

NOTES AND COMMENTS ON SOME EASTERN ATLANTIC SNAKE EELS (ANGUILLIFORMES: OPHICHTHIDAE).— ABSTRACT: *Pseudomyrophis nimius* Böhlke (1960) is first reported from off west Africa. *Microrhynchus epinepheli* Blache and Bauchot (1972) is synonymized with *Sphagebranchus foresti* Cadenat and Roux (1964). *Microrhynchus* Blache and Bauchot (1972) is synonymized with *Phaenomonas* Myers and Wade (1941). *Phaenomonas* is expanded to include species which lack all fins. *Ophichthus karreri* Blache (1975) is synonymized with *Ophichthus serpentinus* Seale (1917).

During the preparation of the chapter on the Snake eels, Worm eels, and Sand eels (family Ophichthidae) for the upcoming publication of the FAO *Living Marine Resources of the Eastern Central Atlantic* (Kent Carpenter, editor), I have made taxonomic decisions on several eel species of questionable identity. As well, I have discovered new records of species previously unreported from that area. The FAO series does not allow an opportunity to explain those actions or specimens, so to that end they will be treated in this brief paper.

MATERIALS AND METHODS

Measurements, techniques, and anatomical definitions follow that of McCosker et al. (1989: 257). Vertebral counts (which include the hypural) were taken from radiographs. The mean vertebral formula (MVF) is expressed as the average of predorsal, preanal, and total vertebrae. Specimens are deposited at the California Academy of Sciences, San Francisco (CAS), the Los Angeles County Museum of Natural History (LACM), the Muséum National d'Histoire Naturelle, Paris (MNHN), and the Universitat Humboldt Museum für Naturkunde, Berlin (ZMB). Institutional abbreviations follow the Standard Symbolic Codes for Institutional Research Collections in Herpetology and Ichthyology (Leviton et al. 1985).

TAXONOMY

A specimen of the benthic worm eel *Pseudomyrophis nimius* Böhlke (1960) was collected by Tomio Iwamoto during recent deepwater assessment cruises off Angola aboard the *R/V Dr. Fridtjof Nansen*. Described from the Gulf of Mexico and subsequently known from the northern Gulf of Mexico and from the Florida Atlantic at depths of 320–755 m, this appears to represent the first known Eastern Atlantic specimen (McCosker et al. 1989). It was captured at 06°55'00"S, 11°43'00"E, using an otter trawl with 1300 m wire out (trawling speed 3 knots) at 518–519 m depth during 2023–2055 on 21 April 2005. The specimen (CAS 224136) is a 367 mm TL male and has the following characteristics (measurements in mm): head length, 25; trunk length 107; tail length 235; dorsal-fin origin 83; body depth behind gill openings 5.3; eye diameter; interorbital width 2.8; snout length 4.5; upper jaw length 7.1; and vertebral formula 42/66/206. It is uniform gray, although its chin and throat are slightly paler; its median fins are pale, becoming darker about 2 head lengths before the tail tip; and its head pores, lateral-line pores, and anterior nostrils are pale. Its pore pattern and dentition do not differ significantly from that of its western Atlantic conspecifics (*cf.* McCosker et al. 1989, figs. 280–282). Its vertebral formula is less than the range of that of western Atlantic specimens (MVF 49-73-214, predorsal vertebrae 47–53, preanal vertebrae 71–75, total vertebrae 211–217). However, until additional eastern Atlantic specimens are examined, I am hesitant to assign it specific status.

The type specimens of *Sphagebranchus foresti* Cadenat and Roux (1964) and *Microrhynchus epinepheli* Blache and Bauchot (1972) have vexed systematic anguillologists since their capture and description. In describing *M. epinepheli*, a partially digested specimen taken from a grouper stomach, Blache and Bauchot created the new genus and included *S. foresti* as its type species. Species of *Microrhynchus* were said to lack fins totally. McCosker and Böhlke (1984) and McCosker et al.

(1989) subsequently referred those species to *Etheadophis*, but upon my reexamination of the type specimens of *foresti* (MNHN 1962-71, from the Cape Verde Islands) and *epinepheli* (MNHN 1964-536, from Senegal) and the discovery of an additional and larger specimen of *foresti* from Ghana, I now consider them to belong in *Phaenomonas* Myers and Wade (1941) and therefore include *Microrhynchus* in the synonymy of that genus. The additional specimen of *P. foresti* (LACM 42701-1) was collected in 1974 off the continental shelf of Ghana over a 39 m mud bottom. The specimen has the following characteristics (measurements in mm): total length 437; head length 21.5; trunk length 285; tail length 130; body depth behind gill openings 5.6; eye diameter 0.7; interorbital width 2.7; snout length 4.1; upper jaw length 5.8; and vertebral formula $-/135/195$. Its pore pattern and dentition do not differ significantly from that of the holotypes of *foresti* and *epinepheli*. Careful examination of these three specimens indicates that they are conspecific and that the type specimen of *foresti* has a very low and short dorsal fin, beginning approximately 9.5 mm behind the snout tip and extending approximately 43 mm from the snout tip. Neither fins nor pterygiophores are visible by radiography on the other two specimens. They have the following total vertebral numbers: type of *foresti* 187; type of *epinepheli* 192; and Ghana specimen 194.

An additional Atlantic species of *Phaenomonas*, *P. longissima* (Cadenat and Marchal 1963), is known from St. Helena and Ascension islands and from Brazil. It differs from *P. foresti* in its vertebral number (206–216 vs. 187–194) and in that the six known specimens (McCosker et al. 1989) have a small but apparent dorsal fin, originating mid-head and extending about three head lengths behind it. I am hesitant at this time to synonymize *foresti* with *longissima* until additional specimens of eastern Atlantic *Phaenomonas* are obtained.

In that these eastern Atlantic specimens of *Phaenomonas* vary in the presence or absence of a minuscule dorsal fin, but share the generic characteristics of the three other species of *Phaenomonas* (McCosker 1975; McCosker et al. 1989), it is appropriate to modify the generic diagnosis of *Phaenomonas* as follows: dorsal fin absent in some specimens, small and low if present, beginning in the anterior head region and extending to the anterior trunk region.

Ophichthus karreri Blache (1975), known from a single specimen captured in 390 m off Namibia (26°32'S, 14°13'E), has not been reported upon since its description. After examining numerous specimens of *Ophichthus serpentinus* Seale (1917), described from the Cape of Good Hope, I am convinced that *O. karreri* is a junior synonym. Although I have been unable to examine the holotype of *O. karreri* (ZMB 22065), its description agrees in coloration, dentition, morphometrics and vertebral number (165, vs. 162–167 for *O. serpentinus*) with that of *O. serpentinus*. *Ophichthus serpentinus* is not uncommon at depths of 235–490 m off Namibia and South Africa, and also includes *Ophichthus bennettai* McCosker (1986) in its synonymy.

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LITERATURE CITED

- BLACHE, J. 1975. Contribution à la connaissance des Poissons Anguilliformes de la côte occidentale d'Afrique. 15^e note: compléments aux familles des Muraenidae, des Heterenchelyidae et des Ophichthidae. *Bulletin de l'IFAN*, sér. A, 37(3):708–740.
- BLACHE, J., AND M.L. BAUCHOT. 1972. Contribution à la connaissance des Poissons Anguilliformes de la côte

- occidentale d'Afrique. 13^e note: les genres *Verma*, *Apterichtus*, *Ichthyapus*, *Hemerorhinus*, *Caecula*, *Dalophis* avec la description de deux genres nouveaux (Fam. des Ophichthidae). *Bulletin de l'IFAN*, sér. A, 34(3):692–773.
- BÖHLKE, J.E. 1960. A new ophichthid eel of the genus *Pseudomyrophis* from the Gulf of Mexico. *Notulae Naturae* No. 329: 8 pp.
- CADENAT, J., AND E. MARCHAL. 1963. Résultats des campagnes océanographiques de la *Reine-Pokou* aux îles Sainte-Hélène et Ascension. Poissons. *Bulletin de l'IFAN*, sér. A, 25(4):1235–1315.
- CADENAT, J., AND C. ROUX. 1964. Résultats scientifiques des campagnes de la “Calypso”. Îles du Cap Vert. Poissons téléostéens. *Annals Institute Océanographique Monaco*, (N.S.):81–102.
- LEVITON, A.E., R.H. GIBBS, JR., E. HEAL, AND C.E. DAWSON. 1985. Standards in herpetology and ichthyology: part I. Standard symbolic codes for institutional resources collections in herpetology and ichthyology. *Copeia* 1985:802–832.
- MCCOSKER, J.E. 1975. The eel genus *Phaenomonas* (Pisces, Ophichthidae). *Pacific Science* 29:361–363.
- MCCOSKER, J.E. 1986. A new snake eel, *Ophichthus bennettai*, (Pisces: Ophichthidae) from off western South Africa. *Special Publications of the JLB Smith Institute of Ichthyology*, no. 39. 4 pp.
- MCCOSKER, J.E., E.B. BÖHLKE, AND J.E. BÖHLKE. 1989. Family Ophichthidae. Pages 254–412 in *Fishes of the Western North Atlantic*, Part Nine, Vol. One: *Orders Anguilliformes and Saccopharyngiformes*. Sears Foundation for Marine Research, Yale University, New Haven, Connecticut, USA.
- MCCOSKER, J.E., AND J.E. BÖHLKE. 1984. A review of the snake eel genera *Gordiichthys* and *Ethadophis*, with descriptions of new species and comments on related Atlantic bascanichthyins (Pisces: Ophichthidae). *Proceedings of the Academy of Natural Sciences of Philadelphia* 136:32–44.
- MYERS, G.S., AND C.B. WADE. 1941. Four new genera and ten new species of eels from the Pacific coast of tropical America. *Allan Hancock Pacific Expedition* 9(4):65–111.
- SEALE, A. 1917. New species of apodal fishes. *Bulletin of the Harvard Museum of Comparative Zoology* 61(4): 79–94

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