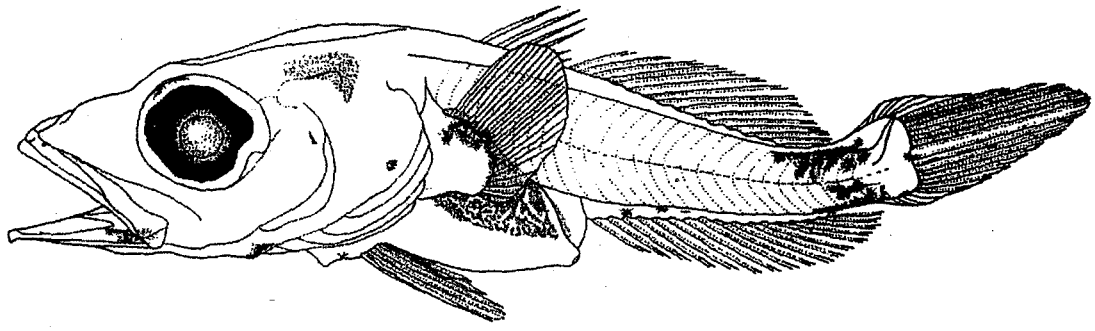
NOAA Technical Memorandum NMFS-SEFSC-440

PRELIMINARY GUIDE TO THE IDENTIFICATION OF THE EARLY LIFE HISTORY STAGES OF PERCOPHID FISHES OF THE WESTERN CENTRAL ATLANTIC

BY

WILLIAM J. RICHARDS



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It will be a chapter entitled Priacanthidae in the "Guide to the early life history stages of fishes of the western central Atlantic".

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Family Percophidae

The fishes of the family Percophidae, commonly known as duckbills, comprise five species in our area all in the subfamily Bembropinae. Bembropinae has two genera, the monotypic *Chrionema squamentum* and four species of *Bembrops, B. anatirostris, B. gobioides, B. magnisquamis,* and *B. macromma.*. The subfamily Percophinae, with one species, *Percophis brasiliensis*, though listed in the tropical west Atlantic by Nelson (1994) is only found in the South Atlantic with a distribution similar to *B. heterurus,* Rio de Janeiro to Patagonia(Matsuura & Suzuki 2000). The percophids are primarily bottom dwelling slope fishes but two (*B. anatirostris* & *B. gobioides*) also occur on the continental shelf (Robins & Ray 1986). Das & Nelson (1996) did a taxonomic revision of the genus *Bembrops*.

Watson (1984) reviewed the meager information on early life history stages, but since then more information has been developed. In our area Richards (1990) illustrated a series of *B. anatirostris* without further comment. And this was followed by a review of the early life stages by Okiyama (1997) which included phylogenetic comment on relationships. Matsuura & Suzuki (2000) have described the larvae of *P. brasiliensis*.

The identification of these larvae as percophids was a problem for many years. I showed some small larvae to the late E. H. Ahlstrom and he was quite intrigued as to what they were. It was not until much later that a larger specimen was obtained that could be cleared and stained to reveal meristics, thus the identification was made. The major characteristics of these larvae are the broad head and distinct pigment pattern. I identified the illustrated series as *B. anatirostris* based on meristic characters and that *B. anatirostris* is the most commonly caught *Bembrops*. *Chrionemus squamentum* lacks a maxillary flap and the flaps are clearly present on the 9.4 mm SL and larger specimens. The identification of *B. gobioides* is based strictly on distribution as only one small specimen was illustrated by Bruce Mundy before the specimen was lost (NOAA 1975). The specimen was taken off New Jersey and *B. gobioides* is the only species found that far north. However, Bruce noted that many tropical larvae were taken in the same tow as it was from a warm core Gulf Stream ring. Therefore it could have been transported from southern waters where other species are found.

Table Percophidae 1. Meristic data for the western North Atlantic species of percophids. Data from Ginsburg (1955), Iwamoto & Staiger (1976), & Das & Nelson (1996).

Species	First Dorsal	Second Dorsal	Anal Rays	Pectoral Rays	Lat Line Scales	Gill Rakers	Vertebrae
Bembrops	VI						
anatirostris		14-15	17-18	23-26	60-68	4-6+12-15	9+19
macromma		14-15	17-18	22-24	54-64	4-6+12-15	9+16
magnisquammis		15-16	17	21-27	45-50	4-5+12-14	
gobioides		16-17	17-18	22-26	60-66	5-6+12-14	9+21
Chrionema	VI						
squamentum		15-16	18	20-22	50-58	6-9+19-22	8-9+19

Table Percophidae 2. Distribution and biological information on percophid species. Data from Das & Nelson (1996) & Iwamoto & Staiger (1976).

Species	Geographical Distribution	Depth (m)	Biological Notes
B. anatirostris	Gulf of Mexico, Caribbean Sea off Puerto Rico,Surinam, & French Guiana	100-350	Females with ripe eggs collected in Jan., Feb., Apr., May
B. gobioides	New York south to Gulf of Mexico and Lesser Antilles	100-700	No information
B. macromma	Gulf of Mexico & Caribban Sea	150-550	Females with ripe eggs collected in May
B magnisquamis	Caribbean Sea	350-465	Females with ripe eggs collected in May
C. squamentum	Caribbean Sea & Straits of Florida	115-525	Found on steep slopes on ponded or muddy substrates

Literature Cited

Das, M. K. & J. S. Nelson. 1996. Revision of the percophid genus Bembrops (Actinopterygii: Perciformes). Bull. Mar. Sci. 59: 9-44.

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Iwamoto, T. and J. C. Staiger. 1976. Percophid fishes of the genus Chrrionema Gilbert. Bull. Mar. Sci. 26: 488-498.

Matsuura, Y. & K. Suzuki. 2000. Early development of the flathead, Percophis brasiliensis (Teleostei: Percophididae), from southeastern Brazil. Ichthyol. Res. 47: 81-87.

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FAMILY PERCOPHIDAE

Bembrops anatirostris Ginsburg

MERISTICS

Vertebrae:	
Precaudal	9
Caudal	19
Total	28
Number of Fin Spines and Rays:	
First Dorsal	VI
Second Dorsal	14-15
Total	20-21
Anal	17-18
Pectoral	23-26
Pelvic	I,5
Caudal	
Principal	8/7
Gill rakers	4-6+12-15

LIFE HISTORY

Range: Gulf of Mexico, Caribbean Sea off Puerto Rico, Surinam, & French Guiana

Habitat: continental shelf and slope, 100-350 m depth range

ELH Pattern:

Spawning:

Season: Adults with ripe eggs Jan., Feb., Apr., & May

Mode: planktonic larvae

LITERATURE

Das & Nelson 1996

EARLY LIFE HISTORY DESCRIPTION

EGGS: Unknown

LARVAE:

Length at Transformation: ca. 6.3 mm SL

Pigmentation: Newly hatched larvae (ca. 2.0 mm NL) with large dendritic melanophore on ventral midline of tail, several scattered melanophores on posterior dorsal surface of gut, melanophores along cleithral bone from symphysis to above pectoral fin origin. Larger larvae > 6 mm SL with large, wide head & heavy pigment on dorsal & ventral caudal peduncle, pigment over gut, on pelvic fins & mid-brain.

Diagnostic Characters: large head, pigmentation pattern

JUVENILES:

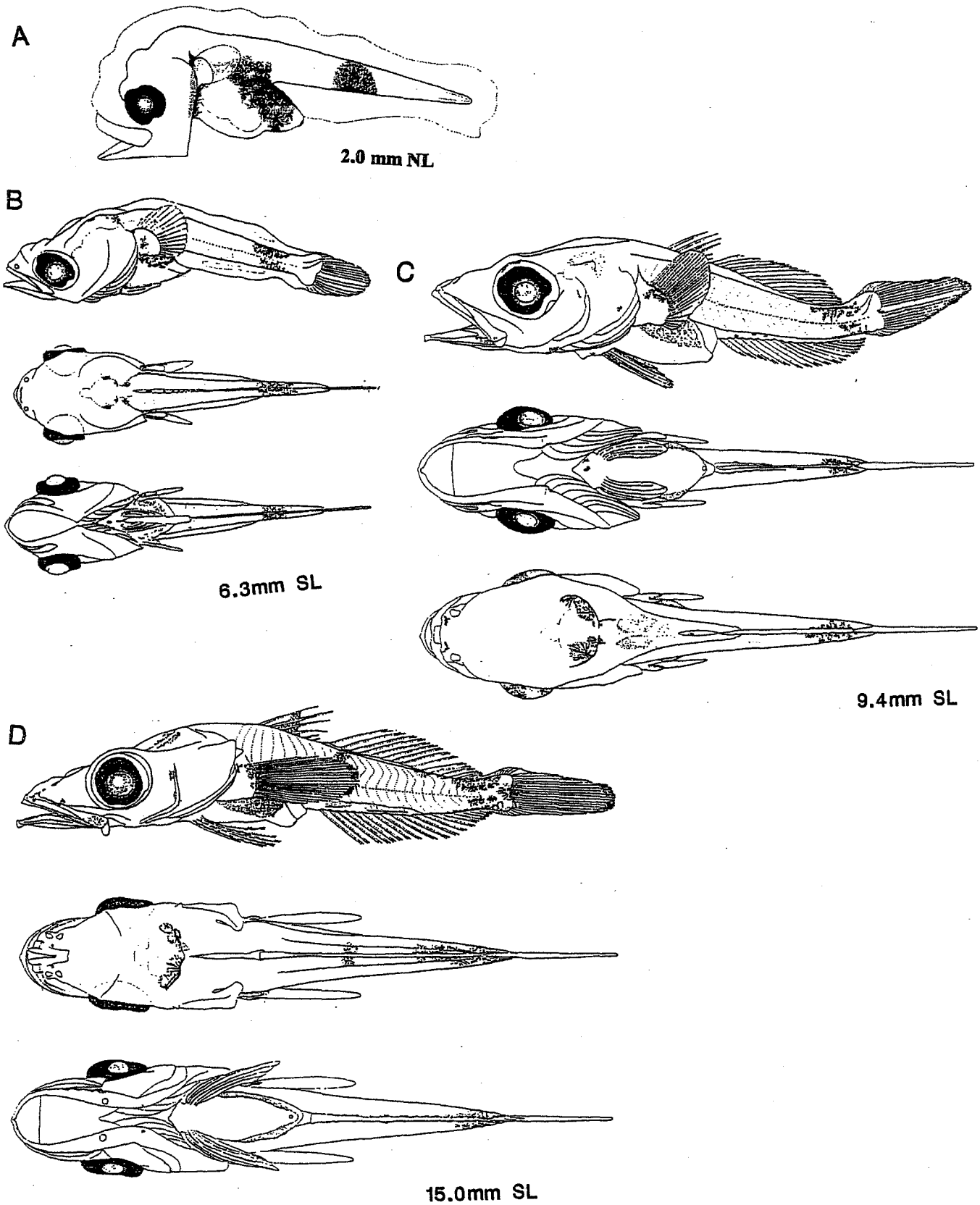
Large flattened head and distinctive pigment pattern. Maxillary flap at posterior end of maxillary.

Diagnostic Characters: Pigment pattern, meristics, & large flattened head

ILLUSTRATIONS

Original from Straits of Florida by J. Javech

Bembrops anatirostris PERCOPHIDAE



FAMILY PERCOPHIDAE

Bembrops gobioides (Goode)

MERISTICS

Vertebrae:	
Precaudal	9
Caudal	21
Total	30
Number of Fin Spines and Rays:	
First Dorsal	VI
Second Dorsal	16-17
Total	22-23
Anal	17-18
Pectoral	22-26
Pelvic	I,5
Caudal	
Principal	8/7
Gill rakers	5-6+12-14

LIFE HISTORY

Range: New York south to Gulf of Mexico, & Lesser Antilles

Habitat: continental shelf and slope, 100-700 m depth range

ELH Pattern:

Spawning:

Mode: planktonic larvae

LITERATURE

NOAA 1975; Das & Nelson 1996

EARLY LIFE HISTORY DESCRIPTION

EGGS: Unknown

LARVAE:

Known from 1 specimen 6.7 mm SL off New Jersey

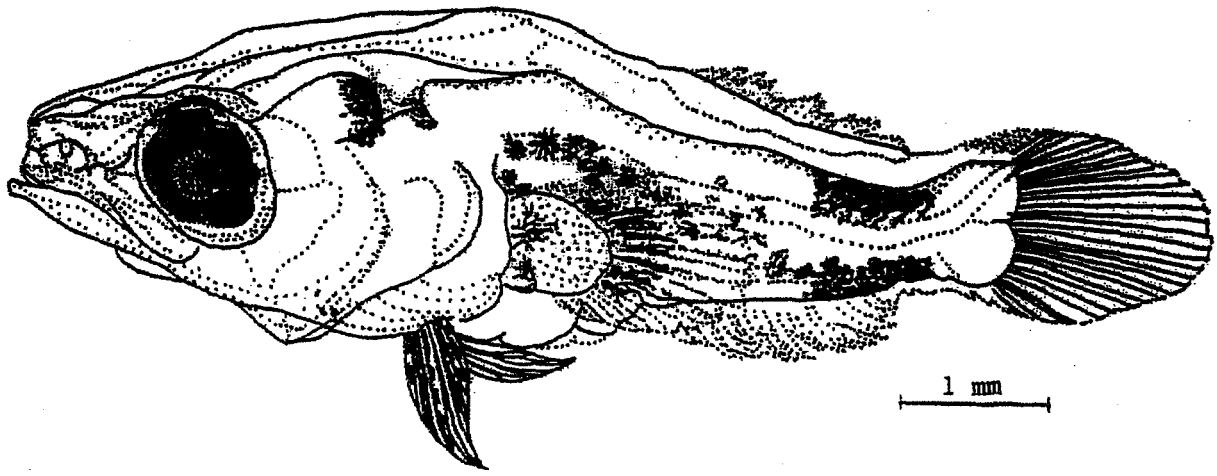
Pigmentation: Larvae 6.7 mm SL with large, wide head & heavy pigment on dorsal & ventral caudal peduncle, pigment over gut, laterally on trunk, on pelvic fins & mid-brain, .

Diagnostic Characters: large head, pigmentation pattern of lateral pigment which differs from *B. anatirostris*

ILLUSTRATIONS

From NOAA 1975 p.356. New Jersey Dumpsite 106, Sta. 13, 38-45N, 072-22W, 19 May 1974. Illustration by B. Mundy.

Bembrops gobioides **PERCOPHIDAE**



6.7 mm SL