

# Additional Records of Bigeye Fishes (Priacanthidae) from the Atlantic Coast of Nova Scotia, Including the First Record of the Glasseye Snapper, *Heteropriacanthus cruentatus*

BRIAN W. COAD<sup>1</sup> and JOHN GILHEN<sup>2</sup>

<sup>1</sup>Canadian Museum of Nature, P. O. Box 3443, Station D, Ottawa, Ontario K1P 6P4

<sup>2</sup>Nova Scotia Museum of Natural History, 1747 Summer Street, Halifax, Nova Scotia B3H 3A6

Coad, Brian W., and John Gilhen. 2002. Additional records of bigeye fishes (Priacanthidae) from the Atlantic coast of Nova Scotia, including the first record of the Glasseye Snapper, *Heteropriacanthus cruentatus*. Canadian Field-Naturalist 116(4): 632–635.

Three species of the bigeye fish family, Priacanthidae, are recorded from Nova Scotia based on new material. The specimens are all juveniles, one of the Glasseye Snapper, *Heteropriacanthus cruentatus*, eight of the Bigeye, *Priacanthus arenatus*, and two of the Short Bigeye, *Pristigenys alta*. The record of the Glasseye Snapper is the first for Canada and a northward range extension of over 1000 km for the species. A key to the four species of western Atlantic bigeyes is given.

Key Words: Glasseye Snapper, *Heteropriacanthus cruentatus*, first record, Nova Scotia, Canada, Bigeye, *Priacanthus arenatus*, Short Bigeye, *Pristigenys alta*, Priacanthidae

The bigeyes (Priacanthidae) are a small family of carnivorous fishes, feeding on coral reef fishes, crustaceans and worms. As their name indicates they have large eyes. The mouth is also large and very oblique with the lower jaw projecting. The scales are small and strongly ctenoid making bigeyes rough to the touch. Scales cover the body, head, the maxilla bone of the upper jaw and the lower jaw. The dorsal fin usually has 10 spines followed by 10–15 soft rays without a strong notch between spines and soft rays. The anal fin has 3 spines and 9 to 16 soft rays. The pelvic fin has one spine and five soft rays and is connected to the body by a membrane. There are 14 branched caudal fin rays. Bigeyes are usually bright red in colour (Coad et al. 1995). Bigeye fishes are usually nocturnal and are common on coral reefs and around rocky areas where they hide in crevices during the day. Adults may be found deeper than 400 metres. Young bigeyes are associated with floating debris near the surface in open ocean and are widely dispersed by ocean currents (Coad et al. 1995). Their occurrence along the coast of Nova Scotia is attributed to transportation within eddies of Gulf Stream surface water. Like a number of juvenile tropical fishes known to occur during the summer months along the coast of Nova Scotia, they survive until autumn and die when water temperatures drop.

The bigeye family of fishes is primarily circum-tropical in distribution. There are about 18 species known from the Atlantic, Indian and Pacific oceans. Only four species occur in the western Atlantic: Bulleye, *Cookeolus japonicus* (Cuvier, 1829), Bigeye, *Priacanthus arenatus* Cuvier, 1829, Short Bigeye, *Pristigenys alta* (Gill, 1862) and Glasseye Snapper, *Heteropriacanthus cruentatus* (Lacepède, 1801). The first three species were reported from

Nova Scotia by Scott and Scott (1988) and Coad et al. (1995). The latter species is reported for the first time from the Canadian Atlantic.

Bigeye fishes are rarely recorded from the Atlantic coast of Nova Scotia. MacKay and Gilhen (1973) first recorded the capture of a 147.0 mm total length Bulleye [*Cookeolus boops* (Forster in Bloch and Schneider, 1801) = *Cookeolus japonicus* (Cuvier, 1829)] from Indian Point, St. Margarets Bay, Halifax County, on 16 September 1971 and a 41.7 mm approximate standard length Bigeye removed from the pharynx of a Pollock, *Pollachius virens* Linnaeus, 1758, caught on a hook and line at Gulch Shoal, off Hopson Island, Halifax County, on 8 September 1972. Scott and Scott (1988) included these and recorded a third species, a 22 mm total length Short Bigeye from near Corsair Canyon at 42°33'N, 64°35'W.

In this paper, we record eight more specimens of Bigeye, two more specimens of Short Bigeye, and the first Canadian record of the Glasseye Snapper, all from the coastal waters of Nova Scotia in the 1990s. The record of the Glasseye Snapper confirms the presence of all four western Atlantic bigeye species in Canada.

## Catalogue Data

Glasseye Snapper, *Heteropriacanthus cruentatus* (Figure 1)

NSM (Nova Scotia Museum) 10037, 63.0 mm SL (standard length), from a mackerel trap, Red Bank, St. Margarets Bay, Halifax County, 44°37'32"N, 64°01'55"W, 18 October 1990, Eric Newton and Brian Coolen. This specimen is the first Canadian record.



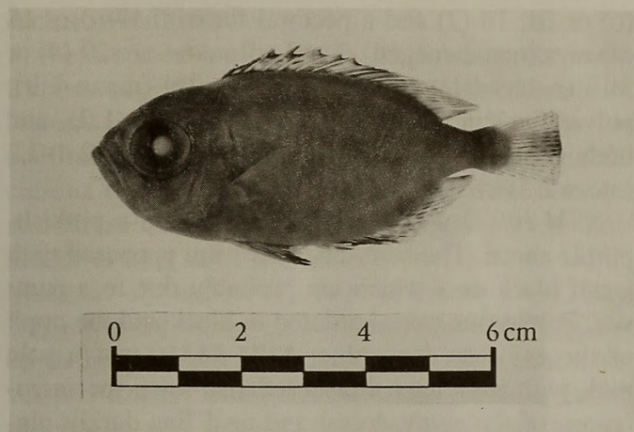


FIGURE 1. A juvenile (63.0 mm SL) Glasseye Snapper, *Heteropriacanthus cruentatus*, first record for the Canadian Atlantic, captured in a mackerel trap at Red Bank, St. Margarets Bay, Halifax County, Nova Scotia on 18 October 1990 by Eric Newton and Brian Coolen (NSM10037; negative N-24, 439).

Bigeye, *Priacanthus arenatus* (Figure 2)

NSM 10092, 70.6 mm SL, caught alive in a mackerel trap set off Red Bank, St. Margarets Bay, Halifax County, 44°37'32"N, 64°01'55"W, 17 September 1990, Eric Newton and Brian Coolen. This specimen is the second record for Nova Scotia.

NSM 85350, 45.7 mm SL, found freshly dead at the strand line on the day after Hurricane Edward on Hirtle Beach, Lunenburg County, 44°27'05"N, 64°21'18"W, 3 September 1996, J. Sherman Bleakney.

NSM 11796, 52.8 mm SL, NSM 11797, 50.2 mm SL and NSM 11798, 55.7 mm SL, caught alive mixed in with a large school of Butterfish, *Peprilus*

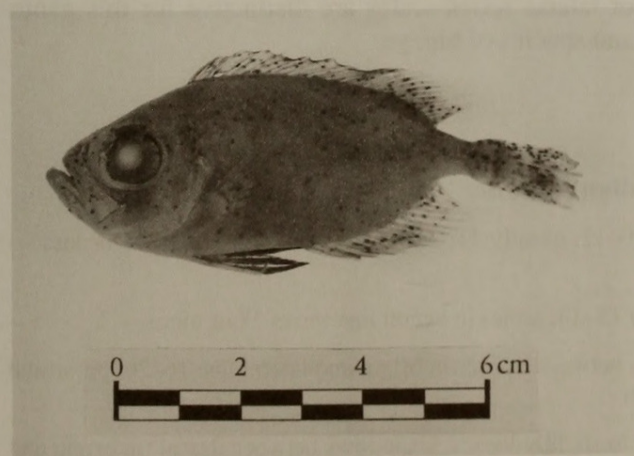


FIGURE 2. A juvenile (70.6 mm SL) Bigeye, *Priacanthus arenatus*, second record for the Canadian Atlantic, captured in a mackerel trap at Red Bank, St. Margarets Bay, Halifax County, Nova Scotia on 17 September 1990 by Eric Newton and Brian Coolen (NSM 10092; negative N-24, 438)

*triacanthus* Peck, 1804, in a mackerel trap set off Joe Shatford's Lobster Pound, Fox Point, St. Margarets Bay, Lunenburg County, 44°37'01"N, 64°03'00"W, 10 October 1996, Eric Newton and Brian Coolen.

NSM 85345, NSM 85346 and NSM 85347, 43.9–64.4 mm SL, washed up at high water mark, presumed to have been killed by a drop in sea temperature from 20°C to 14°C owing to a coastal upwelling occasioned by southwesterly winds, Clam Harbour Beach, Halifax County, 44°43'30"N, 62°53'25"W, 10 September 1999, Patrick Ryall.

Short Bigeye, *Pristigenys alta* (Figure 3)

NSM 10033, 19.4 mm SL, found freshly dead on sandy shore, Sambro Creek area, Indian Harbour, Halifax County, 44°28'17"N, 63°37'00"W, 29 August 1990, Daniel Peters. This specimen is the second record for Nova Scotia

NSM 10035, 25.3 mm SL, scooped up alive in a bucket of seawater, off Hopson Island, vicinity of Prospect, Halifax County, 44°27'00"N, 63°47'30"W, 31 August 1990, Ron Duggan.

Descriptions of the Canadian Specimens

Detailed accounts of the anatomy, colour and distribution of these species may be found in Caldwell (1962) and Starnes (1988). All specimens are juveniles and differ in colour from adults.

*Heteropriacanthus cruentatus*

The single specimen has a dorsal fin with rays X, 13 (10 spines and 13 soft rays), an anal fin with rays III, 14, a pectoral fin with 18 rays, 85 lateral series scales, 11 scales between the dorsal origin and the lateral line, and 23 total gill rakers. Head length (HL) in standard length (SL) is 2.8, head width in

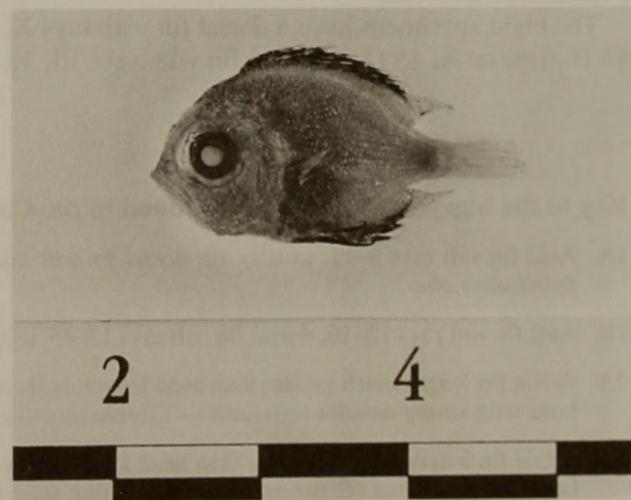


FIGURE 3. A juvenile (19.4 mm SL) Short Bigeye, *Pristigenys alta*, second record for the Canadian Atlantic, found freshly dead on sandy shore, Sambro Creek, Halifax County, 29 August 1990 by Daniel Peters (NSM 10033; negative N-25, 618).



HL is 1.9 (in SL 5.3), body width in SL is 5.6, head depth in SL is 2.5, body depth at the sixth dorsal fin spine level is 2.2 in SL, snout length in HL is 3.7 (10.3 in SL), orbital diameter in HL is 2.1 (6.0 in SL), interorbital distance in HL is 3.0 (8.3 in SL), length of the lower jaw in HL is 1.7 (4.7 in SL), pectoral fin length in HL is 1.9 (5.3 in SL), pelvic fin length in HL is 1.5 (4.2 in SL), caudal peduncle length in SL is 6.9, caudal peduncle depth in SL 10.3, longest dorsal fin spine in SL is 6.1, longest dorsal fin soft ray in SL is 6.6, and longest anal fin soft ray in SL is 6.7.

This specimen lacks scales on the chin and on the preopercle bone posterior to the shelf overlying the sensory canal, in contrast to the superficially similar *Priacanthus arenatus*. When freshly frozen it was a bright blue over the back and upper sides down to below the lateral line. The sides, from the back of the head to the base of the caudal fin, had six dark, uneven bands, interspersed with subtly paler elongate blotches which extend from the back to below the lateral line. The lower sides and belly were silvery-white with a distinct pinkish-red sheen. There were three small, dark-blue blotches on the lower sides above the anal fin. The eyes were a glossy orange-red. Fins were greyish at the base, with orange-brown spots, becoming blue-black along the outer edge, most prominently at the posterior edge of the caudal fin. In the preserved fish, the caudal fin shows rows of spots not seen in the *Priacanthus arenatus* juveniles. The dorsal and anal fins have a similar pigmentation to *P. arenatus*.

The northernmost record of this species was a single record of a juvenile from off Cape May, New Jersey, itself a northward range extension from Southern Florida (Caldwell 1962; Starnes 1988). The Canadian record is a range extension of over 1000 km.

#### *Priacanthus arenatus*

The eight specimens have a dorsal fin with rays X, 14 (6 fish) or X, 15 (2), an anal fin with rays III, 15

(6) or III, 16 (2) and a pectoral fin with 17 (3) or 18 (4) rays (one damaged). Total gill rakers are 29 (4) or 30 (4). Head length in SL is 2.8–2.9 (mean 2.9), pelvic fin length in HL is 1.1–1.4 (mean 1.2), and body depth at the sixth dorsal spine level is 2.4–2.7 (mean 2.5) in SL.

*NSM 10092* was a bright orange with a pinkish-purple sheen. The body and fins were peppered with small black dots which are probably due to a parasite. Pelvic fins were bordered in black and the pupil of the eye was deep blue. *NSM 85350* was a pale pink with rosy bars. Preserved fish have the membranes of the spiny dorsal and anal fins darkly pigmented while the anterior and basal parts of the soft dorsal and anal fins are less darkly pigmented. The pelvic soft rays and membranes are very darkly pigmented while the spine is contrastingly clear. The body is brownish dorsally, silvery on the sides from scale reflections and silvery to whitish on the belly. The caudal fin may have a posterior margin band, particularly evident centrally.

#### *Pristigenys alta*

The two specimens have a dorsal fin with rays X, 11 (2), an anal fin with rays III, 10 (2), and a pectoral fin with 17 (1) or 18 (1) rays. Total gill rakers are 26 (2). Head length in SL is 2.8–2.9 (mean 2.9), pelvic fin length in HL is 1.1–1.2 (mean 1.2), and body depth at the fourth dorsal fin spine level is 1.7 in SL.

There are no colour notes on fresh specimens of this species but the preserved material has a spiny dorsal fin with three bands which are partly reticulate. The soft dorsal fin is darkened at its base. The anal fin spines and membranes are dark and the soft rays are dark basally. The pelvic fin spine has four bars and the soft rays and membranes are dark.

The low counts of dorsal and anal soft fin rays and of lateral series scales are distinctive for this genus and species of bigeye.

### Key to the bigeyes (Priacanthidae) found in the Canadian Atlantic.

- 1A. Anal fin soft rays 9–11, usually 10; dorsal fin soft rays 10–12, usually 11; scales in lateral line series 45 or less — *Pristigenys alta*
- 1B. Anal fin soft rays 12–16; dorsal fin soft rays 12–15, usually 13–14; scales in lateral line series 58 or more — 2
- 2A. Pelvic fin length much greater than head length; scale rows between dorsal fin origin and lateral line 16–20; preorbital bone with strong anterior serrations — *Cookeolus japonicus*
- 2B. Pelvic fin length usually shorter than head length in young to slightly longer; scale rows between dorsal fin origin and lateral line less than 16; preorbital bone with fine anterior serrations — 3
- 3A. Chin tip and posterior preopercle bone lacking scales; total gill rakers 21–25; anal fin soft rays 13–14, usually 14; dorsal fin soft rays 12–13, usually 13 — *Heteropriacanthus cruentatus*
- 3B. Chin tip and posterior preopercle bone scaled; total gill rakers 27–33; anal fin soft rays 14–16, usually 15; dorsal fin soft rays 13–15, usually 14 — *Priacanthus arenatus*



### Acknowledgments

We are indebted to Wayne C. Starnes, Research Curator of Fishes, North Carolina State Museum of Natural Sciences, Raleigh, North Carolina, for his confirmation and correction of our tentative identifications of these juvenile specimens. Eric Newton and Brian Coolen froze the specimens from their mackerel trap and donated them to the Nova Scotia Museum of Natural History for future study. Ron Duggan and J. Sherman Bleakney also kindly donated their specimens. Patrick Ryall, Dalhousie University, Halifax collected the Clam Harbour Beach specimens and Jamie Gibson and Ransom Myers, Dalhousie University, Halifax, Nova Scotia, donated this material to the Nova Scotia Museum of Natural History. The photographs were taken by Roger Lloyd, Learning Resources and Technology, Nova Scotia Department of Education, Halifax, Nova Scotia.

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Received 12 April 2001

Accepted 12 December 2002



Coad, Brian W. and Gilhen, John. 2002. "Additional records of bigeye fishes (Pricanthidae) from the Atlantic coast of Nova Scotia, including the first record of the Glasseye Snapper, *Heteropriacanthus cruentatus*." *The Canadian field-naturalist* 116(4), 632–635. <https://doi.org/10.5962/p.363515>.

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