

BIOLOGICAL RESULTS OF THE UNIVERSITY OF MIAMI  
DEEP-SEA EXPEDITIONS. 111.*TALISMANIA MEKISTONEMA*, A NEW ATLANTIC SPECIES  
OF THE FAMILY ALEPOCEPHALIDAE  
(PISCES: SALMONIFORMES)

Kenneth J. Sulak

## ABSTRACT

*Talismania mekistonema*, a new species of the family Alepocephalidae, is described based on material from six Atlantic localities. The new species is compared with the other four members of the genus *Talismania*. The benthic habit, depth range, and geographical distribution of *T. mekistonema* are discussed. New Atlantic records of *T. longifilis* Brauer and *T. oregoni* Parr are also reported.

The alepocephalid genus *Talismania* currently comprises four species. At the time of Parr's revision (1952) of the group, five specimens only were known. Since then no additional material from the Atlantic appears to have been reported. The type species of the genus, *T. homoptera* Vaillant (1888), is represented to date by a single specimen taken in the Atlantic off North Africa. Also known in the literature from but a single specimen is *T. longifilis* Brauer (1902), from the Gulf of Aden in the Indian Ocean (Brauer 1906). *T. oregoni* Parr (1952) is represented at present by two specimens from a single Gulf of Mexico locality. Only the eastern Pacific species, *T. bifurcata* Parr (1951), is known from several specimens from a number of localities (Parr 1951, Ebeling 1962, Grinols and Heyamoto 1965, Berry and Perkins 1966).

Fifteen additional Atlantic specimens of *Talismania* are reported herein. Included are 11 specimens of a new Atlantic species, *T. mekistonema*, as well as the first example of *T. oregoni* from the eastern Atlantic and the first Atlantic record of *T. longifilis*. Material representing the new species derives from six Atlantic localities, five in the West Indian region, and one in the Gulf of Guinea. Nine of the 11 specimens of *T. mekistonema* have been obtained by research vessels of the Rosenstiel School of Marine and Atmospheric Science, 7 as a result of the ongoing

Tongue-of-the-Ocean benthic fish population program.

*Talismania mekistonema*, new species

Figs. 1-4, Table 1

*Material Examined*.—HOLOTYPE—USNM<sup>1</sup> 211284, a ripe female of 181 mm S.L. (Fig. 1) from R/V COLUMBUS ISELIN sta. 80, in the Tongue-of-the-Ocean, 8 March 1973, Lat. 23°53.5-54.0'N, Long. 77°02.6-04.5'W in 1244-1234 m, 41' semi-balloon trawl. PARATYPES—UMML<sup>2</sup> 31255 (TABL<sup>3</sup> 100507, part), two male specimens of 208 and 202 mm S.L. from M/V GERONIMO sta. 223 in the Gulf of Guinea, 6 Sept. 1963, Lat. 03°05'S, Long. 09°15'E, in 604 m, bottom trawl; UMML 31247, one specimen of 112 mm S.L. from R/V COLUMBUS ISELIN sta. 46, 24 Feb. 1973, Lat. 23°29.75-30.0'N, Long. 77°05.35-05.5'W, in 1234-1280 m, 41' semi-balloon trawl. ADDITIONAL MATERIAL—UMML 15544 (1: 183 mm S.L.) R/V GERDA sta. 375, 12 Sept. 1964, Lat. 23°54-56'N, Long. 81°27-04'W, in 1152-1189 m, 16' otter trawl; UMML 22894 (1: 84 mm S.L.) R/V PILLSBURY sta. 454, 27 July 1966, Lat. 12°55-56.6'N, Long. 72°04-00'W, at 1500 m over 1628-1507 m bottom depth, 10' IKMT; UMML 31247 (2: 120, 83 mm S.L.) collected with paratype above; UMML 31248 (2: 71, 68 mm S.L.) R/V ISELIN sta. 54, 26 Feb. 1973, Lat. 23°54.0-54.8'N, Long. 77°11.25-13.0'W, in 1298-1325 m, 41' semi-balloon trawl; UMML 31249 (1: 77 mm S.L.) collected with the holotype above.

*Description*.—A summary of the meristic and morphometric characters of *T. mekisto-*

<sup>1</sup> USNM = National Museum of Natural History, Smithsonian Institution.

<sup>2</sup> UMML = museum abbreviation for the collection of the Rosenstiel School of Marine and Atmospheric Science.

<sup>3</sup> TABL = designation applies to specimens formerly housed in the Tropical Atlantic Biological Laboratory of the National Marine Fisheries Service, Miami, Florida.

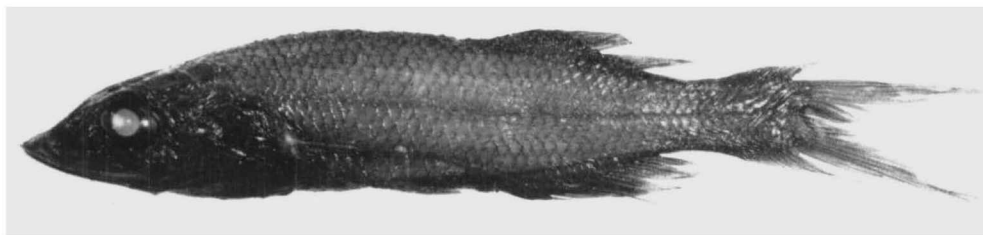


Figure 1. Holotype of *T. mekistonema*, USNM 211284, female, 181 mm S.L.

*nema*, based on the 11 specimens examined, is presented below (Table 1). With respect to overall body form *T. mekistonema* presents an appearance (Fig. 1) typical of species of the genus *Talismania* (Parr 1952). The caudal fin is deeply forked, the upper and lower lobes being produced to tapering points; the dorsal and anal fins are approxi-

mately equal and opposite; the gill cover is extended some distance posteriorly as a membranous flap. The coloration of *T. mekistonema* is also comparable to that of other species of the genus, the head being black and the body brown with darkly outlined scale pockets. The cycloid scales are large and deciduous, and almost completely lost

Table 1. A comparison of the five species of the genus *Talismania*

SPECIES	<i>homoptera</i>	<i>longifilis</i> *	<i>bifurcata</i> †	<i>oregoni</i> *	<i>mekistonema</i>
<b>MERISTIC DATA</b>					
dorsal rays	19	21-23	22	20-24	20-21
anal rays	19+‡	22	23	21-23	20-21
pectoral rays	8+‡	10-11	11-12	11-12	12
pelvic rays	9	7	6-7	7	7-8
scales, lateral series	64	90-100	62-70	63-64	46-47
scales, transverse series§	6/14	28-35 (total)	9-10/11-12	10-11/10-12	6/6
vertebrae, excl. urostyle (2½ centra)	—	48	43 or 44	48-50	45-47
gill rakers, 1st arch	—	6+1+15-16	7-8+15-18	6-9+1+17-18	6-9+1+15-19
branchiostegals	9	7	7	8	7
<b>MORPHOMETRIC DATA</b> (expressed as % S.L.)					
head length	37.4	40.0-41.1	33.0-37.6	29.6-35.0	32.2-36.8
snout length	12.1	10.5-14.6	10.7-11.1	10.2-11.1	8.9-10.5
predorsal dist.	65.8**	65.8-67.7	62.5-63.7	62.9-69.7	61.9-66.8
preanal dist.	67.7**	67.1-67.7	63.4-64.8	63.6-70.9	61.8-66.3
horizontal diam. orbit	9.3	6.3-8.5	5.6-7.8	5.5-6.4	7.1-10.4
pectoral length	—	61.0	65.0-69.0	21.3-29.3	88.4-91.1

\* Data based on original description plus comparative material in UMML collection.

† Data based on original description plus additional literature report (Grinols and Heyamoto 1965).

‡ The anal and pectoral fins of the holotype of *T. homoptera* are damaged.

§ Lateral scale count represents a longitudinal series immediately above the lateral line, beginning at the posterior margin of the opercular flap (re. text footnote 4).

|| Rakers of the upper limb + raker at the angle + rakers of the lower limb.

\*\* Values for *T. homoptera* determined from Vaillant's original figure (1888, pl. XII, fig. 1).

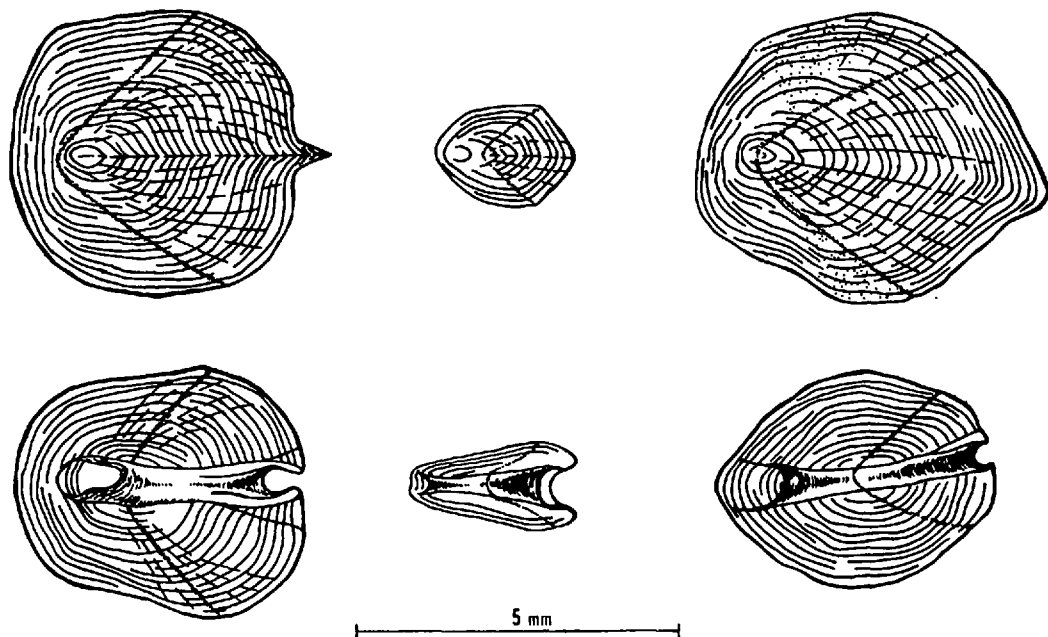


Figure 2. Scales of three Atlantic species of *Talismania* (drawings based on photographic enlargements): top row—body scales, bottom row—lateral line scales; both from an area just above the origin of the anal fin. Left, *T. oregoni*, UMML 31254, 235 mm S.L.; center, *T. longifilis*, UMML 31256, 158 mm S.L.; right, *T. mekistonema*, UMML 31255, 208 mm S.L.

due to handling in the specimen studied. They differ in shape (Fig. 2) from the scales of *T. longifilis* and *T. oregoni*, the other two Atlantic species examined. The upper ray of each pectoral fin is strengthened and greatly elongated. In the holotype, which has the produced pectoral rays preserved nearly intact, they extend posteriorly almost to the tips of the caudal. The length of each upper pectoral ray equals approximately 90% of the standard length of the holotype. Distally these rays become very fine and delicate. The remaining rays of the pectorals are extremely reduced and difficult to count except in the larger specimens examined. The upper jaw is armed to the posterior edge of the maxilla with a single continuous series of small, fixed, conical teeth. The dentition of the lower jaw is similar (Fig. 3, top), but depressible. A single row of smaller depressible teeth lines each palatine. The vomer has two small, widely-separated, depressible tooth plates, each with but two or three teeth

(Fig. 4, top). The orbit is relatively large (7.1-10.4% S.L.) for a species of the genus, while the head is moderate in length (32.2-36.8% S.L.).

*Etymology*.—From the Greek, *mekistos* = longest + *nema* = thread, filament.

*Comparisons*.—*T. mekistonema* is readily distinguishable from its four congeners (Table 1) by its low scale count (6/46-47/6)<sup>4</sup>. Additionally the vertebral number (45-47) of the new species appears to be unique among members of the genus. The possession of extensively modified pectorals also separates *T. mekistonema* from the two Atlantic species, *T. homoptera* and *T. oregoni*, which have the upper pectoral ray only moderately elongated (Parr 1952). The remaining Atlantic member of the genus, *T. longi-*

<sup>4</sup> The longitudinal scale count as a linear series immediately above the lateral line beginning at the margin of the opercular flap is 46-47, beginning at the occiput curving down around the shoulder the count is 52-53.

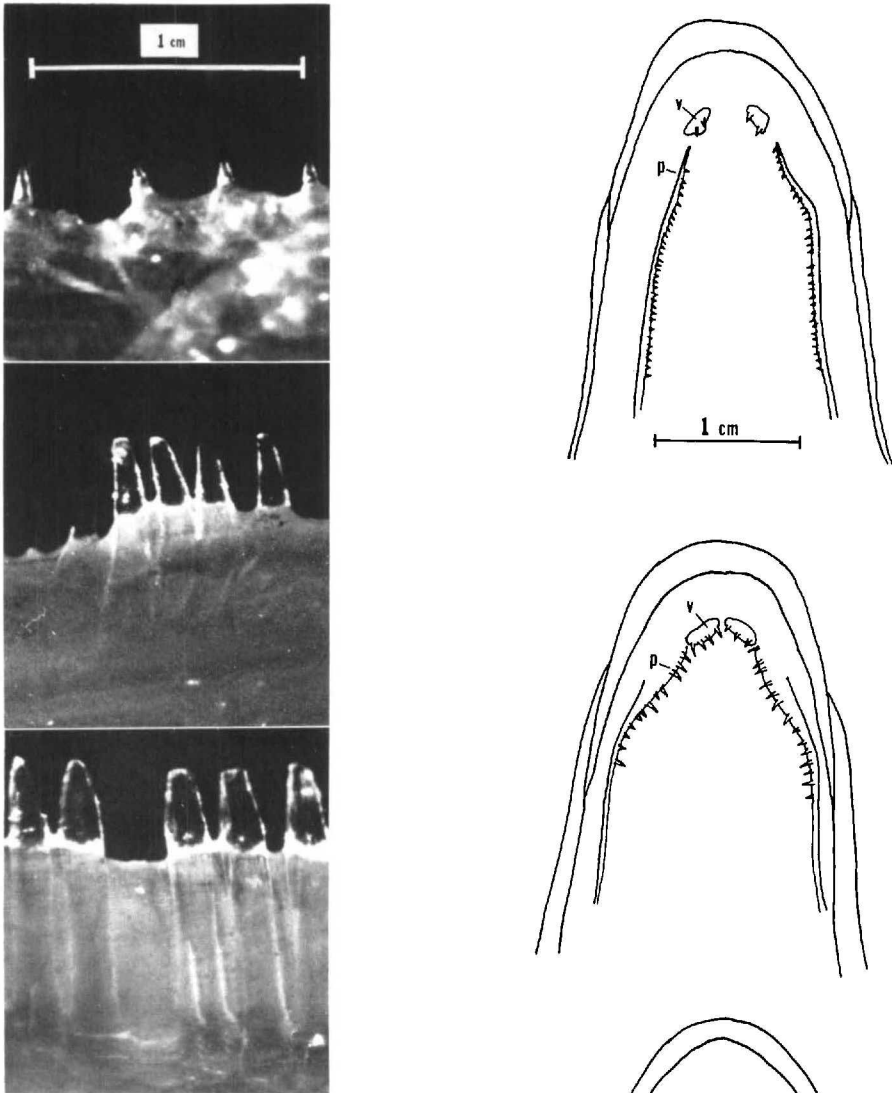
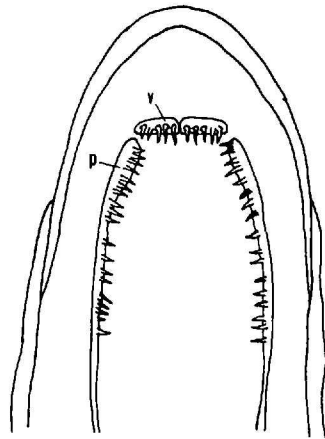


Figure 3. Dentition of the lower jaw of *T. mekistonema*, UMML 31255, Paratype, 202 mm S.L. (top) compared with that of *T. longifilis*, UMML 31256, 158 mm S.L. (middle) and *T. oregoni*, UMML 13490, 176 mm S.L. (bottom).

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Figure 4. Dentition of the palatine (p) and vomerine (v) tooth patches of *T. mekistonema*, UMML 31255, Paratype (top) compared with that of *T. longifilis*, UMML 31256 (middle) and *T. oregoni*, UMML 13490 (bottom).



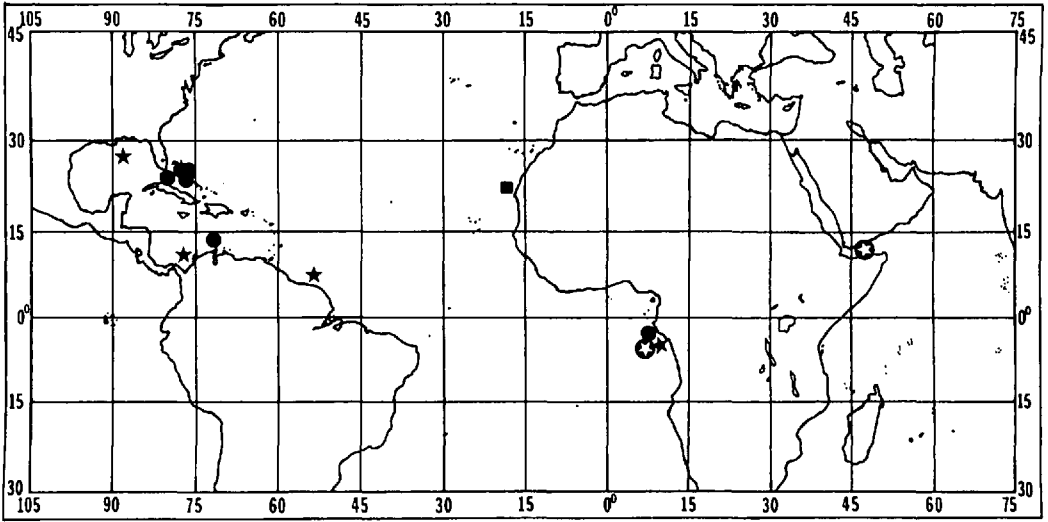


Figure 5. Known distribution of Atlantic species of the genus *Talismania*: ■ = *T. homoptera*, ⊗ = *T. longifilis*, ● = *T. mekistonema*, ★ = *T. oregoni*.

*filis*, has very elongate pectoral rays, but differs from *T. mekistonema* in its greater head length (40-41% S.L. vs. 32-37% S.L. in *T. mekistonema*) and its much smaller scales (Fig. 2) and high scale count (Table 1). The three species examined, *T. mekistonema*, *T. longifilis*, and *T. oregoni*, differ with respect to dentition (Figs. 3, 4). The teeth of the new species are relatively smaller and weaker than those of either congener. Its two vomerine tooth patches are reduced and widely separated. Each patch has only two or three teeth, while both *T. longifilis* and *T. oregoni* have four or five strong teeth on each vomerine patch. The orientation and spacing of these patches differs in each of the three species (Fig. 4). *T. oregoni* has the strongest dentition of the three species. Its lower jaw is equipped with long, closely-set, fixed teeth, which are elliptical in cross-section (circular in *T. mekistonema* and *T. longifilis*). *T. mekistonema* differs from the Pacific species *T. bifurcata* in scale count, vertebral number, and length of the pectoral filament—in addition to differences in anal and dorsal fin ray counts (Table 1). However, dorsal and anal fin ray counts do not appear to be reliable diagnostic charac-

ters with respect to species of the genus. Examination of radiographs of 11 specimens of *T. mekistonema* and three of *T. oregoni* revealed that for each of these species the anterior elements of the dorsal and anal fins vary in development from barely detectable rudiments to rays of normal length and diameter. Additionally the degree of development does not appear to be a function of size of the fish.

*Distribution*.—With the inclusion of the material reported herein four species, *T. homoptera*, *T. longifilis*, *T. mekistonema*, and *T. oregoni*, have been recorded off the coast of Africa in the eastern Atlantic, while *T. oregoni* and *T. mekistonema* are also known from the western Atlantic (Fig. 5). Along with previous records of *T. longifilis* in the Indian Ocean and *T. bifurcata* in the eastern Pacific, the genus is nearly circumglobal, lacking representation in the western and central parts of the Pacific Ocean only. Within the genus only *T. bifurcata* is known to range into temperate latitudes (Pearcy 1964, Ebeling 1962, Lavenberg and Ebeling 1967), the remaining four species of *Talismania* being known from tropical latitudes only, although from deep, cold waters.

*Discussion.*—*T. mekistonema* has been obtained at depths ranging from 604 to 1500 m. Ebeling (1962) considered *T. bifurcata* a bathypelagic species; Percy (1964) referred to the same species as a "lower mesopelagic form". However, nearly all Atlantic captures of *Talismania* to date have been accomplished with benthic trawls. All specimens of the genus reported herein were obtained in bottom gear, with the exception of two individuals of *T. mekistonema* obtained in an Isaacs-Kidd Midwater Trawl working very near the bottom. Consequently, it would appear that at least the four Atlantic species of the genus are benthic or benthopelagic in habit as adults and should be considered typical members of the deep-sea bottom fauna. The elongate pectoral rays found in three species of *Talismania* may represent a sensory adaptation correlated with existence on the bottom. Other benthic fishes such as members of the deep-sea family Bathypteroidae are characterized by the development of specialized filamentous rays.

*Comparative Material Examined.*—*T. longifilis*, UMML 31256 (1: 158 mm S.L., formerly TABL 100553) M/V GERONIMO sta. 231, 7 Sept. 1963, Lat. 03°34'S, Long. 09°58'E, in 823 m, bottom trawl; *T. oregoni*, UMML 13490 (2: 200, 176 mm S.L.) M/V OREGON sta. 4297, 22 March 1963, Lat. 07°46'N, Long. 54°17'W, in 640 m, 65' shrimp trawl; *T. oregoni*, UMML 22577 (1: 256 mm S.L.) R/V PILLSBURY sta. 388, 15 July 1966, Lat. 10°16-10.4'N, Long. 76°03-08.8'W, in 822-1061 m, 40' otter trawl; *T. oregoni*, UMML 31254 (TABL 100507, part. 1: 235 mm S.L.) M/V GERONIMO sta. 240, 8 Sept. 1963, Lat. 04°08'S, Long. 10°08'E, in 1134 m, bottom trawl.

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ADDRESS: Vertebrate Museum, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 4600 Rickenbacker Causeway, Miami, Florida 33149.