



WENZEL J. SCHUBERT  
261 N. E. 114TH ST., MIAMI 38, FLORIDA  
TELEPHONE: PLAZA 7-3747

14 June, 1961.

Dr. Archie Carr,  
Biology Laboratories,  
University of Florida,  
Gainesville, Fla.

Dear Dr. Carr:

It was a pleasure indeed to read the article in this week's Saturday Evening Post about the comeback of the green turtles. On the chance that it may add something to our knowledge of these turtles during the last days of their primeval state in Indian River and on Hutchinson's Island, I relate the following from my own personal recollections:

My recollections start about 1894 at the time the FEC Ry. was being built from Ft. Pierce south. I recall the iron being laid across my Grandfather W. H. Tancre's pineapple fields at Ankona (7 miles south of Ft. Pierce) which his diary shows to have been in March, 1894.

Though not many people realize it, the lower east coast of Florida was one of the last pioneer areas in the U. S. To the best of my knowledge no commercial fishing or turtling had occurred before that date. A fleet of four or five stern-wheel steamers, of 30-ft. beam and 160-ft. length, with iron hulls and wood burning furnaces, had been in operation six or eight years prior to that time, but it was not until the arrival of the railroad that ice and barrel factories were built in Ft. Pierce, and both commercial fish gill-netting and seining and turtling got under way on an extensive basis.

Turtle eggs were considered a delicacy at that time, and so far as I know there was then no law protecting the nesting turtles. It was my boyhood job to keep the village supplied. I patrolled the beach on Hutchinson's Island from Mud Creek south to Nettle's Island (Snake Island, I believe its called now) about five days a week during June, July and part of August. Bears got most of the nests, and it often happened that I would have to cover the beach by moonlight and catch the turtles actually on the nest, or get there immediately after the eggs were laid, to beat the bears.

I suppose I must have seen a couple of hundred bears during my boyhood, and occasionally I shot one for food. Some of them were huge. The last I killed was in 1909. I saw a newspaper notice, however, to the effect that Fred Saeger and the two Waters boys had killed a mother bear and two cubs on the island in 1910. And, while on the subject of bears, the Florida Agricultural Station issued a bulletin on pineapple experiments carried out somewhere around Jensen in 1898 or 1899, which reported the tests inconclusive because the bears ate all the fruit.

But to get back to the turtle eggs:

I continued my beach patrols for 8 or 10 years. I presume I must have robbed upwards of 1,000 nests during that period. The smallest nest I ever found was 59 eggs; the largest 168. I saw but few green turtles on the beach; by far the most were loggerheads, with an occasional trunkback and rarely a hawksbill. I never saw or heard of a nesting turtle being killed during this time, or even molested; it was only the eggs that were taken.

Turtles were plentiful in Indian River in 1894, when serious turtle netting began. The nets were about 1,000 feet long, and were kept in place by stakes that had been worked into the bottom about every hundred feet. The nets were made of soft laid cotton twine by Mrs. Olivia E. Hutchinson, who sold the webbing to the turtlers

for 60¢ a pound. The mesh measured 22 inches, stretch measure. The nets had a cork line, but no lead line, and thus the turtles were able to rise to the surface to breathe, and were always taken living. At that time there were a dozen or more turtle "crawls" along the east shore of the river between Mud Creek and the Hutchinson homestead. These were made of small mangrove stakes, worked into the bottom in water waist deep, and were about 6x6 or 8x8 feet, and approximately square. The turtles were held in them until shipment could be arranged.

Two turtlers whom I knew and often accompanied were a Mr. Kimbrough, a Texan, and a Mr. Daniels. (I understand that a daughter of Mr. Daniels, named Ada, still resides in Ft. Pierce.) I heard Kimbrough state that he caught about 5 loggerheads for every green turtle. My recollection is that each of these men caught about a dozen turtles a week, of which two or three were green turtles. Some of the loggerheads they let go; others they saved and gave to the villagers who butchered them for meat. They worked their nets about twice or three times a week. The catches soon fell off, and commercial turtling in Indian River ended about the turn of the century. Mr. Hutchinson died in June, 1900, and Mr. Daniels took over his interest in the island's real estate and started raising beans.

Of course these turtle nets also caught big sharks. I remember some that were as long as the 16-ft. sail boat Kimbrough used. (This was before the day of the gas engine.) The sharks were usually dead by the time the nets were worked, but occasionally we had a battle royal with a big shark. Manatee herds sometimes tore up the nets, and big sawfish were particularly destructive of nets and especially productive of profanity when they wrapped themselves in many yards of

net. They were powerful brutes, and in threshing about they not only tore up much webbing, but also were sometimes dangerous.

It should be noted that there are no river beaches suitable for turtles to nest on; they are too narrow and so low that the eggs, buried to the usual depth, would be below water level. I presume the females must have sought the ocean at nesting time.

I visited Hutchinson's Island this last week, and walked some three or four miles along the beach. I'd estimate that there are now about one-third to one-half as many nests as there were back in the 1890's. I didn't, however, see a single trunkback nest, nor do I know, of course, the variety of turtles that made the other nests. I saw, as the green turtle, loggerhead and hawksbill turtles make almost identical crawls. The trunkback nest is easily identified, and their eggs also are very large. I didn't see a single trunkback nest last week.

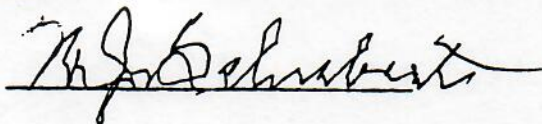
One fact perhaps should be noted: during my boyhood only the bears robbed the nests, and up to the turn of the century they missed but few. But this last week I noted that about a third of the nests had been robbed by racoons.

Perhaps I should add that I haven't seen a single turtle in Indian River since about 1909, when I saw a young green turtle, weighing perhaps 25 lbs., in Herman Bay. Another note: the sea weed in Indian River has changed. One variety of grass has disappeared altogether, and another has appeared. The water now, of course, is very dirty, and this dirt clings to the grass. The river used to be so clear that a dime could be seen 10 feet down, and the grass also was clean.

No doubt you know that loggerheads feed at least occasionally on Portugese man-of-war jellyfish; I've seen them a number of times going after the jellyfish when an eddy in the stream had congregated these floating beauties.

Here's hoping the foregoing may have some value, and if I can answer any further questions, I'll be glad to do try to do so. Also here's wishing you great success in your efforts to re-establish the green turtles. Again let me express my pleasure over the article.

Cordially,

A handwritten signature in cursive script, appearing to read "W. J. Schubert", written over a horizontal line.

WJS:S

**THE FISHERIES OF INDIAN RIVER, FLORIDA.**

**JANUARY 5, 1897.**—Referred to the Committee on Fisheries and ordered to be printed.

The VICE-PRESIDENT presented the following

**LETTER FROM THE COMMISSIONER OF FISH AND FISHERIES,  
TRANSMITTING A REPORT OF AN INVESTIGATION OF THE CON-  
DITION OF THE FISHERIES OF INDIAN RIVER, FLORIDA.**

**UNITED STATES COMMISSION OF FISH AND FISHERIES,  
Washington, D. C., January 5, 1897.**

**SIR:** I have the honor to transmit herewith a report of an investigation of the condition of the fisheries of Indian River, Florida.

This investigation was made in accordance with a provision of the act of Congress approved March 2, 1895, calling upon the Commissioner of Fish and Fisheries "to make special investigation as to the extermination of migratory fishes of the Indian River, Florida." It was begun January 9 and continued until February 2, 1896, and was designed to cover the following points:

What food-fishes occur in Indian River, continuously or as regular visitors; their present abundance as compared with that of former years; their distribution in different parts of the river; their migrations or other movements; the character of bottom on which they are usually found; their spawning time and place; their food; upon what other fishes the various species prey; the weights of the commercial species; the presence in the river of fish not used as food, and their relation to the food-fishes; and such other facts as would bear upon the abundance of the different fishes in the river; also the commercial aspects of the fisheries, as to the number of persons employed, the capital invested, the value and kind of appliances used, the quantity and value of the fish and other products taken, as well as the development of the industry. The inquiry necessarily included also a study of the physical characteristics of the river.

A great deal of information was gained through interviews with fish-dealers, fishermen, and others, and by an examination of the fish in the fish-houses or as brought in by the boats. The knowledge thus obtained was supplemented by making collections with fine-meshed collecting seines, which proved very important in determining the presence or absence of the young of the various food-fishes.

*ORIGINAL*

*Handwritten scribbles and signatures on the left margin.*

The natural-history and physical investigations were carried on by Prof. Barton W. Evermann, assisted by Mr. Barton A. Bean, of the United States National Museum, and Mr. A. G. Maddren; and those concerning the commercial aspects of the fisheries by Mr. W. A. Wilcox. Detailed reports, together with illustrations of the more prominent fishes of the region, are appended.

As a factor in the fish supply in the United States, the Indian River has, within a comparatively short time, attracted much notice. Although only a few years old, the fishing industry of this arm of the Atlantic has already attained considerable prominence, and in 1895 contributed over 2,500,000 pounds of food-fish to the public markets. While the business of taking green turtles antedates the civil war, the fisheries proper did not begin until 1878, when a smack from Connecticut visited one of the inlets with seines and nets, and caught fish for the Savannah market. Up to 1880 this was the only economic fishing carried on in the Indian River, except that for turtles, and it was not until 1886, after the river had been brought into railroad communication with Jacksonville, that the fisheries may be said to have become thoroughly established.

This section of Florida was sparsely settled and practically inaccessible except by water prior to the building of a railroad to Titusville, at the northern end of the river, in 1885, and the abundant fishery resources consequently received but little attention. Mr. George W. Scobie, of Connecticut, may be regarded as the pioneer in Indian River fisheries. In the year named he established an oyster business at Titusville, and in the subsequent year began a regular fishing trade. In 1896 Messrs. A. M. Hambleton & Co. also began operations at Titusville.

From this beginning of the commercial fisheries of the river the business has seen many changes. A second railroad reached Titusville in 1893, and in the two following years extended along the entire length of the river. This resulted in the establishment of new fishing stations farther south and greatly increased the importance of the fisheries, at the same time diminishing the business at the northern end of the river, until in 1895 there were 19 firms with headquarters at 9 points, as follows: Titusville, Cocoa, Eau Gallie, Melbourne, Sebastian, Fort Pierce, Eden, Jensen, and Stuart.

The relative importance of each of these places as a fishing center has varied with the successive completion of the railroad to each, and the regular development of the business. A number of other factors, some of them resulting indirectly from the railroad, have also been potent in influencing the business in particular places, such as the decline in communication along the river by boat, the formation of new settlements, and the success or failure of other vocations. As illustrating this last point, the severe cold of 1894-95 resulted in a relatively large increase in the number of fishermen, as the destruction of the orange and nucapple orchards caused a number of men to engage in

## THE FISHERIES OF INDIAN RIVER, FLORIDA.

prosperity to the cultivators of the land will call back many who have for a time abandoned their orchards.

Fort Pierce was at the time of the investigation the most important point, partly due to its vicinity to Indian River Inlet, in and near which the commercial fishes occur in greatest numbers. The fishing-grounds were within a few miles of Fort Pierce, and fishing was carried on as near the inlet as the law would permit.

The principal fishing in the extreme lower end of the river was near Santa Lucia Inlet and in the vicinity of Sewall Point.

The Indian River fisheries in 1895 gave employment to 254 persons, representing an investment of \$41,512, and yielded 2,659,815 pounds of products, valued at \$37,657. The most prominent fishery objects are mullet, pompano, sheepshead, squeteague, and oysters. The catch of mullet was 1,610,869 pounds, worth \$12,251. The next valuable fish—and the most highly esteemed of all the species in the river—was the pompano, of which only 149,000 pounds were taken, but which brought the fishermen \$9,475.

Besides the fishes mentioned there are other species of some importance, but these are only of secondary value commercially. Some of them, as the gray drum, mutton-fish, and crevallé, are held in low esteem, while many are found in only limited numbers. Some of them, as the gray drum, crevallé, and sergeant-fish, are destroyed in considerable numbers by the commercial fishermen. The gray drum is said to be very destructive to nets, and for that reason is killed when caught. The sergeant-fish and crevallé, and at times others, are allowed to die on the shore when not marketable.

The evidence shows that though possibly in some parts of the river the mullet is less abundant than when fishing first began, it is now sufficiently plentiful to enable the fishermen to secure readily more than are required, and the dealers are frequently under the necessity of putting a limit upon the number which they will accept. So long as this condition of affairs continues the mullet fishery will regulate itself. But an increase in the demand for mullet throughout the country, the rapid development of the salted-mullet industry, cheaper express and freight rates, and cheaper ice are probabilities of the near future, and if the productiveness of the mullet fishery is to be maintained to provide for these greater demands restrictive measures are necessary. One way by which this may be accomplished is to establish a close season during the more important part of the spawning period.

The pompano has decreased greatly, especially since 1894, and the explanation of the fishermen that the decrease is due chiefly to the severe weather in the winter of 1894-95 is not without reason. As this species seems to spawn inside the river, a close season during its spawning period would prove advantageous. Any proposed restrictive legislation should, however, await further investigation of the exact time of spawning, which is not conclusively proved, though probably



The sheepshead has apparently been able to hold its own since commercial fishing began in Indian River, and many of the fishermen think there has been an increase.

The sea trout, or spotted squeteague, which, like the sheepshead, is not only a food-fish but one of the important game-fishes of the river, also appears to be as abundant now as formerly, as does the red drum, another of the game-fishes.

The bluefish, which is one of the most important game-fishes, seems to have been able to maintain itself in normal numbers in Indian River. It has, however, never been found in sufficient abundance to constitute any considerable part of the commercial catch, and, being more or less erratic in its movements, it is doubtful if restrictions should be imposed upon its capture.

Other valuable fishery resources of Indian River are green turtles and oysters. The turtles are much less numerous than formerly, owing to excessive fishing, and there has also been a large reduction in the average size of those caught. The oysters are of fair size and good quality, but have received little attention; their more general utilization and the formation of artificial beds, which will doubtless soon be undertaken, will be one of the principal factors in the growth of the fishing industry.

Regarding the future of the fisheries of the Indian River region, it may be said that while the resources are great and the supply is still ample, yet owing to the comparatively limited area of the fishing-grounds it would appear that the present tendency to overfishing may result in the ultimate destruction of the business. But with the enforcement of proper restrictive laws and the establishment of close seasons there is no good reason why Indian River should not continue to furnish a reasonable amount of commercial and game fishing. Under the present laws of Florida there is no close season, nor any regulation concerning the character of nets to be used, and the only restriction on fishing in Indian River is an act (chapter 4215, No. 191), approved May 22, 1893, which provides:

That from and after the passage of this act no seines, gill nets, or other nets, except a seine: cast net, shall be set or used for the taking of food-fish for sale, within one mile of any pass or inlet, or continuation thereof, from the Atlantic Ocean into any inland waters of this State, or in any of the tributaries of the rivers emptying into the Atlantic Ocean.

This law is undoubtedly a wise one and its rigid enforcement will, in the long run, prove advantageous to the commercial fishermen. So many of the more important species play in and out with the tides that the use of nets near the inlets is analogous to pot-hunting. Without restriction the fishermen would flock to the inlets and in a short time commercial fishing could not be carried on profitably in any other part of the river. The first result would be that all the fishermen not living within easy reach of the inlets would very speedily be driven out of the business, and the final result would be the complete destruction of the

The use of nets in the inlets would prove destructive not only to the species desired, but to all other species large enough to be taken in them. The limit at one mile scarcely covers the area of too easy capture, and it should be extended rather than made less.

Every fisherman should interest himself in seeing that this law is not violated, and the wisdom of the law will be fully demonstrated.

Very respectfully,

J. J. BEICE, *Commissioner.*

To the PRESIDENT OF THE SENATE.

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## INDIAN RIVER AND ITS FISHES.

By BARTON W. EVERMANN AND BARTON A. BEAN.

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### THE PHYSICAL FEATURES OF INDIAN RIVER.

*General description.*—Indian River is not a river at all, but a long, narrow, and shallow salt-water lagoon or sound extending along the east coast of Florida, from latitude  $28^{\circ} 47'$  on the north to  $26^{\circ} 58'$  on the south. Its entire length is about 135 miles. From the sea it is separated by a long and narrow strip of land which rises nowhere more than a few feet above the water. Its width varies from only a few rods at Jupiter Narrows to 5 or 6 miles just below Titusville. The water is usually very shallow, the depth varying from 2 or 3 feet to 17 feet, rarely, however, exceeding 8 to 12 feet.

Just below Titusville is the upper end of Merritt Island, a long, triangular island, separated from the land on the north by Banana Creek and tapering southward in a long, slender point which extends almost to Eau Gallie, a distance of 30 miles. East of this island is Banana River, connecting with Banana Creek on the north and with Indian River opposite Eau Gallie. East of Banana River is the long and narrow outlying sandy island which extends throughout the greater part of the length of the east Florida coast.

Opposite Titusville Indian River is less than a mile in width and the depth ranges from 2 to 12 feet. A few rods above Titusville a depth of 16 feet is found off Sand Point, this being one of the greatest depths given on the Coast Survey charts. Above Titusville the river gradually widens to  $1\frac{1}{2}$  miles and then suddenly expands to 3 miles in width. The depth in this portion rarely exceeds 5 or 6 feet and in many places

until a width of about  $5\frac{1}{2}$  miles is attained opposite the head of Merritt Island proper. The depth also increases somewhat, the average being 7 to 8 feet except near the shores, where it is only about 2 to 4 feet. At Cocoa and Rockledge, about 20 miles south of Titusville, the river is less than three-fourths of a mile in width, the depth being 10 to 15 feet.

For the next 45 miles southward the river continues uniformly narrow, the width nowhere scarcely exceeding a mile, except off the mouth of Sebastian River, where it in some places reaches about 2 miles. From Cocoa to Melbourne the depth runs from 10 to 15 feet. At one place, about 4 miles above San Gallie, the Coast Survey chart shows a depth of 17 feet in the channel, which is the greatest depth given for Indian River. Between Melbourne and Sebastian the eastern shore-line is much more irregular, the width variable, and the depth 2 or 3 feet less. A short distance below Sebastian are the "Narrows," where several small islands reduce the width of the river to a few rods. Below this it again widens to  $1\frac{1}{2}$  to 2 miles, the depth running from 4 to 9 feet. Opposite St. Lucie the minimum width is less than 1 mile, but immediately below it increases to about 2 miles. From Fort Pierce to below the mouth of St. Lucie River, a distance of about 22 miles, the width varies from 1 to 2 miles and the depth from 3 to 10 feet.

About 2 or 3 miles below the mouth of the St. Lucie are found the North Jupiter Narrows, which for nearly a mile are only 20 to 30 rods wide. Below these is a slight expansion known as Peck Lake. Then the river again contracts, and, under the name of South Jupiter Narrows, extends southward a distance of 3 miles as an extremely narrow and somewhat tortuous waterway, with a depth varying from 3 to 14 feet. Below South Jupiter Narrows is a slight expansion known as Hobe Sound, the greatest width of which is about one-fourth mile, the length about 5 or 6 miles, and the depth 3 to 9 feet. Near latitude  $27^{\circ}$  is another short narrows separating Hobe Sound on the north from Jupiter Sound on the south. Jupiter Sound is similar to Hobe Sound, and extends from this "narrows" to the mouth of Jupiter River, a little over 3 miles. Opposite the mouth of Jupiter River is Jupiter Inlet, which is regarded as being at the southern end of Indian River.

*Inlets.*—Indian River at present is connected more or less directly with the ocean at four different places. One of these is near the northern end of the river, and is known as the Haulover Canal. This canal cuts through a very narrow sand isthmus and connects Indian River with Mosquito Lagoon or Hillsboro River, which, in turn, is connected with the ocean by Mosquito Inlet.

Indian River Inlet is in latitude  $27^{\circ}30'$ , and almost opposite St. Lucie. This inlet is less than half a mile long and only a few rods wide. Its depth varies from 7 to 12 feet, except at the inner end, where it is normally quite shallow. The Government is doing considerable dredging at this place, and the inlet will doubtless be greatly improved. Besides the inlet proper there are several other shallower channels or

cuts, as Port Pierce Channel, Baker Cut, Garfield Cut, and Blue Hole Cut, all of which connect directly or indirectly with the outer end of the inlet.

Just opposite the mouth of St. Lucie River, in latitude  $27^{\circ} 10'$ , is Santa Lucia Inlet, which was made some years ago by cutting through the sandstone and coquina rock of Gilbert Bar at a point where it was but a few yards wide. This inlet is said to be quite shallow, but it can be very readily deepened by a little dredging and blasting away a small reef across the outer end.

At the extreme southern end and opposite the mouth of the Jupiter or Lokahatchie River is Jupiter Inlet. This inlet is narrow and usually more shallow than any of the others.

*Character of bottom and shores.*—Indian River throughout most of its extent has a moderately hard sand bottom. The areas covered by soft mud are few, scattering, and limited in extent. Along the immediate shores and on the shallows about the numerous small islands there is in some places considerable mud, but this is unimportant in comparison with the area having solid bottom, and even on the mud flats the mud is rarely more than 4 or 5 inches deep. In some parts of the river the bottom is of comparatively hard cemented sandstone; in others it is of coquina of various degrees of pureness; most of the coquina found along Indian River has a considerable portion of sand mixed with the shell fragments.

The river is well supplied with various species of algae and other species of aquatic plants suited to shallow salt or brackish waters. So generally is the vegetation distributed and so firm is the bottom that no considerable shifting of the bottom by storms seems to have taken place recently. The stability of bottom is of great importance to the fishery interests of the river, as will be shown farther on in this report.

The shores of Indian River are generally low and composed of sand, with considerable coquina in some places. In the southern part of the river mangrove bushes are abundant on the mud flats and on the shores, while northward the cabbage palmetto is the principal tree.

*Streams tributary to Indian River.*—The streams carrying fresh water into Indian River are few and usually small. Beginning at the north the only ones worthy of mention are Eau Gallie Creek, and Sebastian, St. Lucie, and Jupiter rivers.

Eau Gallie Creek flows into Indian River between Eau Gallie and Barno. At its mouth it has considerable width, but only a mile or so above it narrows to only a few feet. It has a very slight current and probably at no time carries any considerable amount of fresh water into Indian River.

Sebastian River, near the station of that name, is a stream of some importance, but it is only a few miles long.

St. Lucie River is the most important tributary, and carries more fresh water into Indian River than all others combined. Its mouth, opposite Santa Lucia Inlet, is from one-fourth to one-half mile wide and has a

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rail to the northern markets the fish were repacked with ice in barrels. The empty cars were filled with ice and sent back to the camps on the return trips of the steamers. The construction of a railroad along the western bank of the Indian River naturally led to a diversion of trade from Titusville, and reduced the necessity for maintaining fully equipped camps in isolated localities.

Cocoa, situated 19 miles south of Titusville, is one of the principal fishing centers on the river. Of the 300 inhabitants in 1895, 40 were engaged in the fisheries. The railroad reached this point in February, 1893, and the fishing business was established the next year. The shipments of fresh fish in 1895 amounted to nearly 500,000 pounds, most of which went to Georgia.

Commercial fishing at Eau Gallie dates from 1893, in June of which year it was brought into railroad communication with Jacksonville. In 1895 the business was represented by four firms; two of these, however, moved farther down the river and one suspended, leaving only a single firm in operation at the close of the year. The shipments from this place in 1895 were over 250,000 pounds of fresh fish. In 1893, when this was for some time the railroad terminus, it received by steamer the catch from points lower down the river and shipped by rail 255,105 pounds of fresh fish. Eau Gallie has a small oyster fishery, the product of which is used locally. The fishermen of this place fish from 3 miles above to 10 miles below the settlement, and at times also resort to Banana River from its mouth to a distance of 10 miles upstream.

Melbourne is a small settlement whose fisheries are now less extensive than those of any other place on the river. In the first part of 1896 there was only one fisherman at this place, although in 1895 there were six crews. The fish shipments in 1895, as shown by the express company's records, amounted to 27,600 pounds.

Fishing at Sebastian began in September, 1895, the first shipment of fish by rail being on September 11. Up to the close of the year 103,890 pounds of fish had been shipped. The year 1896 will doubtless witness a noticeable increase in the fishing centering at this point. Four firms were engaged in the business in the winter of 1895-96; these shipped mostly to New York, Richmond, and New Orleans. The grounds visited by the Sebastian fishermen extend for 15 or 20 miles north and south of that place. A small turtle fishery is there carried on.

Fort Pierce is now the principal fishing center on the river. From its nearness to Indian River Inlet, this part of the river is regarded by the fishermen as a very important section. Fishing camps were located in this vicinity soon after the arrival of the railroad at the northern end of the river, and for several years the catch was shipped from the camps by steamer to the nearest station. On February 1, 1894, the railroad reached this place; soon after the camps were deserted and the business of receiving and shipping fish was transferred to Fort Pierce. The quantity of fresh fish sent from this place in 1894 was 555,915 pounds. New firms entered the business in 1895 when the

shipments reached nearly a million pounds. The principal points to which the products were consigned are Jacksonville, Palatka, Sanford, and St. Augustine, in Florida; Mason, Atlanta, Altona, Savannah, and Marietta, in Georgia; Eufaula, Ala.; Charlotte, N. C.; Louisville, Ky.; Norfolk, Va.; Washington, D. C., and New York City. Three-fourths of the shipments from this place in 1895 were mullet, which were sent chiefly to cities in Georgia. Fort Pierce is the principal headquarters of the alligator hunters of the eastern part of Florida. A very large trade in alligator hides was formerly carried on there, but the business has greatly declined.

Fishing at Eden dates from December, 1894, the railroad having reached the place in February of that year. One firm was here in 1894, and during 1895 there were two firms, who shipped 210,300 pounds of fresh fish. A few turtles are taken here. The fishing-grounds extend north to Fort Pierce, a distance of 13 miles, and south to Sewall Point, a distance of 10 miles.

Jensen has never been important as a fishing center; between November, 1894, and March, 1895, one firm was engaged in the business, since which time the fisheries have been unrepresented. The aggregate shipments were 25,230 pounds in 1894 and 40,485 pounds in 1895.

Stuart is the most southern fishing station on the Indian River. One firm established headquarters here in January, 1895, and shipped 89,658 pounds of fresh fish during that year. From its favorable position with reference to Santa Lucia Inlet, Stuart may be expected to show considerable development of its fisheries within a short time. The Stuart fishermen set their nets as far north as Jensen (4 miles distant) and south to the inlet (3 miles away); they also go from 3 to 6 miles up each arm of the Santa Lucie River.

#### FISHERY RESOURCES OF THE REGION.

The commercial water products of Indian River comprise fishes, oysters, and turtles. Considering the nearness of this region to the West Indies, with their remarkably rich fauna, the fishing resources are not especially varied, although a number of aquatic animals now regarded as unmarketable have economic value and will doubtless be utilized as the fisheries become further developed.

Only about 16 species of food-fish are taken in noteworthy quantities and comprise the regular catch of the Indian River fishermen; 8 or 10 others are obtained in relatively small numbers. A number of other fish, with recognized food value in other localities, occur in the river, which are either not caught at all, owing to the nonadaptability of the apparatus used, or, if taken, are not considered of sufficient importance to justify shipment to distant markets.

More than half the fish taken for market consists of mullet, which is more abundant and caught in larger quantities in Florida than in any other State. Its maximum weight is 5 pounds, although the average

out the river, but the principal part of the catch is taken in the upper part: the low price received has deterred the fishermen of the lower river from taking as many fish as the conditions warrant, owing to the express charges. Some mullet are in the river at all seasons, but they are most abundant from September to January.

Bluefish and Spanish mackerel are ordinarily scarce at all times. Occasionally, in recent years, these fish have entered the river in considerable numbers. On January 13, 1894, a party of seine fishermen caught between Sewall Point and Eden 2,162 pounds of bluefish, which is said to have been the finest lot of bluefish ever taken in the river; none of the fish was under 8 pounds in weight, some weighed 18 pounds, and the average was 12 or 15 pounds. The average weight of the bluefish regularly taken is about 5 pounds.

The pompano is the most highly esteemed fish of Indian River. Its average weight is 2 or 2½ pounds, although some weighing 6 or 8 pounds are taken. A maximum weight of 25 pounds is assigned by the fishermen, but there is little doubt that all supposed pompano weighing more than 10 pounds belong to a different species from the true pompano. The latter is taken at all times during the year, but up to the past two years has been most plentiful in the northern part from September to November, the run continuing until spring, when the bulk of them leave the river. In the southern part of the river pompano are reported to be most abundant from December to March in recent years. After the excessively cold weather of 1894-95, they became very scarce, and up to the end of January, 1896, had not appeared in anything like the former abundance. In illustration of the recent decrease in this species, the following catch of a firm that made a specialty of pompano fishing may be given:

	Pounds.
1892.....	61,014
1893.....	122,614
1894.....	93,579
1895.....	31,353

In the opinion of some fishermen, the best days for pompano fishing on Indian River have past, owing to overfishing; others regard the recent scarcity as largely the result of natural causes.

Such fishes as sheepshead, trout, channel bass, snappers, sailor's choice, sergeant-fish, crevallé, and black drum, which are locally known as "bottom fish," are generally plentiful in all parts of the river and do not appear to have undergone any noticeable changes in abundance in recent years.

The sheepshead is perhaps the most esteemed of the "bottom fish." In the quantity of the catch it ranks next to mullet, and in value it is surpassed only by mullet and pompano. The maximum weight is about 10 pounds and the average 3 pounds. It is taken at all fishing centers on the river, but the largest catch is at Eden. At Jensen a seine took 2,300 pounds of sheepshead at one haul in 1895.

catch; it ranks after the sheepshead in the amount and value of the yield. Some weighing 14 pounds are caught, but the average weight is only 2 pounds. The fishermen of Cocoa and Fort Pierce take the largest quantities.

The channel bass or red drum (locally called bass) is taken in considerable numbers and shipped to market. The range in weight is 1 to 40 pounds, the average being about 5 pounds. The principal part of the catch is obtained at Fort Pierce.

In some localities the red and the black drums, the crevallé, the sergeant-fish, and other species are either always discarded from the shipments or utilized only when it is not possible to fill out the packing barrels with the higher grades of fish. Other fish which are usually not utilized when caught are catfish, menhaden, moonfish, angei-fish, hogfish, and mutton-fish.

Sea catfish weighing 1 to 2 pounds are among the most abundant fishes of the river, but are seldom utilized; shipments aggregating 10,000 pounds of dressed fish were sent from Jensen to St. Louis in 1894, but the fish were not received with sufficient favor to warrant a continuance of the business.

The green turtle (*Chelonia mydas*) is the only product of the Indian River fisheries belonging to the turtle class. It is far from being abundant or even common, and in the past few years has undergone a noticeable decrease in numbers.

Turtles are occasionally taken in Indian River weighing nearly 200 pounds, but they now seldom attain a weight of 100 pounds, and the average weight is little more than one-third of that figure. In 1891, when this region was visited in the interest of the Fish Commission, the average weight of the turtles caught was reported to be 50 pounds. In 1895 the aggregate catch of 18,909 pounds represented 519 turtles, whose average weight was, therefore, 36 pounds. This decrease in weight of more than 25 per cent in five years is suggestive of the decrease in quantity which the available statistics and observation show to have occurred.

Turtles remain in the river more or less plentifully at all seasons, but the principal season is between November and March.

Prior to the advent of the railroad in the Indian River region alligators were comparatively numerous and their capture constituted an important business, but at present, as the result of active hunting operations during the past ten years, they are very scarce, not enough alligators being left to support an industry. The few skins which now reach the hands of the dealers on Indian River come from the interior.

Oysters of large size and good flavor exist in various parts of Indian River, and they constitute one of the principal fishery resources, but up to the present time they have received comparatively little attention. The fuller utilization of oysters is doubtless one of the chief lines along which the further development of the fisheries of this region will



The oysters are found in small scattered beds, but their real abundance is not known. Some of the beds are located as follows: On the east side of the river nearly opposite Titusville; immediately south of Rockledge; one-half mile north of Fort Pierce on the east shore and at Indian River Inlet; on the west shore off St. Lucie and for a number of miles north of that point.

The oyster shells are large, thick, and of irregular shape. They usually occur in clusters, and have mussels and barnacles attached.

Crabs are abundant throughout Indian River, but are not utilized at present. Probably these and other crustaceans, such as shrimp, will receive the attention of commercial fishermen as the fishing industry becomes further developed.

### FISHING APPARATUS AND METHODS.

The economic fisheries of Indian River are for mullet, pompano, turtles, and oysters. A large variety of other fish are taken, but they are obtained incidentally in fishing for mullet and pompano. The apparatus employed comprises gill nets and seines for fish, nets for turtles, and tongs for oysters. Of the gill nets, which are the principal means of capture, there are two kinds, according as they are adapted for mullet or for pompano and other species.

### THE MULLET FISHERY.

In 1895 mullet fishing was carried on at every fishing center on the river except Jensen. The business is most extensive at Titusville, Cocoa, and Fort Pierce. Practically the entire catch of mullet was taken with gill nets, only a few thousand pounds additional being incidentally secured in a haul seine.

Mullet gill nets are 250 yards long and 12 to 14 feet (or 40 to 50 meshes) deep, with a 4-inch-stretch mesh. They are made of linen thread, and when new are valued at \$50 each. The web lasts only two or three months, and has to be replaced by new twine. The usefulness of the nets is prolonged by washing them in lime water to remove the adhering animal matter, which promotes decay. The nets are rigged with cork floats and lead weights.

The mullet fishermen usually go in crews of four, in two boats. When the fish are seen swimming or jumping freely at the surface, a net from one boat is united to one from the other boat, and the two boats are rowed in opposite directions around the school as the nets are thrown out. When the boats come together the nets are again united, with the boats in the inclosed space. By beating on the water with oars, etc., the mullet, and the other fish incidentally encircled, are frightened into the meshes of the nets, from which they are then removed, the catch being equally divided between the two boats. The nets may be cast several times during a night if a sufficient amount is not obtained

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## THE POMPANO FISHERY.

Fishing for pompano is carried on throughout the length of the river, but is most important at Titusville, Fort Pierce, and Eden.

Nets used for pompano and other species besides mullet have a wide range in length. They are primarily about 200 or 250 yards long, but sections of netting are often connected until, as used, they extend from 600 to 2,000 yards, many pieces 1,000 or 2,000 yards long being employed. They have a stretch mesh of  $5\frac{1}{2}$  to 6 inches, and are from 15 to 35 meshes deep. They are constructed of linen twine and are worth, when rigged, about \$12.50 per 160 yards.

Fishing for pompano is done only at night, the darker the night the more favorable the conditions. In the daytime or by moonlight few pompano could be caught, as the fish see the netting and avoid it. The nets are set and left to drift for one or two hours before being visited, the fishermen, in the meantime, being on the adjacent shores, where fires are kindled for warmth or to keep the mosquitos away. The catch is removed from the nets several times during a night's fishing. Besides pompano, the principal fish taken are bluefish, sheepshead, sea trout, channel bass, mangrove snapper, and crevallé.

Owing to the peculiar shape of the pompano and the relatively large mesh in the pompano gill nets, the fish are not caught by being actually gilled. The fish push their heads through the mesh far beyond the gill-openings and are made fast by the twine getting behind the pectoral and ventral fins. Frequently, also, the mesh is caught on one of the stiff rudimentary spines in front of the dorsal fin.

## THE SEINE FISHERY.

Seine fishing is unimportant, and only two seines were used in 1895. One of these, at Jensen, was 400 yards long; the other, at Stuart, was 825 yards long, 12 feet deep in the center and 6 feet in the wings, with a 4-inch mesh. The seine at Jensen was fished for only a short time in 1895, the catch consisting chiefly of pompano and sheepshead. In operating the larger seine, which was not regularly used in 1895, a small steamer (of 3.56 tons) was used to assist in drawing the seine ashore. Pompano, sheepshead, channel bass, and whiting made up the bulk of the catch.

## THE TURTLE FISHERY.

The turtle fishery is comparatively unimportant. It is followed only from Sebastian, Fort Pierce, and Eden, although turtles are incidentally caught at a number of other points on the river.

The nets used in the turtle fishery are constructed on the principle of ordinary gill nets; they are made of 12-cord thread, with a 28-inch stretch mesh, and are 85 to 115 yards long and 10 meshes deep. They are worth about \$10 each. Two fishermen usually go in one boat, and 10 nets are the complement of a crew, although only 4 to 6 are in active use at one time.

The turtles are caught by being entangled in the meshes. Some of the nets are fastened to stakes that are driven on the turtle feeding-grounds, others are left to drift freely. The staked nets are visited twice a day. When the fishermen use a loose net, they take a position near by, and on seeing the net struck by a turtle pull up in their boat and secure it.

Turtle fishing begins about November 1 and continues until March 1, after which it is impracticable on account of the arrival of large saw-fish, sharks, and other fish that destroy the nets.

The total number of turtles taken for market on the Indian River in 1895 was 519, having a weight of 18,909 pounds; 51 of these, weighing 1,694 pounds, were taken in gill nets set for fish. The value of the catch was \$1,320, or about 7 cents a pound. The regular fishery was carried on by 12 men in 7 boats, using 66 nets.

In 1890, according to the report of Mr. W. deC. Ravenel, of the United States Fish Commission, the turtle catch of the Indian River was 738 turtles, weighing 36,900 pounds, valued at \$2,722; this yield, however, was obtained by 24 men, using 168 nets.

There is no doubt that turtle fishing on the Indian River is much less productive than formerly. Mr. Charles Pearke, of Sebastian, who has followed the turtle business during the past ten years, reports a great decrease of turtles as compared with earlier years. About 1886 he took 2,500 turtles with eight nets; in 1895 he secured only 60 turtles with six nets. The principal reason assigned for the decrease by Mr. Pearke is that the turtles have been frightened off by the steamboats and launches. The unusual cold of the winter of 1894-95 is also known to have seriously affected the abundance of turtles. Several hundred turtles were then found floating on the surface in a numbed or frozen condition. On being warmed most of them survived and were soon on their way to the northern markets. Since the cold spell turtles have been much scarcer than ever.

When it is desirable to retain the turtles any length of time prior to shipment, they are confined in pens and fed on vegetable matter, the articles principally used being a marine plant known as turtle grass, sweet-potato vines, and sometimes morning-glory vines and mangrove leaves.

#### THE OYSTER INDUSTRY.

The taking of oysters, is a more extensive business than any other fishery on the river with the exception of the gill-net fishery. It is carried on by fishermen of Titusville, Cocoa, Eau Gallie, and Fort Pierce, the first-named place having the principal interests. The entire supply is taken by means of tongs from natural beds in the vicinity of the places named.

The 29 persons who in 1895 gave special attention to the oyster fishery took 6,084 bushels, which yielded \$2,115, or about 35 cents a bushel. The oysters are handled by dealers, who ship them in the shell or

## THE FISHERIES OF INDIAN RIVER, FLORIDA.

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opened, as desired by the purchasers. When shucked the oysters seldom produce more than 3 quarts of meats to a bushel. The market is limited to the near-by cities and towns of Florida and Georgia.

There seems no doubt that the conditions are very favorable for the expansion of the oyster industry. By the adoption of such measures as are now followed with great benefit in other States—the allotment of land for oyster cultivation, the spreading of oysters on prepared grounds, the planting of seed and cultch, etc.—a valuable permanent industry may here be established, while under present conditions it is only a question of time when the natural supply will become exhausted.

## FISHERMEN, PRICES, SHIPMENTS, MARKETS, ETC.

The Indian River fishermen are from many parts of the country, and, with few exceptions, are white and American-born. Some had followed the fisheries of the Great Lakes, Long Island Sound, and Mississippi River before going to Florida. A number, however, were entirely without previous experience and began fishing from force of circumstances. The decline of the steamboat business on the river after the building of the railroad threw many persons out of employment, and some of these are now connected with the leading fish firms. The great damage to the fruit crop by frosts forced men of small means temporarily at least into other branches, the fisheries receiving a fair proportion, owing to the limited capital required to begin the business.

The fishermen, as a rule, contract with some fish-dealer as to prices to be paid for fish during a particular season. Sometimes the dealer furnishes a part of the fishermen's outfit, and takes his pay in fish. During 1895 the ruling prices received by the fishermen from the dealers were 1½ cents each for mullet, 2 cents a pound for bluefish, and 6 cents a pound for pompano and Spanish mackerel. All other fish, which are collectively known as "bottom fish," bring 1½ cents a pound. These prices seem very low, but it is doubtful if the dealers could pay much more and realize any profit, after meeting the heavy expenses for ice and the express charges on fish sent to the distant northern markets. Shipments often result in actual loss, owing to an overstocked market or the spoiled condition of the fish on arrival.

The average income of the fishermen on the river in 1895 was about \$200; many of them worked at the fisheries only one-third or one-half the time, being engaged in other business during the remainder of the year.

Practically the entire product of the Indian River fisheries is sold fresh. From time to time small lots of fish have been salted, but the demand is limited. In 1895, 25,000 pounds of salt mullet were prepared at Titusville, Fort Pierce, and Eden. The fish were put up in barrels holding 200 pounds each, and sold for \$5 per barrel, mostly to Charleston, S. C. The fish when thus prepared are split down the bac-

It seems probable that before long a profitable market will be found for the surplus mullet by salting them.

While the fish trade of the river is carried on throughout the year, it is most active between October and April, when the northern markets are largely dependent on southern waters for their fish supply.

The catch is landed from the fishing-grounds early in the morning and at once packed in barrels with ice for shipment on the early express train going north. The more select fish go as far as New York, Louisville, and St. Louis, but the mullet are chiefly consigned to points in Florida and Georgia. The express rates being from \$2 to \$8 per barrel, the shipments to the northern cities usually have to be limited to the highest-priced fishes.

Ice is an important and expensive item in the fisheries of this region. Owing to the long distances to which most of the catch is shipped, it is necessary to use relatively large quantities of ice for its preservation. Ice is procured in small lots from factories at Titusville, Cocoa, and West Palm Beach at prices ranging from \$4.50 to \$6 per ton; the freight charges sometimes bring the price up to more than \$7 per ton. The total quantity of ice consumed in the fishing business of the river in 1895 was 1,226 tons, or 2,452,000 pounds, an amount nearly equal in weight to that of the fish shipped. The cost of the ice was \$8,187, an average of \$6.67 per ton.

### STATISTICS OF THE FISHERIES.

In the appended tables detailed figures are given showing the extent of the commercial fisheries of the Indian River in 1895. The statistical information is based on personal interviews with fishermen and dealers and careful examination of available records. The investigation showed that the industry gave employment to 254 persons, represented an investment of \$41,512, and yielded 2,659,815 pounds of fish and other products, having a value to the fishermen of \$37,657.

Of the total number of persons directly connected with the fisheries in 1895, 172 were engaged in taking fish, 29 in oystering, 8 in catching turtles, and 41 in caring for the products pending shipment or in preparing them for market. The number of each class in each locality is shown in the following table:

Table showing the number of persons employed in the commercial fisheries of Indian River, Florida, in 1895.

Fishing centers.	General fisheries.	Oyster fishery.	Turtle fishery.	Preparing products.	Total.
Titusville .....	40	8	.....	6	54
Cocoa .....	22	9	.....	9	40
Kan Gaffie .....	32	2	.....	6	40
Melbourne .....	12	.....	.....	2	14
Sebastian .....	6	.....	.....	2	10
Fort Pierce .....	20	10	.....	6	36
Eden .....	25	.....	.....	6	31
Jensen .....	8	.....	.....	2	10
Stuart .....	10	.....	.....	2	12

The following table shows the amount invested in vessels, boats, apparatus, shore property, and cash capital at the various fishing centers. The details of the investment are given in subsequent tables. The largest investments are at Titusville and Fort Pierce, where the most men are employed and the principal business done.

Table showing the capital invested in the commercial fisheries of Indian River, Florida, in 1895.

Fishing centers.	Amount.
Titusville.....	\$14,821
Cocoa.....	5,103
Kau Gallie.....	4,047
Melbourne.....	1,140
Sebastian.....	3,530
Fort Pierce.....	4,788
Eden.....	4,390
Jensen.....	1,100
Stuart.....	2,495
<b>Total.....</b>	<b>41,512</b>

The number and value of the vessels and boats employed in the Indian River fisheries are stated in the next tabulation. Only one vessel of over 5 tons' burden is used in the fisheries of the river; this is a sloop of 8.09 net tons, having headquarters at Eden. A steamer of 3.53 tons is connected with the fisheries at Stuart. Of the 106 boats employed, 84 were in the general fisheries, 15 in the oyster fishery, and 7 in the turtle fishery. The total value of the vessels and boats was \$6,790.

Table showing the number and value of the vessels and boats employed in the commercial fisheries of Indian River, Florida, in 1895.

Fishing centers.	Vessels.		Boats.						Total value of vessels and boats.		
			Fishing.		Oystering.		Turtle-fishing.			Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.		No.	Value.
Titusville.....			20	\$400	4	\$140			24	\$1,120	\$1,120
Cocoa.....			11	550	5	200			16	750	750
Kau Gallie.....			11	715	1	40			12	755	755
Melbourne.....			6	300					6	300	300
Sebastian.....			3	90			1	450	4	140	140
Fort Pierce.....			13	650	5	350	4	200	22	1,200	1,200
Eden.....	1	\$400	12	600				100	14	700	1,100
Jensen.....			4	200					4	200	200
Stuart.....	1	1,000	4	225					4	225	1,225
<b>Total.....</b>	<b>2</b>	<b>1,400</b>	<b>84</b>	<b>4,310</b>	<b>15</b>	<b>720</b>	<b>7</b>	<b>350</b>	<b>106</b>	<b>5,790</b>	<b>6,790</b>

The value of the apparatus of capture employed in the Indian River fisheries was \$8,507; the shore and accessory property and the cash capital were valued at \$26,215. The mullet and pompano gill nets used, numbering 221, had an approximate combined length of 162,300 feet (or over 30 miles), and were valued at \$7,400. The 66 turtle nets were valued at \$800, and were 10,000 feet in length.

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The following table gives detailed figures on these items for the various fishing centers:

Table showing the quantity and value of the apparatus employed in the commercial fisheries of the Indian River, Florida, in 1895.

Fishing centers.	Mullet gill nets.			Pompane gill nets.			Turtle nets.		
	No.	Length (feet).	Value.	No.	Length (feet).	Value.	No.	Length (feet).	Value.
Titusville.....	12	9,000	9000	74	44,400	\$2,260			
Cooca.....	71	8,250	550	6	3,600	240			
Kau Galie.....	11	8,250	585						
Melbourne.....	6	5,400	300	1	1,500	40			
Sebastian.....	3	2,700	150	2	3,900	90	8	1,800	250
Fort Pierce.....	13	11,700	650	0	10,800	360	40	12,000	490
Eden.....	1	750	30	48	26,000	960	20	6,000	200
Jensen.....				12	7,200	300			
Stuart.....	1	750	35	12	9,000	420			
<b>Total.....</b>	<b>58</b>	<b>45,800</b>	<b>2,700</b>	<b>163</b>	<b>115,500</b>	<b>4,700</b>	<b>68</b>	<b>19,800</b>	<b>300</b>

Fishing center.	Haul seines.			Oyster tongs.		Value of shore and accessory property.	Cash capital.
	No.	Length (feet).	Value.	No.	Value.		
Titusville.....				8	\$56	44,200	\$2,500
Cooca.....				2	63	2,900	1,500
Kau Galie.....				1	7	1,400	1,500
Melbourne.....						200	300
Sebastian.....						2,600	500
Fort Pierce.....				8	4	3,700	2,400
Eden.....						1,300	800
Jensen.....	1	1,250	\$100			200	800
Stuart.....	1	2,475	165			250	300
<b>Total.....</b>	<b>2</b>	<b>3,825</b>	<b>265</b>	<b>26</b>	<b>162</b>	<b>16,115</b>	<b>10,100</b>

The quantity and value of the principal products of the Indian River fisheries in 1895 are shown in condensed form in the following table. The fish comprised 2,598,318 pounds, valued at \$34,222; the weight of the 519 turtles was 18,909 pounds, valued at \$1,320; the 6,084 bushels of oysters yielded 42,588 pounds of meats, and had a market value of \$2,115:

Table showing the quantity and value of the fish and other products taken in the commercial fisheries of the Indian River, Florida, in 1895.

Species.	Pounds.	Value.	Species.	Pounds.	Value.
Black drum.....	19,999	\$140	Sheepshead.....	261,141	\$4,440
Bluefish.....	33,096	703	Spanish mackerel.....	1,100	05
Channel bass or red drum.....	142,400	2,115	Trout.....	20,735	2,872
Crovalle.....	14,709	184	Whiting.....	25,200	875
Flounders.....	2,900	136	Other fish.....	11,516	106
Mangrove snapper.....	78,000	1,137	Turtles.....	18,909	1,320
Mullet, fresh.....	1,565,860	11,501	Oysters (meats).....	42,588	2,115
Mullet, salted.....	23,900	750			
Pompane.....	142,111	9,475	<b>Total.....</b>	<b>2,610,818</b>	<b>37,627</b>
Sailor's choice.....	11,500	167			

4519 in number

65,084 bushels.

More detailed figures relating to the output of the fisheries are given in the next table, which shows by fishing center and apparatus the quantity and value of each principal species. The fishing centering at

THE FISHERIES OF INDIAN RIVER, FLORIDA.

erably larger than is credited to any other place. Titusville follows with \$6,000, after which come Eden with \$6,000 and Cocoa with \$4,800.

Table showing by fishing centers and apparatus with which taken the products of the commercial fisheries of Indian River, Florida, in 1895.

Apparatus and species.	Titusville.		Cocoa.		Kau Gallie.		Melbourne.		Sebastian.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
<b>Gill nets:</b>										
Black drum.....			9,800	\$119						
Bluefish.....	2,258	\$45	525	11	280	\$6	400	\$8	1,200	\$24
Channel bass or red drum.....	12,100	181	8,700	102	30,530	459	3,500	52	8,500	135
Crovalle.....			14,700	184						
Flounders.....									200	3
Mangrove snapper.....			7,300	91	1,500	23	1,300	20	2,800	42
Mullet, fresh.....	285,119	2,138	330,400	2,065	157,160	1,164	4,800	72	66,090	495
Mullet, salted.....	10,000	300								
Pompano.....	38,553	2,315	9,800	490	800	30	6,100	366	1,100	53
Sailor's choice.....	3,000	50	2,000	23	600	9	400	6	1,200	18
Sheepshead.....	79,531	593	28,100	351	5,200	78	8,400	126	9,700	144
Trout.....	22,835	342	54,000	663	36,400	543	1,500	22	12,100	181
Whiting.....	3,000	45	2,400	36	2,500	38			900	14
Other fish.....	3,016	45	2,600	32			1,200	18	400	6
Turtles.....	500	35	100	7					4,500	315
<b>Total.....</b>	<b>420,210</b>	<b>6,087</b>	<b>470,925</b>	<b>4,188</b>	<b>234,840</b>	<b>2,350</b>	<b>27,600</b>	<b>691</b>	<b>108,390</b>	<b>1,433</b>
<b>Tongs:</b>										
Oysters.....	17,227	\$61	11,235	\$69	5,600	\$290				
<b>Grand total.....</b>	<b>437,437</b>	<b>6,048</b>	<b>482,000</b>	<b>4,857</b>	<b>240,440</b>	<b>2,639</b>	<b>27,600</b>	<b>691</b>	<b>108,390</b>	<b>1,433</b>

FT PRODUCE  
EDEN  
WITHIN A FEW  
MILES OF  
EACH OTHER

Apparatus and species.	Fort Pierce.		Eden.		Jensen.		Stuart.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
<b>Gill nets:</b>										
Black drum.....			800	\$12					10,300	\$131
Bluefish.....	18,000	\$380	8,000	200			1,200	\$24	31,800	678
Channel bass or red drum.....	58,000	870	8,100	121	1,500	\$20	4,300	48	134,400	1,998
Crovalle.....									14,700	184
Flounders.....	8,000	120	800	5					8,500	123
Mangrove snapper.....	57,000	855	3,200	48	800	12	500	8	74,400	1,079
Mullet, fresh.....	730,000	5,475					6,800	51	1,590,300	11,450
Mullet, salted.....	5,000	150	10,000	300					25,000	750
Pompano.....	27,000	1,890	36,300	2,541	5,800	948	15,100	798	133,350	8,830
Sailor's choice.....			1,100	16	600	9			9,800	131
Sheepshead.....	29,110	436	196,100	2,041	11,300	169	8,300	125	275,641	4,063
Spanish mackerel.....			600	42					100	1
Trout.....	50,000	750	14,100	211	2,200	33	2,100	47	190,835	2,811
Whiting.....	9,000	135							17,800	262
Other fish.....			1,700	26			1,800	27	10,710	154
Turtles.....	6,107	428	6,600	463	500	42	500	33	18,900	1,820
<b>Total.....</b>	<b>997,217</b>	<b>11,408</b>	<b>228,908</b>	<b>6,028</b>	<b>23,594</b>	<b>633</b>	<b>39,822</b>	<b>1,173</b>	<b>2,548,407</b>	<b>34,050</b>
<b>Haul seines:</b>										
Black drum.....							800	8	600	8
Bluefish.....					1,225	25			1,225	25
Channel bass or red drum.....					1,200	18	6,734	101	7,934	119
Flounders.....							500	8	500	8
Mangrove snapper.....					700	11	1,800	27	2,500	33
Mullet.....							5,500	41	5,500	41
Pompano.....					4,200	63	6,552	393	10,752	645
Sailor's choice.....					560	8	1,300	18	1,700	24
Sheepshead.....					8,700	130	16,800	752	28,800	382
Spanish mackerel.....							350	15	350	15
Trout.....					1,800	29	2,000	30	8,900	59
Whiting.....							7,500	113	7,500	113
Other fish.....							800	12	800	12
<b>Total.....</b>					<b>18,435</b>	<b>478</b>	<b>50,836</b>	<b>1,010</b>	<b>67,821</b>	<b>1,498</b>
<b>Tongs:</b>										
Oysters.....	6,538	\$26							48,500	\$2,138