REPORT ON THE FISHES TAKEN IN MADEIRAN AND CANARIAN WATERS DURING THE SUMMER-AUTUMN CRUISES OF THE «DISCOVERY II» 1959 AND 1961

II. THE IDENTITY OF THE NORTH ATLANTIC FANFISH, *PTERACLIS*

By GILES W. MEAD [1]

1 Fig., 2 tables

INTRODUCTION

This note is occasioned by the recent rediscovery in Madeiran waters of an adult and several juvenile specimens representing the genus *Pteraclis*. The young specimens at hand were caught by R. R. S. *Discovery II* (Table 1). The adult was acquired by the Museu Municipal from a fishmonger in the Funchal market on July 12, 1961. I am indebted to Mr. G. E. Maul of that Museum for allowing me to study and to report on this material; to Dr. Richard H. Rosenblatt of the Scripps Institution of Oceanography for providing a recently caught adult *Pteraclis* from the Pacific Ocean off Baja California; and to the authorities of the Dominion Museum, Wellington, and the Carlsberg Laboratory, Copenhagen, for providing material which will be the subject of a later paper, but which has provided comparative data of value here. *Discovery II* field data were supplied by Peter Foxton of the National Institute of Oceanography, England. The author is also indebted to the National Science Foundation for its support, through grant no. G 15887, of the bramid research of which this paper is a part.

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1) Museum of Comparative Zoology, Harvard University.

PTERACLIS

Pteraclis, one the most distinctive of the oceanic acanthopterygians, can be confused with no other genus with the possible exception of its close relative *Pterycombus*. Diagnostic of *Pteraclis*, however, are the advanced origins of the unpaired fins, the dorsal over a point in advance of the eye and the anal beneath the opercular flap; the lack of scales on the dorsal midline anterior to the origin of the dorsal fin; and the notably thickened fourth dorsal and second anal rays — characters useful for the separation of individuals of all sizes Because of the rarity of adults, the scarcity of material of any sort, the nature of the type material and of the original descriptions, and the lack of comparative literature, most recent workers have simply ascribed their material to the oldest, and type, species, *Pteraclis velifera* (Pallas, 1770). The writer has been studying all available material, principally the many young taken by the Danish *Dana* chiefly in the Atlantic, and preliminary data suggest that the genus is polytypic. First, the distribution of young suggests not cosmopolitan but discontinuous occurrence, particularly of spawning site. In the Atlantic, for example, the youngest specimens are found only in the central Sargasso Sea. Those taken further east, such as the specimens at hand, are larger and probably of Sargasso origin. Secondly, the few available specimens show differences suggesting the existence of at least three forms. Two, *P. velifera* and *P. carolinus*, differ meristically (Table 2), and there appear to be differences in body proportion between these and *P. aesticola*. As new material becomes available other forms may become definable and should be expected in the southern hemisphere. A consideration of the data and material now available suggests the following arrangement of the genus and nominal species:

Genus ***Pteraclis***

Pteraclis Gronow, 1772: 43-47, fig. 1; type species, by original designation, *Pteraclis pinnata* Gronow, 1772, ? = *Coryphaena velifera* Pallas, 1770.

Generic Synonyms:

Pteridium Scopoli, 1777:454; type species, by original designation, *Coryphaena velifera* Pallas, 1770.

Oligopodus Lacépède, 1802:511; type species, by monotypy, *Oligopodus veliferus* (Pallas, 1770); not *Oligipodes* Cuvier, 1817:328-9, based on *O. niger* Risso, 1810:142, which appears to be an ophidioid; or *Oligopus* Risso, 1826: 538, which apparently is also based on *O. niger* Risso, 1810.

Pteraclidus Rafinesque, 1815:82 (replacement name for *Pteraclis* Gronow); type species, by monotypy, *Coryphaena velifera* Pallas, 1770.

Bentenia Jordan and Snyder, 1901:306; type species, by original designation, *Bentenia aesticola* Jordan and Snyder, 1901.

Pteraclis velifera

Coryphaena velifera Pallas, 1770:19-24, pl. 3, fig. 1 (original description; type locality: Australasian Indian Ocean).

Synonyms:

Pteraclis pinnata Gronow, 1772:43-47, fig. 1 (substitute name for *velifera* Pallas).

? *Pteraclis ocellatus* Cuvier and Valenciennes, 1833:363-367 (Mozambique channel; type in Paris Museum, seen).

Pteraclis trachypterus Cuvier and Valenciennes, 1833:367 (no locality but probably Indo-Pacific, having been collected by Quoy and Gaimard; type in Paris Museum, seen).

Pteraclis guttatus Cuvier and Valenciennes, 1833:370-371 (apparently a replacement name for *P. velifera* of Pallas).

Pteraclis velifera australiae Whitley, 1935:238-239 (Port Jackson, New South Wales; type in Australia Museum, not seen).

Pteraclis carolinus

Pteraclis carolinus Cuvier and Valenciennes, 1833:368-371 (Coast of Carolina; type in Paris Museum, seen).

Synonym:

?Pteraclis papilio Lowe, 1843 (Madeira, type lost)

Pteraclis aesticola

Bentenia aesticola Jordan and Snyder, 1901:306, pl. 16, fig. 6 (Atlantic coast of Japan; type formerly in Tokyo University, lost by fire in 1923).

DESCRIPTION OF ADULT

As the young *Discovery II* specimes are within the size range of the more abundant *Dana* material to be discussed elsewhere, no description will be entered here. The adult, however, is unique as it is the first ever recorded from North Atlantic waters; it provides the following description:

Body more compressed than head, greatest body width about 3.4 in greatest depth. Greatest width of head 3.1 in length of head. Depth of body 4.3 in standard length (s.l.), least depth of caudal peduncle 5.4 in head length. Snout, lower jaw, and all fins except for the proximal part of the caudal naked; head and body otherwise covered with scales. Those on head are weakly serrated but without spines; those of body similar but with vertical median spines which are larger posteriorly than anteriorly. Deep troughs for the reception of dorsal and anal fins formed from scales bordering the bases of these fins. Lateral line if present without modified scales. No scales on dorsal midline between origin of dorsal fin and snout, or between origins of ventral and anal fins. No axillary scales beneath paired fins.

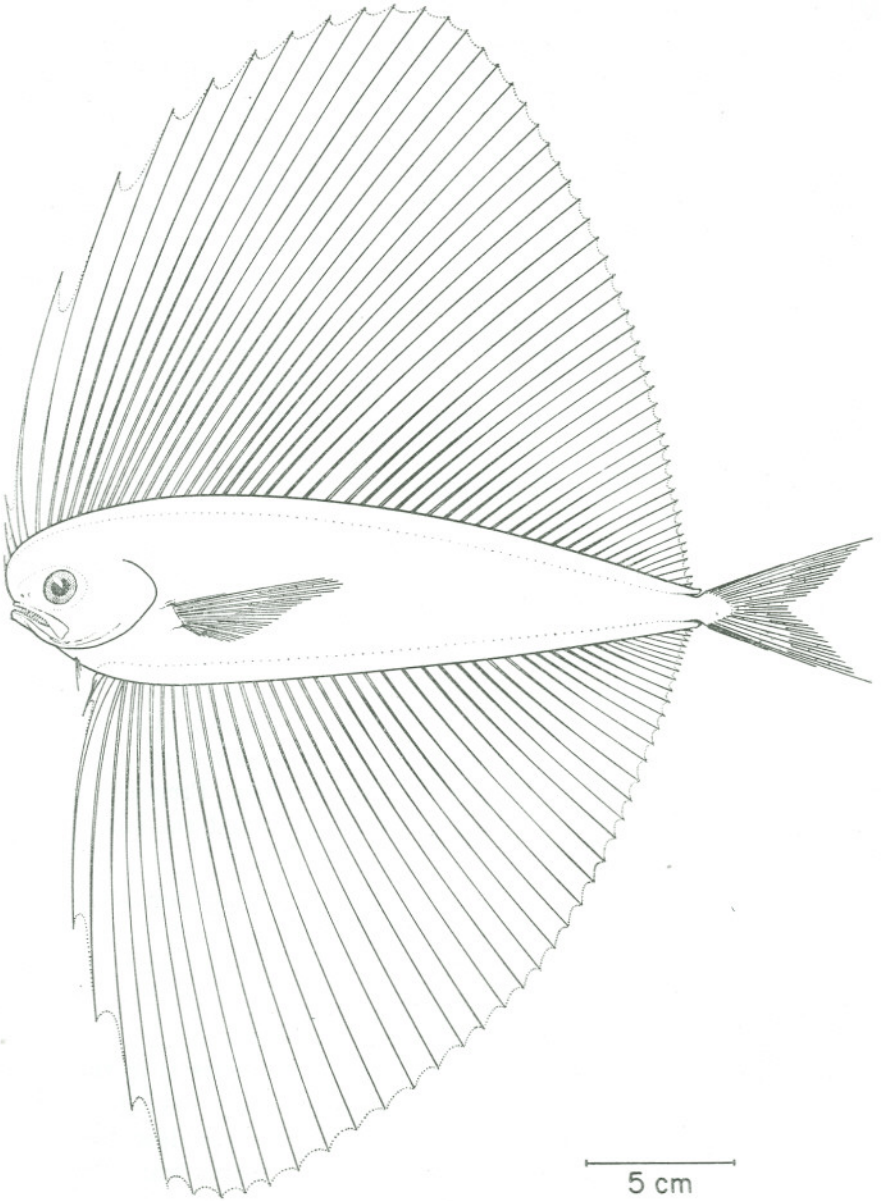

Figure 1. — A small adult specimen of *Pteraclis carolinus*, 237 mm in standard length, from the Funchal fish market; MMF no. 18434. (Drawn by D. W. Bourne.)

Length of head 4.5 in s.l. Snout protruding beyond tip of upper jaw (the shape of this contour is variable in other *Pteraclis* and *Pterycombus*). Horizontal diameter of eye 5.3 in head, an oblique diameter slightly greater than the horizontal. Symphysis of lower jaw in advance of upper; the maxillary extending to a point below rear edge of lens. Mandibular teeth needle-shaped and lying in two rows, those of the inner larger than those of outer. A pair of larger fangs present anteriorly. Premaxillary teeth of similar shape but forming a band which is broader near the toothless symphysis anteriorly. Eight prominent teeth on vomer, about six on palatine, none on tongue. Gill flap joined to isthmus below anterior edge of eye; without spines, and terminating not far ahead of base of pectoral fin. Gill rakers few and feeble, 1+1+6 on first arch with rudimentary rakers above and below. Longest gill raker about a quarter of the length of the opposite gill filament. Subsequent gill arches rugose but without rakers. Pseudobranch prominent.

Dorsal fin originating at anterior tip of head, its base less than 1.1 in s.l.; its longest fin ray contained 1.1 in s.l. Anal origin under gill flap; preanal distance 6.8 in s.l.; length of base of anal fin 1.2 in s.l., length of longest anal ray 1.1 in s.l. Second anal and fourth dorsal rays about six times as thick as the succeeding rays. Preventral length 8.2 in s.l., insertion of fin under eye, its length 5.3 in head; and composed of a spine and five rays difficult to count without careful dissection. Prepectoral length 4.3 in s.l.; lengt of the fin 3.9 in s.l. Caudal fin forked, the lobes approximately equal.

In alcohol, the body is pale with some darkening dorsally. Pectoral fin and caudal lobes dusky. Vertical fins black.

DISTRIBUTION

As noted above, the spawning center of this species is in the central Sargasso Sea, specimens caught elsewhere presumably having originated there. The only adult known is the Madeiran specimen described above, but juveniles have been known from eastern Atlantic waters from the description of *P. papillio* (Lowe, 1843), which may or may not be a pteraclid, and the several specimens recorded by Lütken (1880). Five additional records are represented by material variously collected and present in the Zoological Museum, University of Copenhagen. These positions,

21° to 28° N. lat., 28° to 35° 18' W. long., complete the known list of eastern Atlantic localities.

Table 1. Data associated with the capture of young *Pteraclis carolinus* by R.R.S. *Discovery II* in the eastern Atlantic. The net used, a British Columbia mid-water trawl, was fished at depth and hauled; it was not fished obliquely.

Standard length (s), mm.	Station	Wire out (m)	Estimated depth (m)	Latitude (N)	Longitude (W)	Date	Time
17.2	4741	300	100(-0)	32° 22' to 32° 31.5'	16° 57.5' to 16° 47.5'	19 IX 61	1850 to 2330
26.0	4743	505	170(-0)	32° 34' to 32° 28'	16° 45' to 16° 54'	20 IX 61	2010 to 0025
15.5 & 19.1	4758	445	170(-0)	28° 01' to 28° 12'	16° 46.5' to 16° 56'	30 IX 61	2210 to 0300

Table 2. Meristic data from representatives of three species of *Pteraclis*.

	P. carolinus	*P. velifera*	*P. aesticola*
No. specimens	40	4	1
Dorsal fin	48-54	54-57	49
Anal fin	42-47	47-50	43
Pectoral fin	18-19	20	20
Scales in horizontal series	50-54	55-59	50
Br. rays	8	7	8
Vertebrae (incl. urostyle)	49-52	54	45

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