

SEA URCHINS



Faced with heavy competition, fluctuating resources and politics, California urchin divers explore their options.

Summertime is slow-moving in California's sea urchin industry: prices low, exports slack, full-time boats on rotation. One slack day finds a group of Santa Barbara highliners in margaritaville, round-tabled in a waterfront restaurant debating the course of their fishery.

"Mariculture is the answer," exclaims David Hastie. "We have to adopt a farming approach." Blond, clean-cut and 25, David has fished urchins hard for four years, one of a new generation of urchin divers. His older brother, Rob, interjects, "In two more good seasons without regulation, the Channel Islands urchin fishery will no longer exist except for scratching."

"I said that seven years ago," Bruce Steele chuckles, his lean, imposing presence and a decade of experience making him a senior spokesman at age 30. "Five years ago I told Fish

and Game that the fishery needed regulation. We all used to daytrip; now it's two-day trips. Our price and work effort have doubled, but our average catch has dropped by half." Studying his swollen, bandaged hand, punctured by an urchin spine, he adds, "We've done well in the last 10 years, but we've reached a point where we need to manage ourselves."

Management is a common topic these days as urchin divers find it harder to plug their holds. Based mainly south of Point Conception and divided into three major fleets — San Diego, Los Angeles, and Oxnard-Santa Barbara — 229 boats landed 17,267,701 pounds of red urchins in 1983. Close to 90 percent of that poundage came from the Channel Islands, according to California Department of Fish and Game statistics. At prices averaging \$.20 a pound, topping \$.30 in peak season, urchins brought over \$3 million to uni divers.

Article and Photographs
by D.B. Pleschner

Above: The Hasties submerge their catch overnight at the anchorage, hooking urchin bags onto a line with an anchor at one end and a buoy at the other. Left: Bruce Steele samples an urchin, checking for roe quality.



SELF DUMPING HOPPERS

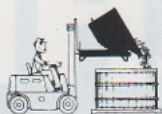
Provides a safe dependable, ideal method of handling.

In Washington call toll free 1-800-824-0670 • 206-747-3733

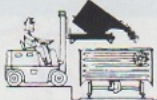
DACO Products

AIR CURTAINS
ALUMINUM TOTES
BASKETS
BOXES
COLLAPSIBLE
CONTAINERS
CONVEYORS
DOCK BOARDS
& PLATES
DOCK EQUIPMENT
FANS & ENERGY
SAVING EQUIPMENT
FLOOR MATS & SLATS
FLOOR TRUCKS
HOPPERS

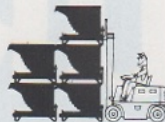
INSULATED
CONTAINERS
INSECT
ELECTROCUTORS
MOBILE
LOADING RAMPS
PALLET DOLLIES —
JACKS — HOOKS
PLASTIC
CONTAINERS —
SHOVELS — PALLETS
PLASTIC
GARBAGE CANS
STAINLESS STEEL
TABLES & SINKS
STORAGE RACK
STRIP DOORS
TOTES
WELDERS & BRANDERS
WHEELS & CASTERS



SELF DUMPING



SELF LOCKING
AND RESETTING



STACK FOR
STORAGE



P.O. Box 4 Bellevue, WA 98009

Circle No. 25 on Reader Service Card.

SEA URCHINS

With Channel Islands urchins ranked among the best in the world, the fishery's 1983 export value exceeded \$8.67 million. Export demand rises in fall, after Japanese and Korean urchin fisheries close, and peaks during the winter holiday season. In fact, sea urchins have become an important U.S. export product as well as the largest shellfishery in Southern California.

Around the northern Channel Islands, however, blackout areas, once solid with urchins, are gone; some areas never have come back. Mia Tegner, a marine biologist studying urchins at Scripps Institution of Oceanography, has found that juvenile red urchins recruit almost exclusively under the spines of mature red urchins. She speculates that overharvesting, removing nursery habitat, may limit the fishery.

"We picked over the big urchins; you have to thin them out. Blackout areas usually have poor quality roe," Bruce says, reminiscing. "In the early 1970s, most guys thought of urchins as a two-year business — until they got into the fishery and saw a future in it. Now we're harvesting regrowth."

The primo urchin is about 4 inches in diameter, not counting spines, reaching pickable size in 3-4 years. Its roe should be thumbsize, canary yellow, with a texture like creamy Cream of Wheat and the firmness of Jell-O. Changing seasonally, roe quality and yield peak during the holidays and before urchins spawn, which seems to climax around February.

Food abundance also affects urchin roe. Typically, red urchins aggregate on the outer fringes of kelp beds, a pattern Mia Tegner attributes to the movement of currents: the edge effect. Some divers harvest only the feed lines, rows of urchins nearest to the kelp, leaving immature animals to fatten and large nursery urchins to protect the babies.

A farmer by heritage, a naturalist and perhaps the most conservation-minded diver in the urchin business, Bruce has firm ideas about protecting the fishery. He would like to see a four-month closed season between, say, May and August, to protect just-settled juvenile urchins. "It's almost seasonal now, based on price," he explains.

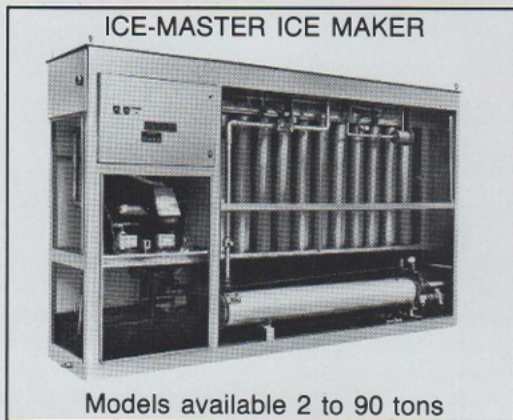
Limited entry is another proposition that divers are mulling over. "Not many divers work in summer, but the influx in winter is awesome," Bruce says.

David and Rob Hastie take up the

MOST IMPORTANT NEWS IN 20 YRS. TO ICE USERS

MORRIS AND ASSOCIATES

Introduces the "Power Saver" - Saves Thousands \$ in Electrical Cost \$



Models available 2 to 90 tons

The 1985 model Morris "ICE-MASTER" ICE MAKERS are now available for forward-looking leaders in the vegetable, seafood, and food processing industries. The new models reflect over 36 years of engineering research and development by America's leading designer and builder of Ice Making Equipment.

This know-how has paid off in the design of the 1985 Morris Ice Makers and the dramatic reduction in their cost of operation . . . so important when electric cost continues to increase an average of 15% per year.

The 1985 Morris-designed "ICE-MASTER" ICE MAKERS assure an operating savings of from one-third to one-half compared with any other units on the market. This latest "state of the art" equipment from Morris features the original "Double Tube" design originated by Morris many years ago.

Call or write for the money-saving details today. **Make us Prove It!** If you use ice you cannot afford to wait . . . especially at today's electric and water costs, one of your largest overhead expenses.

P.O. Box 1046 • Raleigh, N.C. 27602 • (919) 779-1250 • TX 377-2214

Circle No. 26 on Reader Service Card.

subject, running to the islands a few days after the round table. "We should have the same regulations as abalone — limited entry and poundage requirements," Rob says. "The easy spots have been worked over; now we're getting into heavy surf, working deeper. We can't survive spot-picking individual urchins." "There's too much pressure," David agrees. "We should be cultivating the bottom."

Farming animals underwater was David's high-school dream, growing up near Boston, Massachusetts, captivated by Jacques Cousteau movies. In 1980 he moved to California, saw an ad in a newspaper and went to work as a walk-on urchin diver in Redondo Beach. A year later, in Santa Barbara, he fell in love with the *Amber Marie*, a 40-foot customized Radon for sale, the biggest urchin boat in the harbor. "I B.S.ed my way into owning it," he grins. Rob joined him soon afterward.

New in town, the Hasties took a ribbing in the beginning. They still do. But they picked weight their first year out and have been top producers ever since. Brother Mark, the youngest Hastie, joined them a year ago. With David as skipper-tender, Rob, Mark and a third diver, Ward Motyer, dress in as the *Amber Marie* reaches the islands.

Rob prospects for almost two hours to find a workable spot, listening for the rustle of urchin spines on the bottom. Finally he finds a bed about 40 feet deep. Checking the roe quality, he cracks open a random sample of urchins. Over 60 percent of them are good, the gonad plump and pale ocher in color, almost perfect.

Air hoses hooked up, the divers roll off the swim step armed with long, clawlike metal rakes. David tosses out the rest of their gear: picking baskets made of lobster trap wire and ring bags made of 2-inch stretch mesh knotted around a 3-foot diameter metal hoop. The biggest bags, about 6-feet deep, hold close to 800 pounds; smaller, 5-foot bags hold 500.

Heading in different directions, the divers secure their bags by inflating an inner tube floater that holds the ring eye-level off the bottom. Then they swim off with the picking baskets, rake in urchins with a flick of the wrist, dump the catch into the bag and head off for more. They make at least five such trips, at 100 pounds a basket, to stuff each ring bag, treading on the

Serving the fishing industry with fuel and much more since 1937



- centrifuge sales and service
- cable greasing facilities
- bilge pumping facilities
- boat cleaning supplies
- boats from all ports welcome

On Lake Washington Ship Canal just inside the Locks
5300 26th Ave. NW, Seattle, WA 98107 (206) 783-0241

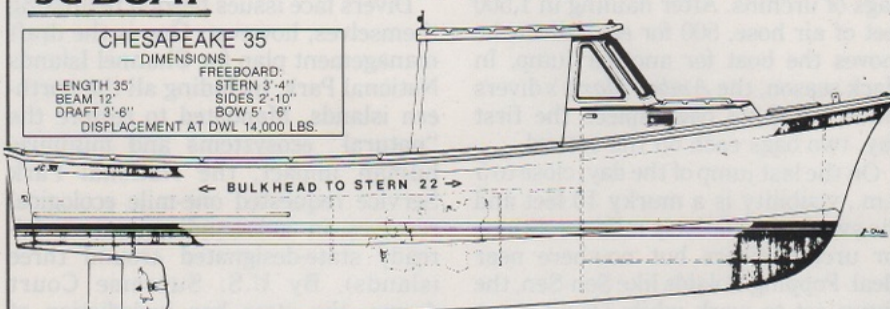
Circle No. 27 on Reader Service Card.

JC BOAT

The Innovative Builders For The 80's

CHESAPEAKE 35
— DIMENSIONS —

LENGTH 35'	FREEBOARD: STERN 3'-4"
BEAM 12'	SIDES 2'-10"
DRAFT 3'-6"	BOW 5' - 6"
DISPLACEMENT AT DWL 14,000 LBS.	



← BULKHEAD TO STERN 22 →

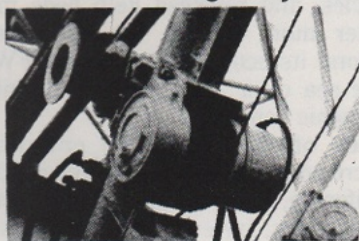
N.H. Boat Builders Inc.
P.O. Box 4965
Manchester, N.H. 03108

Semi-Custom Built Fiberglass Boats For All Uses
Call or Write Sterling Giberson
(603) 483-5967

Circle No. 28 on Reader Service Card.

NPI Keeps Fish Boats Fishing

Expert sales and service for your propulsion, control, and deck machinery systems. New and rebuilt parts. 24 hour emergency service.



Featuring Garmatic Winches
Units • Parts • Service •
All in San Diego Stock
Model 6 through model 23 with many drum sizes and line pulls. Complete systems engineered and installed — on shore or on board.

Authorized sales and service for American Standard • Bendix • Bosch • Capitol • Cav • Cleveland Diesel • Cummins • Fairbanks-Morse • Garmatic • GMC • Hy-Drive • Marco • Mathers • Murphy • Pow-R-Quik • Racor • Roosa-Master • Simmons • Twin Disc • Wabco

Call 619/232-0831
National Pump & Injector

2307 E. Belt • San Diego, CA 92113

Circle No. 29 on Reader Service Card.

SEA URCHINS

urchins like old-fashioned wine makers to pack the load.

On deck, tracking the divers' bubbles, David launches into a pet topic: farming urchins. By leasing tracts of ocean bottom from the Fish and Game Commission, divers could legally move urchins from "bunk" beds into good growth areas. Operating a bottom lease, David would plan his year around peak season, picking all he could between November and January, selling top-quality urchins at a top-dollar price.

Floater's pop to the surface, and David breaks off to winch aboard the bags of urchins. After hauling in 1,500 feet of air hose, 500 for each diver, he moves the boat for another jump. In slack season, the *Amber Marie's* divers shoot for three bags apiece the first day, two bags each on the second.

On the last jump of the day, close to 5 p.m., visibility is a murky 10 feet and the swell 3-5, relatively mild conditions for urchin divers but nowhere near ideal. Popping Roloids like Sen-Sen, the divers set to work while David mans the hoses, all leaking air from urchin spine punctures.

With about 4,000 pounds on, the *Amber Marie* runs for the anchorage. David clips the urchin-filled bags onto a line with an anchor on one end and a buoy on the other, dropping the catch overboard. Each bag hangs 4 feet underwater, held up with an inner tube. "Submerging the urchins overnight keeps them fresher," David says.

The second day goes as before: another 4,000 pounds, the last load aboard by 1 p.m. Retrieving the first day's catch, the *Amber Marie* heads for port.

At S-M Uni the next morning, the Hasties follow their load as the roe is scooped out, washed and drained, then soaked in a preserving solution that is the key to uni processing. Owner Neil Matsushita, one of eight uni dealers in Southern California, began processing 12 years ago, the first to export to Japan. He now employs 40 workers yearlong. During the summer he supplies domestic sushi bars, and in peak season he airships 100,000 refrigerated pounds (whole weight) a week to Japan.

His workers pack the roe in wooden trays, each tray holding close to 30 primo pieces on top and broken pieces underneath — 7-10 ounces total, the produce of 8-11 good urchins. The trays hit the auction block no more than a

day or two after reaching Japan. Their price is determined by color, texture, size and eye appeal, ranked in three acceptable grades. Processors sell roe unfit for the trays in bulk pack at a lower price.

Matsushita's average recovery on his urchins is 3 percent to 5 percent, or about three pieces of roe per urchin. "There's a lot of waste," he acknowledges. Commenting on the fishery, he says, "If it folds in Southern California, processors would probably go to Mexico. I think the urchin business will last forever here. But divers have got to regulate it."

Divers face issues beyond regulating themselves, however. One is the draft management plan for Channel Islands National Park, including all the northern islands. Mandated to restore the "natural" ecosystems and minimize human impact, the National Park Service requested one-mile ecological reserves in surrounding waters (already state-designated around three islands). By U.S. Supreme Court decree, the state has jurisdiction of marine resources (excluding marine mammals). But NPS "will continually seek more conservative regulations" to limit, if not eliminate, commercial fishing.

Another huge concern to urchin divers, indeed all shellfishermen, is the proposed sea otter translocation to San Nicolas Island, among the southern Channel Islands.

Yielding half of the Oxnard fleet's catch now, San Nicolas is increasingly important to the urchin fishery. Ironically, a key rationale in the U.S. Fish and Wildlife Service plan states that by removing kelp-grazing urchins, sea otters will enhance macrocystis kelp, the commercially harvested species, and renewed kelp beds may foster more finfish for fishermen. Beyond its ecological role, says FWS, "the sea otter does produce tangible economic benefits."

Sea otters may have enhanced macrocystis in some areas of central California, and urchins, once considered pests, have grazed kelp beds to barrens in some areas of Southern California, one reason the National Marine Fisheries Service initiated the red urchin fishery. But that's only half the story, according to many scientists.

Storms uproot much of central California's kelp each winter, while many areas in Southern California, without sea otters, produce macrocystis yearlong. Mia Tegner argues that sewage played an important role in

reducing Southern California coastal kelp; urchins survived the pollution, and the 1957-59 El Nino administered the *coup de grace*. Tegner questions the sea otter's ecological importance in Southern California, where urchins have other major predators — spiny lobster, sheephead, urchin divers — not found elsewhere.

"Whether urchins are removed by otters or divers, their removal enhances kelp," says Ron McPeak, marine biologist for Kelco, commercial kelp harvesters. "But kelp is so productive in a normal environment that urchins aren't a menace. If they have enough drift algae to eat, they don't graze living plants."

Kelco seasonally controls purple and white urchins (smaller, noncommercial species) at Point Loma on the southern coast. Yet it doesn't control urchins at San Nicolas Island, where it has harvested kelp since 1941. Over 22 percent of Kelco's macrocystis has come from San Nicolas in the past seven years. Kelco opposes a sea otter translocation unless FWS guarantees in writing that it won't close the island to kelp harvesting. "There's no absolute guarantee that otters will introduce macrocystis," McPeak says. "It depends on the time of year, the area, what kelps are springing. So many variables enter in."

The kelp-fish relationship also varies widely by area and species. Ted Hobson, NMFS fisheries biologist, generally equates more kelp with more of some species of fish, "but not necessarily those valued by fishermen. It's a very complex question and very little is known about some relationships," he notes.

Glenn VanBlaricom, FWS sea otter biologist and author of the economic benefits statement, acknowledges that kelp is influenced by many factors. He maintains that because urchins don't overgraze in the presence of otters, "sea otters improve the odds for a good kelp harvest." But he adds, "The expansion of harvestable kelp resources may not occur for a decade or more."

The bottom line is, nobody knows how much kelp is generated by sea otter foraging, or how many economically important fish. But those "odds" are included in FWS's Environmental Impact Statement for the translocation as positive economic benefits.

"That's just another argument FWS can use to justify putting otters at San

Nicolas Island," says Bob Hardy, project leader of the CDF&G otter team. "Fishermen and state resource managers need to know FWS's recovery goal. The service hasn't identified how many otters must occupy how many places before somebody in Washington, D.C., can say the population has recovered enough to permit management. Sea otters have a legitimate claim to shellfish," he adds. "But so do fishermen."

"Urchins are vital to the shellfish ecosystem," Bruce Steele declares. "There's a little microhabitat under each large urchin — baby urchins, abalone, cleaner shrimp ... And by trapping drift kelp, urchins are critical in dispersing kelp spores. Mia Tegner found that. There's new realization that urchins do something good." His voice rises. "I think FWS is setting up an unnatural system — uncontrolled otter foraging. In the long run that's bound to be unhealthy for kelp and all the creatures in the ocean that rely on shellfish. Urchin divers restore kelp; we help preserve a balance. And we're part of a multimillion-dollar export fishery besides."

Bruce, for one, can't see how otters would provide greater economic benefits than urchin divers already have, since red urchins historically led the kelp-grazing fronts and their declining abundance has everyone in the fishery talking management.

"There should be some reduction in effort," CDF&G's Dave Parker, head of invertebrate research, agrees. The first step is a revokable permit for urchin divers; the bill recently passed the legislature. The second step will be consensus on which regulations to pursue. Meanwhile, FWS is proceeding with the translocation EIS, preferred site San Nicolas Island. Since FWS has no proven containment methods, and managing the rest of the herd is now illegal, given a San Nicolas move and future otter expansion, sea otters would sooner or later preclude the urchin fishery.

At a crossroad, divers recently set up the California Urchin Divers Association to press for fishery reform and grapple with politics. A CUDA spokesman, Bruce exclaims, "We need organization badly; we have so many enemies — ourselves, the Park Service, sea otters. But we'll get it together. It's necessity!" His eyes glint, frustrated at the irony, yet determined. "We're an experiment that worked. NMFS helped create this fishery, and now FWS might very well destroy it." PF

COMPUTER SOLUTIONS

At last a computer solution designed for the fish and poultry distributor.

Distribution III can provide a total solution to your information needs by providing the following software.

- Order entry, shipping & billing
- Inventory control and tracking
- Purchase order control
- Purchasing recommendations based on sales history
- On-line customer sales history
- On-line purchase history
- Accounts receivable
- Accounts payable
- General ledger

Let your information make you money and help increase sales.

Call or write today:

Interactive Management Systems

629 Banta Court
San Jose, CA 95136

(408) 978-8877 - 24 HR MESSAGE - (408) 977-5227

Circle No. 30 on Reader Service Card.

Harris



Electric, Inc.

4020 23rd Ave. W. Seattle,

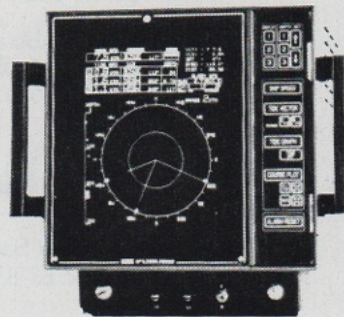
WA 98199 (206) 282-8080

the **Sea** can be **Yours...**
with the

Furuno Doppler Sonar Current Indicator **CI-30**

Features:

- Color Doppler Speedlog/Current Indicator System
- Easy readouts on 14" Color CRT
- Continuous display of ship's speed and heading; current speed and direction at three depths; distance run and other data.



Circle No. 31 on Reader Service Card.

March 1985
Vol. VI, No. 3

COLUMNS

14

Management

You and Product Liability Laws

36

Gear Locker

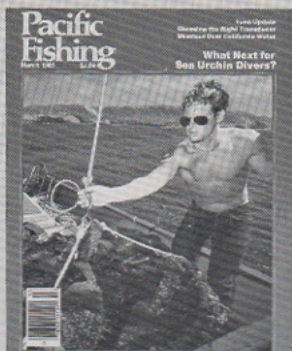
Selecting the Right Transducer

54

Opinion

DEPARTMENTS

- 3 Letter to Our Readers
- 6 Letters
- 9 Seafood Report
- 11 Japan Update
- 13 World Watch
- 16 Who's Doing What
- 42 New Products
- 44 Reader Service Card
- 45 Vessels
- 46 MarketPlace
- 47 Advertisers
- 48 Dates To Log
- 50 Classifieds

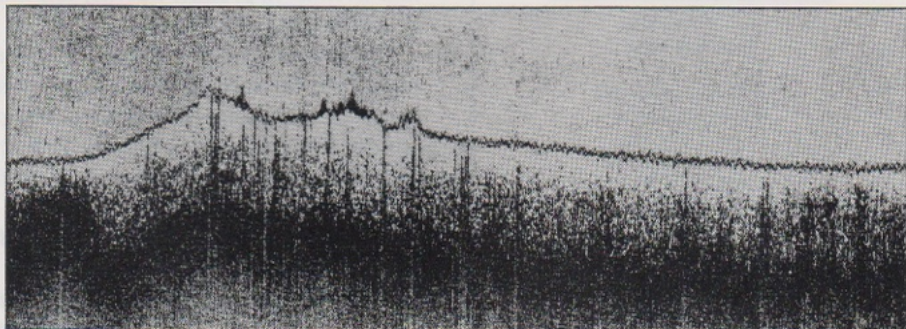


Cover: David Hastie lowers a bag of urchins into the hold as the *Amber Marie's* divers prepare for another jump. See story on page 28. D.B. Pleschner photo.

Pacific Fishing (ISSN 0195-6515) is published 12 times a year (monthly) by Special Interest Publications. Editorial, Circulation, and Advertising offices at 1515 N.W. 51st St., Seattle, Washington 98107, U.S.A., Telephone: (206) 789-5333. Subscriptions: One-year subscription rate for U.S. and Canada, \$20, two-year \$35, three-year \$48, outside U.S. and Canada surface rate is \$30 per year, air mail \$72 per year. The Publisher of Pacific Fishing makes no warranty, express or implied, nor assumes any legal liability or responsibility for the information contained in Pacific Fishing. Second class postage paid at Seattle, Washington. Postmaster: Send address changes to Pacific Fishing, 1515 N.W. 51st St., Seattle, WA 98107. Copyright © 1985 by Special Interest Publications. Contents cannot be reproduced without permission.



Sea Urchins, page 28



Choosing the Right Transducer, page 36

FEATURES

24

Shootout Over California Water

Fishermen — bitter, betrayed, unbowed — vow to fight even harder to save California water for fish.

28

Fish of the Month — Sea Urchins

Faced with heavy competition, fluctuating resources and politics, California urchin divers explore their options.

35

Tuna Update

With the tuna industry in the midst of a profound sea-change, 1985 promises little if any improvement for fishermen or canners.

36

How to Choose the Right Transducer

Part I of this "Gear Locker" two-part series explains the eight major factors that affect transducer performance.