

## Notes

### The Atlantic Spanish Mackerel, *Scomberomorus maculatus*, New to Nova Scotia and Canada

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A single Atlantic Spanish Mackerel, *Scomberomorus maculatus* taken by Victor Kiley off Sauls Island 44° 28' 25"N, 63° 47' 00"W, 4 October 1985, is the first record for Canadian waters. The species has previously been taken north as far as Monhegan Island, Maine. Spots on its sides, a black area on the front of the first dorsal fin and high vertebral count distinguish it from other Canadian Scombridae. Its occurrence in Nova Scotian waters does not appear to be explainable by passive transplant in the Gulf Stream as is invoked for northern records of less active swimmers.

Key Words: Atlantic Spanish Mackerel, Thazard atlantique, *Scomberomorus maculatus*, Sauls Island, Nova Scotia.

A fish taken by Victor Kiley, off Sauls Island, the Prospect area of Halifax County, Nova Scotia at 44° 28' 25"N, 63° 47' 00"W, on 4 October 1985, is here identified as the Atlantic Spanish Mackerel, *Scomberomorus maculatus* (Mitchell, 1815). This substantiates the record, cited from this paper in manuscript, in Scott and Scott (1988) and previously unknown from Canadian waters. The Atlantic Spanish Mackerel has been commonly reported north only to Cape Cod (Collette and Russo 1984), although it has been taken at Lynn, Massachusetts, and at Monhegan Island, Maine (B. B. Collette, personal communications to DEM

1987). The specimen is catalogued as Nova Scotia Museum 985-85-1(1). Its preserved total length was 375 mm, fork length 325 mm, and standard length 310 mm (Figure 1).

The King Mackerel, *Scomberomorus cavalla* (Cuvier, 1829) has been the only species of the genus previously known from the Atlantic coast of Canada (Legendre 1978). The sides in this species are plain silver, without bars or spots, while the sides in the Atlantic Spanish Mackerel are spotted. The Atlantic Spanish Mackerel lacks a dip in the lateral line.

The following account follows the format used

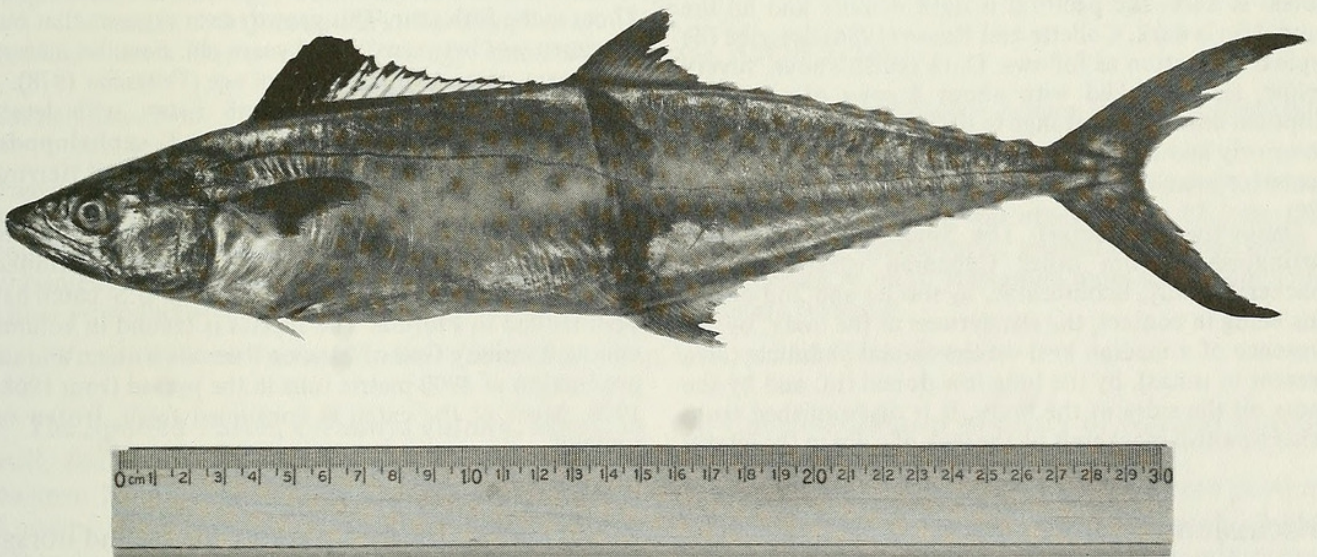


FIGURE 1. Atlantic Spanish Mackerel, *Scomberomorus maculatus*, captured in a gill net, off Sauls Island, Halifax County, Nova Scotia by Victor Kiley on 4 October 1985.



in Leim and Scott (1966). Collette and Russo (1984), Collette and Nauen (1983), and Collette, Potthoff, Richards, Ueyanagi, Russo and Nishikawa (1984) placed the Spanish mackerel genus *Scomberomorus* in the tribe Scomberomo-

rini of the subfamily Scombrinae, itself placed in the mackerel family, Scombridae. In the following description where there is a single count or body proportion it is for our specimen; values in parentheses are from Collette and Russo (1984).

### Atlantic Spanish Mackerel, *Scomberomorus maculatus* (Mitchill 1815), Thazard atlantique

**Description:** Body fusiform, elongate, moderately compressed. Caudal peduncle carries three keels on each side, one median; maximum body depth about 5 times in standard length (SL). Head entering 8 times in SL, pointed, mouth terminal, end of lower jaw extending just past orbit; a row of large triangular knifelike teeth in the jaws, patches of fine teeth on palatines and vomer; no teeth on tongue. Snout shorter than rest of head. Orbit entering 6.6 times in head length, surrounded by transparent eyelid. Gill rakers moderately long, 2 upper plus 10 lower (1-4 + 10-11 = 10-15 total). Two dorsal fins followed by finlets, 1st low, triangular, 18 (17-19) flexible spines, originating over the pectoral fins, 2nd dorsal, 18 soft rays (17-20), short, following immediately after spinous dorsal, followed by 9 (7-9) finlets equally spaced between the 2nd dorsal and the caudal fin; caudal large, lunate; anal 20 (17-20), followed by 9 (7-10) finlets of the same size dorsal finlets; pectoral short, triangular, with 22 (20-23) rays, inserted high on the side just behind the gill opening; pelvics small, ventral, just behind insertion of pectoral fins, 4.9% of fork length (3.6-5.9%). Scales small, skin smooth, no anterior corselet developed. Gas bladder absent. Vertebrae 21 precaudal plus 31 caudal, total 52 (21-22 plus 30-31 for total of 51-53). Lateral line high anteriorly, descending under the 1st dorsal fin, then following along in a midlateral course with small waves.

**Coloration:** The body of our specimen was dark blue above, lighter and silvery on the sides and below with bronze spots (turning dark on preservation), each smaller than the orbit on the sides. The second dorsal, caudal and pectoral fins were bluish black when the specimen was fresh. The 1st dorsal is dark back to the 7th ray, the 2nd dorsal is dark, the pectoral is dark distally and all the caudal fin is dark. Collette and Russo (1984) describe the typical coloration as follows: Dark bluish above, silvery below, sides marked with about 3 rows of round to elliptical dark spots (orange in life); first dorsal fin black anteriorly and at distal margin posteriorly, basal part of posterior membranes white.

**Distinctive Characters:** The Spanish mackerels are distinguished from other Canadian species of the mackerel family, Scombridae, by the 1st and 2nd dorsal fins being in contact, the slenderness of the body, by the presence of a median keel on the caudal peduncle (also present in tunas), by the long low dorsal fin, and by the spots on the sides of the body. It is distinguished from other Spanish mackerels by the lack of a dip in the lateral

line (it descends gradually to the midline of the caudal peduncle), the high number of vertebrae (51-53), more gill rakers (usually 11 or more) than in *S. cavalla* (usually 10 or less), and possession of spots on the sides.

**Size:** The maximum weight in the scientific literature is 4.8 kg, a specimen 77 cm in fork length. But the all-tackle angling record is a 4.97 kg fish taken at Oak Bluffs, Massachusetts. Females grow larger than males.

**Distribution:** The previously known range was reported as seasonal along the Atlantic coast of United States from Cape Cod to Miami, Florida, and the Gulf of Mexico coast from Florida to Yucatan (Collette and Russo 1984). Our record extends the known range northeastwards from Manhegan Island, Maine.

**Biology and Economics:** This species inhabits the upper layers of the sea and migrates in large schools over great distances along the shore. As temperatures warm the Atlantic Spanish Mackerel moves north from Florida to Rhode Island between late February and July and back in fall. It overwinters off Florida. Schools also migrate westward in early spring, reaching Texas in late March.

The Atlantic Spanish Mackerel spawns from May to September in waters of less than 50 m depth over the inner continental shelf of Texas, from July to September off Florida, and from late August to late September in the northern part of its range. Eggs, 1 mm in diameter, hatch in 15½ hours at 29°C (Fritzsche 1978). Larvae have been found in temperatures between 19.6-29.8°C and salinities of 28.3-37.4 ppt. The young grow to 18 cm in the first year, 32 cm in the second, 46 in the third, 56 in the fourth and to 57 cm in the fifth year. This growth data suggests that our specimen was between 3 and 4 years old. Females mature by 3 years, some at 1 or 2 years of age (Fritzsche 1978).

Food consists mainly of small fishes with lesser quantities of penaeoid shrimps and cephalopods. Clupeoids such as Menhaden, Alewives, Thread Herring and anchovies are important.

The Atlantic Spanish Mackerel is a valued fish to recreational and commercial fisheries in the United States and Mexico. Over 92% of the total U.S. catch has been landed in Florida. The species is second in volume among Mexico's Gulf of Mexico fisheries with an annual production of 4900 metric tons in the period from 1968-1976. Most of the catch is consumed fresh, frozen or smoked.

### Discussion

Our specimen can be distinguished from the only other known Canadian species of Spanish mackerel by the presence of spots, by the black area on the front of the first dorsal fin, the straight

lateral line without a dip under the second dorsal fin, and the caudal vertebrae counts. Our specimen does not differ in any significant way from the description of the species in Collette and Nauen (1983).



It is difficult to explain the occurrence of this specimen in Nova Scotia in October. Migrations northwards take place in the United States between late February and July with return in the fall; the Nova Scotian occurrence does not fit in with the known migratory pattern. The occurrence of other tropical fishes in Nova Scotian waters has been explained by postulating transport northwards in the Gulf Stream and shorewards in gyres which break off the Stream. Passive transport does not seem as applicable to an active swimmer such as an Atlantic Spanish Mackerel.

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We thank Victor Kiley who caught this specimen and generously furnished it to J. G., Ron Merrick who took the photograph and Mrs. Jadwiga Frank who took the x-ray.

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## Courtship and Nesting Records for Spotted Turtles, *Clemmys guttata*, in the Mer Bleue Bog, southeastern Ontario

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Chippindale, Paul. 1989. Courtship and nesting records for Spotted Turtles, *Clemmys guttata*, in the Mer Bleue Bog, southeastern Ontario. Canadian Field-Naturalist 103(2): 289-291.

Two instances of courtship between Spotted Turtles, *Clemmys guttata*, in the Mer Bleue bog are described. On 30 May 1985 an adult male was seen nudging and biting an adult female, but no mating was observed; on 17 June 1985 courtship and brief mating of an adult pair were noted. A single nesting record for *C. guttata* in the Mer Bleue is presented: an adult female laid one egg in a shallow hole in a hummock of moist sphagnum moss on 29 June 1986. Other reproductive behaviour records for this species in Ontario are reviewed.

Key Words: Spotted Turtle, *Clemmys guttata*, courtship, nesting, Mer Bleue, Ontario.

The Spotted Turtle, *Clemmys guttata*, occurs in still, shallow-water habitats throughout much of eastern North America. In Canada, *C. guttata* is known from numerous locations in southern Ontario, but is more rare and possibly disjunct in scattered occurrences in eastern Ontario and Quebec (Cook et al. 1980; M. J. Oldham. 1982. The status of the spotted turtle (*Clemmys guttata*)

in Canada. Ontario Ministry of Natural Resources, Toronto. 88 pages).

Populations in the central and southern portions of this turtle's range have been well studied (e.g. Ernst 1976), but little is known of the ecology and, in particular, of the reproductive habits of this species at the northern periphery of its distribution. This note describes only the third observation





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