PREFACE

We began our studies of the inshore species of fishes that are of recreational importance in coastal South Carolina about nine years ago. In the fall of 1992, the South Carolina Department of Natural Resources released Educational Report No. 17 entitled "Red Drum: Natural History and Fishing Techniques in South Carolina". The purpose of the report was to inform the angling public about this fine fish in our state's waters. As mentioned in the booklet, it was the first of an intended series that will cover additional species of fishes. Here (finally) is the second.

The research that provided the basic information about the natural history of this animal was paid for by your tax dollars in two ways. First, some funds were provided directly by the state to the Department of Natural Resources which then funded our work. The remainder of the support was obtained from the federal trust fund established by the Sport Fish Restoration Act. In essence, revenues derived from excise taxes on sport fishing equipment as well as taxes from fuel used by boaters are placed in an account that is administered by the U.S. Fish and Wildlife Service. Each state receives an allocation based on factors such as the number of fishermen. The cost of printing this document was paid from revenues obtained from the Fishing Stamp.

Two people wrote this booklet, however, the work that went into the research and layout of this publication was the result of the efforts of several people. Bill Roumillet has commented on many drafts of the documents. Fred Holland gave the beast a very thorough going over. Their comments and suggestions were greatly appreciated, however, we are responsible for any errors of fact or presentation. During the past few years, numerous people have helped us sampling. Bill Roumillet, Susan Tyree, Chris Walton, Joe Moran, Mark Maddox, Louie Daniel, and George Reikirk have spent many an hour with us in the field. There is no way we could have completed this without their help. Karen Swanson converted our 'stickman drawings' into intelligent presentations and did the camera ready copy for the printer. To all, thank you for your efforts.
A NOTE OF THANKS AND APPRECIATION

by Charlie Wenner

In the first guidebook of this series (Red Drum: Natural History and Fishing Techniques in South Carolina), I dedicated the work to the late Colonel Jim Rathbun for his effort on behalf of sportfishing in particular, and marine conservation in general in our state. For this present work, I feel a note of thanks is more appropriate.

When I think of spotted seatrout (trout to all folks of coastal South Carolina), I think of two people. One older gentleman (and he'll probably cuss me for calling him old) worked with Colonel Rathbun on some of his conservation oriented missions, and the other has played a major role in bringing 'art' into the science of inshore sportfishing in addition to promoting catch and release fishing.

The old guy is Mr. Joe Deytens who has forgotten more about trout fishing than I will ever know. Thanks Mr. Deytens for all your efforts on behalf of the promotion of the wise use of marine and estuarine resources. Thanks for working with the late Colonel and thanks for continuing the good fight for the proper use of our fishery resources in South Carolina.

The other guy, much younger in age, has been a vocal proponent of catch and release and fishing for the future. I have seen him in action during a demonstration, and it brought to mind two memories; the first was the flyfishing scenes in "A River Runs Through It", and the other was picking my flies from various forms of vegetation on the banks of freshwater streams in western New York state thirty years ago. I spent more time with my fly in the trees than with it slowly drifting across the surface of a pool full of brook trout. This guy is Mike Able who has played a significant role in promoting saltwater flyfishing in our state. In addition to Mike, the members of the "Boca-Morris Pass Fly Fishing Club" have promoted the 'art' of flyfishing and the catch and release of marine gamefish.

Knowing that people like these care makes my job much easier. Thanks Mr. Deytens (my Mom always told me to respect my elders), Mike, and the members of the Boca-Morris Pass Fly Fishing Club. Your concern and work today will result in future generations having the same fishing opportunities as we presently have.
INTRODUCTION
by Charlie Wenner

Most fishermen consider fall to be the best time of the year. The air is crisp and clean, the inshore waters have cooled, and the crowds that were present during the warm summer months have put away their jet skis, cruising boats and water skis. Their absence allows peace to return to the state’s estuaries and coastal creeks. This is the time to fish for spotted seatrout, when they move upstream as the rivers cool and gorge themselves on fishes and shrimps prior to the winter.

There are fish that grow larger and fight harder, but there is something special about angling for trout. Fishing for trout in a creek that winds through the marsh on a cool fall morning has what the restaurant critics call “wonderful ambience”. Some restaurants make up for either unspectacular food or service by having a great view, wonderful music, or an outstanding decor. The fall is a wonderful time to be in South Carolina’s estuaries and tidal creeks. A time for Mirrolures and grubs, cool weather, clear water, and a chance for peace and quiet. All these make up for the relatively small size and moderate fighting ability of spotted seatrout.

My first experience with spotted seatrout fishing was in the mid-70’s in Virginia. I was still a graduate student in Marine Science at the College of William and Mary. It was the first week in May and my father-in-law asked me if I would like to try the “specs”.

In the Chesapeake Bay, blue crabs move into subtidal grassbeds in early May to molt. After crabs lose their hard external shell, they are very vulnerable to predators. The “eel grass” gives them a hiding place during this dangerous period. Around high tide, large “specs” swim through the grass beds looking for soft crabs for dinner. The way to catch them was to toss a quarter of a soft crab with a piece of steel buried in it on the edge of the grass beds. I was pretty excited about the invitation because my father-in-law and his fishing friend of thirty years had caught some “specs” in the 6 to 10 pound range the previous week.

I left our house at 3:30 am so I could reach his house by 4:00 am. The old man had to be in the water at daybreak, and if you were late, even by a few minutes, you were greeted by an icy stare and a comment like “So nice of you to make it.” He was born and raised on a farm in Mathews County, Virginia and never did a thing in the morning on an empty stomach. I left the house early that day not only to get on the river at daybreak, but also to drink coffee and eat breakfast with the old man.

That day I didn’t catch a fish, and honestly I can’t remember if anyone did. My only memory of that morning was the smell of the kitchen when I opened the back door. You see, having been born and raised in New York, I had a deprived childhood in that I had never walked into a kitchen on a cool morning when slabs of country ham were frying with eggs, biscuits were fresh from the oven, and the coffee was hot and strong. I had always thought that ham was that soft, processed stuff (with salt, water, and a bunch of unpronounceable chemicals added) that had little or no flavor unless you loaded it up with brown sugar, cloves, and pineapple. When I opened the door, I asked him what smelled so wonderful. He looked at me like I was some strange creature and said “That’s country ham, boy.”

After that morning, I began a love affair with country ham; there is no doubt that cool mornings, ham biscuits, hot coffee, and trout just go together. God must have created them all at the same time when He was in a really great mood. When you eat country ham before you go trout fishing, you really don’t have to worry about any cholesterol or salt because the day doesn’t count anyway since every day that you spend fishing isn’t subtracted from your allocated time on earth.¹

I have been fishing for spotted seatrout in South Carolina since 1980, and have only become reasonably successful in the last five years. I don’t claim to be an expert on the subject, and there are a number of anglers like David Yates, Joe Deytons, Sandy Stuhr, Don Buxton, Tony Mims, and Mike

¹ I thought and wrote about this early in the morning and the image is so vivid in my mind that my mouth couldn’t stop watering.
Able who have forgotten more about trout fishing than I will ever know. What I would like to accomplish with this booklet, which is the second in a series dealing with the natural history and techniques for catching inshore fishes in South Carolina, is to introduce the interested angler to the habits of this fine fish as well as provide the novice fisherman with some general techniques that may help them catch trout.

John Archambault wrote the fishing techniques section, whereas I summarized our scientific knowledge of this fine critter. With that in mind, if you have problems catching them, blame John; I had nothing to do with that part.

There are as many ways to approach the art of trout fishing as there are successful fishermen. Neither all the techniques nor all the locales involved in the pursuit of this fine fish are included in this work. Drop me a line and let me know what you think about the booklet. If there is something that you like or don’t like, tell me. There are several more of these booklets planned. They can be made more informative only if people let me know how they feel.

In my mind, fishing is more than simply catching a fish, sticking it in a cooler, cleaning it at home, and finally eating it. The following article, originally published in April 1980 in Outdoor Life, was subsequently reprinted in condensed form in the April 1986 issue of Reader’s Digest. It provides another aspect of fishing that frequently we forget about.

THE LAST RAINBOW
by Jim Berlin

The OLD MAN was still getting around pretty well. In slow motion, to be sure, with a gingerliness that bespoke the pain of terminal cancer—but getting around nevertheless. I’d taken a few days off from my job and flown to join him at the cabin, the one he’d built with his own hands when my brother Jack and I were barely tall enough to reach his waist.

The cabin. Those two words will evoke a montage of memories for as long as I live. Gold-
he meant.

The old man had exhausted the downstream hole, but we knew that the best had been saved for last. Under the bridge—that was where the best rainbows always waited. And it was right there, in fact, that I had caught my very first trout: a fat 12-inch.

I watched the tip of the old man’s rod as he floated a fresh crawler toward the hole neither of us had ever really seen, but had fished a hundred times.

He stopped feeding the line just when I thought he should. Instinctively we knew the bait was precisely where it ought to be. We waited. Five seconds, maybe ten. Then it happened.

The tip of the rod twitched, twitched again, and then bent double as the trout bit down and held on, and the old man began easing the fighting fish out of the hole.

"It’s a good one," he said. For that moment at least he forgot he was dying, forgot that this stream and all the streams he loved so deeply would soon be flowing past without him.

"It’s a good one," he said again, and my eyes traveled up the rod to his face. The slight, patient smile was a little wider than usual.

It was good. Before it was over the old man was breathing heavily and tiring as fast as the fish. But he worked the trout out of the bridge’s shadow and into the upstream light. It wasn’t any record. Maybe 15 inches, but fat and thick and feisty. As good as any we’d ever taken from under the bridge at old Silver Creek.

"It was a great fishing trip," I said, putting my arm around him as we walked slowly to the car.

"Yes," he replied. "We’ll do it again sometime. Sometime soon."

Several months later I traveled back home once more, this time for his funeral. I walked into his bedroom and found his fishing rod in the corner, rigged with a brand new Eagle Claw and two tiny split shot.

My mother came in and saw me holding it. "He had it all ready for another trip," she said. "He thought maybe the two of you could go fishing together one more time."

We will, old man. We will.

THE SPECIES

by Charlie Wenner

Our subject of this book goes by several names depending on where you are. In South Carolina, I have heard them called speckled trout, trout, or winter trout; in Virginia, they are speckled trout or simply “specs”. Anglers in the shallow waters of the Gulf of Mexico refer to them as “specs”. The accepted common name which has been established by the American Fisheries Society to standardize names for fishes that are found in several areas is spotted seatrout. The scientific name is Cynoscion nebulosus which is derived from several Greek words. Cynoscion is a composite of two words: Cyno which means dog-like and scion which means a sea-fish. The second name, nebulosus, means dark and clouded. If you put them together, you get a dark/clouded dog-like sea-fish. I guess that the resemblance to a dog comes from the presence of the two serious looking canine-like teeth on the upper jaw; I have no idea of the origin of dark and clouded.

Ichthyologists (biologists who study fishes) do not consider spotted seatrout to be a type of trout at all. Real trout are members of the salmon family (=Salmonidae), whereas spotted seatrout are members of the family Sciaenidae (=drum family) which includes many inshore species of fishes that are popular with recreational anglers along our coast (Figure 1). In South Carolina, we have three different species of seatrout: spotted seatrout (Cynoscion nebulosus), weakfish (=summer trout, Cynoscion regalis, and sand seatrout (Cynoscion nothus) (Figure 2).

Spotted seatrout are found along the Atlantic coast of the United States, around southern Florida, and along the coast of the Gulf of Mexico to the northeast Mexican coast. Although spotted seatrout have been caught as far north as New York, they are rare north of the Chesapeake Bay. This species has been harvested by both commercial and recreational fishermen throughout its range. Samuel F. Hildebrand and William C. Schroeder in Fishes of the Chesapeake Bay, which was written in 1928, state that “spotted squeteague (=spotted seatrout) was one of the most important commercial fishes
harvested in Chesapeake Bay. Because of its highly prized, firm flesh, the retail prices in both 1921 and 1922 were between 25 and 30 cents per pound. If you think of that in terms of the value of present day money, that was a very high priced fish in those days.

In 1986, spotted seatrout was made a gamefish in South Carolina; in other states where it is found, various restrictions have been placed on its harvest to insure healthy populations. There is no doubt in my mind that, as the number of people living along the coast increases as projected in the next ten to

### Spot -
has distinctive spot on its shoulder. Highly sought after species by inshore fishermen especially in the fall during the "spot run". Grows to $\frac{1}{2}$ to 1 lb. in weight.

### Atlantic croaker -
also a popular fish; common around $\frac{1}{2}$ lb.; rare over 2 lbs. in weight. When you catch one it gives a "croaking" sound.

### Northern kingfish (Whiting) -
a popular fish in South Carolina noted for its delicate flavor. Grows to 1 to 3 lbs.

### Black drum -
has "whiskers" under its chin. These are actually barbels with taste buds on them so that the fish can locate food. Feeds on crabs, mussels, worms and reaches 80 lbs. in wieght.

### Red drum -
"Spottail bass" the most popular gamefish in South Carolina grows to 50+ lbs.

Figure 1. Some common members of the drum family (= Family Sciaenidae) found in the estuarine and nearshore waters of South Carolina.
**Spotted seatrout** - spots on body and fins

**Weakfish** - summer trout; generally has yellowish tinge on the fins; soft anal fin; rays = 11 to 13

**Silver seatrout** - small fish, fins white or silver; found mainly in the nearshore oceanic waters; soft anal fin; rays = 8 to 10

Figure 2. South Carolina's three different species of seatrout (= Cynoscion) found in the estuarine and nearshore waters.
Table 1. Salt water line class records for red drum as published by The International Game Fish Association, 300 E. Las Olas Blvd., Fort Lauderdale, Florida 33316-1616 in 1990. M = men’s class; W = women’s class; T = tippet class (fly rod) weight = pounds-ounces.

<table>
<thead>
<tr>
<th>Line Class</th>
<th>Weight</th>
<th>Place</th>
<th>Date</th>
<th>Angler</th>
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<tbody>
<tr>
<td>M - 2 lb</td>
<td>10-1</td>
<td>Daytona Beach, FL</td>
<td>4/16/83</td>
<td>D.M. Fairbanks</td>
</tr>
<tr>
<td>M - 4 lb</td>
<td>10-12</td>
<td>Halifax River, FL</td>
<td>4/12/83</td>
<td>B.L. Britton</td>
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<tr>
<td>M - 8 lb</td>
<td>13-8</td>
<td>Texas City Flats, TX</td>
<td>11/17/84</td>
<td>G. Hernandez</td>
</tr>
<tr>
<td>M - 12 lb</td>
<td>14-0</td>
<td>Ponce de Leon Inlet, FL</td>
<td>8/10/72</td>
<td>A.K. Gibbens</td>
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<tr>
<td>M - 16 lb</td>
<td>12-8</td>
<td>Crystal River, FL</td>
<td>12/8/83</td>
<td>T.E. Thorpe</td>
</tr>
<tr>
<td>M - 16 lb (tie)</td>
<td>12-9</td>
<td>Ponce Island, FL</td>
<td>3/9/86</td>
<td>L.L. Nelson</td>
</tr>
<tr>
<td>M - 20 lb</td>
<td>16-0</td>
<td>Mason’s Beach, VA</td>
<td>5/28/77</td>
<td>W.G. Katko</td>
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<tr>
<td>M - 30 lb</td>
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<td>5/4/69</td>
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<tr>
<td>W - 2 lb</td>
<td>9-10</td>
<td>Texas City Flats, TX</td>
<td>10/27/84</td>
<td>V.J. Hernandez</td>
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<tr>
<td>W - 4 lb</td>
<td>10-6</td>
<td>Melbourne Beach, FL</td>
<td>4/10/84</td>
<td>B.S. Arthur</td>
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<tr>
<td>W - 8 lb</td>
<td>14-6</td>
<td>Texas City Flats, TX</td>
<td>11/17/84</td>
<td>V.J. Hernandez</td>
</tr>
<tr>
<td>W - 12 lb</td>
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<td>5/6/86</td>
<td>B.S. Arthur</td>
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<tr>
<td>W - 16 lb</td>
<td>11-11</td>
<td>Melbourne Beach, FL</td>
<td>1/11/87</td>
<td>B.S. Arthur</td>
</tr>
<tr>
<td>W - 20 lb</td>
<td>10-9</td>
<td>Banana River, FL</td>
<td>7/12/79</td>
<td>J.M. Patton</td>
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<tr>
<td>W - 30</td>
<td>14-0</td>
<td>Stuart, FL</td>
<td>4/25/70</td>
<td>M.C. Albright</td>
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<tr>
<td>T - 2 lb</td>
<td>8-11</td>
<td>South Padre Is, TX</td>
<td>7/8/89</td>
<td>C. Scates</td>
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<tr>
<td>T - 4 lb</td>
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<td>J. Hubbard</td>
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<tr>
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<td>9-0</td>
<td>Jensen Beach, FL</td>
<td>1/2/72</td>
<td>E. Colvin</td>
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Twenty years, additional restrictions will have to be placed on the harvest to maintain the size of this species' population at levels that will insure successful reproduction. There is a limit to the number of trout that can be produced in our estuaries. As the number of anglers increase, the number of fish that each angler takes must decrease, or the condition of the state’s fishery for spotted seatrout will be put in jeopardy.

Spotted seatrout usually are dark grey above with bluish reflections and numerous round black spots irregularly scattered on the back and upper sides. These “speckles” are also seen on the dorsal and caudal fins (Figure 2). As with many other fishes that move between the rivers and the ocean, the overall appearance of the fish will vary in relation to where you catch it.

Spotted seatrout caught in the ocean, in front of the barrier islands, are lighter in color and more silvery than those from the brackish waters of the river systems where the bottom is brown and the color of the water is often like weak tea. This adjustment of general body color enables the fish to blend in better with its surrounding; it reduces the trout’s visibility to both the animals that it eats as well as those that eat it.

Spotted seatrout almost never grow to 20 pounds in weight. The all tackle record documented by the International Game Fish Association (IGFA) is 16 pounds. This rather “healthy” sized trout was caught on May 27, 1977 at Mason’s Beach, Virginia which is on the western shore of Chesapeake Bay. The largest fish registered in South Carolina is an 11 pound 13 ounce spotted seatrout that was caught at Murrells Inlet by A. Pendergrass in November of 1976. The IGFA line class records and tippet class records (fly rod) are presented in Table 1.
THE JUVENILES

In the discussion of juvenile red drum in the first guidebook of this series, I explained that the shallow tidal creeks that cut through the Spartina marshes inside South Carolina’s estuaries are the primary nursery areas for red drum. We have found that juvenile spotted seatrout also use these same creeks as nursery areas from June through November. These shallow, productive creeks are the places where juvenile red drum, spotted seatrout, flounder, shrimp, and many other species find plentiful food as well as protection from large predators.

Spotted seatrout spawn from late April-early May through the first week of September. When water temperatures are cool, spawning is delayed slightly until May; during warm springs, such as 1995, spawning begins in late April. During early evening, sexually active males and females discharge their sperm and eggs into the water. Fertilized eggs float to the surface, and hatch into larvae in about 24 to 36 hours. At first the developing larvae use the yolk of the egg as a food source. When this is exhausted, they feed on very small animals in the water. At a size smaller than a quarter of an inch, they settle in the shallow creeks.

Most juveniles stay in the nursery creeks for about three months. When they reach a length of about 6 to 7 inches, the majority leave for the larger creeks or the main parts of the estuary where they form schools of similar sized individuals.

Our samples taken in the nursery habitat during September had more spotted seatrout than those from any other month (Figure 3). If you examine the sizes of the spotted seatrout from September shown in Figure 4, you will see that this month had newly spawned fishes (~1 inch in length), individuals between two and three inches long which were spawned in August, as well as larger ones (4 to 6 inches long) that were spawned during July.

As the water temperatures begin to cool rapidly in the fall, the abundance of juvenile spotted seatrout declines in the nursery creeks. We found only a handful of juveniles in our samples taken in

![Graph: Juvenile Abundance in Nursery Creeks]

**Figure 3.** The abundance of juvenile spotted seatrout by month in the nursery habitat (= the shallow tidal creeks that meander through the cordgrass marshes). The number of young trout that were caught during each month was expressed as a percentage of all the juvenile trout that we caught in these creeks during our five year sampling period. Almost 80% of all the young trout that we caught were taken from July through September.
the tidal creeks in December, and none in samples taken from January through April.

During the coldest months of the year (January and February), juvenile spotted seatrout (3 to 6 inches in length) were collected only in samples made with shrimp trawl nets towed in the deeper water of the channels of the main rivers and their largest tributaries. When the estuarine waters warm in March and April, these juveniles leave the deep water and form schools whose members are ravenous and grow rapidly.

The diet of spotted seatrout changes as they grow. The smallest individuals, less than one-half an inch long, feed on microscopic animals that are suspended in the water. Small crustaceans, called copepods (Figure 5), make up the greatest percentage of the diet, both in the number of food item and the volume². These small spotted seatrout ate only a few opossum shrimp.

As young spotted seatrout grow, their swimming speed increases, so they are able to catch and eat bigger animals. In the stomachs of those fishes between one-half and 2 1/2 inches, opossum shrimp are very numerous, however, because of their small size, they contribute only a small amount to the bulk of the diet (Figure 6). Grass shrimps are not very numerous, but because of their relatively large size, they comprise a significant percentage of the bulk of

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2 When biologists examine what fishes eat to determine what plants and animals are important in the diet, they count the number of each item and then measure its volume. A fish may eat numerous small items, but their bulk might not equal one big fish or shrimp.
Foods for Spotted Seatrout \(<\frac{1}{2}\) inch in length

Opossum shrimp

Copepods

Percent Number

Percent Volume

Figure 5. Foods of spotted seatrout which were less than one-half an inch in length. Copepods, which are small animals that are distantly related to crabs and shrimp, were the most numerous item in the diet, and contributed the greatest bulk.

Foods for Spotted Seatrout \(\frac{1}{2}\) to \(2\frac{1}{2}\) inches in length

Fish

Grass shrimp

Amphipods

Opossum shrimp

Copepods

Percent Number

Percent Volume

Figure 6. Foods of spotted seatrout which were one-half to \(2\frac{1}{2}\) inches long. Although grass shrimps contributed only about 15% to the total number of food items eaten by the young trout, they made up about 70% of the volume of food because of their large size relative to other things eaten. This would be analogous to a man who sat down to a dinner of steak and peas; the peas would be the most numerous item eaten, but the steak would make up most of the bulk or volume of food in the man's stomach. For this size juvenile trout, the opossum shrimp would be the peas, and the grass shrimps would be the steak.
Foods for Spotted Seatrout $2\frac{1}{2}$ to 6 inches in length

![Food Composition Diagram]

Percent Number

- Fish
- Grass shrimp
- Opossum shrimp
- Copepods

Percent Volume

Figure 7. Foods of juvenile spotted Seatrout which were $2\frac{1}{2}$ to 6 inches in length. Fishes and grass shrimps were the most important foods of spotted Seatrout in this size range.

Food. Small fishes, mostly juvenile spot and mudmichogs (mud-minnows) are also eaten. Spotted juveniles 2.5 to 6 inches in length mainly eat fishes and grass shrimp (Figure 7). These two groups accounted for 86% of the number and 99% of the volume of food eaten by this size group.

THE ADULTS

Spotted Seatrout become sexually mature when they are about one year old. The smallest mature males that we have observed were about 9 inches in length and the smallest mature females were about 10 inches long. As I mentioned in the previous section, the spawning season extends from late April through early September.

When we first began our studies of spotted Seatrout in South Carolina’s waters, we believed that spotted Seatrout spawned around the inlets and along the front beaches of the barrier islands. Several scientists had written articles describing the presence of very small spotted Seatrout in samples of larval fishes taken outside inlets.

They concluded that the mature trout move to these areas to spawn, and the presence of fertilized eggs and very young fish in those areas confirmed their beliefs. It is generally assumed that the spawning area of a species is located near where you catch the eggs and smallest larvae. We later learned that this was not the case.

In the wild, fishes use “environmental cues” such as changes in water temperature and photoperiod (day-length) to ensure that both males and females are ready for the spawning season. The increases in day-length and water temperature in the spring provide signals to spotted Seatrout that the reproductive period is approaching. In males not only do the testis become active and produce the cells that will eventually mature as sperm, but also, muscles that are found in the lining of the gut cavity adjacent to the swim bladder increase in size and the blood vessels become more developed.

The young eggs in the ovaries of the female increase in diameter as they start to mature. The size and weight of the ovaries become greater as the spawning season approaches (Figure 8). The ovaries in older, larger spotted Seatrout contribute a greater percentage of the total weight of the animal than in smaller females (Figure 9). This essentially means that age 2 and older females contribute more eggs per unit of body weight than the one year-old, first maturing females.

The endpoint of the maturation process, spawning, takes place shortly after dusk in aggregations of reproductively active trout at specific locations that are used consistently from year to year. Around