

A NEW FISHERY FOR GROOVED SHRIMP IN SOUTHERN FLORIDA

By Clarence P. Idyll*

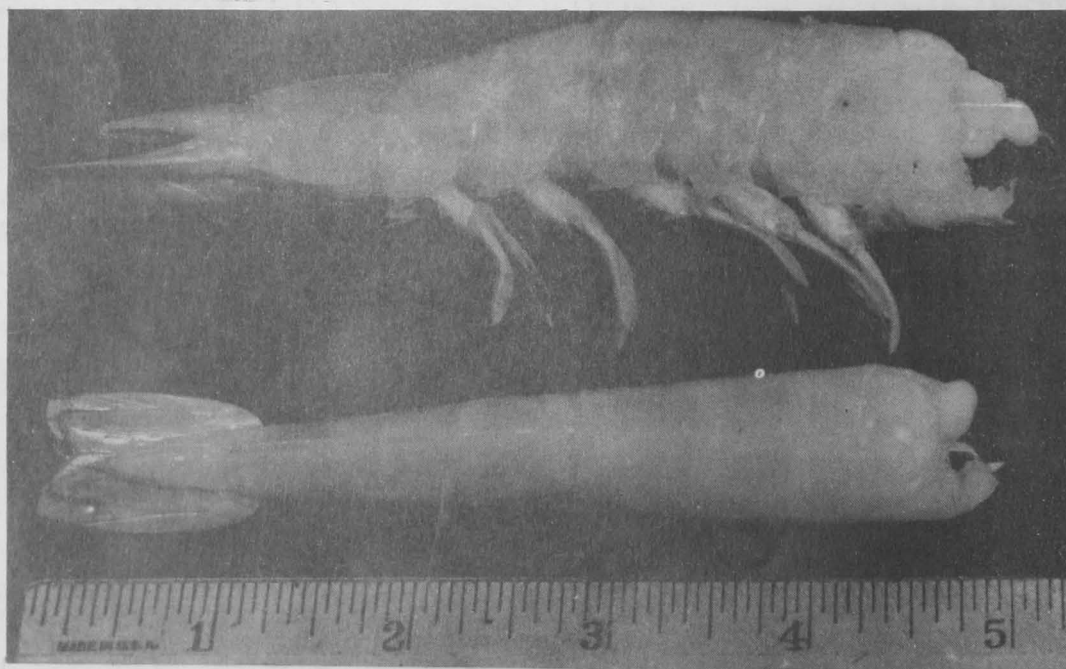
INTRODUCTION

In early February 1950, reports were received of large landings of grooved shrimp at Key West, Florida. At the request of the Florida State Board of Conservation, a preliminary investigation of this new fishery was made by the Marine Laboratory of the University of Miami. The purpose of the survey was:

- (1) To establish the taxonomic identity and size of the shrimp being caught.
- (2) To determine the location and extent of the new grounds and the type of bottom being fished.
- (3) To estimate the volume of the landings and the number of boats fishing.

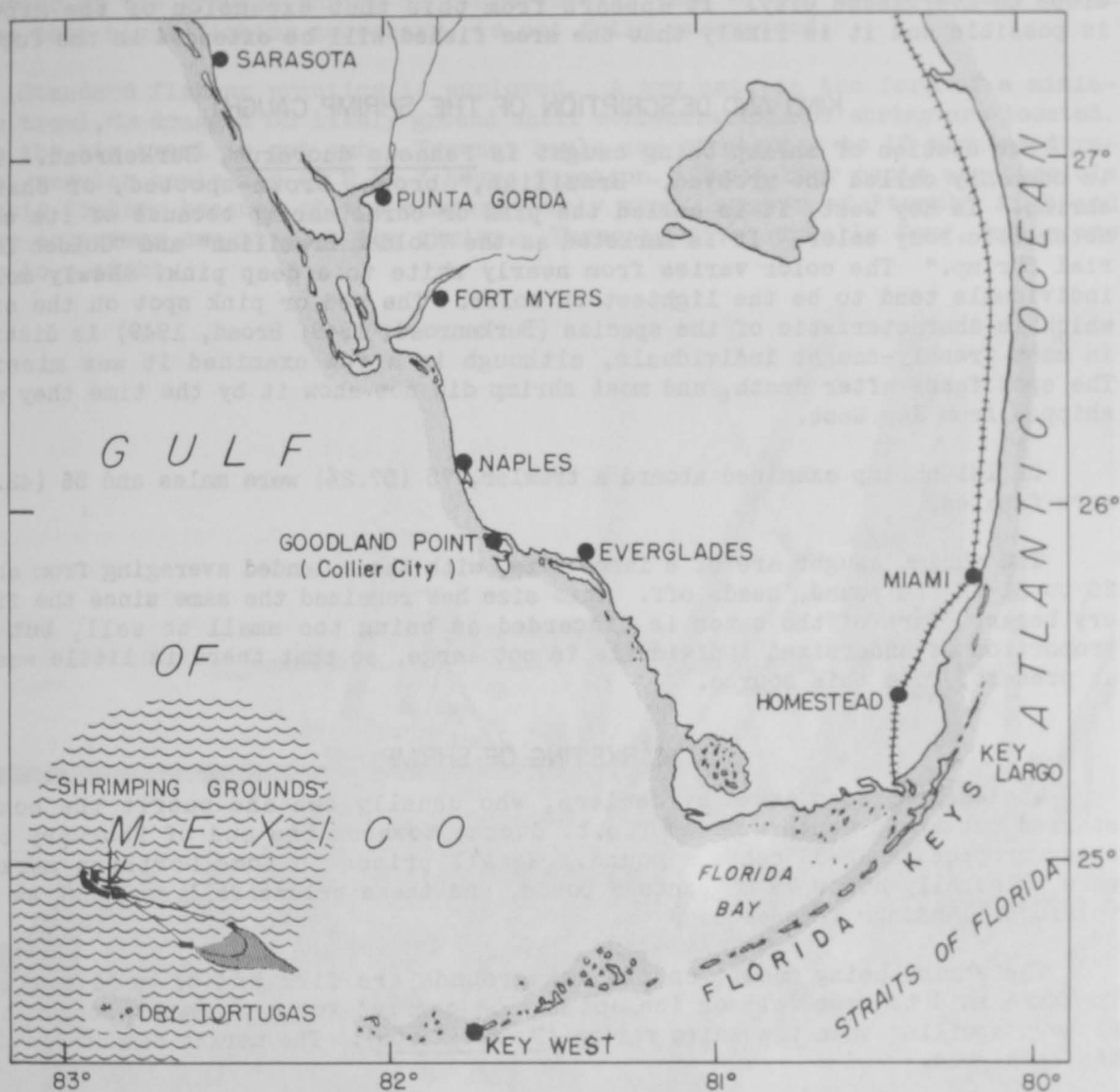
Recommendations were requested concerning the possible need of regulation of the fishery by the State of Florida. The report of this survey was submitted to the Board of Conservation on February 14 (Idyll, 1950, 1).

The present paper incorporates the material of the above report and brings the situation up-to-date concerning landings, the area fished, and other particulars.



HEADED GROOVED OR BROWN SHRIMP (PENAEUS DUORARUM), SHOWING SIDE AND TOP VIEW AND INDICATING ACTUAL SIZE. (MIAMI DAILY NEWS.)

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NEW GROOVED SHRIMP GROUNDS IN SOUTHERN FLORIDA ARE LOCATED NORTH OF A LINE DRAWN FROM KEY WEST TO LOGGERHEAD KEY IN THE DRY TORTUGAS GROUP. THE AREA PRESENTLY BEING FISHED EXTENDS A FEW MILES WEST OF LOGGERHEAD KEY, AND IS ABOUT 70 MILES LONG BY ABOUT 15 TO 20 MILES WIDE.

LOCATION AND EXTENT OF THE FISHING GROUNDS

The new shrimp grounds are located north of a line drawn from Key West to Loggerhead Key in the Dry Tortugas group. The area presently being fished extends a few miles west of Loggerhead Key, and is about 70 miles long by about 15 to 20 miles wide. When the fishery began, in January and early February, it was concentrated on the westerly part of the above area, near Loggerhead Key. More recently, many of the boats have begun to fish closer to Key West, some within 15 miles of the city.

A small amount of successful fishing has been done outside the area described above. One boat is reported to have made a small catch in the daytime

close to Everglades City. It appears from this that expansion of the grounds is possible and it is likely that the area fished will be extended in the future.

KIND AND DESCRIPTION OF THE SHRIMP CAUGHT

The species of shrimp being caught is Penaeus duorarum, Burkenroad. This is commonly called the grooved, "Brazilian," brown, brown-spotted, or channel shrimp. In Key West, it is called the pink or coral shrimp because of its characteristic rosy color. It is marketed as the "Golden Brazilian" and "Golden Imperial Shrimp." The color varies from nearly white to a deep pink. Newly molted individuals tend to be the lightest in color. The red or pink spot on the side, which is characteristic of the species (Burkenroad, 1949; Broad, 1949) is distinct in most freshly-caught individuals, although in a few examined it was missing. The spot fades after death, and most shrimp did not show it by the time they were shipped from Key West.

Of 131 shrimp examined aboard a trawler, 75 (57.2%) were males and 56 (42.8%) were females.

The shrimp caught are of a large size, with those landed averaging from about 26 to 31 to the pound, heads off. This size has remained the same since the fishery began. Part of the catch is discarded as being too small to sell, but the proportion of undersized individuals is not large, so that there is little waste, at present, from this source.

MARKETING OF SHRIMP

Wholesale prices asked by dealers, who usually own and outfit the boats, started out at 55 cents a pound f.o.b. docks; towards the end of February this price dropped to 45-50 cents a pound. Retail prices in some Northern markets were originally about 79-85 cents a pound, and these prices fell somewhat as the volume of landings increased.

The shrimp being caught on the new grounds are firm and of good quality. They are said to keep well on ice and may be carried for a somewhat longer time without spoiling than the white shrimp (P. setiferus). The market demand for them has been good.

FISHING CONDITIONS AND GEAR USED

The shrimp boats operating on the new Key West grounds have encountered certain difficulties associated with a strange area, night-fishing, and the type of bottom encountered. The shrimp are found on white coral sand with some mud and shell and outcroppings of live and dead coral. The latter has caused the loss of a considerable amount of gear. Some boats have torn or lost several nets, in some cases, two in a single night. These nets cost in the neighborhood of \$300 each.

Fishing has been done mostly in depths of between 15 and 25 fathoms, with the favored depths being around 18 to 20 fathoms.

Fishing is done at night, in contrast to the practice in the fishery for the common or white shrimp (P. setiferus). Some grooved shrimp are caught in the daytime, but catches at night are said to be at least three times greater. Grooved-shrimp fishing in North Carolina and Texas is done at night also. The different

behavior of the grooved shrimp as compared with that of the white shrimp, which makes this night-fishing necessary, is not fully understood.

Standard fishing practice is employed. A try net, in the form of a miniature trawl, is dragged on likely ground until concentrations of shrimp are located. Then the big trawl is put out. Try-net hauls are of about 5 to 15 minutes duration, regular hauls are of 2 to 3 hours duration. Three-hour hauls are possible in this fishery because of the comparatively small number of "trash" fish and other organisms caught with the shrimp. Three to five, usually four, hauls are made in a night.



SHRIMP BOAT UNLOADING GROOVED OR BROWN SHRIMP AT KEY WEST, FLORIDA. (MIAMI DAILY NEWS)

After sorting, the shrimp are headed aboard the vessel in most cases. Then they are iced in the hold. Five to ten tons or more of ice are carried by each boat. The boats stay out from about 3 to 7 days per trip.

At first, no boats carried sonic depth recorders, but several vessels have recently installed them and many more are expected to do so. These instruments are almost a necessity in this fishery. There are models at present on the market which operate in water up to a depth of 200 or 300 feet (33.3 to 50 fathoms) which will detect depth differences of less than two feet. The use of these should enable the boats to avoid many of the coral rocks which now cause loss of gear.

Originally all the shrimp boats were based at Key West, which is $1\frac{1}{2}$ to 6 hours from the fishing grounds. During February, some boats landed their catches at Everglades City, Goodland Point (Collier City), Naples, Fort Myers, Fort Myers Beach, Punta Gorda, and Sarasota. These ports are about 7 to 16 hours running time from the fishing grounds. Shallow channels have made it difficult for the shrimp boats to land at Everglades City and Naples, but deeper channels are expected to be dredged.

The boats range from about 45 to 80 feet in length with most of them about 55 feet long. One Texas boat of over 100 feet has been fishing.

Limited ice-making facilities and lack of dock space have handicapped operations so far. Ice has been shipped by truck from Homestead and Miami. The present rapid expansion in facilities is expected to overcome these difficulties.

LANDINGS AND NUMBER OF BOATS

Except for small catches, which were the result of experimental fishing, the first landings of shrimp from the new grounds were made on January 12. January landings amounted to 25,000 pounds of headed shrimp, equivalent to about 42,000 pounds with heads on (using the standard conversion factor which calculates headed shrimp to be about 60 percent of the whole animal by weight).

In early February, the number of boats began to increase rapidly and landings rose in proportion. During the month of February, an estimated 865,000 pounds (1,442,000 pounds, heads on) were landed at Key West and 405,000 pounds (675,000 pounds, heads on) at west coast Florida ports. This is a total of 1,270,000 pounds (2,117,000 pounds, heads on) for February. The total Florida landings of shrimp for all 12 months of 1948 was just under 17 million pounds (heads on).

The wholesale value of the January and February landings from the new grounds is about \$647,500, calculated at 50 cents a pound, heads off.

The average catch per boat has been about 3,000 to 3,500 pounds per trip. This average has been maintained since the fishery started, except in mid-February when bad weather interfered with fishing.

Two boats made the first landings in January and by the end of that month, only four were fishing. By February 8, an estimated 50 boats were operating. Three days later, about 125 to 175 boats were on the new grounds and more were arriving daily. By March 1, it is estimated that 250 to 300 boats were fishing the new grounds, but this figure may be in error since it is difficult to obtain an accurate count while conditions are changing so rapidly.

Boats are known to have come to the new fishery from North and South Carolina; Georgia; the Florida shrimp centers of Fernandina, St. Augustine, and Pensacola; Alabama; Mississippi; and Texas. No certain reports from Louisiana are at hand, making it the only South Atlantic and Gulf State not known to have contributed to the Key West shrimp fishing fleet.

HISTORY OF THE FISHERY

Several accounts of the finding of the Key West shrimp grounds are related, but the generally accepted story is that the grounds were discovered and explored by S. Salvador Sons, of St. Augustine, associated with Mr. E. L. Peterson. Experimental fishing was begun in September 1949 on the basis of accounts of successful night-fishing for "red" or grooved shrimp in Texas. Results were encouraging and two boats began commercial operations in January 1950. News of the good catches was soon spread and the rapid expansion followed.

Shrimp populations have doubtless always been present in this area. They were not discovered before because the presence of coral reefs discouraged serious trials with commercial gear. In addition, night-fishing was not attempted on a large scale until recent years, and these shrimp are caught in large numbers only at night.

POSSIBILITY OF EXTENDING THE FISHERY BY EXPLORATION

Charts show that there appear to be suitable shrimp areas north of the present fishing grounds. Exploration of these should be carried out and it is conceivable that a considerably greater area than is now being fished may prove to be productive. The boats are at present reluctant to trawl in unproven areas where coral rock may cause the loss of gear, but the pressure of the increasing number of boats will make new exploration essential.

The desirability of exploration between Key West and Apalachicola was mentioned in a report to the Florida State Board of Conservation (Idyll, 1950, 2). Between Dry Tortugas and Apalachicola, at varying distances offshore, in 15 to 30 fathoms of water, lie unexplored bottoms, many of which are believed to be potential sources of shrimp. These bottoms have been examined in some instances by divers for sponge and by members of the Marine Laboratory staff during a brief survey of the sponge industry. While some areas are unsuitable, there are nevertheless others with undoubted shrimping potentiality. The shrimp possibilities are also borne out by the presence of shrimp in the stomachs of red snapper taken from this area.

Exploration of such grounds as these is, as a rule, beyond the financial ability of the individual fishing operator and it is probably the function of the State, to which the industry pays taxes both directly and indirectly, to undertake such work.

The investigation of new grounds should not be undertaken without the use of the proper type of sonic depth sounder.

PROBABLE FUTURE OF THE FISHERY

It seems likely that this newly discovered fishery will be of a permanent nature. Landings per boat may begin to fall off soon. This is to be expected, since up to now, fishing has been on a virgin stock and fishing operations cannot help but thin out the population. Expansion of the area fished should keep the landings at a high level for some time, however, and later a fairly stable fishery should result.

There is probably no reason to fear a sudden collapse of the fishery. So much of the area is protected from fishing gear by coral that a natural brake is applied to fishing intensity. Furthermore, the shrimp is essentially an annual

crop and the catch does not depend on the accumulation of several age groups, as is the case in most scale or fin fisheries.

The life history of P. duorarum is not as well known as that of P. setiferus but it is believed to be similar for both species. Spawning takes place offshore and the larval stages later drift to inshore nursery areas. As growth takes place the shrimp move offshore again. In general, the bigger individuals occur farthest from the shore.

REGULATION OF THE FISHERY

At present, there appears to be no necessity to regulate the fishery. If, later, it appears that small shrimp dominate the catches at certain times, it might be advisable to impose closed seasons. No size limits are necessary now, since the fishery is taking mostly large individuals.

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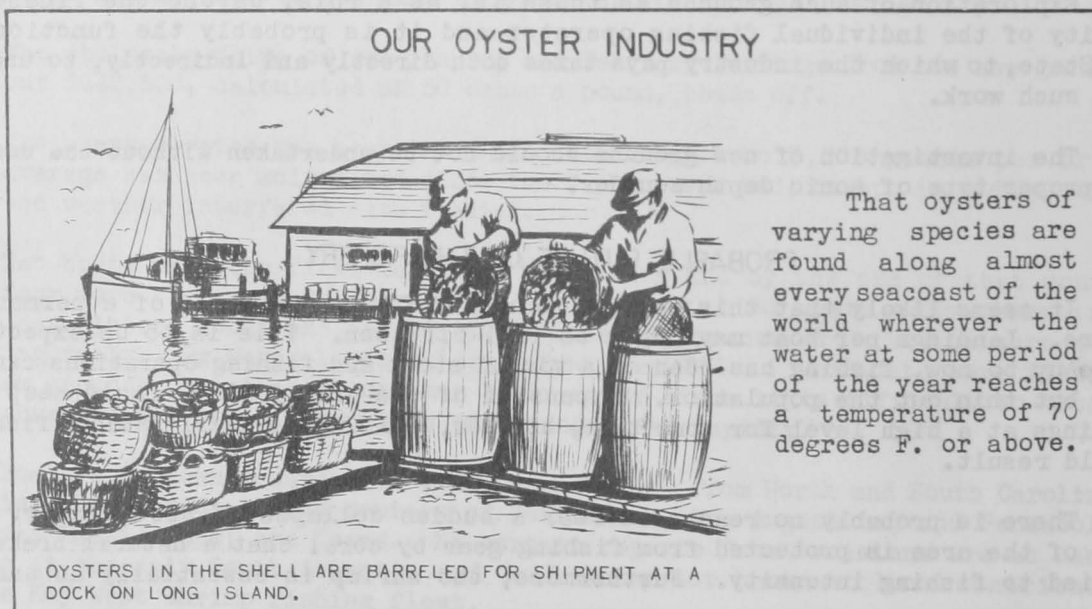
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OUR OYSTER INDUSTRY



That oysters of varying species are found along almost every seacoast of the world wherever the water at some period of the year reaches a temperature of 70 degrees F. or above.

OYSTERS IN THE SHELL ARE BARRELED FOR SHIPMENT AT A DOCK ON LONG ISLAND.