Atlantic Ocean Occurrences of the Sea Lamprey, *Petromyzon marinus* (Petromyzontiformes: Petromyzontidae), Parasitizing Sandbar, *Carcharhinus plumbeus*, and Dusky, *C. obscurus* (Carcharhiniformes: Carcharhinidae), Sharks off North and South Carolina

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ABSTRACT—Sandbar and dusky sharks captured in 1993 in western Atlantic Ocean waters off North and South Carolina were parasitized by sea lampreys. All lampreys were females ranging from 165 to 343 mm total length. Removal of an attached lamprey revealed round, reddish and/or bleeding areas on a shark's body. Blood oozing from a lamprey's cloaca indicated that feeding was occurring or had occurred.

The anadromous parasitic sea lamprey (*Petromyzon marinus*) is widely distributed on both sides of the Atlantic Ocean. It occurs off North America from Labrador southward to Florida, and along eastern Europe from Varanger Fjord in Norway to the western Mediterranean (Beamish 1980). Apparently it also formerly occurred in the Gulf of Mexico (Vladykov and Kott 1980, Gilbert and Snelson 1992). Lampreys are known from marine waters to depths of 4,099 m (Haedrich 1977). Dempson and Porter (1993) note other western Atlantic captures of sea lampreys in deep open ocean waters. Excellent reviews of sea lamprey biology can be found in Hardesty and Potter (1971) and in the Proceedings of the Sea Lamprey International Symposium (1980). We add the sea lamprey as an external parasite of sharks and present meristic and morphometric data for specimens captured off North and South Carolina.

Sea lampreys prey on a variety of fishes in freshwater and marine habitats (Bigelow and Schroeder 1948). Sea lampreys have not been reported from ocean habitats off North Carolina (personal observation) or South Carolina (S. Van Sant, South Carolina Marine Resources Center, personal communication), although lamprey captures are known from inland North Carolina streams and Albemarle Sound (Smith 1907, Menhinick 1991). Schwartz et al. (1982) reported a 140-mm total length (TL), 3.9-g specimen (UNC 8501) entangled in a gill net on the west side (Station 19 west) of the Cape Fear River, 4 km north of Southport, North Carolina, from waters of 10.2C and 10 ppt salinity on 19 February 1974. Whether it was attached to a fish caught in the net was unknown.

PREVIOUS SEA LAMPREY–SHARK PARASITISM RECORDS

We know of two verified records of sea lamprey–shark parasitism. One involves a female sea lamprey and a basking shark (*Cetorhinus maximus*), specimen 965-2-3-1, of the Nova Scotia Museum (Bigelow and Schroeder 1948). The lamprey was 290-mm TL when preserved in formalin. The 7.6-m-long basking shark, caught 29 June 1965 in a gill net off Hopson Island (near Prospect), Halifax County, Canada, was alive when the lamprey was removed. Attachment was just above and anterior to the base of the anal fin, although sea lampreys often attach to pectoral fins and along the dorsal and body sides (Cochran 1985, 1986). The second was a record of two adult lampreys, 180- and 250-mm TL (USNM 130791) taken from an unknown species of shark captured 3 June 1885 off Cape Charles, Virginia, at Albatross Station 2422 at 37°08′30′′N, 74°33′30′′W (Jenkins and Burkhead 1993).

RECENT SEA LAMPREY–SHARK PARASITISM RECORDS

South Carolina—We captured a female sea lamprey (UNC 17398), 168-mm TL, 8.8 g, on 6 February 1993 while longlining 69 km off South Carolina in 31.1 m of water. Set location began at 33°10.9'N, 78°17.45'W and ended at 33°00'N, 78°24.08'W. It was still attached to a 1280-mm fork length (FL), male sandbar shark (*Carcharhinus plumbeus*) along the shark's right lateral flank midway between the rear tips of the pelvic and dorsal fins on the gray portion of the skin. Removal of the lamprey revealed a round reddish area on the side of the body, which indicates that it had been attached for some time before the shark's capture. Blood oozed freely from the female lamprey's cloacal opening.

North Carolina—We know of five recent occurrences (March 1993) of female sea lampreys parasitizing sharks captured from two different locations off North Carolina; the host in one case was a 3-m-FL dusky shark (*Carcharhinus obscurus*), the others three 3-m-FL sandbar sharks (*C. plumbeus*). A dusky shark and one sandbar shark, captured by fishermen longlining 74-km east-southeast off Masonboro, North Carolina, carried one feeding lamprey attached near the cloaca of each shark. But the lampreys were not retained by the fishermen who captured the sharks.

Three additional female sea lampreys (UNC 17403, Table 1) 165-, 178-, and 343-mm TL, weighing 6.4, 9.5, and 70.7 g, respectively, were captured 23 March 1993 during nighttime longlining sets 46.2 km east of Cape Lookout in 31–36-m waters. All three specimens parasitized 3-m-TL female dusky sharks, one was attached to a pelvic fin, the others to the white skin of the cloacal area. No masses were taken of any shark at sea. Body proportions of the North Carolina preserved sea

Table 1. Meristic and morphometric data for sea lampreys captured parasitizing dusky and sandbar sharks caught off South Carolina (UNC 17398) and North Carolina (17403). 1993. Lengths are expressed as a percentage of the total length.

Lengths (% total length)	Female Sea Lampreys			
	UNC 17398[1]		UNC 17403[2]	
Predorsal	14.9	15.3	15.2	13.1
Branchial	10.8	8.7	8.8	8.7
Disc	9.0	9.3	9.3	8.5
Eye	3.3	3.0	2.2	2.3
Trunk	45.1	46.1	49.7	53.6
Tail	29.1	29.8	26.2	24.5
Myomere	68	66	67	—[3]
Total Length (mm)	168	165	178	343

[1]Host female sandbar shark.
[2]Hosts all female dusky sharks.
[3]Dark adult body coloration prevented accurate myomere count.

lampreys (Table 1) were larger than those reported for a 136-mm-TL specimen from Florida (Vladykov and Kott 1980).

Conclusions

Sea lamprey–shark parasitism occurrences are rarely reported because fishermen or scientists often think that a reddened bleeding area on the body is simply a bruise rather than a wound caused by a lamprey. Likewise, a lamprey might have fallen off once a shark was landed, making the association of the injury with a lamprey difficult. Information on sea lampreys from sharks caught at sea may shed more information on their occurrence, seasonality, water depth frequented, host preferences, and biology of sea lampreys than is presently known. Lamprey parasitism may be more damaging to marine fishes than now suspected.

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STATUS OF THE PRESUMED ZOARCID FISH *OPHIDIUM PARRII* AND ITS IDENTITY WITH *LIPARIS KOEFOEDI*, LIPARIDAE.

One hundred and fifty years ago Lieutenant James C. Ross made several zoological collections in the eastern Canadian Arctic while accompanying Captain William E. Parry's expedition on the ships FURY and HECLA in search of the North-West Passage. Among common Arctic fishes Ross (1826) obtained, swimming among the ice of Baffin Bay and Prince Regent Sound, a 14-cm fish which he described as a new species, *Ophidium parrii*. Other authors, lacking a type specimen, have not applied the name to new material, and have been uncertain of its taxonomic placement. Herein we suggest a solution to the mystery and offer a resolution to the nomenclatural problem thus created.

History.—It was on the third of his arctic voyages that James Clark Ross (not to be confused with his uncle, Captain John Ross) discovered the new species, subsequently described in honor of Captain Parry. The description is reproduced as Fig. 1 because of its relevance to the problem and its rarity in libraries. Apparently the type was not kept, for Günther (1862), in his catalogue, did not list it, referring solely to Ross's description. Subsequent searches by F. Johansen in 1922, G. Palmer in 1962 and the junior author in 1973 failed to turn up a specimen under the original or other names.

Ophidium parrii was next recorded by Ross (1828) from Spitzbergen on the basis of a specimen, which by its pectoral-fin ray count (28 instead of 37), belongs to a different species. Finally Ross (1835) reported a 10-cm specimen ejected from the stomach of a Glaucous Gull shot near Felix Harbour, on the east side of Boothia Peninsula in the central Canadian Arctic. Johansen (MS) examined this specimen (Günther's, 1862, specimen 1h), and identified it as *Gymnelis viridis*.

Günther (1862), though uncertain of the family, established a new genus, *Uronectes*, in Lycodidae (= Zoarcidae) for *Ophidium parrii* to draw attention to it. Gill (1884), presumably because *Uronectes* Günther, 1862, was preoccupied by the crustacean genus *Uronectes* Bronn, 1850, proposed a replacement name, *Lycocara*. The species has been cited under that genus, in the Zoarcidae, in subsequent papers by most authors. With over 1500 collections from the Canadian Arctic, it is unlikely that a surface dwelling species like *Ophidium parrii* has not been rediscovered; more likely it has not been recognized due to lacunae in the original description.

Identification.—Hofsten (1919) and Johansen (MS) believed that *Ophidium parrii* was actually *Gymnelis viridis*, a common zoarcid of

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