

THE CUBERA SNAPPER, *LUTJANUS CYANOPTERUS* (CUVIER) (PISCES: LUTJANIDAE) NEW TO NOVA SCOTIA AND CANADA

A large fish, 1.124 metres long, of a species and family previously unknown in Canada, was caught in a fish trap at Tuffin Island, off *Ecum Secum*, Nova Scotia, 17 September 1975 (Fig 1). This specimen is a cubera snapper, *Lutjanus cyanopterus* (Cuvier, in Cuvier and Valenciennes, 1828), originally described from Brazilian waters, but later reported from the Caribbean, the Gulf of Mexico and north to lower Chesapeake Bay, Virginia. The known range of the species is extended northward 1400 km. The description follows the format of Leim and Scott (1966).

There are several important reviews of the Lutjanidae of the western Atlantic. Guides and descriptive texts have been prepared (Anderson 1967; Hardy 1978; Vergara 1977).

The specimen is catalogued as NMC75-1962 in the National Museum of Natural Sciences, National Museums of Canada, Ottawa, Ontario.

Family Lutjanidae

Snappers

A large family of bottom-associated predatory fishes, predominantly marine and tropical but frequently entering estuaries and temperate waters. They usually feed at night on crustaceans and fishes. The flesh of lutjanids, of a delicate taste, is highly esteemed, although some species have been reported to cause ciguatera poisoning. Several thousand tons are caught annually in the tropical Western Atlantic and north to Cape Hatteras, North Carolina. Small pelagic eggs and larvae are produced.

The family is composed of generalized predators often with elongate snout and many with large teeth, typically with 2 weak opercular spines, spinous and soft parts of dorsal fin united, three anal fin spines and ctenoid scales. The pelvic fins are thoracic with 1 spine and 5 soft rays, the caudal fin varies from truncate to deeply forked. The gill membranes are separate and free from the isthmus. The family includes about 17 genera and about 140 nominal species (excluding the Caesionidae).

The following description is based on our specimen with comparative notes from previous records.

Cubera Snapper

Vivaneau Cubéra

Lutjanus cyanopterus (Cuvier, 1828)

Description

Body robust, the greatest depth, at the beginning of the dorsal fin, 3 times in standard length (=SL), compressed; caudal peduncle deep, depth 9.5 in SL. Head large, 2.7 in SL, pointed, snout long, 2.5 in head length (=HL); upper limb preoperculum very finely serrated, coarser teeth at angle of preoperculum; mouth terminal, slightly angled, hind tip of upper jaw reaching to half way between posterior nostril and orbit (much further on smaller specimens, *vide* Dr. W. Anderson, at least to mid-orbit), length upper jaw 2.3 in HL; jaws with large canine teeth, 1 large and 1 small in upper jaw, 2 large and 4 moderate in lower jaw, v-shaped (frequently triangular *vide* Dr. W. Anderson) patch of villiform teeth on vomer without posterior extension; oval-shaped patch villiform teeth on tongue; lower jaw ex-

tends slightly beyond upper, but not always; orbit small, diameter 9.7 times in HL. Fins: Dorsal (1)X, 14, spinous and soft-rayed portions united but deeply notched, origin over base of pectoral fin; caudal fin large, emarginate; anal III, 8, soft portion distally rounded, not pointed; pectoral fins pointed, falcate, 17 rays, length 4.2 in SL; pelvic fins thoracic, 1.5, length 5.6 in SL. Lateral line present, complete, arched parallel to dorsum then descending to midline on caudal peduncle. There are about 52 rows of scales with approximately 43 with pores, and 8 rows above lateral line. Scales on bases of dorsal, caudal, anal and pectoral fins. Scales on opercle, subopercle and, in 8 rows, on cheeks. Gill rakers denticulate, 5 rudimentary on upper arch. 7 developed and 9 rudimentary on lower arch.

Colouration

In this preserved specimen head and body are dark brown above, lighter on abdomen, inter-radial membranes of soft dorsal and anal fins dark. No dark spots were observable elsewhere. Vergara (1977) reported colour of fresh specimens as dark grey with reddish tinges on back and upper sides; pectoral fins almost colourless, anal and pelvic fins somewhat reddish, and dorsal and caudal fins greyish. Walls (1975) included a colour photograph showing the dark inter-radials of the soft dorsal and anal fins, a dark caudal fin and silver-grey scales with dark edges.

Distinctive Characters

Distinguished from other fishes in the region that have united dorsals provided with soft and spinous rays by the long triangular snout, upper jaws that do not reach posteriorly to the eye (but at least to mid-orbit in small specimens) and slipping up under the preorbital bones when the jaws are closed, the large canine teeth in the jaws and the long pointed pectoral fins.

Size

Reported elsewhere to more than 1002 mm TL (Böhlke & Chaplin, 1968) and more than 45 kg, and to attain a maximum of 1600 mm (Vergara, 1977). Our specimen measured 930 mm SL, 1077 mm FL (fork length), 1124 mm TL, and weighed 19.1 kg.

Distribution

Known in the western Atlantic from Brazil (the type locality) north through the Caribbean, West Indies, Atlantic coast of Mexico (Castro-Aguirre 1978), rare in northern Gulf of Mexico (Moe 1968), from Florida (Rivas 1949) north to lower Chesapeake Bay, Virginia (Hardy 1978), and from Cape Lookout to Wrightsville, North Carolina (Schwartz 1972). Specimens were also reported off Charleston, North Carolina (Schwartz 1972). Specimens were also reported off Charleston, North Carolina and in Mill Pond, near Chatham, Massachusetts (clipping seen by Dr. W. D. Anderson, Jr., specimen not examined).

Canadian Distribution

Known only from the present record from Tuffin Island, Halifax County, 4.8 km south of Ecum Secum, Nova Scotia (44°55'N, 62°10'W).

Biological and Economic Notes

Vergara (1977) reported large specimens mainly along submarine ledges over rocky bottoms or around reefs, at depths usually of no more than 40 m; small specimens often inhabit mangrove-lined coasts. Vergara (1977) reported that it fed

mostly on fishes; Böhlke and Chaplin (1968) listed crustaceans and fishes. Juveniles are reported from estuarine areas in rivers, streams and canals or shallow turtleggrass beds at 3.7 - 37 ppt salinity and 24.5 - 31.0°C; nothing is known of spawning, eggs, larvae, or age and size at maturity (Hardy 1978).

The cubera snapper is caught mainly on hook and bottom longlines; also with gill nets and occasionally with bottom trawls, or with spears by skin divers. It is marketed fresh and frozen; its flesh is of good quality, although large individuals taken from toxic sectors of reefs may cause ciguatera poisoning when eaten (Randall 1968).

Several tropical fish species have been recorded less than half a dozen times on the Atlantic coast of Canada. These may be larvae or juveniles in which case the simplest explanation is northward expatriation through Gulf Stream currents, then shorewards to the Canadian coast by eddies from the Gulf Stream (Gilhen, Gruchy & McAllister 1975). This would also provide a mechanism for transport of adults of tropical pelagic fishes.

The explanation for occurrences of large benthic predatory fishes is less certain. Transport of eggs or larvae with development and maturation in Canadian waters is less probable given the tropical temperatures, approximately 24.5 - 31.0°C (Hardy 1978), at which juveniles of cubera snappers normally occur.

Robust fishes one metre long seem unlikely to be transported in ballast water from the tropics and discharged in Canadian waters since discharge pipes are commonly 15 cm in diameter. But on the other hand, the movement of large benthic fishes, some 2000 km northward unto unusual environments, is improbable. In this case, the fish would have either to cross the cold waters of the Bay of Fundy or those between Georges and Browns Banks to reach the outer coast of Nova Scotia. Perhaps the determination of growth rates from scale or otoliths will eventually help solve this enigma, although at present nothing is known of growth rates of the cubera snapper; a sudden slowing of the growth rate relative to tropical specimens might suggest at what age it moved into northern waters where its growth rate would presumably decrease because of lower temperatures.

Acknowledgements

Jadwiga Frank photographed and weighed the specimen. The specimen was caught by Bernell, Neil, Dennis, Harvey and Winston, all of the Jewers family, and saved by Jewers Fisheries Co-op. Jim Cameron, Fisheries Officer, recognized its rarity and advised the first author of its capture. The authors wish to warmly thank these persons. Dr. William D. Anderson, College of Charleston, Charleston, North Carolina, reviewed the manuscript and gave numerous helpful suggestions.

References

- Anderson, W.D., Jr.** 1967. Field guide to the snappers (Lutjanidae) of the western North Atlantic. *U.S. Fish. Wildlife Serv. Circular* (252): 1-14.
- Böhlke, J.E. and Chaplin, C.C.G.** 1968. *Fishes of the Bahamas and Adjacent Tropical Waters*. Academy of Natural Sciences of Philadelphia.
- Castro-Aquirre, J.L.** 1978. Catalogo sistematico de los Peces marinos que penetran a las aguas continentales de Mexico con aspectos zoogeograficos y ecologicos. Direction General del Instituto Nacional de Pesca. Mexico. Serie Cientifica (19): 1-298.
- Cuvier, G.L.C.F.D. and Valenciennes, A.** 1828. *Histoire Naturelle des Poissons*. F.G. Levrault, Paris.

- Gilhen, J., Gruchy, C.G., and McAllister, D.E.** 1976. The sheepshead, *Archosargus probatocephalus*, and the feather blenny, *Hypsoblennius hentzi*, two additions to the Canadian Atlantic ichthyofauna *Canadian Field-Nat.* 90: 42-46.
- Hardy, J.D., Jr.** 1978. Development of fishes of the mid-Atlantic Bight. Volume III. U.S. Dept. Interior, Fish and Wildlife Service. 394 pp.
- Leim, A.H. and Scott, W.B.** 1966. Fishes of the Atlantic coast of Canada. *Bull. Fish. Res. Board Can.* (155): 1-485.
- Moe, A.M., Jr.** 1968. First Gulf of Mexico record for *Lutjanus cyanopterus*. *Quart. J. Fla. Acad. Sci.* 29: 285-286.
- Randall, J.E.** 1968. *Caribbean Reef Fishes*. T.F.H. Publications Inc. Jersey City, New Jersey. 318 pp.
- Rivas, Luis R.** 1949. A record of lutjanid fish (*Lutjanus cyanopterus*) for the Atlantic coast of the United States, with a note on related species of the genus. *Copeia* (2): 150-152.
- Schwartz, F.J.** 1972. Recent occurrences of cubera snappers (Pisces, Lutjanidae) in North Carolina Atlantic Ocean waters. *J. Elisha Mitchell Sci. Soc.* 88(4): 252-254.
- Vergara, R.R.** 1977. Lutjanidae, snappers. FAO Species Identification Sheets, Western Central Atlantic. Rome. 38 pp.
- Vergara, R.R.** 1980a. Consideraciones filogeneticas sobre la especies cubanas del genero *Lutjanus* (Lutjanidae, Perciformes, Teleostei). Academia de Ciencias de Cuba, Instituto de Oceanologia, Informe Cientifico Tecnico (113): 1-30.
- Vergava, R.R.** 1980b. Estudio fenetico de las especies cubanas del genero *Lutjanus* (Pisces: Perciformes). *Ibid.* (114): 1-11.
- Walls, J.G.** 1975. *Fishes of the Northern Gulf of Mexico*. T.F.H. Publications, Neptune City, New Jersey.

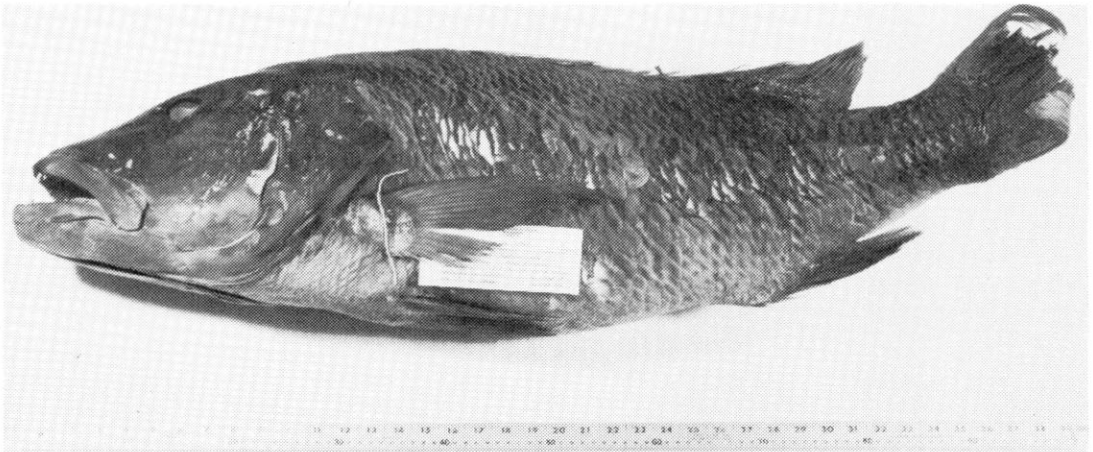


Fig 1 Cubera snapper, *Lutjanus cyanopterus* (Cuvier), caught at Tuffin Island, Halifax County, 4.8 km south of Ecum Secum, Nova Scotia, 17 September 1975, by Bernell, Neil, Dennis, Harvey and Winston Jewers.