

AMERICAN FISHES

A POPULAR TREATISE

UPON THE

GAME AND FOOD FISHES OF NORTH AMERICA

WITH ESPECIAL REFERENCE TO HABITS AND
METHODS OF CAPTURE

BY

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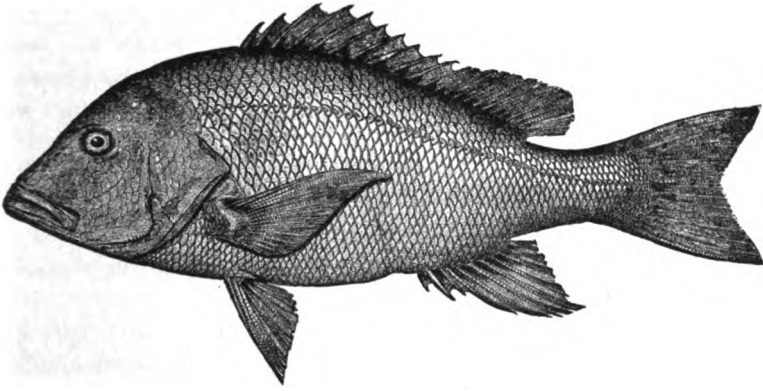
DEDICATION.

This little book on the fishes of America, is dedicated to my Brother-Ichthyologists in other lands—

DR. NICHOLAS APOSTOLIDES, of Athens ;
 DR. ROBERT COLLETT, of Christiania ;
 DR. FRANCIS DAY, of Cheltenham, England ;
 PROF. ENRICO H. GIGLIOLI, of Florence ;
 DR. ALBERT C. L. G. GÜNTHER, of the British Museum ;
 DR. JAMES HECTOR, of New Zealand ;
 PROF. A. A. HUBRECHT, of Utrecht ;
 DR. FRANZ M. HILGENDORF, of Berlin ;
 MESSRS. K. ITO, and S. MATSUBARA, of Japan ;
 DR. CHRISTIAN LÜTKEN, of Copenhagen ;
 DR. ANDRE-JEAN MALMGREN, of Helsingfors ;
 PROF. PIETRO PAVESI, of Pavia ;
 DR. EMILE SAUVAGE, of Paris ;
 PROF. F. A. SMITT, of Stockholm ;
 DON FELIPE POEY, of Havana ;
 DR. FRANZ STEINDACHNER, of Vienna ;
 DR. DECIO VINCIGUERRA, of Rome ;
 PROF. OSCAR VON GRIMM, of St. Petersburg—

in memory of much pleasant intercourse in the past, especially during the recent Fisheries Exhibitions in Berlin and London, and with the hope that its publication may lead to a wider popular appreciation, in America, of the importance and interest of Ichthyological Science.

L. J. Brown Goode



THE RED SNAPPER.

SNAPPERS AND RED-MOUTHS.

The island's edges are a-wing
 With trees that overbranch
 The sea, with song-birds welcoming
 The curlews to green change,
 And doves from half-closed lids espy
 The red and purple fish go by.

Mrs. BROWNING, *An Island.*

THE Snappers and the Grunts belong to Gill's family, *Pristipomatidæ*. Jordan puts them with the *Sparidæ*, or Sea-Breams, while Günther includes them in his much more comprehensive perch family. They are among the most wholesome and abundant of the food-fishes of tropical waters. There are numerous species in the West Indian fauna, but only a small number are sufficiently abundant on the coast of the United States to merit discussion in this book.

The Snappers and Grunts are among the most highly colored of the tropical fishes—the tanagers and grosbeaks of the coral reefs.

The Red Snapper, *Lutjanus Blackfordii*, although it has been for many years a favorite food-fish of the Gulf of Mexico and Eastern Florida, has but recently become known in Northern markets. About 1874 individuals of this species were occasionally seen in New York and Washington, and they began shortly after to come into notice in the cities of the Mississippi Valley. It was not even described and named until 1878, when a study

of the notes and measurements obtained in Florida confirmed my suspicion, which had been growing for years, that the species was new to science. The name *Lutjanus Blackfordii* was chosen in compliment to Mr. Eugene G. Blackford, Commissioner of Fisheries of New York, whose enthusiastic labors have greatly aided all students of American ichthyology, and who has added several species of fishes to the fauna of the United States. The genus *Lutjanus* was founded in 1787 by Bloch, who derived its designation from *Ikan Lutjang*, an Asiatic name for a kindred species of the group. Its color is bright crimson, and it is the most conspicuous fish ever to be seen in our markets.

Seven years ago the geographical range of this species was supposed to be limited at the north by Savannah Bank, but during the summer of 1880 several specimens were taken along the coast of the Middle States; one, nine-and-a-half pounds in weight, off Point Monmouth, New Jersey, October 5; another, about August 10, near Block Island. This northern extension of its range is quite unexpected, and the fact that even stragglers find their way into the northern waters suggests great possibilities for the future in the way of their artificial propagation and introduction along the coast of the United States. In the South it is found on the same grounds with the sea-bass, a species which is abundant as far north as Cape Cod, and it is hard to understand why the banks which are favorite haunts of this fish should not also be shared by the Red Snapper. In the Gulf of Mexico the Red Snapper is exceedingly abundant in suitable localities from Key West to the Rio Grande.

“About the Florida reefs,” writes Silas Stearns, “and as far north as Temple Bay, where there are reefs and rocks, they live in holes and gullies where all kinds of marine animals and fish are most abundant, and sometimes, as I have noticed, off Charlotte Harbor numbers of them will congregate about a solitary ledge protruding over a level bottom of white sand. Throughout this southern district the fishing spots are small, but very numerous; and away from the reefs, where the bottom is chiefly sand, it is only necessary to find rocks or rocky bottom to find Red Snappers. Since it is impracticable to make use of bearings by which to find the fishing grounds, the fishermen sail about, throwing the lead continually until it indicates the proper bottom. Along the coast from Temple Bay to Texas the bottom declines very gradually to the hundred-fathom curve, forming vast, almost level plains of sand. In these barren wastes there are gullies

of variable size, having rocky bottoms and teeming with animal and vegetable life. These gullies occur at a depth of from twelve to forty-five fathoms, the water in them being several fathoms deeper than the surrounding bottom, and more rocky, and in the deepest parts richer in animal life. Red Snappers are exceedingly abundant in these places, which are the so-called 'snapper banks.' From Temple Bay to Cedar Keys the gullies are numerous in sixteen, eighteen, and twenty fathoms; from Cedar Keys to Saint Mark's, in fifteen and sixteen fathoms; off Saint Mark's and Dog Island there are a few in five and ten fathoms. From Cape San Blas to the mouths of the Mississippi River occur the best fishing grounds in the Gulf, so far as is now known; gullies ten and fifteen fathoms in depth are especially abundant fifty miles west from the cape. West of the Mississippi, and on the Texas coast, there are a few which are in twelve and fifteen fathoms. These grounds are found by the use of the sounding-lead, which shows every position by the sudden increase in the depth of the water. Red Snappers live in such places all the year, except, perhaps, in some of the five and ten fathom ones, which are nearly deserted in winter. Off Pensacola there seems to be quite a movement inshore in fall. In South Florida they are usually associated with the groupers, which occur in the proportion of about three to one, while in West Florida the case is reversed; not more than one fish in ten of those caught is a grouper."

Red Snappers are also known to be abundant on the Savannah Bank and on the Saint John's Bank, off Eastern Georgia and Florida.

The Red Snappers are strictly carnivorous, feeding upon small fish, crabs, and prawns. The temperature of the water in which they live probably rarely falls below 50°. They have no enemies except sharks and two or three enormous spiny-rayed fishes such as the jew-fish or warsaw (*Guasa*). The only reliable observations upon their breeding habits have been made by Mr. Stearns, who states that they spawn in May and June in the bays and at sea. In June, July, and August they are found in some of the bays of the Northern Gulf, about wrecks and rock-piles, in considerable numbers, and none are taken but the larger adults and the young from one to eight inches long. The spawning season probably extends over a period of several months, Mr. Stearns having found well-developed ovaries in them from April to July. Nothing is known of their rate of growth. They attain to the size of forty pounds. In East Florida, however, the aver-

age is much less. Mr. Stearns remarks that in the Gulf of Mexico they very seldom exceed thirty pounds weight, though he has seen several of that size, while the average is eight or nine pounds, and in a large lot may usually be found individuals weighing from two-and-one-half to twenty pounds.

Red Snappers from Florida are frequently quoted in the New York market returns. In 1879 about 12,000 pounds were there sold. They are also shipped to Boston, Washington and Baltimore in winter, the supply in these cities being derived chiefly from Pensacola. Mobile and New Orleans consume considerable quantities, and from these ports they are shipped up the Mississippi River to the principal cities of the West, where the fish is growing to be a staple of much importance. In Saint Louis and New Orleans it is one of the most highly esteemed food-fishes.

Snappers should always be boiled or cooked in a chowder. Thus treated they are equal to the striped bass, sea bass or turbot, in flavor and texture. The *Court-Bouillon* of the New Orleans cooks is made of Snappers, and is very delicious.*

Snapper-fishing is usually carried on with a bottom bait of skip-jack, bluefish, or young shark. The Snappers will sometimes bite at a white rag. Norris, the only sporting authority who has written about them with a clear understanding as to what species he was dealing with, states that they bite readily at a silver or pearl squid. I am inclined to believe that this is a mistake. Their habits are closely similar to those of the sea bass and the sheepshead, and they seldom rise to the surface.

A trip to the Snapper banks is a favorite summer recreation for the gentlemen of Jacksonville. A tug is chartered for the day, and usually returns to the city with flags flying, whistles triumphantly sounding, and gorgeous festoons of red fish hanging over the bows.

My friend, Dr. C. J. Kenworthy, has kindly given me the following memoranda concerning such a trip :

“Eighteen of us left Jacksonville at two o'clock in the morning, reaching Mayport before daylight. Before the sun rose we were twelve miles from the shore, and near the banks. The second cast of the lead furnished

* *Court-Bouillon*. “This preparation gives boiled fish a better flavor than cooking in clear water does. Many cooks use wine in it, but there is no necessity for it. Four quarts of water, one onion, one slice of carrot, two cloves, two table-spoonfuls of salt, one teaspoonful of pepper, one table-spoonful of vinegar, the juice of half a lemon and a bouquet of sweet herbs are used. Tie the onion, carrot, cloves and herbs in a piece of muslin, and put in the water with the other ingredients. Cover, and boil slowly for one hour. Then put in the fish and cook as directed for plain boiling.”—MISS PARLOA.

unmistakable evidence of rocks, and over-board went the lines. They scarcely touched bottom before the cry 'Snapper!' 'Snapper!' was heard, and a crimson beauty graced our deck.

"All were soon engaged, foreward, aft, starboard, and port. To feel the bite of a twenty-five pound Snapper at a depth of twelve fathoms causes a sensation never to be forgotten. As the line is pulled in and the fish is first seen at a depth of several fathoms, he looks like silver and not larger than one's hand. As he comes nearer his tints deepen, as he struggles at the surface to escape, all his rich, brilliant colors are displayed, and when he reaches the deck every one exclaims, 'What a beauty!' For a few minutes the shouts resound from all sides, but a change soon occurs. Each man labors as if the number to be captured depended upon his individual exertions, and no breath or time could be spared to cry 'Snapper!' or indulge in fisherman's chaff. In less than two hours the whistle sounds 'Up lines' for we must cross the bar at a particular stage of the tide. The fish are biting rapidly, but our tired arms and blistered fingers induce us all quietly to obey the warning.

"On the home-trip our captures are counted;—not sea bass, porgies, and small fry, but fish worth counting,—and it is found that the party has captured one grouper weighing thirty-five pounds, two of eighteen pounds, and two hundred and eight snappers averaging twenty-five pounds each,—the entire catch weighing two and one half tons."

One April day, some years ago, the writer and a party of friends were passengers on the little steamer which plied between Jacksonville and the mouth of the St. Johns. After leaving Mayport on the return trip, we were hailed by a party of men from a large sail-boat laying-to in the middle of the river. We threw them a line, and they gave us a deck-load of stout fishes,—shapely, bright-eyed, and crimson. We learned that the boat had left Mayport on the previous afternoon, carrying six men, who had, in three hours, taken ninety Red Snappers, weighing in the aggregate over a ton, besides quantities of sea bass. Their brilliant hues were a great surprise to those of our party who were acquainted only with the neutral colors of the common northern market fishes, or perhaps had even seen the dull red color of the Snappers hanging in the markets. The ladies were eager to possess some of the "lovely scales," but soon learned one of the first lessons of ichthyology, that scales are always white, whatever may be the color of the fish which wear them.

The writer also learned a lesson in ichthyology, on the same occasion. The opportunity to examine so many specimens of this fish, gave him the clew to the fact that it was an undescribed species and led to its descriptions by Goode and Bean under the name *Lutjanus Blackfordii*.

The genus *Lutjanus* is found everywhere in tropical waters, and fish resembling the Red Snapper occur everywhere throughout the West Indies. There is one which is abundant on the Bahama Banks and in South Florida. This is *L. campechianus*, Poey, perhaps also accompanied by *L. torridus*, Cope. Two other brilliant red species occur with *L. Blackfordii* in the Gulf of Mexico—the Pensacola Snapper, *L. Stearnsii*, and the Mangrove Snapper, *Rhomboplites aurorubens*. On the Bermuda reefs occurs a small but brilliant species, still undescribed, which I propose calling *L. autolycus*.

The Pensacola Snapper might fairly be compared with *L. Blackfordii*, although its color is somewhat less vivid. Concerning this species, Mr. Stearns, whose name it bears, writes: "It is abundant on the Gulf coast, and lives in the bays all the year. In summer it is to be found about stone-heaps, wharves, and old wrecks, where it obtains crustaceous food in abundance. In winter it returns to the deeper places in search of food, and to escape from the cold surface-water. During a cold snap in 1876 a great many of these fish were benumbed and floated at the surface, until the sun appeared and warmed them, when they revived and sought the bottom. They spawn in May and June. They are very cunning, and will not readily take the hook. Those commonly seen in the bays are quite small, averaging ten inches in length, while those taken with the Red Snappers at sea are from twenty to twenty-four inches long. It is an excellent food-fish, generally thought to be superior in flavor to the Red Snapper." This fish has as yet been found only on the Gulf coasts of the United States, where it is known as the "Mangrove Snapper." Since this name is used on the Atlantic coast for another species, and has been so used since the time of Catesby, it seems desirable to designate *Lutjanus Stearnsii* by another name, and "Pensacola Snapper" has been suggested.

The Mangrove Snapper, *Rhomboplites aurorubens*, of Charleston, called at Pensacola the "Bastard Snapper," is a much more slender and elegantly formed fish than either of the Snappers already described. Its color is less vivid, being somewhat more russet, and is enlivened by the presence of narrow, oblique lines, with gold and yellow upon the sides. It is a swift-swimming fish, probably less given to bottom feeding, and more partial to a diet of living fish. It has been found at Jamaica, and as far north as Charleston, S. C.

"In the Pensacola region," writes Stearns, "it is well-known, but not

a common species." Single individuals are occasionally brought in from the sea with the Red Snappers and groupers. It is caught at all depths, from ten to thirty-five fathoms, and seldom exceeds eighteen inches in length. As a food-fish it is equal to the Red Snapper.

The Gray Snapper, *Lutjanus caxis*, is similar in form to the others, but not red in color. It is called the "Gray Snapper" in South Florida, and the "Black Snapper" at Pensacola; is abundant about the Bermudas, and has been found on the east coast of Florida, in tropical South America, in Western Africa, and about the Bermudas, where it attains the enormous size of sixty to eighty pounds, and is known as the "Gray Snapper," and also, on account of its sly, cunning habits, the "Sea Lawyer."

Mr. Stearns writes: "It is most abundant in South Florida, living in deep channels, on rocky bottoms, about old wrecks, stone-heaps, and wharves; it is considered the most cunning fish on the coast, and extremely difficult to catch. The young may be seen about the wharves, and the breeding grounds are probably near by. Those usually observed are from ten to twelve inches in length, but I think I have seen specimens which would measure two feet."

The Red-mouths or Grunts, small fishes belonging to the genus *Diabasis*, are found in the inshore waters of the Southern Atlantic and Gulf States. They are closely related to the Snappers, which they resemble in form, and have remote affinity, with the perch, the bass, and the porgy and sheepshead. Their colors are usually striking, and without exception, they are distinguished by the brilliant red color of the inside of the mouth and throat, from which they have sometimes been called Red-mouths, or Flannel-mouths. From their habit of uttering a loud, rather melodious sound when taken from the water they have acquired the name of "Grunts" and "Pig-fish." In some localities they are called also "Squirrel-fish," in allusion to the same habit. They are, for the most part, bottom feeders, preying chiefly upon crustaceans and small fish. In fact, they are, in most respects, miniature counterparts of the Red Snapper. In many localities they are in high favor as food-fish. They have not yet been very carefully studied, but so far as they are now understood the following species are known to occur in sufficient numbers to prove of commercial importance.

The Black Grunt, *Diabasis Plumieri*, has a brownish body, lighter upon the sides, and has the sides of the head ornamented with numerous hori-

zontal stripes of bright blue, while the posterior half of the lower lip is red. It occurs as far north as Charleston, and Dr. Yarrow claims to have seen it at Beaufort, North Carolina, though there is some question whether another species was not mistaken for this. Holbrook records that it has been observed on the Atlantic borders of South Carolina, Georgia, and Florida. I noticed several small individuals in the markets of Saint Augustine in March, 1877. Stearns mentions the Black Grunt as abundant at Key West among the reefs, and as frequently seen in the markets. It is there known as the "Ronco Grande," *D. albus* being called the "Margate Fish," and *D. chromis* the "Sailor's Choice."

The Red-Mouth Grunt, *Diabasis aurolineatus*, is probably the "Flannel-mouthed Porgy," familiar to Florida fishermen, and often taken on the St. Johns bar. It has recently been found to be common in Charleston in summer. This species was mentioned in Catesby's great work, published in 1643, under the name of "Margate-fish." When alive its color is bright silvery, but it soon becomes, when taken from the water, of a dull amber-brown, with a slight brazen tint along the back and sides, though the belly remains white. The upper jaw, within, is white; the palate is salmon-colored; the lower jaw and mouth below are also white in their interior third; the posterior two-thirds, both within and without, are red, and the mouth below; the tongue and fauces are of a similar color. This fish occurs in Northern Brazil and throughout the West Indies, and specimens are recorded from Jamaica, Trinidad, and the Bahamas; it is found in the Bermudas and on our coast at least as far north as Charleston. Stearns writes: "It is quite common on the Gulf coast of Florida from Pensacola to Key West. It is caught with hook and line, and is eaten as a pan-fish. I took an extremely large specimen from the snapper ground between Cedar Keys and St. Marks in fifteen fathoms of water. It is not found in the vicinity of Pensacola." Holbrook writes: "The Red-mouthed Grunt is occasionally taken in our waters at all seasons of the year, but is never abundant, as seldom more than a dozen or two are met with in the market at one time. It is not highly esteemed for food, since its flesh lacks both firmness and flavor."

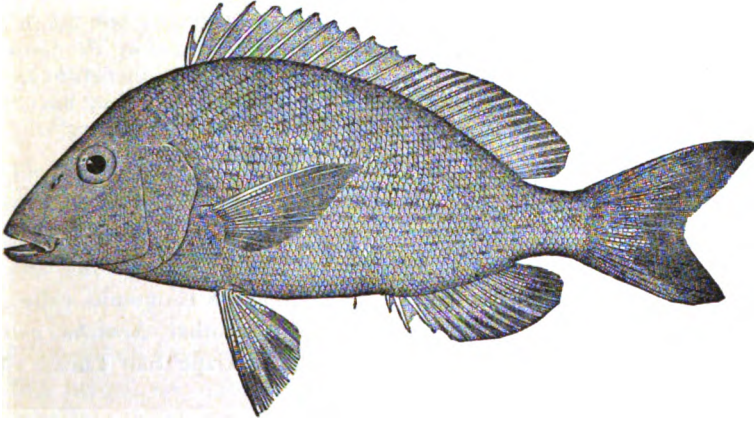
Uhler and Luggar say that it occurs occasionally in the lower part of the Chesapeake Bay, where it is not considered to possess great economical value. The occurrence of this species so far north needs confirmation.

The Norfolk Hog-fish, *Pomodasys fulvomaculatus*, belonging to a

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closely related genus is the "Hog-fish," or "Grunt," of the Chesapeake, and called also "Pig-fish" or "Grunt" in the Gulf of Mexico, and "Pork-fish" and "Whiting" at Key West, and known in South Carolina and the St. John's River, Fla., as well as in Bermuda under the name of "Sailor's Choice. Its colors are as follows: Above, pale brown; belly, silvery; sides marked with numerous orange-colored or yellow spots; those above the lateral line disposed in irregular oblique lines, those below it in horizontal rows. Dorsal, anal and caudal fins with similar spots; sides of the head pale bluish with a silvery tint and marked with yellow spots; lower jaw, orange at the angle of the mouth; internal surface of the gill membrane bright orange."



THE NORFOLK HOG-FISH.

This species was first described by Mitchill from a specimen taken in the bay of New York. The National Museum has many specimens from various parts of the Southern coast and the Gulf of Mexico. "In New York," wrote DeKay in 1842, "this is a rare fish, but occasionally appearing, as I am informed, in our harbor in considerable numbers. It is a very savory food." Prof. Baird did not find it on the coast of New Jersey in 1854. It occurs in the salt water of the lower part of the Chesapeake Bay, and is much esteemed for food, being perhaps the most popular pan-fish of the Lower Chesapeake.

At Beaufort, N. C., where it is also called "Hog-fish," according to Jordan, it is extremely common everywhere in the harbor. Holbrook wrote about 1860: "The 'Sailor's Choice' makes its appearance in our

waters about the month of April and continues with us until November, when the largest are taken. I have found in the stomach of this animal only the remains of small fish, and yet it takes hook readily when baited with shrimps and clams. It is found along the coast from Georgia to Virginia, where it is called "Hog-fish," and is held in great estimation by epicures."

"On the Gulf coast," writes Stearns, "it is common everywhere and throughout the year it lives in shallow water among the grass, feeding upon small crustaceous animals. It spawns in April and May, and is a choice food-fish. The average length is about ten inches." Stearns also refers to three species known respectively as the "White," "Yellow" and "Black" Grunt, which are found at Key West and upon the neighboring reef in great abundance. He states that "they are taken with hook and line, and are brought daily into market. Before the poisoned water visited that neighborhood the Grunt was the most important as well as the favorite food-fish in the market, but since then they have been scarce, and other fish, to a great extent, have taken their place."

On the coast of California, especially southward, occur two species of this family; one, known by the name "Sargo," *Pristipoma Davidsoni*, is found from San Pedro southward to Cerros Island, chiefly about the islands, and is nowhere common. It feeds on crustaceans, and is a good pan-fish, but is too scarce to have much economic value. It reaches a length of about fifteen inches. Still another, *Xenistius californiensis* Steindachner, occurs from San Diego to Cape San Lucas. It is too scarce to be of any importance for food.