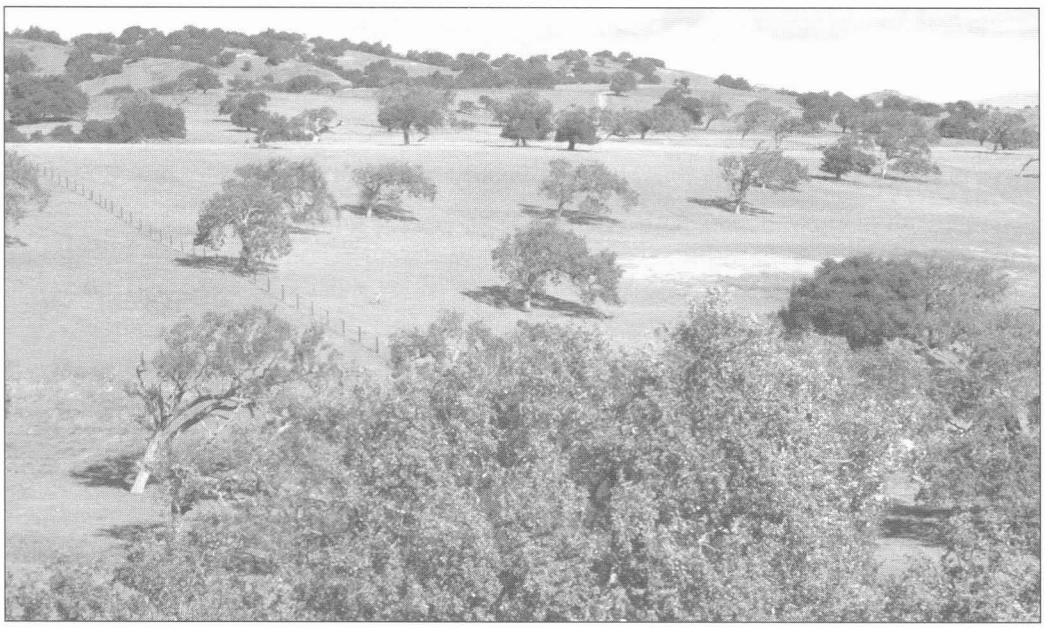
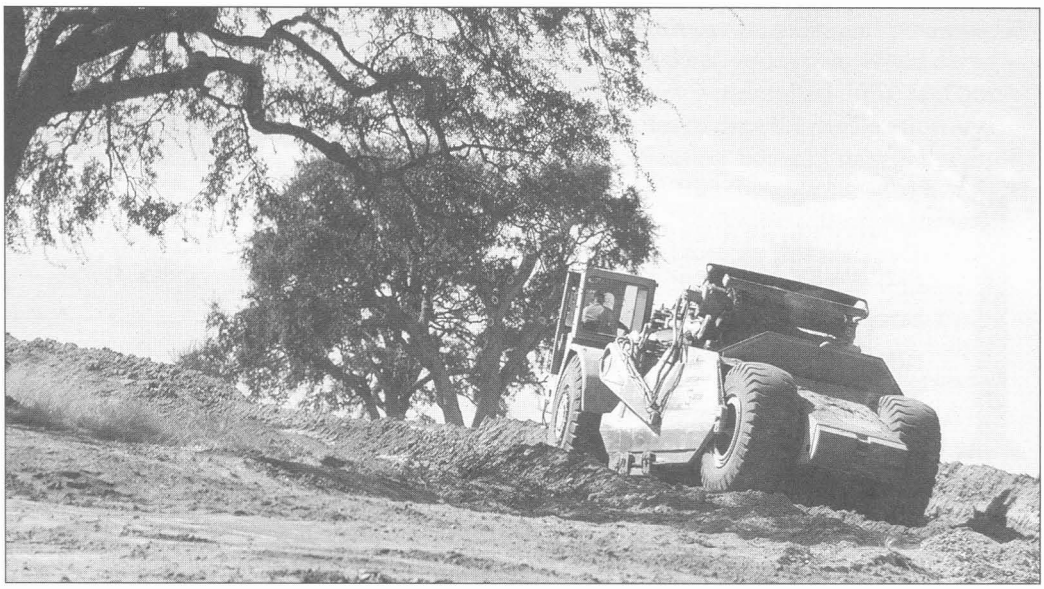


PHOTO COURTESY ACORN



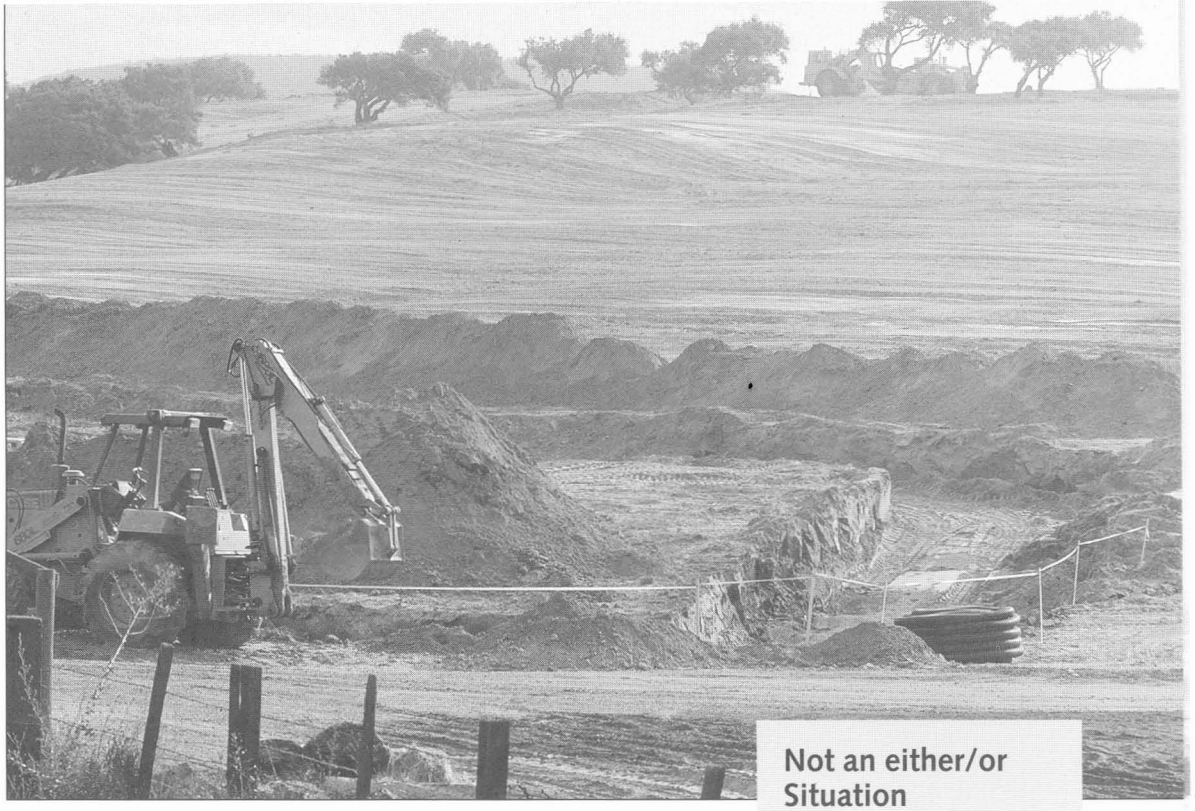
RICHARD D. SAGE

Top: This kind of land is ideal for both oaks and vineyards. Right: An earthmover at a new vineyard east of Paso Robles

Fine wine has been produced for generations in Santa Barbara, Sonoma, and Mendocino Counties, in keeping with a tradition of natural resource stewardship. Growers have tended to keep oaks even within the vineyards, recognizing their value in holding soil and providing food and shelter for birds like goshawks, which prey on the birds that dine on grapes.

The style of many newcomers is vastly different. Instead of shaping their vineyards to the land, they reshape the land. Many rely on mechanization, computerized irrigation systems, and chemical pest control.

In Santa Barbara County, acreage in vines doubled from 9,000 to 18,000 during 1996 and 1997 and nearly 2,000 oaks were destroyed. But it took the Kendall-Jackson action, in plain view from the heavily traveled highway, to mobilize citizens. Local people formed the Alliance to Conserve Oak Resources Now (ACORN) and pressed the County Board of Supervisors to adopt guidelines governing removal of old oaks and to promote oak reforestation. The Board failed to act, so members of ACORN wrote their own oak protection measure and placed it on the November 1998 ballot.



RICHARD D. SAGE

Heavy equipment plumbs and levels land at Cat Canyon North Vineyards, near Los Alamos, Santa Barbara County.

Going, going . . .

THE 17TH-CENTURY explorer Juan Cabrillo is said to have observed that one could walk from Rincon Point (at the southern corner of Santa Barbara County) to Gaviota Point (some 65 miles to the west, at the foot of the Santa Ynez Mountains) without ever leaving the shade of an oak. Such was the historic abundance of coast live, blue, and valley oak trees in this region.

These generous trees, which predominate on more than 10 million of the state's 100 million acres, have symbolized a sense of place for generations of Californians. They are identified through our verbal, written, and photographic history as part of this state's natural order of things. Over recorded time, they have provided food, shelter, and nesting sites for wildlife we profess to value. They have served as a final filter system for water that makes its way from many sources to the ocean; and they sequester carbon dioxide from the air we breathe. Almost anyone who grew up in California has a story of a special swing, tree fort, summer camp, or school trip experience involving an old oak tree.

All those benefits, all those memories are at stake in Santa Barbara County and the other 47 of California's 58 counties where oak trees grow, because these stately trees stand without any statewide protection in the areas favored for both urban development and large-scale conversions of grazing lands to viticulture.

Since the mid-1940s, more than 1.2 million acres of oak woodland have been converted to urban and agricultural uses. An estimated 14,000 acres are lost each year to urban, primarily residential, development, according to Bruce W. Hagen of the California Department of Forestry and Fire Protection. Only the names of new shopping centers and single-home tracts hint at what they have displaced: Oakmont, Oakcrest, Oakridge. What oak woodland habitat remains is becoming more and more fragmented, and therefore less and less useful to wildlife.

Not an either/or Situation

ROBERT ISAACSON, who grew up on a cattle ranch in Santa Barbara County, sees the conversion of grazing lands to vineyards as "exciting and positive." It could stave off urbanization by allowing ranchers to diversify and become more economically stable, he wrote in an article published in the *Santa Barbara News-Press* July 8. By putting high-value grapes on unprofitable grazing land, or by leasing such land to vineyard operators, cattle ranchers might manage to stay in business. But oak woodlands should be protected from vineyard developers who treat them as "no more than weeds," he wrote. Voluntary guidelines won't do the job. In his opinion, most citizens in the County "prefer a solution that embraces not only world-class vineyards of which we can all be justly proud, but also a healthy, aesthetically pleasing oak-studded landscape."

Some Californians perceive the spread of vineyards as a force no less destructive to oak woodlands. The issue isn't farming; it's giant wine operators mining natural resources at the expense of our common natural heritage. In Santa Barbara County, vineyard operators now own most of the lowland habitat favored by the valley oak. In San Luis Obispo and Monterey Counties, where water is a scarce resource, they are irrigating lands that used to be dry-farmed.

Meanwhile, smart developers wait in the wings. When wine prices take a dive, land that has already been converted to vineyards, without any California Environmental Quality Act review, is set for growing buildings. The hard work has been done: the natural vegetation cleared, the land recontoured, deep-ripped, fumigated, staked, and irrigated.

ACORN succeeded in gathering 19,781 signatures in 42 days to place its initiative on the November 3 ballot as Measure K-98. The measure requires landowners to obtain permits to remove oaks that are 15 inches in diameter two feet above the ground, but allows exemptions for up to 48 oaks over five years to accomodate traditional agricultural practices.

When vineyard operators and their allies complained that this law would drive agriculture out of the county, the Board of Supervisors agreed to place a competing measure on the ballot. Measure O protects only much bigger and older oaks, having at least a 15-inch diameter four feet above the ground. Measure O allows landowners to simply plant 10 acorns for every oak they remove, but unlike Measure K-98 it provides no monitoring. Oak advocates call Measure O "the poison oak measure," because it would negate the ACORN initiative with a "poison pill" provision that says Measure O will prevail if both pass.

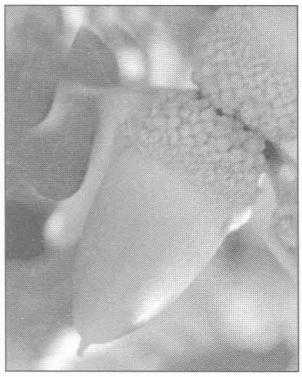
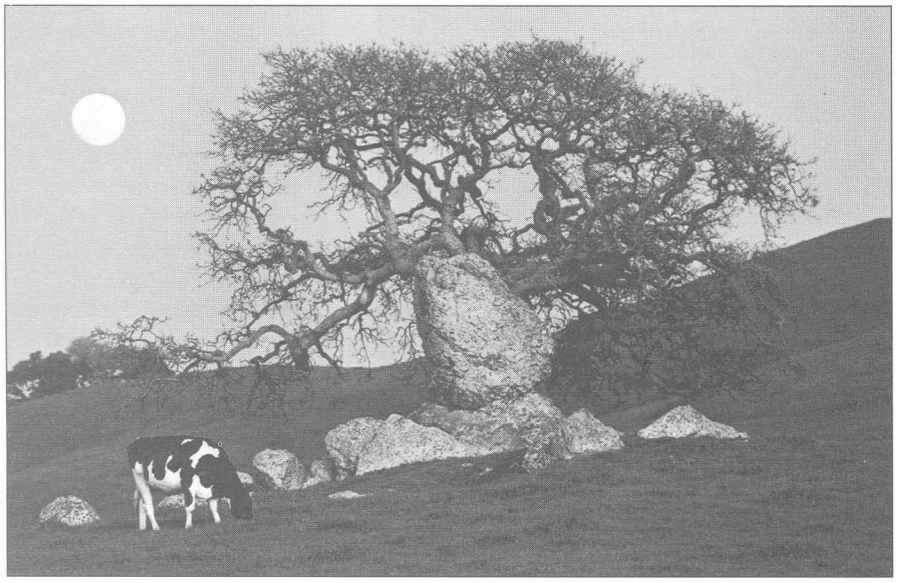


PHOTO COURTESY ACORN



MARTY KNAPP

At press time, a heated campaign was under way in Santa Barbara. Meanwhile, in counties to the north, landscapes continued to be reshaped, and protest had begun to stir. In September, Sonoma County grape growers and conservation advocates agreed to accept an ordinance that prohibits vineyards on the steepest hillsides (with slopes of 50 percent or more), requires landowners seeking to develop on slopes of 15–50 percent to submit an erosion control plan to the county agricultural commissioner for approval, and provides a 50-foot setback from streams and rivers. Severe fines and penalties are proposed for noncompliance. The proposed ordinance, which must be approved by the Board of Supervisors, does not include protection for oak woodlands or scenic ridgetops, but it's a step forward.

The Oak Foundation is establishing a system of third-party certification, by which wine buyers can be assured that they are not unwittingly supporting environmentally destructive practices. The Foundation is also working with partners to spearhead action toward listing the valley oak as a threatened species.

Because 85 percent of the state's oaks grow on private lands, their protection will ultimately depend on landowner cooperation. The good news is that many landowners are now working with the Oak Foundation and other conservation organizations toward effective stewardship of wildlife habitat and maintenance of watershed values, in addition to agricultural benefits on private lands.

Land use decisions in California ultimately boil down to a 3–2 vote by elected boards of supervisors in each county. Californians need to participate in the search for answers to the challenges facing us. The quality of life for all living things within our borders is at stake. ■

Janet Cobb is executive officer of the California Oak Foundation, a statewide membership organization based in Oakland. Greg Helms, community affairs coordinator for the Environmental Defense Center in Santa Barbara and a member of ACORN, contributed to this article.

A Lost Hiker Confesses

DEWEY SCHWARTZENBURG

CAROLE PEPITO; ABOVE: DEWEY SCHWARTZENBURG

The hikers posed for a picture at Nadelos campground after their 25-mile trek down the coast of the King Range.

THE AFTERNOON SUN bore down relentlessly as I slogged through the soft sand. My backpack shifted with each staggering step and my back muscles struggled to maintain balance. A sharp headache stabbed into my brain.

It was the third day of an eight-day hike along Humboldt County's rugged and wild Lost Coast, organized and led by Coastwalk. The familiar coast of developed beaches and parks, motels and parking lots, piers and palaces of pleasure was so far away we might have been in southern Australia or some remote stretch of Baja California.

I had wanted to hike this shoreline for years, but now my will was waning. Having slipped and fallen while fording one of the many streams, I had injured my ankle, and

COASTWALK is a nonprofit organization which is working to establish a border-to-border California Coastal Trail and to preserve the coastal environment. For more information, and a schedule of 1999 Coast Walks, write to Coastwalk, 1389 Cooper Road, Sebastopol, CA 95472.

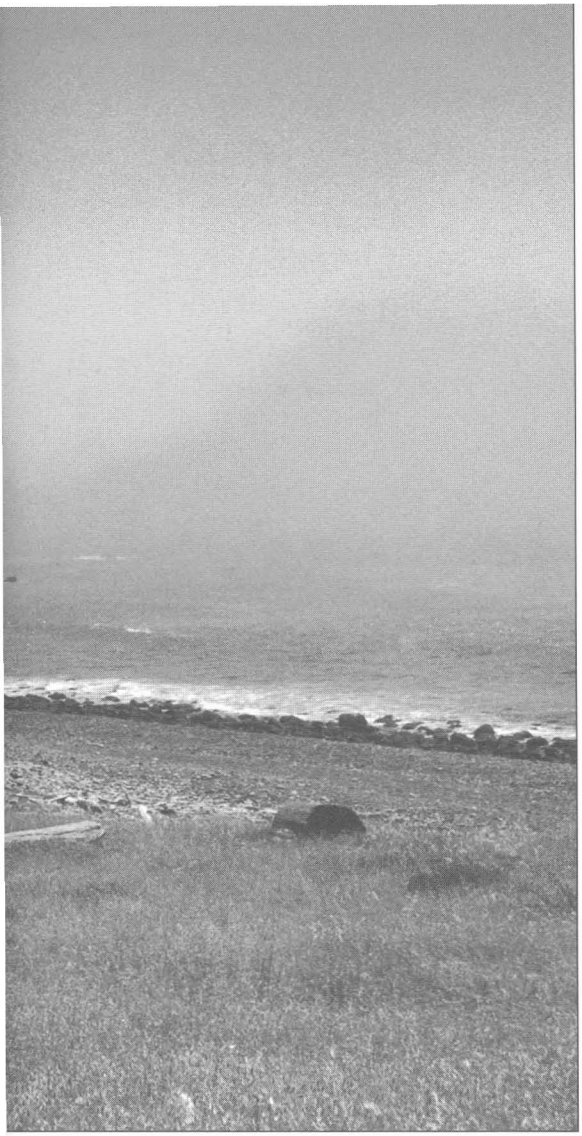
also had to keep my left index finger elevated, pointing skyward—swollen and throbbing, possibly fractured. Five more days of this—and worse—lay ahead.

The 75-mile shoreline of the Lost Coast stretches from the mouth of the Eel River near Ferndale south to Usal at the southern end of the Sinkyone. Steep mountains hug the coastline, in places plunging almost vertically into the ocean. It is a region so rough that when Highway 1 was being built, engineers threw up their hands and routed the "coast" highway inland. Except for a few small towns like Petrolia and Shelter Cove, and a few isolated settlements and cabins, this region has remained wild—as much as a place ravaged by logging can be wild. Now nearly 50 miles of the Lost Coast lie within the King Range National Conservation Area and Sinkyone Wilderness State Park. Another 3,900 acres were recently purchased by the Sinkyone Wilderness InterTribal Council and will be restored for the benefit of nature, the tribes, and limited public access.

I had been drawn to the Lost Coast because here, as in Big Sur, mountains and seashore meet in a close embrace, yin and yang coming together to form a perfect unity of power and beauty. But Big Sur, where I've hiked and camped for years, is easily accessible by Highway 1 (most of the time), while the only way to experience the Lost Coast is by backpacking in from one of the few steep rough roads that wind west to remote shoreline settlements like Whale Gulch or Shelter Cove.

So now I was here, where I had wanted to be, on a guided trip in a group of 11, ranging in age from teenager to senior citizen. Though I was neither the oldest nor the weakest in our group, I reluctantly came to the conclusion that I had taken on more than I could do without extreme discomfort.

COASTWALK, THE NONPROFIT organization working to promote and complete the California Coastal Trail (see *Coast & Ocean,* Autumn 1996) sponsors a series of guided "Coast Walks"



PHOTOS BY DEWEY SCHWARTZENBURG

One of the many treacherous stream crossings on the Lost Coast

each summer. All except the Lost Coast walk are fairly easy and, by comparison, even luxurious. Hikers need carry only daypacks and their lunches, with the rest of their gear transported by van from one campsite (sometimes a hostel) to the next, and all dinners are provided. Only the Lost Coast walk requires backpacking. I had signed up for the second and third legs of this 12-day trek: 50 miles through the King Range and Sinkyone Wilderness, June 23–July 5.

That was my first mistake. I had never hiked more than five days in succession with a heavy pack. My usual practice is to select some remote and beautiful site, establish a "base camp," and settle in for a couple of days of rest with relatively easy day hikes in the vicinity. Eight days of continuous backpacking were three or four too many. In addition, I realized, I had not done what I had always done before: get in shape beforehand. Not only was I carrying a 45-pound backpack, but I was also lugging around an extra ten pounds of fat—through which I had to pump blood with every heartbeat.

My finger throbbing, my back aching, I considered that we had been walking almost the entire time on the beach. Long-distance walking on sand in boots, weighed down by a pack, is far different than a short run along the water, and it is not at all like hiking on a good dirt trail through meadows and woodlands.

It has been said that hiking a mile on soft sand is equivalent to hiking a mile and a half on firm ground. I now believe that's an underestimate, that two miles on terra firma takes no more energy than one mile on "sanda softa." Your foot sinks in with every step and slides backward, so extra effort must be exerted to move forward.

The shoreline terrain did vary, from the loose, squishy sand that I came to hate, to firm, solidly packed sand (oh, such a relief!), to sand mixed with gravel (gravel of any size was almost as bad as soft sand), to cobbles and boulders. Rare and welcome were the few segments (like Spanish Flat and Miller Flat) where we climbed up from the beach to a firm bluff trail.

Then, of course, there were all the creeks to be forded. Along the King Range, many small streams cascade from high ridges down gorges and canyons: Randall Creek, Spanish Creek, Oat Creek, Kinsey Creek, Big Flat Creek, Shipman Creek, and more. Most are easy fords, but no ford is without

DEWEY SCHWARTZENBURG

The isolated town of Shelter Cove, from Chemise Mountain, a high point on the Coastal Trail

risk, and it was Cooskie Creek, at the beginning of my second day, that had waylaid me. I had scoped out what seemed to be a safe path from rock to rock across five feet of stream, but was not completely sure until Jeff, the tall, long-legged 16-year-old in our group, came along and hopped nimbly over the rocks to the other side. Forgetting that I was neither as tall, long-legged, young, nor strong as he, I attempted to follow—and promptly slipped and fell, bruising and gashing my right shin, twisting my right ankle, and injuring my left index finger. Some quick first aid stopped the bleeding and after a few minutes of agony I realized that my ankle, though sore, was not badly strained after all, so I was able to continue. My finger, however, began to swell and throb, and so I pointed at the clouds as I struggled down the beach.

The third day was relatively easy: only four and a half miles, much of it on the firm ground of Big Flat and Miller Flat. But I considered what lay ahead: the nearly impassable Sinkyone Wilderness, where the trail moves inland, up and down over ridges, climbing and descending a total of 5,000 feet, which—as Carl May, the coordinator of the Lost Coast backpack, pointed out—is the equivalent of climbing down into the deepest part of the Grand Canyon and back out again.

What was I to do? To continue would be a misery; to back out seemed an admission of failure. But, I thought, I have never had a competitive attitude toward backpacking. I have never been one of those obsessed (as I saw it) with "How far can I go? How high can I get? How much adversity can I handle?" For me, the effort of backpacking is a means to an end, not an end in itself. And the goal is the experience of wilderness, the awareness of natural beauty, entering fully into the immanent spirituality of nature—and yes, rest and relaxation, not suffering and endurance.

By the time we arrived that afternoon at our campsite on the beach at Shipman Creek, I had made my decision. I would bail out the next day at Shelter Cove. I first told Bob Cowell, the leader with whom I had hiked most of the way because, as

"sweep," he stayed at the tail end of the group. Bob was surprised, commenting that I seemed to be doing quite well with the hike, but added that only I could decide what I could handle. I told the others over dinner, and everyone was understanding.

The next morning, as I struggled through the final seven-plus miles down Black Sands Beach, I knew I had made the right decision. The entire stretch was soft sand. After retrieving my car from Garberville, I did rejoin the group for the night at Nadelos Campground, a BLM camp near Shelter Cove. The next morning I joined them to hike (sans backpack!) up to the summit of Chemise Mountain. But when the trail began a serious descent to sea level and into the Sinkyone, I said goodbye to the others and returned alone to Nadelos.

ON MY FIRST AFTERNOON alone, I drove down to Shelter Cove for provisions—firewood and a bottle of wine—and returned for a quiet evening in my campsite, across a picturesque wooden footbridge beside Bear Creek. I had the whole campground to myself. After dinner, I built a fire and relaxed in the lush garden-like setting in the midst of the north coastal rain forest, and considered my Lost Coast adventure.

Despite the problems, I had good memories. We had been blessed with clear and relatively warm weather, exceptional for the northern California coast. Rain would not have been unusual, and daylong fog cover would have been normal. What morning fog there was had lifted quickly every day, and the sight of wispy mist rising from the canyons in hazy sunlight had been beautiful to behold. The evenings had been pleasant and clear, with a glorious crescent moon gliding down over the ocean.

We had seen abundant wildlife—deer, pelicans, plenty of gulls and other shorebirds, sea lions, and garter snakes. One of our group had spotted a "dead" rattlesnake in the middle of a side trail near the ruins of Point Gorda Lighthouse, but when the rest of us went to look, it had disappeared. One of our sadder moments came when we found a very sick baby sea lion stranded on the beach, gasping for life. There was of course nothing we could do—though someone commented, "This is one time I wish I had a gun with me."

Near Shipman Creek, where we camped before the final push down Black Sands Beach into Shelter Cove, we found fresh bear tracks in the sand. The paws that had made these tracks were very large, and this was one bear we were glad we had missed.

Wildflowers were abundant, and not for the first time I regretted my lack of botanical knowledge. My favorite sights, however, had been the sunsets, in glorious pastel shades that a French impressionist could only dream of, with sea and sky transformed into a panorama of light and color, constantly shifting and changing. Waves receding from the shore glistened and sparkled in the sand like the flickering light of a million fireflies. And above it all, that crescent moon, with its earth-lit nightside clearly visible—the phenomenon known as "the old moon in the new moon's arms."

Now that I was at ease, with nothing more to dread, I appreciated the fact that I had, after all, hiked 25 miles of the Lost Coast, and had seen so many fascinating things. There had been driftwood shelters, painstakingly built, some quite elaborate and architecturally interesting. One even had a cobblestone "patio" with a sunken firepit, protected by a windbreak and surrounded by log benches. Someone said young surfers built them anew each year, after winter storms had destroyed them.

But the best thing about the trek, I realized, had been the group. Eleven of us, seven men and four women, had walked together from the mouth of the Mattole River down to Shelter Cove, ably led by Bob Cowell and Al DuCharme of Coastwalk. There had been a warm camaraderie around the campfire at night, as we nursed our bruises and wounds and shared our experiences.

Five of the 11 Coastwalkers made the entire 12-day trek: Al DuCharme, Warren Yeend, Patricia Bolfing, Carole Pepito, and Jeff Boone. Two others who had started with me at the mouth of the Mattole continued on down through the Sinkyone, unbowed by the challenge: Gloria Pass and Hans Sluis. They all survived just fine.

Would I do the King Range coast again? In a minute. Not next year, though. There is still that unfinished business of the Sinkyone Wilderness. Next year I want to tackle that. ■

Dewey Schwartzenburg is managing editor of Coast & Ocean.

California Needs A Coastal Hazards Policy

TEXT AND PHOTOS BY GARY GRIGGS

THE COAST of California is under attack from the front and from the rear, from the ocean and from land. As storm waves and a rising sea level eat away at beaches and bluffs, fortifications are built at an ever more rapid rate to hold back the ocean, creating a dilemma of increasing magnitude.

The 1982–83 El Niño was a wake-up call—more than 3,000 oceanfront homes and 900 businesses were damaged—and the milder 1997–98 El Niño served as a reminder: Trapped between an ever more densely developed shoreline and the encroaching sea, California's parks, headlands, open spaces, and wetlands can be expected to dwindle at an accelerating rate unless there is a drastic change in coastal management.

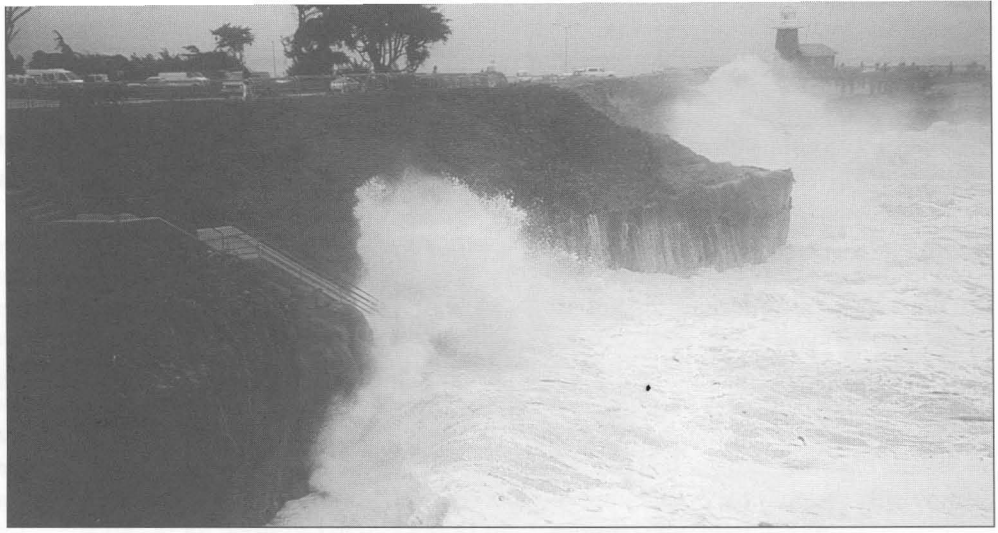
The ongoing processes of cliff retreat and beach erosion, including the role that major oceanic events like El Niño play in them, have only recently begun to be recognized and appreciated. The California Coastal Act of 1976 is notably deficient regarding these coastal hazards. When that law was shaped, these problems were less apparent than they are now, and concern was focused mainly on public beach access, wetlands, and open space.

In the past two decades, both the impacts of coastal hazards and our perception of them have changed markedly. Major storms caused an estimated $150 million in coastal damage between 1978 and 1983, not counting the day-to-day cumulative effects of waves and other forces on the shoreline. In the 1982–83 El Niño year alone, coastal storm damage totaled some $100 million. Preliminary estimates from the 1997–98 winter indicate about $50 million in coastal damage.

As public and private attempts to fortify the shoreline increased, so did the expense. From 1985 to 1990, about 45 miles of coast were armored with seawalls, riprap, and other hard structures, at an average cost of $1,500 per foot, or about $60 million a year for new hard structures, not including expenditures for repair of roads, public stairways, and private property. Californians today are paying more than $75 million a year on average to maintain a foothold on their shoreline.

While "El Niño" is a relatively recent addition to most Californians' vocabularies, there is every reason to believe that the phenomenon has occurred periodically for thousands of years, if not longer. Historic records in Peru document its devastating impact for at least 400 years.

One of my Ph.D. students at the University of California, Santa Cruz, has been sifting patiently through global oceanographic and meteorologic data bases for the period 1910–1995 to study the impact of El Niño events on the coast of California. He has found that 22 El Niño events of differing severity occurred in this 85-year period, coming about every four years. Twenty of these coincided with larger waves, higher-than-normal sea levels, above-average



The beach just north of Lighthouse Point in Santa Cruz in February 1998 (right) and (below) in October 1997. What winter waves take away, summer waves may return.

rainfall, and coastal storm damage. Within this period, 75 percent of the storms that produced major damage along the central coast occurred during El Niño winters. It is important to realize that these global climatic events are not uncommon acts of God, and that they didn't start in 1983.

The 30-year period prior to 1978—during which much of the construction along the California coast took place—is now believed to have been a period of relatively mild climate. The cumulative costs of storm damage were relatively low. In the past 20 years, however, more severe storms, leading to increased shoreline erosion, have substantially increased both the damage and the cost of protection.

Nearly a decade ago, Jim Pepper, Martha Jordan, and I conducted a study, *California's Coastal Hazards: A Critical Review of Existing Land Use Policies and Practices* (1992), funded by the California Policy Seminar Program. We had intended to bring the results and our recommendations to the state legislature, but the Loma Prieta earthquake intervened, seismic issues claiming center stage. Our findings nevertheless remain timely today.

We found that despite a growing body of scientific information on coastal hazards and their associated risks, oceanfront development continued in unstable areas. We also found a wide disparity in the manner in which local governments and state agencies dealt with bluff retreat or other coastal hazards, indicating a lack of guiding direction and the heavy influence of local economics and politics.

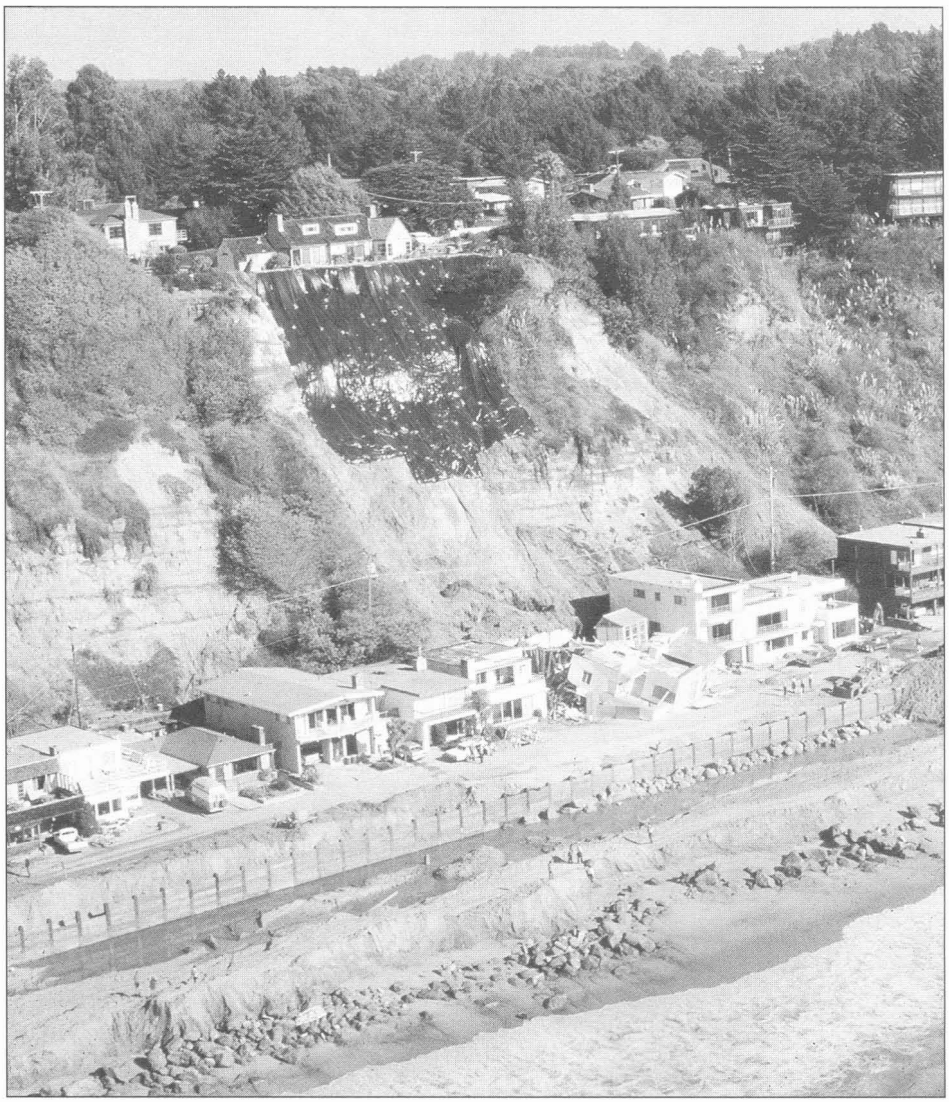
OCEANFRONT development and shoreline erosion continue, putting more infrastructure and growing numbers of public and private structures at risk. Property owners and government agencies have had three basic options when confronting this risk: (1) remove or relocate the threatened structure, (2) nourish the beach, or (3) armor the shoreline.

We can retreat by either demolishing structures or, if an alternative site exists and the owners can afford the expense, moving them farther inland. Two

Seawalls and revetments are not built to protect public beaches; they are built to protect property and structures on dunes, bluffs, or cliffs. To my knowledge, a seawall has never been built to save a beach.

oceanfront houses were moved recently at Depot Hill in Capitola, for instance, and at least one more was moved at Big Lagoon in Humboldt County after a major bluff failure. Generally, however, property owners fight to protect their homes and views, in place, at great cost. For them, and for public beach advocates, beach nourishment has emerged as an attractive alternative. Whether it can achieve the intended goals, however, depends on many site-specific factors.

The economics of beach nourishment, including who pays the costs, and how long the material brought to the shore remains there are factors that have blocked proposals in California, particularly where littoral drift rates are high, that is, where the sand is in continuous transit downcoast. In discussing such projects, it's wise to consider why a need for nourishment has arisen. In southern California, where beach loss has become a significant issue, the major reason for the loss has been known for years: As dams and reservoirs were built throughout coastal watersheds in the first half of the century, the sand that streams formerly transported to the coast became trapped. In a number of cases—Gibraltar Dam near Santa Barbara, for example—the dams no longer

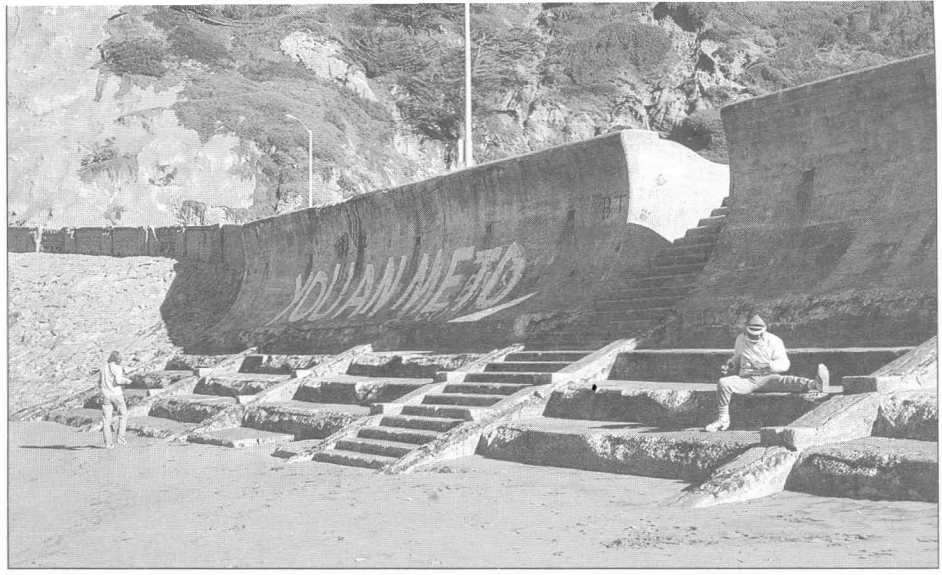


fulfill their intended purpose because the reservoirs behind them are filled with sand. The sand is still in the system, it's just in the wrong place. Before we invest vast amounts in searches for new sand supplies and in complicated short-term plans to nourish eroding beaches, perhaps we should look at the natural sources and transport mechanisms again. Why not remove some useless dams from coastal streams?

The most common approach to protecting property from coastal erosion has been to build seawalls or other hard structures. Currently, about 130 miles (12 percent) of the entire California coast has been armored, and a flood of permit requests for new structures and repairs comes after every major damaging storm.

Now is the time for the California Coastal Commission and other agencies to look carefully at the past and future of this approach. Some of these structures have been successful in protecting property, but others have proved to be no match for the ocean. The massive O'Shaughnessy Seawall backing Ocean Beach in San Francisco has survived for 70 years. To replace it today would cost $5,000 or more per linear foot. The 3,100-foot Great Highway Seawall, modeled after the O'Shaughnessy wall and built just downcoast on Ocean Beach in the early 1990s, cost $4,700–$8,000 a foot, depending on how much was built at one time, with the smallest (120 feet) section being the most expensive. Newer structures have cost $1,000–$3,000 per foot, or $5–$15 million per mile—considerably less than the O'Shaughnessy Wall, but their design and materials differ. Some may not stand for nearly as long.

In striking contrast to the O'Shaughnessy wall is the timber bulkhead and seawall at Seacliff State Beach near Santa Cruz. It has been rebuilt and subsequently damaged or destroyed seven times in 60 years. When last reconstructed, in the fall of 1982, it was expected to stand for at least 20 years, protecting a parking area. Two months later, storm waves damaged it so severely that the repair cost mounted to half the reconstruction cost. There is a lesson here: Either build a wall that can endure the environment or consider other options. Perhaps it is time to move the parking area inland.



Opposite: Homes built on the sand in Rio del Mar were damaged in 1982 by bluff failure from behind and in 1983 by wave attack. Above: The 70-year-old O'Shaughnessy Seawall backing San Francisco's Ocean Beach remains a model of sound design and construction.

Seawalls and revetments are controversial for several reasons. Not only are they costly and often ineffective, but they also have aesthetic and other impacts on beaches. Almost 30 percent of the coastline of Santa Cruz County and close to 65 percent of Ventura County's coast—to name but two instances—have now been armored. It's difficult for a beachgoer not to notice this much rock and concrete along the shore. A vertical, relatively narrow seawall will take up a very small amount of beach, but a riprap revetment, to be stable, may have to extend 20 to 40 feet seaward from the foot of the bluff—in some cases completely covering the usable beach area. Where such a structure is built along a shoreline that is undergoing long-term net erosion, the effect will be the gradual loss of beach in front of the structure as the shoreline migrates landward beyond it. Private structures may be temporarily saved, but the public beach is lost.

How such structures work on California beaches depends in part on local conditions. My research team at Santa Cruz recently completed an eight-year study monitoring the impacts of several different types of seawalls and revetments on fronting and flanking beaches in northern Monterey Bay. We found no permanent effects on the beaches studied, which are along a coastline that has no net long-term erosion. The impacts of a seawall on a shoreline undergoing erosion—the Fort Ord area of central Monterey Bay, for example, or the area south of the Half Moon Bay breakwater—would be very different and ultimately would lead to beach loss as the shoreline to either side of the wall retreated, leaving a protected peninsula without a beach.

Coastlines are getting increasing national attention as their economic and recreational importance grows and as shoreline erosion continues. Most protection structures to date have been financed by federal, state, or local funds or through insurance settlements, with statistics on beach usage and tourist dollars often invoked to justify such "coastal protection." But "beach erosion" and "shoreline erosion" are not the same thing. Seawalls and revetments are not built to protect public beaches; they are built to protect property and structures on dunes, bluffs, or cliffs. To my knowledge, a seawall has never been built to save a beach.

If California is to enjoy the many benefits of sandy beaches in the future, it must develop a realistic policy on coastal hazards and resist the pressures that permit continuing development in hazardous areas, as well as structures that may protect shoreline properties, but only at the beaches' expense. ■

Gary Griggs is professor of earth sciences and director of the Institute of Marine Sciences at the University of California, Santa Cruz.

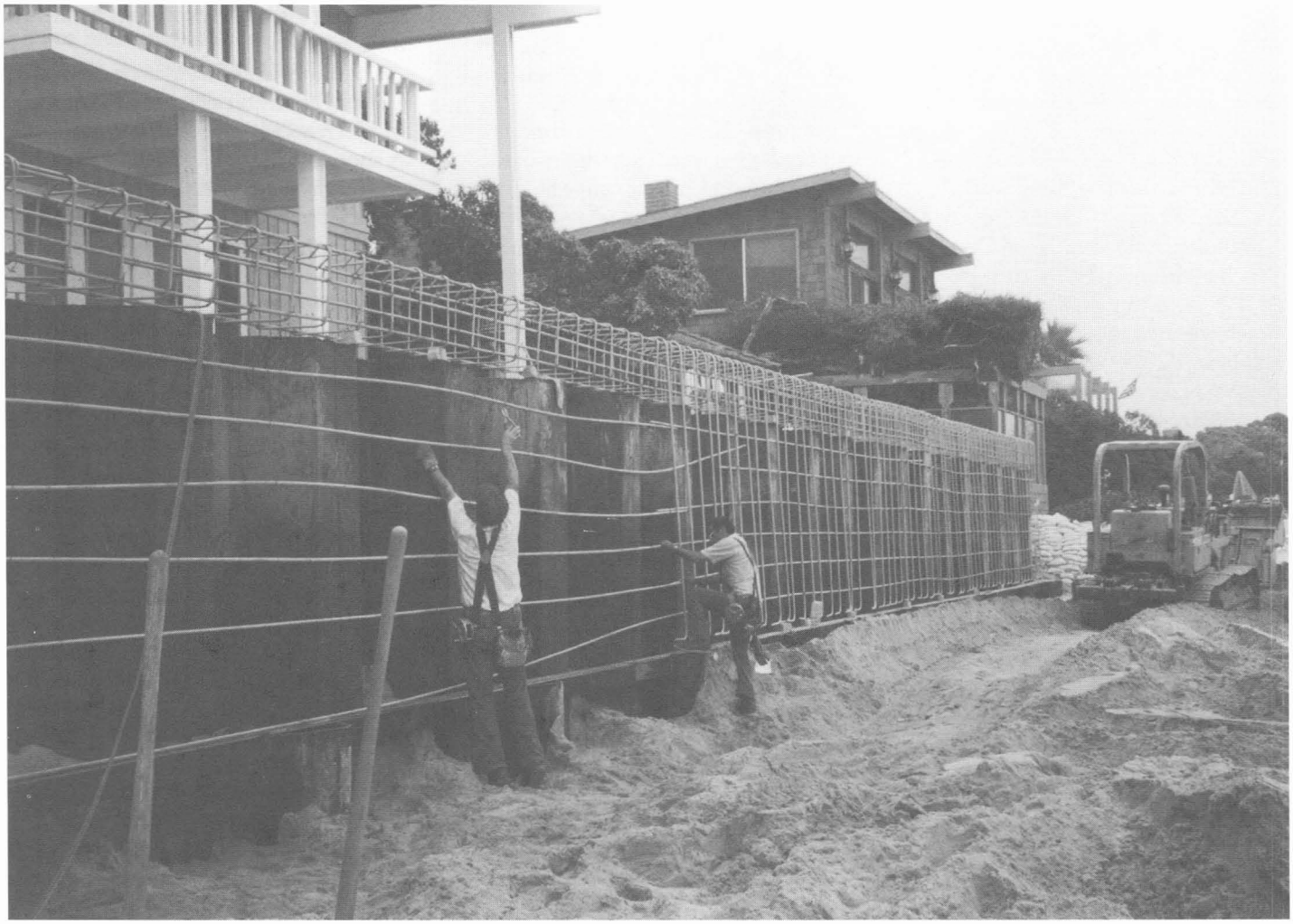
California's De Facto Shoreline Policy: Build Seawalls

Let's Mimic Mother Nature Instead

JON T. MOORE

WE HAVE inherited a shoreline that was zealously built up in ignorance of the dynamic beach environment, along with reactionary practices that prevail, basically unchanged, even today. Although we know that many of California's beaches are disappearing, no statewide or regional policy has been put in place to address the problem of shoreline erosion. As a result, individual property owners have little choice but to build seawalls and other hard structures, and coastal fortification increases after every big storm.

A look at the coast of Santa Barbara and Ventura Counties is instructive. Between the early 1920s and the late 1940s, some 60 miles of this 150-mile stretch of coastline were urbanized. In



JON T. MOORE

the early days of development, the word "setback" was not in the developers' vocabulary, and houses and streets were constructed literally on the backshore and even on the unstable front beach.

Early encounters with storms, high tides, and huge waves soon brought the first generation of groins and seawalls. As development continued, efforts to armor and protect new coastal property kept pace, with virtually all these efforts focused on the backshore. By now, some 65 percent of the Ventura county shoreline and 25 percent of the Santa Barbara County shoreline are backed by hard structures. Little was done in the way of long-term beach restoration or enhancement.

The tendency to build as close as possible to the water's edge has continued, despite the Coastal Act. To this day, despite a long record of property damage, no regional shoreline erosion management plans have been implemented, either along the Santa Barbara–Ventura Counties' shoreline or elsewhere along the 1,100-mile California coast. In their absence, the state's de facto policy essentially dictates the use of hard structures. The beach erodes, and the owner, in the absence of other alternatives, resorts to seawalls and revetments.

If these reactionary practices continue—and there is no reason now to think that they will not—it seems clear that many of our beaches will vanish within the next hundred years.

CAN THIS DIRE SCENARIO be averted? Although at first glance it may appear impossible, with so much of the shoreline already developed, there is some reason for hope—but only if we act soon. That hope lies in what I call the "Everts Illumination," which states that judicious use of structures is necessary to restore, enhance, and preserve beaches. This principle—at first paradoxical—was developed by coastal scientist Craig Everts and is based on his observations that many natural and man-made structures can benefit beaches by partly blocking sand movement, altering wave patterns, or otherwise manipulating natural littoral processes. Today, almost all healthy beaches in southern California and many other areas depend for their survival on natural or man-made structures.

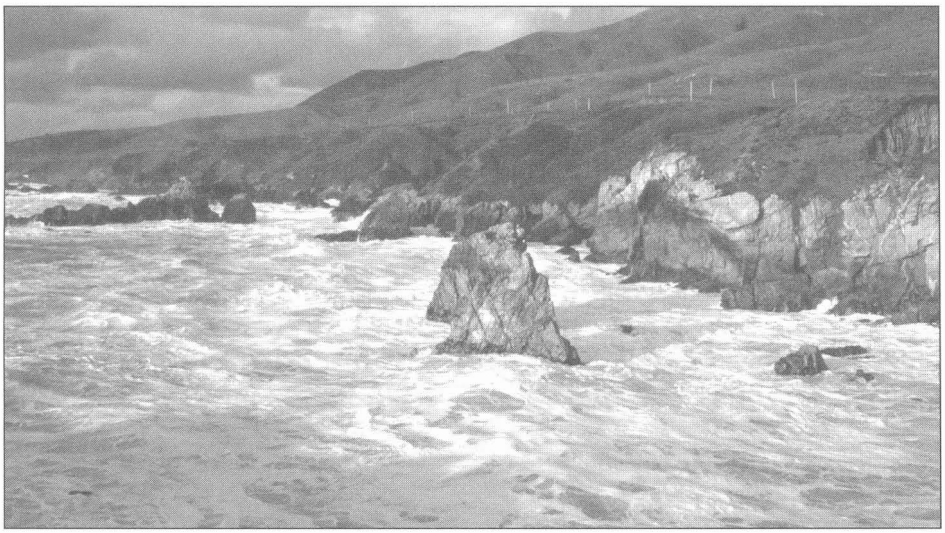
In the light of the Everts Illumination we can start to look at shoreline protection in new ways. If we focus on ways to maintain healthy beaches by using methods that include man-made structures, we may be able to lessen dramatically the need for backbeach fortification.

These structures might not be the familiar groins, seawalls, and rock revetments. Although these have all

SPENCER COLLECTION, UCLA

CALTRANS

Opposite: Seawall construction at Broad Beach, Malibu 1996
Top right: Looking north, beach development at San Buenaventura, 1936. Note the first indications of seawalls and groins constructed in an effort to protect the ill-placed development.
Bottom: Looking south, San Buenaventura, 1961



PHOTOS BY KIP EVANS

Winter storms not only destroy beaches, they also create new ones—this one appeared at Garrapata, near Soberanes Point north of Big Sur, early this year, built by local river sand washing ashore. Top: before; Bottom: after

proven effective in certain settings, they are often controversial, may exacerbate bluff and beach erosion, and are generally viewed as ugly intrusions upon the shore. The nonstructural alternative, beach nourishment, can also be problematic and is perceived by some critics as "throwing good money after bad," as imported sand is washed away and must be repeatedly replenished.

The Everts Illumination invites us to consider techniques that mimic Mother Nature in the ways she stabilizes a coastline. We might, for instance, bring sand from behind dams and from debris basins, sand that has been held back from its natural flow to the shore. We might mimic such natural shoreline barriers as rocky points, armor beaches with natural cobble to retard erosion, or build offshore reef and berm structures to alter wave patterns so as to induce beach growth. These ideas and others arise as we shift our focus from backshore protection to beach enhancement.

Carpinteria, where the shoreline has been seriously eroded since the 1950s, might serve as a real-world example. Although seawalls have long been considered to protect threatened houses there, a more innovative approach would be to manipulate offshore Sandy Point Reef and alter the local wave climate. If done thoughtfully and carefully, this might restore the city's beach without detrimental side effects. As the beach builds, existing fortifications might be buried and perhaps never again needed. Such a reef enhancement project would offer potential environmental and recreational benefits, giving the term "shoreline defense" a whole new meaning.

Without funding to realize them, of course, new plans will be of little value. Three steps must be taken:

- Federal coastal storm damage reduction guidelines must be rewritten to give priority to regional beach enhancement practices. The U.S. Army Corps of Engineers' current procedural guidelines are too narrowly focused and do not recognize the enormous benefits that beaches contribute to the California economy.
- The state must become financially involved in regional shoreline management. It should be the catalyst that brings together federal and local cosponsors.
- Politicians and planners must discuss the uncomfortable issue of cost with local communities. The old adage "there's no such thing as a free lunch" certainly applies to regional shoreline and beach enhancement projects. Benefits to local constituencies are obvious, and the days of looking for state or federal help to handle every local problem are over.

The challenge is clearly upon us. Unless a proactive plan that emphasizes beach enhancement is implemented, and soon, our de facto shoreline policy will only lead to the building of many more seawalls and revetments, turning our coast into a continuous line of fortification.

If, however, we look for more innovative ways to manage the shoreline, we will likely enjoy some pleasant surprises. Costs may not be as overwhelming as some fear, and benefits may go far beyond our conservative expectations. Most important of all, if we at last assume responsibility for our shoreline and embark on the noble path of beach enhancement, everyone will emerge a winner. ■

Jon T. Moore is a coastal engineer at Noble Consultants, Inc., in Irvine. He has practiced for over 25 years, the last 11 in southern California.

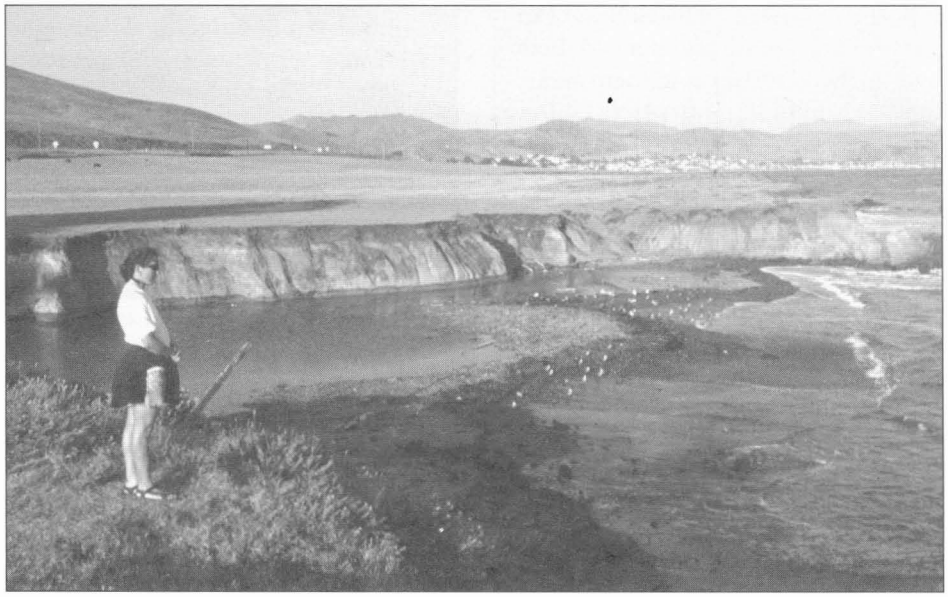
ESTERO BAY PURCHASE

THE COASTAL CONSERVANCY in October authorized the expenditure of $2.5 million to enable the Trust for Public Land (TPL) to acquire and protect the 275-acre Estero Bay property, which extends along three and a half miles of open coastline in northern San Luis Obispo County. North of Cayucos and about half a mile west of Cayucos State Beach, this property includes two streams, coastal terrace grasslands, sandy coves, wetlands, and tidepools. It provides refuge for several threatened and endangered species. The owners, a 32-member partnership, have been trying for many years to develop this landholding into clustered subdivisions.

The total cost of the purchase is estimated at $5.9 million; The Packard Foundation is contributing $2.4 million and a private donor an additional $1 million. TPL has negotiated a purchase agreement with the owners, which requires that this acquisition be completed by December 29, 1998.

NEW ACCESSWAYS FUNDED IN MENDOCINO COUNTY

THE COASTAL CONSERVANCY has allocated a total of $56,000 to three Mendocino County nonprofit organizations for a beach and three coastal trails. Of the total, $26,000 is to go to the Coastal Land Trust to acquire, develop, and manage part of Seaside Beach, near the mouth of the Ten Mile River, north of Fort Bragg; $15,000 will go to the Moat Creek Managing Agency to design a new trail along the blufftop between Moat and Ross Creeks south of Point Arena, and to improve parking and trails at that location; and $15,000 will go to the Mendocino Land Trust, Inc., to design, develop, and manage two trails to blufftops between Fort Bragg and the town of Mendocino, and to investigate more potential trail sites in that area.



© MICHAEL EADINGTON

Three and a half miles of coastline will be protected at Estero Bay, in San Luis Obispo County.

WANT TO HELP IMPROVE BEACH ACCESS?

TWO TECHNICAL ASSISTANCE booklets directed at nonprofit groups are available free of charge. For a copy of *Happy Trails to You: How to Accept and Manage Offers to Dedicate Access Easements* and/or *Limitations on Liability for Nonprofit Land Managers,* write Brenda Buxton, Coastal Conservancy, 1330 Broadway, 11th Floor, Oakland, CA 94612; or call (510) 286-0753.

PRO ESTEROS CELEBRATES ITS FIRST DECADE

THE BINATIONAL CITIZENS organization *pro esteros* celebrated its tenth birthday with a gathering in Ensenada on September 19 to take stock of its work and learn more about the state of conservation in Baja California. Reports on scientific, educational, and advocacy efforts showed that the work has only just begun. Despite the progress *pro esteros* has made, the pace of change in Baja continues to gain momentum. As worrisome as that may be, *pro esteros,* still a small grassroots organization, now has the confidence that comes through effective action.

Southern California conservationists are drawn to *pro esteros* for simple reasons: they share with Baja a fantastic, diverse bioregion. Baja, however, retains, particularly in its wetlands, much of what has been squandered and lost north of the border. While 90 percent of southern California's coastal wetlands have been destroyed, Baja's lie largely natural at the threshold of the 21st century. As one travels along the coast south from the border, slowly the megalopolis stops and nature takes hold for 1,000 miles. There is hope for a different approach here, for sustainable human development. As a group, *pro esteros* has become the instrument of that hope and in a relatively short period of time has developed the skills and sensitivity to become a respected voice on the Baja peninsula.

Some twenty speakers, representing government, academic, and conservation interests from both sides of the border, held forth on such diverse topics as scientific investigations and technical research methods, community education and social participation exercises, and legal and public policy initiatives. Students from the small peninsula community of San Quintín

made the 100-mile trip to Ensenada to report on *pro esteros*'s Black Brant Project and told how it had opened their eyes to the world around them and linked them to faraway places on the Pacific Flyway via the Internet (see *Coast & Ocean,* Winter 1996–97).

Patricia Martinez, a *pro esteros* founder, reported on efforts to assist the state government in developing the administrative structure needed for managing the Bahía de San Quintín. She also reported on another initiative to the south where *pro esteros* is attempting to involve local people in El Vizcaíno Biosphere Reserve in decisions regarding a saltworks development proposed at La Laguna San Ignacio. Mark Spalding, of International Environmental Policy and Law, described how such a resource exploitation project could actually happen in UNESCO's largest Latin American reserve and spoke of the astonishing effort, spanning three continents, being made to prevent its realization.

Speakers gave their detailed assessments of Baja's marine fisheries and prospects for averting a "tragedy of the commons." Others reported on aquaculture and ecotourism in Baja, and on research assessing the sustainability of such undertakings.

Lest we forget the splendor here, Dr. Exequiel Ezcurra, director of the San Diego Natural History Museum's Center for Investigation of the Biodiversity of the Californias, spoke of the "sky islands"—mountains on the spine of Baja (one, Picacho del Diablo, at over 10,000 feet above sea level) with unique flora and fauna and the most compact environmental gradients anywhere.

The strongest attribute of *pro esteros* at the close of its first decade is its unwavering regard for local people and a commitment to their participation in examining options for the future. Experience tells us that this is a key ingredient for success.

—*Jim King*

BRIAN UYEDA, COURTESY *THRASHER* MAGAZINE

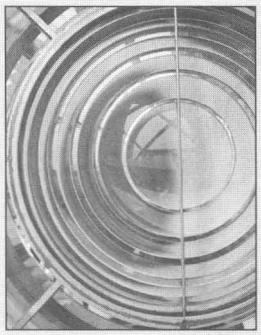
SKATEBOARD UPDATE

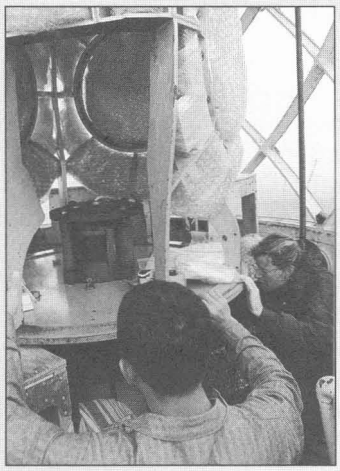
SKATEBOARDERS MAY TRAVEL light, but they carry a reputation for being destructive that has led to head-on collisions with various authorities. A way to avert these, some cities have found, is to create public skate parks. The California Legislature added this acrobatic sport to the list of hazardous recreational activities this year, enabling municipalities to provide such parks without undue liability risk. Arcata, Half Moon Bay, Seaside, Ocean Beach, and Coronado are among those that have done so. Carlsbad will open a new skate park by the end of the year.

Half Moon Bay's Cunha Skate Park, officially opened on July 26, is the community's response to complaints from business owners and pleas from skaters, according to Steve Jesperson, the City's director of parks and recreation. The City Council decided in October 1997 to build a skate park, and early this year provided the site—the parking lot of Cunha Intermediate School, which had previously been off-limits to skaters—and funds for design, done in collaboration with skaters. The City, the Cabrillo Unified School District, Friends of the Boys and Girls Club of the Coastside, private donors, skate shops, and skaters worked together.

"It only took four weeks to get the site cleaned up and slurry-sealed, to do a little landscaping and signage," said Jesperson, "and then only about a week to install the fixtures." Kevin Thatcher, publisher of the skateboard magazine *Thrasher,* said it was "kind of like a barn-raising, where everybody pitches in to help." The park has a six-foot half pipe, ramps, and rails, some movable. The City holds the two-year lease, with an option to renew, and is responsible for installation, maintenance, and insurance. If it continues to be successful, a larger, permanent skate park may be built. So far, skateboarders and in-line skaters have been sharing the space peaceably.

Cunha Skate Park is unsupervised, but safety regulations are posted, including a requirement that helmets and protective gear be worn. These rules have caused some dissent, but enforcement has been low-key, said Jespersen, and most local skaters seem to accept them. The park's reputation has spread, and it attracts many skaters from outside the area. —*HMH*





LEFT: DAVID RUSSELL; RIGHT: KEVIN FLETCHER

POINT CABRILLO UPDATE

The historic fresnel lens will again shine in the lighthouse tower at Point Cabrillo, replacing the beacon currently in use. The U.S. Coast Guard has agreed to work with the Coastal Conservancy and the North Coast Interpretive Association to put the rare lens back in operation. The lantern will be restored, then lifted back to its place in the tower. The goal is to complete the job in time for National Lighthouse Day, August 7, 1999.

Geologic Trips: San Francisco and the Bay Area, *by Ted Konigsmark. GeoPress, Gualala, CA, 1998. 174 pp., $13.95 (paper).*

HERE'S A TRAVEL GUIDE that invites you to go on some eye-opening adventures through both space and time. Part I includes chapters on geologic thinking, plate tectonics, faults and earthquakes, rocks, and the geologic history of the area. Part II offers trips that include San Francisco, Marin Headlands, Angel Island, Ring Mountain, Fort Funston, Bay Area Faults, and Point Reyes Peninsula. A lot of information is crammed into this small book by geologist Ted Konigsmark: even if you think you know the Bay Area inside out, it may offer you a fresh perspective.

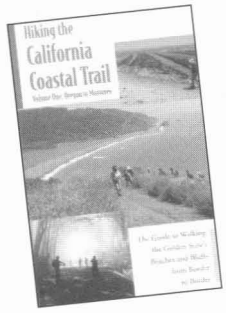
Coastal Waters of the World: Trends, Threats, and Strategies, *by Don Hinrichsen. Island Press, Washington, DC, 1998. 420 pp., $60 (cloth).*

THIS IS A SURPRISINGLY readable, comprehensive, yet concise summary of the current state of the global crisis in coastal waters. "Ultimately, of course, the whole of humankind is coastal," Hinrichsen points out. "No matter where we live, we are connected to the world's oceans through an intricate drainage system of rivers and streams." The problems of overpopulation, pollution, and depletion of resources have been and are increasingly concentrated in coastal areas, yet few coastal regions are managed effectively or sustainably.

Based on over 60,000 miles of travel and interviews with hundreds of people—from prime ministers to local fishermen—this is a rare personal overview of the world's seas. Although the book focuses on regional problems, the uniform format allows for easy comparison. The text is not long enough to present detailed analyses or solutions, but makes clear the gist and scope of the issues involved.

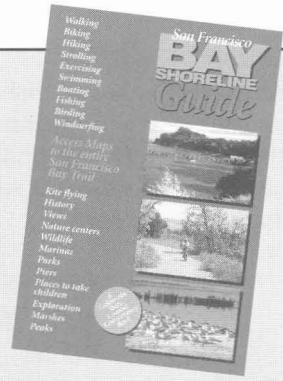
"Collectively, humankind is undergoing a crucial test: whether as a globe-shaping species we can design resource management systems that are ultimately sustainable, not only for humanity, but for the entire complement of plants and animals with which we share the earth," writes Hinrichsen, a United Nations consultant specializing in environmental and population issues. "All too often the lessons learned from one nation's experiences never get beyond its borders. Similarly, the lessons seldom get out to a broad public constituency, a constituency that might put pressure on its political leaders to press ahead on coastal management plans instead of abandoning them at the first sign of resistance from powerful economic interests."

Hiking the California Coastal Trail, Volume One: Oregon to Monterey, *by Bob Lorentzen and Richard Nichols. Bored Feet Publications, Mendocino, and Coastwalk, Sebastopol, CA, 1998. 320 pp., $18 (paper).*



THIS IS REALLY a hiker's book. It has comprehensive information on access, facilities, and conditions for each section of the California Coastal Trail, along with maps and brief complementary articles, but the bulk of the text simply describes the trail. This is a guide to *hiking:* where to turn, when to look for signs or landmarks, what to do if the tide comes in or the weather changes. It has the practical specifics that only experienced hikers can provide, that can make your hike go smoothly and free you to enjoy the pleasures of the coast.

Bob Lorentzen is the author of *The Hiker's hip pocket Guides* to the northern California coast and other guidebooks. Richard Nichols is the executive director of Coastwalk, the nonprofit organization which is working to complete the California Coastal Trail. Both live on the north coast.



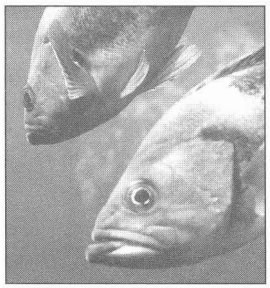
The San Francisco Bay Shoreline Guide is packed with glimpses of the history, culture, and nature of the Bay Area and is a complete guide to the 400-mile Bay Trail. The Northern California Independent Booksellers Association chose it as an ideal holiday gift in 1995. Ask for it in your local bookstore or order from the Coastal Conservancy by sending a check for $16.18 ($14.95 plus sales tax) payable to Coastal Conservancy, 1330 Broadway, 11th Floor, Oakland, CA 94612.

The Northwest Coast: A Natural History, *by Stewart T. Schultz. Timber Press, Portland, OR, 1998. 401 pp., $19.95 (paper), $29.95 (hardcover).*

THIS NEWLY ISSUED paperback edition of a 1990 hardback takes an unusual approach to examining the fauna and flora of the northwest coast (Cape Mendocino north to Cape Flattery in Washington). By studying aspects of climate, geology, and oceanography, the author traces the development and adaptation of the region's plants and animals. He begins in coastal waters and moves inland through seashore, estuary, dune, and forest habitats. Along the way he discusses a wealth of topics such as the relation between echolocation and cognition in cetaceans, the role of ocean upwelling in the distribution of coast redwoods, and estuaries as avenues of evolution. This solid scientific work is quite readable, and its interdisciplinary approach gives new insight into the ways life and habitat interact as part of an integrated system. —*HMH*

Editor:
Kip Evans's photo of fish on page 17 of your summer 1998 issue is the first photo of fish which made me see them as individual beings—terrific!

M. J. Walter
Portola Valley



Editor:
Your article in the Spring 1998 issue of *Coast & Ocean* about the loss of beach along our California coast that would take place if all the planned rock walls, concrete walls, and riprap were put in place as planned reminded me of a Sea Ranch letter I received about 1970, which began: "With only 3 1/2 inches of California coastline per resident, the chance to acquire any California coastal property at a reasonable price is rare."

What do you suppose the percentage of coastline per resident is now?

Marianne Caratti
Santa Rosa

We consulted coastal scientist Gary Griggs, who says:

If we divide California's 1,100 miles of coastline by its 33 million people, we find that each of us only has about two inches. Only 40 percent of the coast is accessible to the public, however. And then, of course, we share our beaches with nearly 100 million visitors each year.

Editor:
Could someone please tell me how long the California coastline is? I bet a friend a lobster dinner Maine's coastline of 3,500 miles is longer.

Bill B. (via e-mail)

We asked John Cloud of the Geography Department at the University of California, Santa Barbara, to help, and he replied:

Here are two responses from geographers here:

(1) The length of the coast is fractal—thus infinite (therefore, California= Maine=every coastline). However, I calculated a length of 1540 km (957 mi) for the mainland linking the major headlands and running along the major beaches. This does not include islands or numerous crenulations in the coast. (2) You could grab some US coastline data off the net and measure it. But . . . I don't think that would be "right." It would supposedly treat the coastlines in some standard way, but generalized at a presumably very coarse level.

A few days later, Cloud forwarded this from Kevin M. Curtin of the National Center for Geographic Information and Analysis, UCSB:

First I measured the coastlines from the canned ArcView data set of the U.S. I have no metadata for this, and it looks appropriate for use at a scale of about 1:googol. The results were: California coastline=2,258,787 meters; Maine coastline=755,629 meters.

Then I downloaded the NOAA/NOS Medium Resolution Vector Shoreline data set from the USGS coastline extractor. I had to make some guesses on the latitude and longitude boundaries, and I clipped a little of Maine's coast. This data is appropriate for use at a scale of 1:70,000. The results: California=6,141,109 meters; Maine=6,865,931 meters.

So which is longer? Depends what side of the bet you're on, how tricky you can get with GIS, and how badly you want the lobster. It's possible that another data set at a larger scale could show millions of tiny inlets in the California coast that aren't in Maine's. I doubt it, but it's possible.

You also have to ask, "How far up Penobscott Bay does the Penobscott River start?" *[and the same for San Francisco Bay, etc.—Ed.]* This is also a great pick-up line, come to think of it. I did these calculations quickly, so another analysis could cast some doubt.

John Cloud continues:

I suspect that the more the coast is generalized, the more likely it is that California will win. I also suspect that if we get extremely fine, California wins again because the distance from Oregon to Baja California is so huge, and the intermediate points and coves will cancel out. Somewhere in between, scales may exist at which Maine is longer. I say . . . let the lobster decide!

IN THE WEST

In the West, water flows uphill
Leaping across the Tehachapi Mountains
To fill the mouth of the City of Angels.

In the West, the streams serve us
Captured and prisoned, in tunnels, in siphons and aqueducts
Bleeding into our irrigated lands.

In the West, once the rivers' voices
Coaxed the salmon, surging thick against the current
Lured the antelope and bison herds to their banks.
Now there is silence.

In the West, the rivers are the Disappeared
Their bones buried in a common grave
We forget their names
And call the land "Desolation."

Todd Detter, Grade 9, Central High School, Phoenix, Arizona
A winner in the 1998 River of Words Contest

THE FOURTH ANNUAL River of Words International Environmental Poetry and Art Contest again invites children and young people in grades K-12 to take part. "Watersheds" is again the theme. For free entry forms and contest guidelines, or to order a 50-page Teacher's Guide ($6) and other materials, contact River of Words, P.O. Box 4000-j, Berkeley, CA 94704; phone: (510) 433-7020; FAX (510) 848-1008; e-mail: row@irn.org; web site: www.irn.org.

"The Last Stand"

Cormorants still roost at Harbor Lake, a remnant slough that is no longer connected to the Los Angeles River. This is a potential habitat restoration site. Photo by Sean Wood

Coast & Ocean keeps you in touch with the news in California's watersheds, from endangered salmon runs in the wild north to embattled beaches in the urban south. Learn what people are doing to protect and restore our natural wealth and how you can participate where you live.

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