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FIVE NEW GENERA AND TWO NEW SPECIES OF UNSTALKED CRINOIDS

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In revising the genera and species of the large comatulid family Antedonidae, it was found that a more precise definition of certain generic groups was desirable. This is made possible by the creation of three additional genera the recognition of which will assist in bringing out more clearly the true interrelationships of the species in the groups concerned. In addition to these three genera there are described herein a new genus based upon a hitherto undescribed species from the northeastern Pacific and a genus that has long been used by the author but never formally diagnosed.

A small West Indian comatulid recorded from the *Blake* collection by Dr. P. H. Carpenter as *Antedon hagenii* was for a long time a mystery, as none of the specimens were received by Hartlaub when, after Carpenter's death, the *Blake* collection was sent to him. This now turns out to be a species quite different from *Coccometra hagenii*, and it is described below as *Compsometra nuttingi*. It is assigned to the genus *Compsometra* with some misgivings, but until more adequate and more extensive material is available it seems better to place it here than to create a new genus for it.

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Genus COMPSOMETRA A. H. Clark

COMPSOMETRA NUTTINGI, new species

Antedon hagenii (part) P. H. Carpenter, Bull. Mus. Comp. Zool., vol. 9, no. 4, pp. 154–156 (pp. 4–6 of separate), 1881 (Dominica to Grenada; 75–291 fathoms; Barbados; Grenada).

Antedon hageni (part) P. H. Carpenter, *Challenger* Reports, Zoology, vol. 26, pt. 60, pp. 22, 54, 207, 367, 368, 373, 377, 1888 (Caribbean Islands).—A. Agassiz, Bull. Mus. Comp. Zool., vol. 15 (reprinted as "Three Cruises of the *Blake*"), pt. 2, p. 124, 1888 (Dominica to Grenada; 75–291 fathoms).

Coccometra hagenii (part) A. H. Clark, Univ. Iowa Studies in Nat. Hist., vol. 9, no. 5, pp. 8, 26, 27, 1921.

Description.—The centrodorsal is hemispherical, or low and broadly rounded conical, with a broad area free of cirri and covered with relatively large papillae from the center of which the low, rounded, conical, dorsal pole protrudes.

The cirri are XXV–XXX, 9–11, 3.5 to 5 mm long. The first segment is not so long as broad; the second is longer than broad, strongly constricted centrally with the distal end prominent; the third is about four times as long as the median width with the terminal fourth expanded; the fourth is the longest, about five times as long as the median width; the fifth is about as long as the third; and the sixth is about three times as long as the median width. The segments following decrease in length to the second before the last, which is twice as long as the median width, the antepenultimate, which is half again as long as broad, and the terminal, which is slightly longer than broad and bears a blunt opposing spine. The distal ends of the third and following segments are expanded and produced all around into a thin transparent border that overlaps the base of the segments succeeding; this becomes less prominent on the short distal segments.

The 10 arms are 25 to 40 mm in length. The earlier brachials have the central portion of the distal edge strongly produced and armed with several stout webbed spines. Beyond the second syzygy the brachials are constricted centrally and have produced and spinous distal ends. The distal brachials are much elongated and very strongly constricted centrally; the syzygial unions are also much swollen.

The distal intersyzygial interval is usually two muscular articulations.

P_1 is long and slender, evenly and gradually tapering and becoming very delicate distally. It is composed of 18 to 20 segments of which the first is about as long as broad, the second is slightly longer than broad, the third is twice as long as the median width, strongly constricted centrally, and the remainder are much elongated, four or five times as long as the median width, with swollen proximal ends and the distal ends strongly flaring and spinous.

P_2 is about two-thirds as long as P_1 and is much stouter basally, though becoming very slender in the distal half. It is composed of 11 to 12 segments of which the first is short, the second is longer than broad, and the third and following are much elongated with expanded and spinous distal ends. There is a long ovate gonad on the third–fourth or third–fifth segments. The following pinnules are similar. The lower and middle pinnules have the distal ends of the segments strongly produced and armed with prominent spines. The distal pinnules are very slender.

Type.—From the University of Iowa's Barbados–Antigua Expedition station 15; Barbados. U.S.N.M. no. E. 4289.

Range.—West Indian Islands, from Cuba to Grenada; from shallow water to 532 meters.

Remarks.—This new species, which heretofore has been confused by the author and others with the very different *Coccometra hagenii*, appears to be most closely related to *Compsometra parviflora* of the East Indies.

ANNAMETRA, new genus

Annametra A. H. Clark, U. S. Nat. Mus. Bull. 82, vol. 1, pt. 2, pp. 618, 647, 648, 681, 723, 1921; The Danish *Ingolf*-Exped., vol. 4, no. 5, Crinoidea, p. 41 (range), p. 52 (in key), 1923.

Diagnosis.—A genus of Antedoninae in which P_3 is of the same length and character as the succeeding pinnules; P_1 and P_2 have 18 to 32 segments; P_1 is shorter than P_2 though similar to it; and the cirri are short and stout, strongly recurved distally, resembling the cirri of *Antedon petasus*, with 10 to 16 segments.

Genotype.—*Cominia occidentalis* A. H. Clark, 1915.

Range.—Cape of Good Hope; southern Japan; 0–47 meters.

Included species.—*Annametra occidentalis* (A. H. Clark); *A. minuta* (A. H. Clark).

CARYOMETRA, new genus

Diagnosis.—A genus of Zenometrinae in which the centrodorsal is elongate conical with its sides not divided into radial areas, bearing beneath each radial three columns of cirrus sockets of which the median ends at about the middle of the centrodorsal; the cirri are long but delicate with rather numerous (30–35) segments of which the longest proximal are two to three times as long as broad and the fifteenth and following are about as broad as long, or broader than long, with small terminal dorsal spines; the elements of the IBr series and the lower brachials are not in lateral contact, and their edges are smooth; and all the pinnules are present.

Genotype.—*Adelometra tenuipes* A. H. Clark, 1908.

Range.—Off Habana, Cuba; 386 meters.

Included species.—*Caryometra tenuipes* (A. H. Clark).

EOMETRA, new genus

Diagnosis.—A genus of Zenometrinae in which the centrodorsal is small, conical with somewhat swollen sides, about as high as broad at the base, almost completely covered with cirrus sockets, which are arranged in 10 closely crowded columns of 2 or 3 each; the cirri are slender and only slightly curved distally, gradually tapering to a fine point, with all the segments except the basal much elongated and without dorsal processes; the elements of the IBr series and lower brachials are smooth and not in lateral contact; all the pinnules are present; P_1 and P_2 are similar, the latter the longer; P_3 and the pinnules following are much longer than P_2.

Genotype.—*Psathyrometra antarctica* A. H. Clark, 1915.

Range.—Antarctic; 2,725 meters.

Included species.—*Eometra antarctica* (A. H. Clark).

BOLEOMETRA, new genus

Diagnosis.—A genus of Bathymetrinae in which the first six or seven segments of P_1 are as broad as, or broader than, long; there are not more than 30 cirrus segments; and the brachials and pinnule segments have smooth distal edges.

Genotype.—*Antedon clio* A. H. Clark, 1907.

Range.—Southwestern Japan; 195 meters.

Included species.—*Boleometra clio* (A. H. Clark).

RETIOMETRA, new genus

Diagnosis.—A genus of Bathymetrinae in which P_1 is much elongated, about twice as long as P_2, and composed of 20 to 30 segments; P_2 resembles the succeeding pinnules and bears a large gonad; the brachials have slightly produced and spinous distal ends; the centrodorsal is low hemispherical; and the cirri are short with 11 to 20 segments of which the longest are not more than three times as long as broad and the distal do not bear dorsal spines.

Genotype.—*Retiometra alascana*, new species.

Range.—Southeastern portion of Bering Sea and the Gulf of Alaska; vicinity of Marion Island (southeast of the Cape of Good Hope); 91–1,270 meters.

Included species.—*Retiometra alascana*, new species; *Retiometra exigua* (P. H. Carpenter).

RETIOMETRA ALASCANA, new species

Description.—The centrodorsal is very low with a broad bare dorsal pole about one-third the diameter of the centrodorsal in width; the 45 to 60 cirrus sockets are closely crowded and increase slowly in size from the vicinity of the bare dorsal pole to the periphery.

The cirri are XLV–LX, 11–12, 7 or 8 mm long. The first segment is half again to twice as broad as long; the second is nearly twice as long as broad; the third and fourth are nearly three times as long as the median width, slightly constricted centrally; and those following slowly decrease in length so that the antepenultimate is not quite twice so long as broad, at the same time losing the median constriction so that they appear slightly broader in lateral view. The penultimate segment is half again as long as broad. The opposing spine is small, terminal, and directed obliquely forward; its dorsal profile makes practically a straight line with that of the penultimate segment. The terminal claw is about as long as the penultimate segment, rather stout at the base, evenly tapering, and evenly and strongly curved.

The distal edges of the radials are even with the rim of the centrodorsal. The IBr_1 are extremely short, about six times as broad as long in the median line, just in contact basally, with the lateral edges so strongly convergent as to make almost a straight line with those of their neighbors. The IBr_2 (axillaries) are triangular, broader than long, the anterior angle, which is not produced, approximately a right angle, the anterior sides only slightly concave, the lateral angles extending far beyond the anterolateral angles of the IBr_1, yet widely separated from those of the adjacent axillaries, and with a slight well-rounded process in the median portion of the proximal border.

The 10 arms are 55 to 75 mm in length. The first brachials are very short, twice as long exteriorly as interiorly, with the proximal half of the inner edges of those of each arm pair in contact and the distal halves diverging at first in a straight line, which later turns abruptly upward in a slightly rounded right angle. The second brachial is much larger and is irregularly quadrate. The first syzygial pair (formed of the third and fourth brachials) is slightly longer interiorly than exteriorly, and about as broad as the median length. The next five brachials are almost oblong, and about half again as broad as long. The following brachials become almost or quite triangular, about as long as broad, and gradually wedge-shaped and elongate distally. The distal edges of the brachials are slightly produced and finely spinous, giving the profile of the arm a regularly serrate appearance.

Syzygies occur between brachials 3+4, 9+10, and 14+15, and distally at intervals of 2 (rarely 3) muscular articulations.

In the type specimen P_1 is 10 mm long with 20+ segments, slender but not attenuated; the first segment is short, the second is about as long as broad, the fourth and fifth are twice as long as broad, and the distal are about four times as long as broad. The elongated segments have somewhat abruptly produced and overlapping distal ends, which are armed with very fine spines. P_2 is 8 mm in length with 13

segments of which the first is broader than long, the second is about as long as broad, the third is twice as long as broad, and the remainder are much elongated with produced and finely spinous ends. P_3 is similar to P_2, and the pinnules following are similar. After P_5 the gonads gradually become smaller, disappearing after P_{10}.

Type.—From *Albatross* station 3330; north of Unalaska (lat. 54°00′45″ N., long. 166°53′50″ W.); 642 meters; bottom temperature 3.22° C.; black sand and mud; August 21, 1890. U.S.N.M. no. E. 1141.

Range.—Southeastern Bering Sea and the Gulf of Alaska; 291 (?197)–1,270 meters. This species is usually found associated with the very much larger *Florometra asperrima.*

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