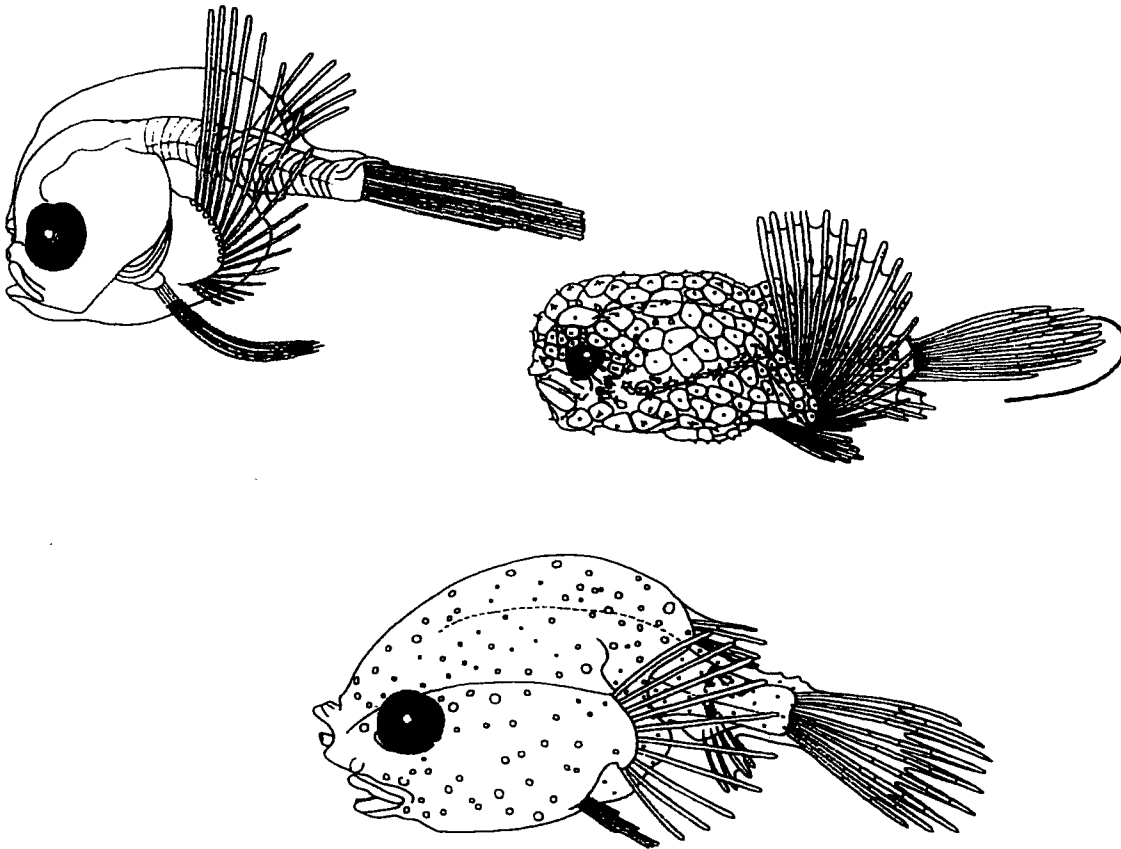




PRELIMINARY GUIDE TO THE IDENTIFICATION OF THE EARLY LIFE HISTORY STAGES OF  
OGCOCEPHALID FISHES OF THE WESTERN CENTRAL ATLANTIC

BY

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U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
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February 1999



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**U.S. DEPARTMENT OF COMMERCE  
William M. Daley, Secretary**

**National Oceanic and Atmospheric Administration  
D. James Baker, Under Secretary for Oceans and Atmosphere**

**National Marine Fisheries Service  
Rolland A. Schmitten, Assistant Administrator for Fisheries**

**February 1999**

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The Ogcocephalidae (batfishes) are worldwide in tropical and subtropical seas and comprise 14 species in our study area. They are found in shallow to slope water (0-1830 m) and the adults are very unusual with a depressed body, enormous head, pectoral fin on a long pedicel (caused by the elongation of the pectoral girdle), projecting rostrum with an esca, and a small, protrusible mouth. The body is covered with tubercles giving it a most grotesque appearance as they crawl on the bottom using their pectoral fins. In our area there are 9 species of *Ogcocephalus* (another species *O. vespertilio* occurs just outside of the area along the coast of South America south of the Amazon), one species of *Halieutichthys* (a highly variable species), 2 species of *Dibranchus*, and 1 species of *Malthopsis*. The young stages were first described by Watson (1996), but they closely resemble ELH stages of ceratioids and chaunacids. They can be easily distinguished from ceratioids by the presence of pelvic fins as only one ceratioid, *Caulophryne jordani*, has pelvics but with a high number of dorsal fin rays (14-22) and anal fin rays (13-19). Chaunacids also have more dorsal rays (11) and anal rays (5-6). Ogcocephalids share with the ceratioids and chaunacids the "balloon-like" shape of the body as the skin is inflated in a balloon-like capsule. Additional

information may be found in Bradbury (1967, 1980, 1998), Pietsch (1984), and Watson (1996).

We have found 2 types of larvae that can be assigned to a taxon based mainly on pectoral fin ray counts. One specimen had a low pectoral fin ray count of 10 which we assigned to *Ogcocephalus*. All other specimens with full complements of pectoral fin rays had 17-18 rays. This would indicate that they were *Halieutichthys aculeatus* but the pigment patterns showed some variation. This pigment variation could be due to age or individual variation. This species has been considered polytypic but one of us (Bradbury) has studied the problem for many years and concludes that it is monotypic though highly variable. Unfortunately we do not have many specimens to develop a series to resolve this issue. Pectoral fin rays must be counted with care as the lower rays are not on the same plane as the upper rays (possible preservation artifact) and are quite small. The pelvic fin spine was not seen in any of our specimens and must develop late, but the 5 rays were present in a 2.0 mm NL specimen. On the head nasal tubes are quite prominent just below the rostrum which contains the esca which is also visible. Individual accounts with illustrations are provided following a table of meristics (Table OGCO-1).

Table OGCO-1. Meristic characters for the Family Ogcocephalidae. Values in parentheses are rare. Vertebrae counts may or may not include first which is fused to skull.

| Species               | Dorsal      | Anal | Pectoral      | Vertebrae     | Branchiostgals | Caudal | Source           |
|-----------------------|-------------|------|---------------|---------------|----------------|--------|------------------|
| Ogcocephalidae        | II+1-6      | 3-4  | 10-15         | 18-21         | 2+4            | 9      |                  |
| <i>Ogcocephalus</i>   |             |      |               |               |                |        | Bradbury 1980    |
| <i>nasutus</i>        | II+4-5(2-3) | 4(3) | 11-14         | 18-19         |                |        | Bradbury (orig.) |
| <i>parvus</i>         | II+4(2-5)   | 4(3) | 10-12         | 18-20         |                |        | Bradbury (orig.) |
| <i>corniger</i>       | II+4(3-5)   | 4(3) | 10-12         | 18-19         |                |        | Bradbury (orig.) |
| <i>rostellum</i>      | II+4(3-5)   | 4(3) | (11)12-14     | 19-21         |                |        | Bradbury (orig.) |
| <i>notatus</i>        | II+4-5(2-6) | 4(3) | 12-14(15)     | 18-19         |                |        | Bradbury (orig.) |
| <i>cubifrons</i>      | II+4-5(3)   | 4(3) | 11-14         | 19-21         |                |        | Bradbury (orig.) |
| <i>pantostictus</i>   | II+4-5(3)   | 4    | 11-13(14)     | 19-21         |                |        | Bradbury (orig.) |
| <i>declivirostris</i> | II+4(2-5)   | 4(3) | (9)10-12      | (18)19-20     |                |        | Bradbury (orig.) |
| <i>pumilus</i>        | II+3-4(1-5) | 3-4  | (10)11-12     | 19            |                |        | Bradbury (orig.) |
| <i>Halieutichthys</i> |             |      |               |               |                |        |                  |
| <i>aculeatus</i>      | II+4-6      | 4    | 16-19         | (16)17-18(19) |                |        | Bradbury (orig.) |
| <i>Zalieutes</i>      |             |      |               |               |                |        |                  |
| <i>mcgintyi</i>       | II+4-6      | 4    | 10-12(13)     | 17-18         |                |        | Bradbury (orig.) |
| <i>Dibranchus</i>     |             |      |               |               |                |        |                  |
| <i>atlanticus</i>     | II+5-6(7)   | 4    | (12)13-15(16) | (17)18(19)    |                |        | Bradbury (orig.) |
| <i>n. sp. "t"</i>     | II+(4)5-7   | 4    | 12-14         | 19(18-20)     |                |        | Bradbury (orig.) |
| <i>Malthopsis</i>     |             |      |               |               |                |        |                  |
| <i>gnoma</i>          | II+4-5      | 4    | 11-13         | 17-18         |                |        | Bradbury 1998    |

**MERISTICS**

|                               |               |
|-------------------------------|---------------|
| Vertebrae                     |               |
| Total:                        | (16)17-18(19) |
| Number of Fin Spines and Rays |               |
| First Dorsal:                 | II            |
| Second Dorsal:                | 4-6           |
| Anal:                         | 4             |
| Pectoral:                     | 16-19         |
| Pelvic:                       | I,5           |
| Caudal:                       | 5+4=9         |

**LIFE HISTORY**

Range: NC to South America

Habitat: hard sand and coral; sand and sandy clay or sandy mud with much shell debris; 30-300+ m.

ELH Pattern: Oviparous, eggs unknown; larvae and prejuveniles pelagic, mostly taken May-October off the United States, but known from Atlantic November-April, especially in Caribbean.

Spawning: gravid females taken May-July 1974 off Cape Canaveral, Florida; May-August in 1972 and 1977 off Alabama.

**LITERATURE**

Robins & Ray 1986; Lowe (McConnell) 1962; Franks et al. 1972; Winans 1975

**EARLY LIFE HISTORY DESCRIPTION**

**EGGS:** Unknown

**LARVAE:**

Length at Flexion: ca. 2.6 mm

Length at Transformation: varies greatly, 11.5-25+ mm SL.

Sequence of Fin Development: P<sub>1</sub>, C, P<sub>2</sub>, D, A.

Pigmentation: Variable - few on dorsum, over gut, caudal peduncle, and pectoral and pelvic fins.

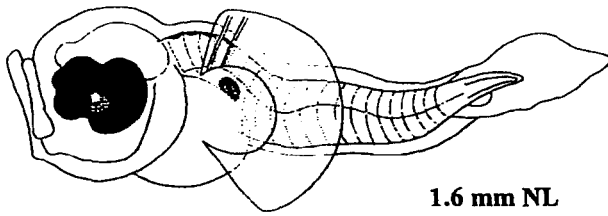
Diagnostic Characters: Meristics - high pectoral fin ray count.

**JUVENILES:**

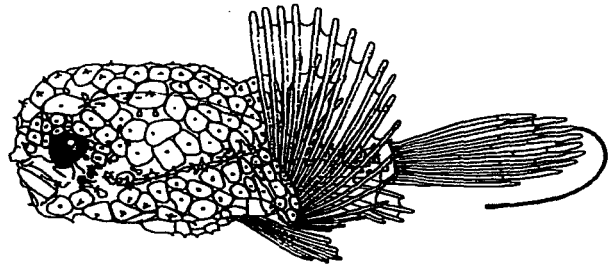
Diagnostic Characters: Meristics, tubercles on ventral surface of body resorbed, ventral surface becoming naked. Note elongated ray in caudal of recently transformed pelagic specimen.

**ILLUSTRATIONS**

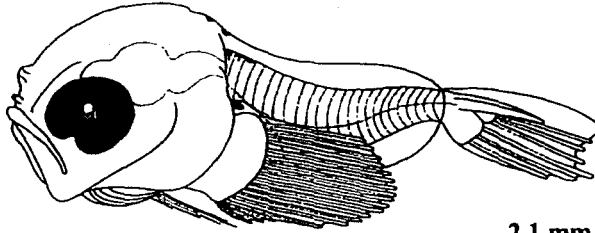
Original: 1.6 mm NL, 2.1 mm NL, 2.6 mm SL - Straits of Florida (SEFCAR Cr. CA89106305); 3.0 mm SL - Straits of Florida (SEFCAR Cr. LH3 2702); 5.5 mm SL Straits of Florida (SEFCAR Cr. LH3 2703); 12.0 mm SL - Straits of Florida (SEFCAR CA89104204)



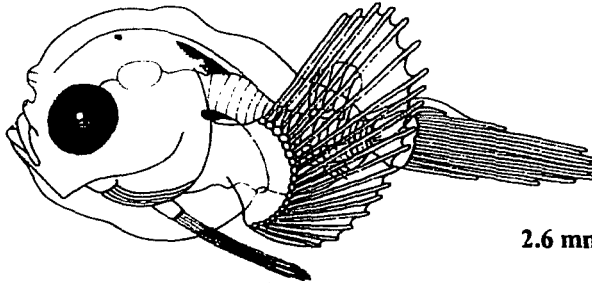
1.6 mm NL



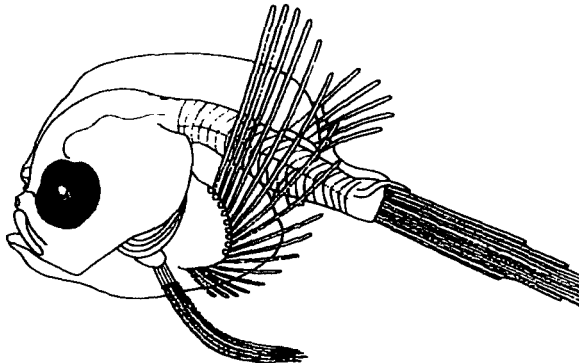
12.0 mm SL



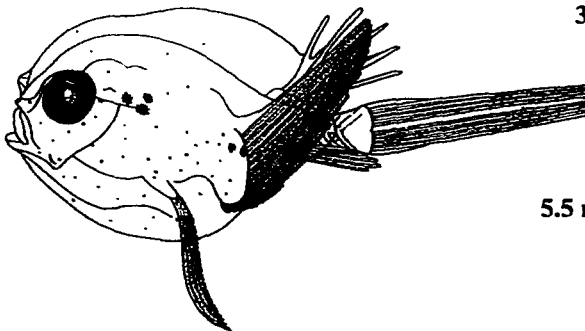
2.1 mm NL



2.6 mm SL



3.0 mm SL



5.5 mm SL

**OGCOCEPHALIDAE***Ogcocephalus parvus* Longley & Hildebrand 1940**MERISTICS**

|                               |       |
|-------------------------------|-------|
| Vertebrae                     |       |
| Total:                        | 18-21 |
| Number of Fin Spines and Rays |       |
| First Dorsal:                 | II    |
| Second Dorsal:                | 4     |
| Anal:                         | 4     |
| Pectoral:                     | 10    |
| Pelvic:                       | I,5   |
| Caudal:                       | 9     |

**LIFE HISTORY**

Range: Cape Hatteras to Recife, Brazil, 30-125 m.

Habitat:

ELH Pattern: Oviparous, oceanic pelagic

Spawning Season: January to April in northeastern Caribbean; males displayed nuptial colors (red lips & pinkish abdomen) during this period. Spawning in Gulf of Mexico may be later as ripe females found April through August, unripe in February & March.

**LITERATURE**

Robins & Ray 1986  
Bradbury 1980  
Erdman 1976

**EARLY LIFE HISTORY DESCRIPTION**

EGGS: Unknown

**LARVAE:**

Length at Flexion: <4.5 mm SL

Length at Transformation: > 4.5 mm SL

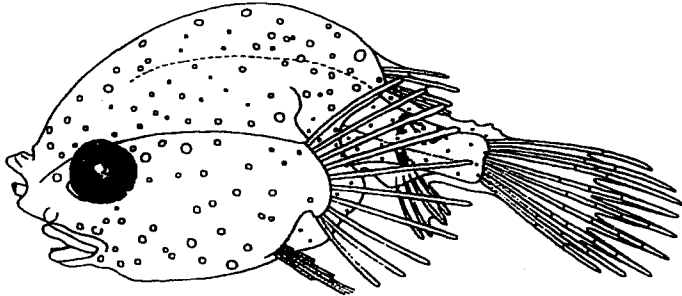
Sequence of Fin Development:

Pigmentation: Few melanophores on caudal peduncle

Diagnostic Characters: Meristics – low pectoral fin ray count

**ILLUSTRATIONS**

Original: Straits of Florida (SEFCAR LH3 2702)



4.5 mm SL



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