# The Fish of the Month

Last March, Captain Carl Burlesci of the trawler *Colintino Rose II* made an educated guess: that waters near Point Sur on the mid-California coast would likely have a concentration of shortbelly rockfish. And right he was. In five days of fishing the vessel picked up nearly 75 tons in 14 tows.

But why would Burlesci go after this non-commercially-important fish? The answer is that his boat was under charter by the National Marine Fisheries Service (NMFS) to check out the practical details of a potential shortbelly rockfish fishery—to find out what would be appropriate gear and fishing strategy, what the catch and by-catch rates would be, and to help test on-board handling, shoreside handling, and marketing.

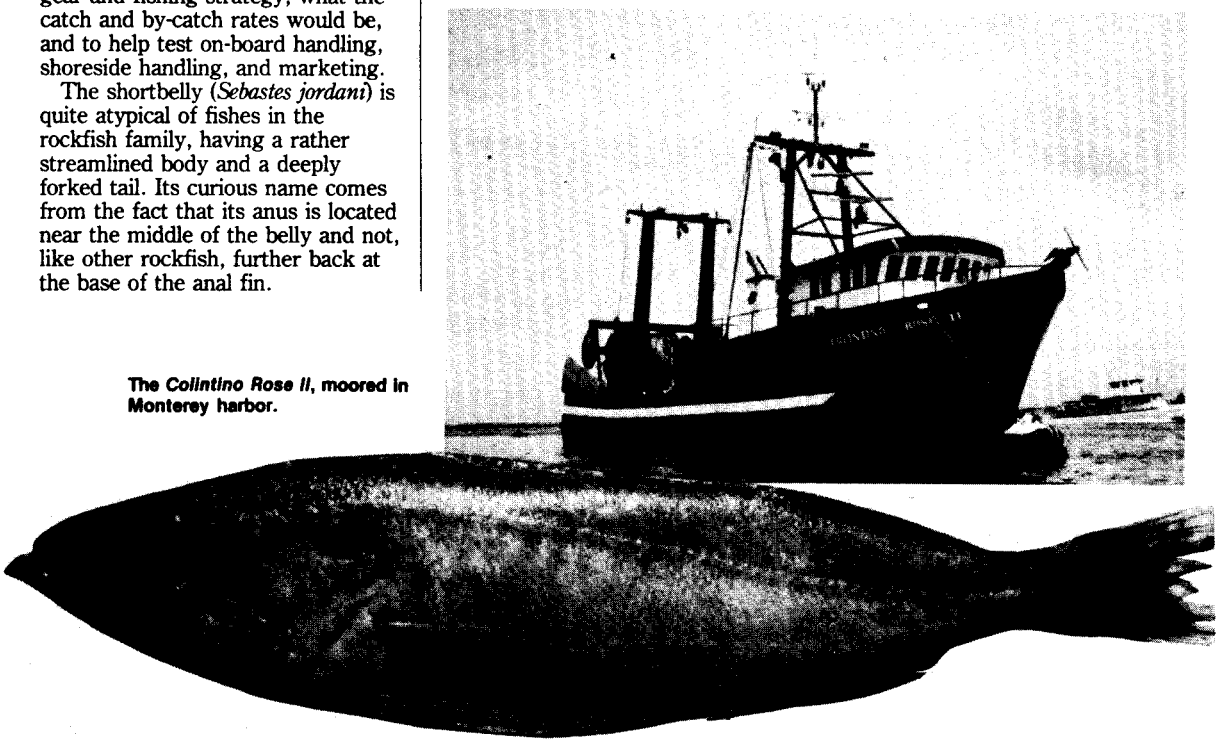
The shortbelly (*Sebastes jordani*) is quite atypical of fishes in the rockfish family, having a rather streamlined body and a deeply forked tail. Its curious name comes from the fact that its anus is located near the middle of the belly and not, like other rockfish, further back at the base of the anal fin.

It is a fast-growing fish, attaining sexual maturity at an average age of two years when the length is around 6½ inches, according to biologist Bill Lenarz of NMFS's Tiburon Laboratory. A 10-inch fish, the average size to be expected in a commercial fishery, weighs about one-third pound. Twelve inches is the largest fish commonly found.

The largest fish are always females. They carry developing embryos from January through March. Like other rockfish, shortbellies give birth to larval fishes instead of dropping eggs in the sea.

The diet of shortbelly rockfish consists primarily of krill (euphausiid shrimps), but the shortbellies no doubt also feed opportunistically on any prey of appropriate size. Studies by Tony Chess, another Tiburon biologist, indicate that shortbelly rockfish prefer canyons and drop-offs—areas where krill also congregate. The fish form compact schools during the day and usually, but not always, disperse at night when they feed.

For a fish that isn't commercially important, shortbelly rockfish is one of the better-known species to the



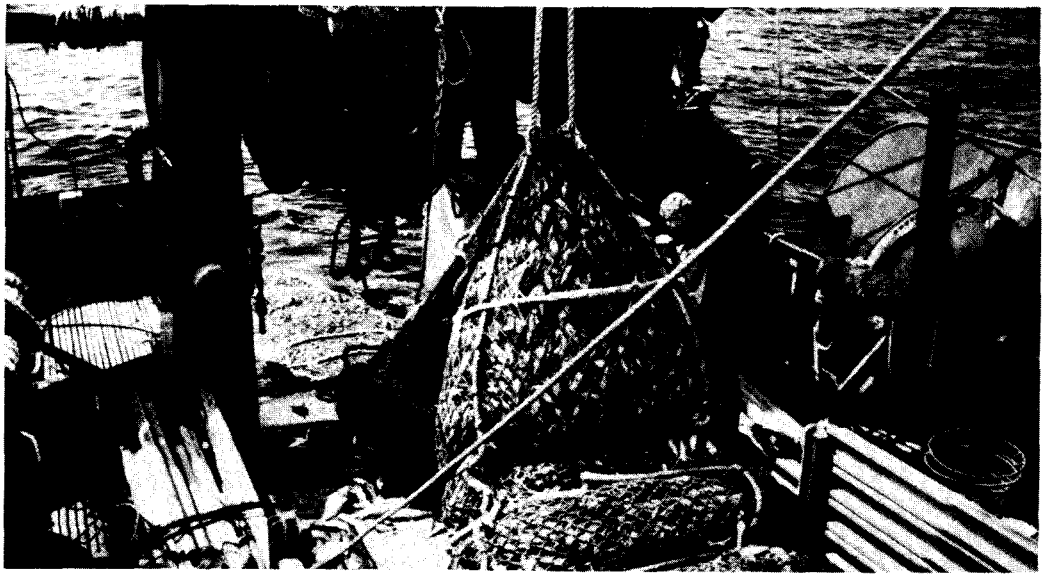
**The *Colintino Rose II*, moored in Monterey harbor.**

# *Checking Out Shortbelly Rockfish*
# Colintino Rose II's
# *Mission Accomplished*

*Article and Photos by Sus Kato*

West Coast fishing industry, but they have rarely been caught in large numbers because they can easily escape through the 4½-inch mesh trawls used by California fishermen. Further, when they are caught, they are sometimes misidentified as juvenile bocaccio or chilipepper. And even when correctly identified, the small sizes of most shortbellies make them seem difficult to market.

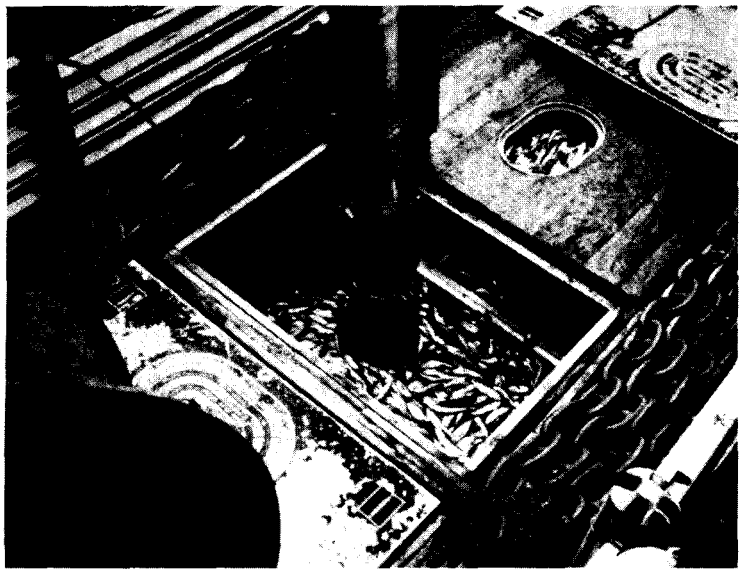
But if the hoped-for expansion of U.S. fisheries is to take place, the potential of species like shortbelly rockfish must be given an all-out try. That's why NMFS chartered the *Colintino Rose II,* an 80-foot trawler from Fort Bragg, CA., and one of the vessels built after passage of the Magnuson Act with an eye toward new fisheries, to conduct a shortbelly-fishing experiment.



The crew of the *Colintino Rose II,* Captain Burlesci plus crew members Jeff Owens and John Savage, had had one season's experience in mid-water trawling for Pacific whiting and widow (brown) rockfish. They used the same gear to catch shortbelly rockfish, a No. 8 (three-quarters) Polish rope wing trawl. The entire 60-foot cod-end was lined with 1½-inch mesh webbing. A 1,000-pound weight was hung at each lower wing of the trawl. The doors were five square-meter Suberkrub midwater doors. A sonar unit, a fathometer with a CRT (cathode ray tube) display (which indicated strength of signals), a track plotter and a headrope transducer all made aimed trawling practical

**Top:**
**Captain Carl Burlesci on the bridge with all the electronic aids used by modern trawlers.**

**Bottom:**
**A clean tow of 15,000 pounds of shortbelly rockfish being hauled up the stern ramp.**



and efficient.

The *Colintino Rose II* left the Tiburon Laboratory's dock on March 17, and carried out a search pattern in 75 to 150 fathoms from San Francisco southward to Santa Cruz. Shortbelly had been consistently found in large numbers in this area in earlier research cruises. This time only one large shortbelly school was found, however, and a test tow revealed that the fish were small. That's when Burlesci, who had fished handline for rock cod in Monterey for several years prior to moving north and beginning to drag, recalled his earlier days and surmised that Point Sur might be a smart place to try.

The men found school after school of shortbelly there in 75 to 90 fathoms, some close to the bottom and others in mid-depths. In the five days of fishing starting on March 19, they caught 10,700 pounds in an average tow and their largest catch was around 15,000 pounds in a 40-minute tow. Their average length of towing time, once the net was in fishing position near the bottom, was 41 minutes. Towing speed was usually under 3 knots. Several times it was clear that a larger cod-end, or a small-mesh intermediate, would have yielded considerably more fish, as they saw trails of shortbelly spilling out through the 4¾-inch mesh of the intermediate, just in front of the cod-end.

They hauled the net aboard and opened it directly into the hold. For large catches, they separated the detachable front of the cod-end from the body so that fish spilled into the hold from both ends. Seventy-nine percent of the shortbellies caught were females, averaging 9.8 inches, while the males were smaller, averaging 8.7 inches. Many of the large females were gravid, carrying eyed larvae nearly ready to hatch.

As impressive as the catches of shortbelly were, even better were the low amounts of by-catches of other species. Only about 2,000 pounds of chilipepper and 1,000 pounds of bocaccio, the rockfish species of most concern to local fishermen, turned up in the net. This by-catch amounts to about two percent of the shortbelly catch. And, nearly all the incidentally caught rockfish were large enough for filleting, with juveniles virtually absent.

One tow produced about 4,000 pounds of widow rockfish along with an equal amount of shortbelly, but after studying the fathometer paper, Captain Burlesci concluded that schools of widows could usually be distinguished from those of shortbelly. No other widow rockfish were caught in subsequent tows.

The only other significant by-catch was about 350 pounds of small to large Pacific whiting caught in a night tow along with five tons of shortbelly.

The total catch of all other species (Pacific mackerel, market squid, sunfish, ling cod, midshipmen) was small, well under 100 pounds for the entire cruise. No salmon were taken at all.

The *Colintino Rose II* fishermen iced the catches made early in the day or during the first day of 2-day trips, but they simply dumped the later catches into the hold or on deck without refrigeration, to be iced immediately upon off-loading. With a fish pump, the vessel could be unloaded in less than 2 hours.

Next, Royal Seafood Inc. of Monterey and Producers Seafood of Oakland packed and froze the whole shortbellies in 22- to 30-pound cartons. These cartons then went into the hands of three other firms which would ship the shortbellies to Japan and do extensive market analyses. One firm shipped 20 tons to Japan, another shipped 7 tons and the third shipped a small amount.

All three firms reached similar conclusions, according to Shig Ohgami (San Francisco Trading Co., Oakland), Paul Wherland (International Multifoods, Minneapolis) and Yoshio Terajima (K.Y. Trading Co., Tokyo): that shortbellies have good taste, texture and appearance, and that they are suitable for traditional Japanese dishes such as fish cooked in soy sauce-based stock, fish served

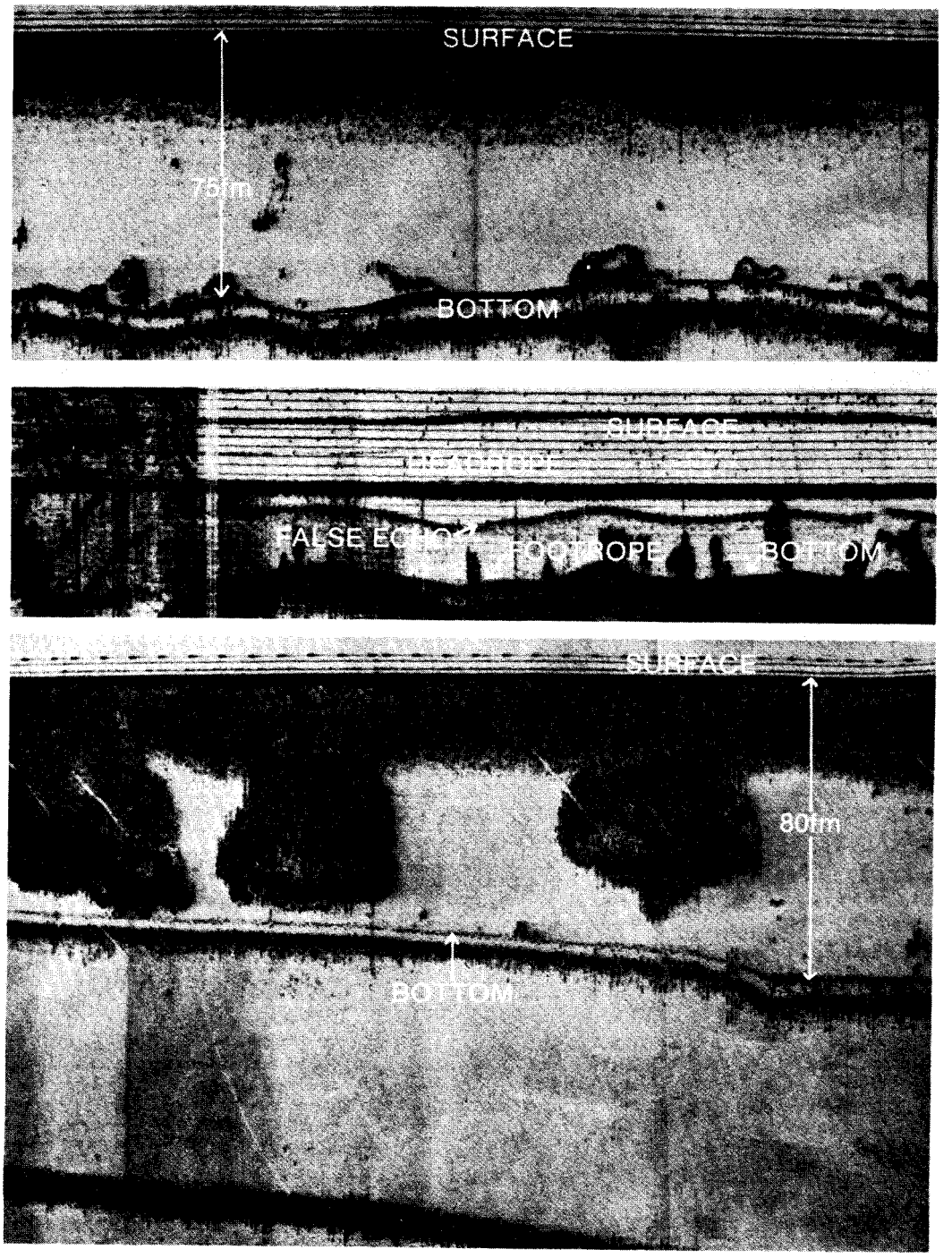
**Top Left:**
**Fish wells filled with shortbelly rockfish are unloaded with a suction pump.**

**Top Right:**
**Echo sounder marks (top half of photo) of shortbelly rockfish schools; in the lower half, the same fish are shown entering the trawl on the net monitor recorder.**

**Bottom Right:**
**Three large schools of shortbelly rockfish in midwater.**



Shortbelly Rockfish


SURFACE
75fm
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FALSE ECHO
FOOTROPE
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SURFACE
80fm
BOTTOM

**Shortbelly were packed and frozen whole in cartons lined with plastic.**

raw, pickled, fried or broiled, or marinated in soybean paste (*miso*) and sweet wine (*mirin*), or boiled in seaweed stock.

There were also negative findings: that the small size of the fish is a detriment because of low meat yield; that it is not good as a dried or semi-dried product because of its small girth and lack of fat (however, one firm thought dried shortbelly has possibilities); that *surimi* made from fresh samples lacked elastic and binding properties (though this may have been due to lack of freshness or presence of parasites, or both, since nearly all white-fleshed fish have some degree of these properties); and that samples provided to the firms were of mixed quality, with varying fish sizes, spotty preservation and low fat content.

Long-term promotional efforts, the firms concluded, will be needed to move large amounts of shortbelly in Japan.

One of the three firms has now abandoned its shortbelly development efforts, but the other two are still pursuing possible avenues for shortbelly use. One firm sent samples to Africa, where the reaction was generally good but the price offered too low.

High freight costs probably make shortbelly an uneconomical product for U.S. processors, even if production costs are minimized. Samples were, however, sent to Baader North America Corp. in Massachusetts for trial machine-processing. Eydfinn Tausen of Baader reports that the best speed obtainable, using a herring machine, was only 90 fish per minute for a headed, gutted and filleted product. The yield of flesh was 40 percent, and "butterfly" fillets (skin-on) produced better results than conventional fillets. Baader found problems in aligning the fishes' heads correctly and in complete removal of guts.

If the shortbelly rockfish can be marketed whole at a decent price, the fishery could start quickly because local processors experienced in bulk-freezing whole herring have facilities to handle a substantial catch. Needless to say, local processors and fishermen are eager for the day when the large shortbelly resource can be put to use.

Fishing trials on the *Colintino Rose II* indicate that 15 to 20 tons can be caught daily in 3 or 4 tows. If the fishing areas were close to a landing port, daily trips could be made. At present, it is thought that the most likely area of concentration of shortbelly is about 20 miles offshore between Pigeon Point and Pillar Point (37° 10′ to 37° 30′ N.).

What questions remain? One is how to determine whether a particular school of shortbelly consists of small or large fish. Although the fish seem to segregate by size, schools of small and large fish are sometimes present in the same area, making it impossible to avoid catching small fish. It will be tempting for fishery managers to use mesh size limitations to save small fish, but this will cause problems with "gilling" to the point that fishing will be severely hampered.

Another question is how to handle the large amounts that can be taken in a single tow. Aboard the *Colintino Rose II*, it was difficult to handle very large amounts on deck. A lot of fish got crushed. On-board handling methods in general can stand much improvement.

At the plant, it is important to do a top-notch job of keeping the fish on ice until they are packed and frozen. Otherwise their pleasing color quickly fades, particularly if fresh water is too liberally used during washing and deicing operations.

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