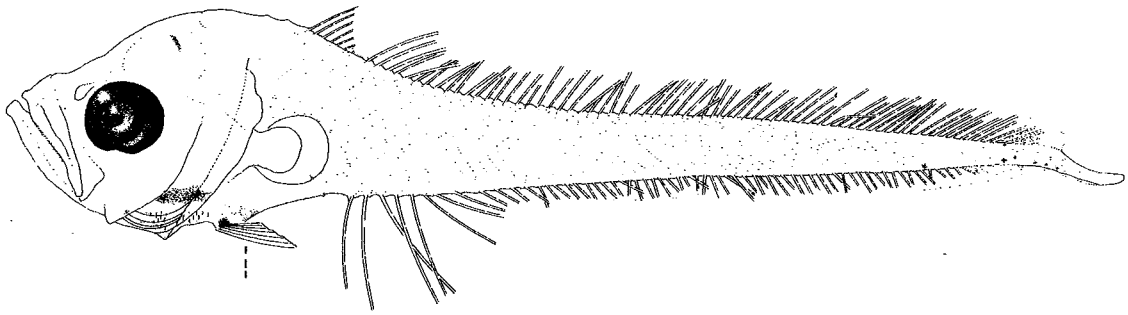
NOAA Technical Memorandum NMFS-SEFSC-506

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

BY

Michael P. Fahay



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
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It will be a chapter entitled Steindachneriidae in the "Guide to the early life history stages of fishes of the western central North Atlantic".

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October 2003

STEINDACHNERIIDAE: Luminous hake

by Michael P. Fahay

This monotypic family contains the luminous hake, *Steindachneria argentea* Goode and Bean, 1896. It is found in the Gulf of Mexico, Caribbean Sea and off the east coast of the United States, where it occurs over the outer continental shelf and upper continental slope, usually over soft bottoms. A single specimen has been collected as far north as 35° 51' N, in slope water just north of Cape Hatteras, North Carolina. Its maximum size is 277 mm TL. The luminous hake is typified by a long and tapering body that ends in very reduced caudal fin rays without a caudal supporting structure. A light organ is present on the abdomen, and extends from the throat region to the mid-point of the anal fin (Cohen, 1964). Its color is silvery with a slightly brownish dorsal surface and a purplish cast to the light organ. The inner lining of the mouth is dark.

Although this species is not important to the fishery at present, it is often collected in large quantities at depths between 400 and 500 m. Details of reproductive biology are not described, but the larvae are known to be pelagic.

Initially placed in the Macrouridae (Goode and Bean, 1896), then in the monotypic macrourid subfamily Steindachnerinae (sic) (Parr, 1946), Regan (1903) questioned its placement and remarked on its resemblance to *Merluccius*. The family Merlucciidae was proposed by Marshall (1966) and it included *Steindachneria* along with *Merluccius, Macruronus, Lyconus* and *Lyconodes*. Most recent studies have treated *Steindachneria* as a merlucciid, or as a monotypic family with uncertain affinities. Fahay and Markle (1984) concluded their review of gadiform ontogeny with a question regarding the uncertain status of *Steindachneria*. Based on an ontogenetic series and osteological characters, *Steindachneria* has more recently been regarded as a primitive sister group to the macrourids, residing in its own family (Fahay, 1989). Howes (1993) concluded that the family was closely related to bathygadids, and that both were more derived than the macrourids.

MERISTICS

Vertebrae:	
Precaudal	13
Caudal	?
Total	?
Number of Fin Spines and Rays:	
First Dorsal	I,7-9
Second Dorsal	>123
Total Dorsal Elements	> 131
Anal	>123
Anal Finlets	
Total Anal Elements	>123
Pectoral	14-17
Pelvic	8
Caudal	Very reduced
Gillrakers on First Arch	
Upper	5
Lower	13-15
Total	18-20
Branchiostegals	7

LIFE HISTORY

Range: Gulf of Mexico, Caribbean Sea, east coast of U.S. to just north of Cape Hatteras.
Habitat: Outer continental shelf & upper continental slope, usually over soft bottoms.
ELH Pattern: Oviparous, pelagic larvae.
Spawning: Reproductive biology undescribed
Fecundity: Unknown
Age at First Maturity: Unknown
Longevity: Unknown

LITERATURE

Cohen 1964, Fahay 1989

EARLY LIFE HISTORY DESCRIPTION

EGGS: Undescribed

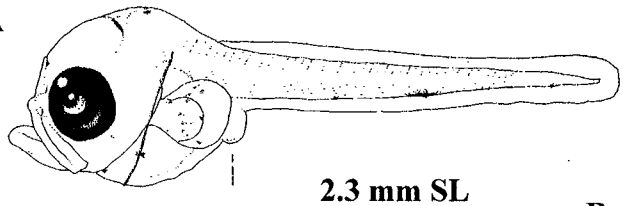
LARVAE: Large head, large eye, prominent mouth, tapering body with no ethmoid or other spines.
Length at Flexion: Notochord does not flex; weakly developed, tiny caudal fin
Length at Transformation: Gradual, between 24 & 55 mm SL
Sequence of Fin Development: Early forming anterior A rays, followed by D, A (posterior) & P_2. Late forming P_1 rays.
Pigmentation: Sparse; single melanophore on venter of tail (early), on posterior midbrain, a scattering on developing P_1.
Diagnostic Characters: Striated luminous organ forms between P_2 bases, spreads on venter posteriorly to mid-A fin (fig. G). Anus migrates anteriorly.
Distinguish from macrourid larvae by lack of stalked pectoral fins. From other gadiforms by tapering body, anus & urogenital opening separated

JUVENILES:
Diagnostic Characters: Strongly tapering body, high anterior anal fin, luminescent organ

ILLUSTRATIONS

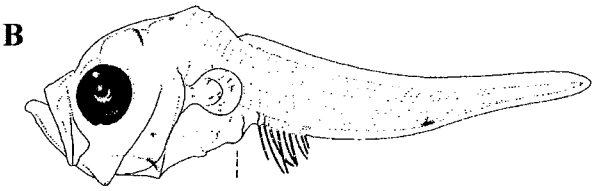
A-D, F: Fahay, 1989; E,G: Betsy Washington (Fahay & Markle, 1984)
(Note: Dotted line in figures indicates position of anus)

A



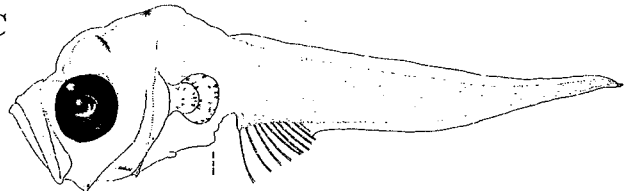
2.3 mm SL

B



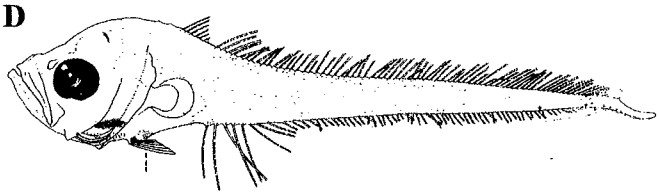
4.6 mm SL

C



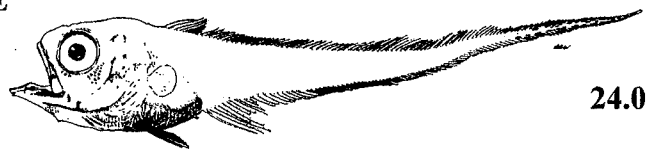
5.8 mm SL

D



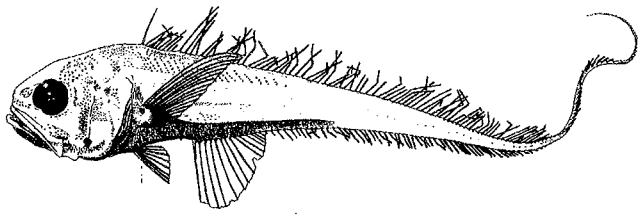
11.5 mm SL

E



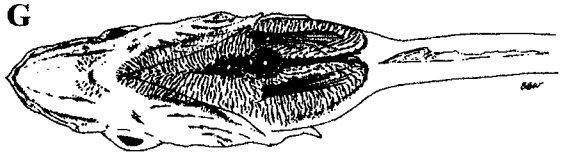
24.0 mm SL

F



55.0 mm SL

G



24.0 mm SL

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