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Notes on *Barathronus maculatus* (Aphyonidae) with Two Records from off Japan

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Abstract *Barathronus maculatus* Shcherbachev, 1976 was until now known by two records only, both from off Southeast Africa. Three additional specimens, two of which are from off Japan and one from off Madagascar, are treated here. A redescription with illustrations of e.g. the characteristic copulatory apparatus is given.

Barathronus maculatus was described by Shcherbachev (1976: 164) based on a single male specimen caught off Southeast Africa. A second specimen from the same area was published upon by Shcherbachev *et al.* (1978: 191). Since then two additional specimens have been caught, one of which is from off Japan and the other from off Madagascar. Furthermore, the specimen taken by the *Albatross* in 1906 off Japan and described as "*Barathronus* specimen" (Nielsen, 1969: 57) also seems to belong to *B. maculatus*. We reexamined them, and a short redescription is given emphasizing the diagnostic characters of the species. Its relation to other *Barathronus* spp. is also discussed.

The following abbreviations are used: BSKU—Department of Biology, Faculty of Science, Kochi University. MNHN—Museum National d'Histoire Naturelle, Paris. USNM—United States National Museum of Natural History, Washington, D.C. ZIL—Zoological Institute, Leningrad.

Diagnosis. *B. maculatus* differs from other *Barathronus* spp. in having areas with strongly developed brown pigment dorsally between head and anterior part of dorsal fin and on both sides of body and a median placed dorsal and ventral clasper surrounding proximal part of penis. Furthermore, it is distinguished in having the following combination of characters: peritoneum blue, no bulbs developed at basis of penis, palatines edentate and a total of 74–77 vertebrae.

Relationship. *B. maculatus* is rather isolated among the nine *Barathronus* spp. because of the complicated form of the copulatory apparatus. It seems closest to *diaphanus* Brauer, 1906 due to the blue peritoneum and dorsal brown pigment, but differs in many characters e.g. the copulatory apparatus. Shcherbachev (1976: 164) stated that *maculatus* is closest to *bicolor* with reference to the colouration of one of 42 specimens mentioned by Nielsen (1969: 39). The closest related species may turn out to be a yet undescribed species from the Northeast Atlantic as this is the only other *Barathronus* species with a clasper at the proximal part of the penis.

Barathronus maculatus Shcherbachev, 1976
(New Japanese name: misuji-okumeuo)

Barathronus maculatus Shcherbachev, 1976: 164, fig. B; Cohen and Nielsen, 1978: 62; Shcherbachev *et al.*, 1978: 191; Schwarzhans, 1981: 109, fig. 157; Nielsen (in press).

Barathronus sp. Machida, 1984: 266.

Barathronus specimen Nielsen, 1969: 57.

Material. Five specimens. Holotype: ZIL N 42298 (SL 157 mm, ♂), *Fiolent* st. 198 (26°41′S, 34°06′E), 1,000 m, bottom trawl, 27 Sep. 1973. USNM 150285 (SL 156 mm, ♂), *Albatross* st. D-5065 (35°05′40″N, 138°29′30″E), 386–430 m, bottom trawl, 15 Oct. 1906. ZIL N 45144 (SL 182 mm, ♀), *Fiolent* st. 255 (30°16′S, 31°18′E), 950–1,050 m, bottom trawl, 26 May 1974. MNHN 1984-371 (SL 144 mm, ♂), *Vauban* Crosnier coll. trawl, no. 133 (13°02′S, 48°02′E), 1,000–1,525 m, bottom trawl, 21 Jan. 1975. BSKU 28689 (SL 137 mm, ♀), *Yuryo-maru* No. 8 net no. 60 (28°53′N, 127°18′E), 820–830 m, bottom trawl, 16 Mar. 1978.

Shcherbachev (1976) and Shcherbachev *et al.* (1978) suggested that the specimen from off South Africa referred by Gilchrist (1906: 158) to the West Atlantic *B. bicolor* Goode et Bean, 1886, more appropriately could be included in *B. maculatus* judging from the distribution of the two species. However, the short description given by Gilchrist indicates that

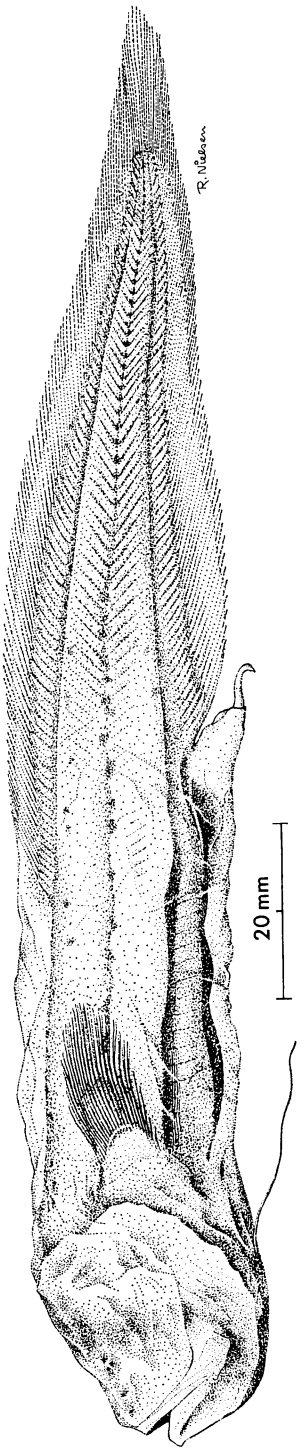

Fig. 1　Holotype of *Barathronus maculatus*, SL 157 mm (ZIL N 42298).

the specimen is much closer to a species from off Madagascar presently under description by one of us (JGN).

Description. An illustration of the holotype is given here (Fig. 1) as it was not included in the original description. Table 1 contains the more important meristic and morphometric characters. There is a fine accordance between the five specimens except for one of those from off Japan (USNM 150285) which has a somewhat shorter dorsal fin.

The skin is loose, scaleless and transparent. As mentioned in the diagnosis certain areas are brown-pigmented. The bluish peritoneum is divided by the pale musculi infracarinales mediales into three bluish streaks. The Japanese specimen (USNM 150285) is much bleached.

The left sagitta is shown in Fig. 2. The sulcus is undifferentiated and an ostial channel is indicated (Schwarzhans, 1981: fig. 157).

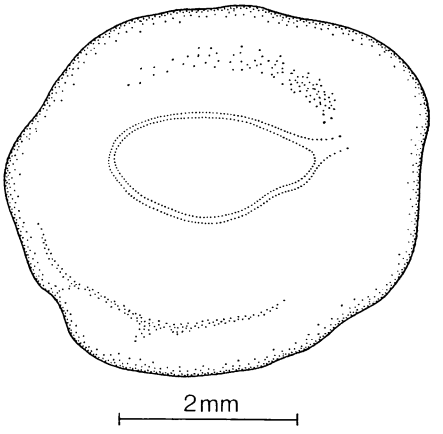

Fig. 2. Otolith (left sagitta) from *Barathronus maculatus*, SL 144 mm (MNHN 1984-371).

The dentition consists of 2–3 fangs on vomer, 3–4 fangs posteriorly on each dentary and many fine, granular teeth anteriorly, granular teeth

Table 1. Meristic and morphometric characters of *Barathronus maculatus*.

	Holotype ZIL N 42298	ZIL N 45144	MNHN 1984-371	BSKU 28689	USNM 150285
SL in mm	157	182	144	137	156
Meristic characters					
Dorsal fin rays	76	78	82	82	75
Caudal fin rays	10	10	10	10	10
Anal fin rays	57	61	66	62	59
Ventral fin rays	1/1	1/1	1/1	1/1	1/1
Pectoral fin rays	24/24	25/24	25/25	24/24	25/25
Developed rakers on anterior gill arch	6+1+24 =31	5–6+1+24–25 =30–32	6–7+1+24–25 =31–33	5–6+1+25–26 =31–33	6+1+23–24 =30–31
Vertebrae	35+40	35+42	35+41	34+40	33+42
Anterior anal ray below dorsal ray no.	19	19	23	22	13
Anterior anal ray below vertebra no.	35	37	37	34	32
Anterior dorsal ray above vertebra no.	25	24	23	23	26
Morphometric characters as % of SL					
Head	18.5	18.5	18.0	18.5	19.0
Upper jaw	10.0	10.0	10.5	11.0	11.0
Preanal	55.0	52.0	53.0	53.0	51.0
Predorsal	41.0	40.5	37.0	41.0	45.0
Preventral	14.5	15.5	15.0	15.5	15.5
Base of ventral fins to anterior anal ray	46.0	39.5	40.0	42.5	39.0

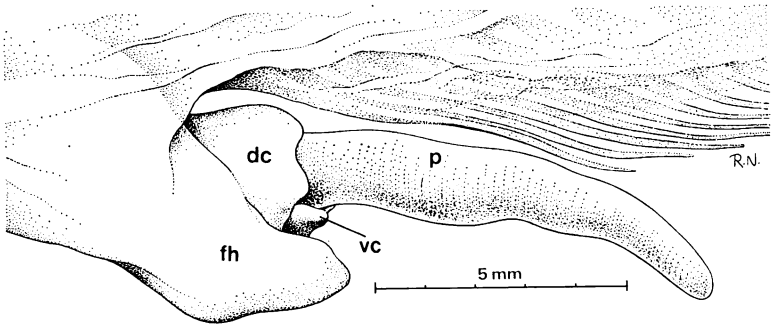

Fig. 3. Copulatory apparatus of *Barathronus maculatus*, SL 144 mm (MNHM 1984-371). dc, dorsal clasper; fh, fleshy hood; p, penis; vc, ventral clasper.

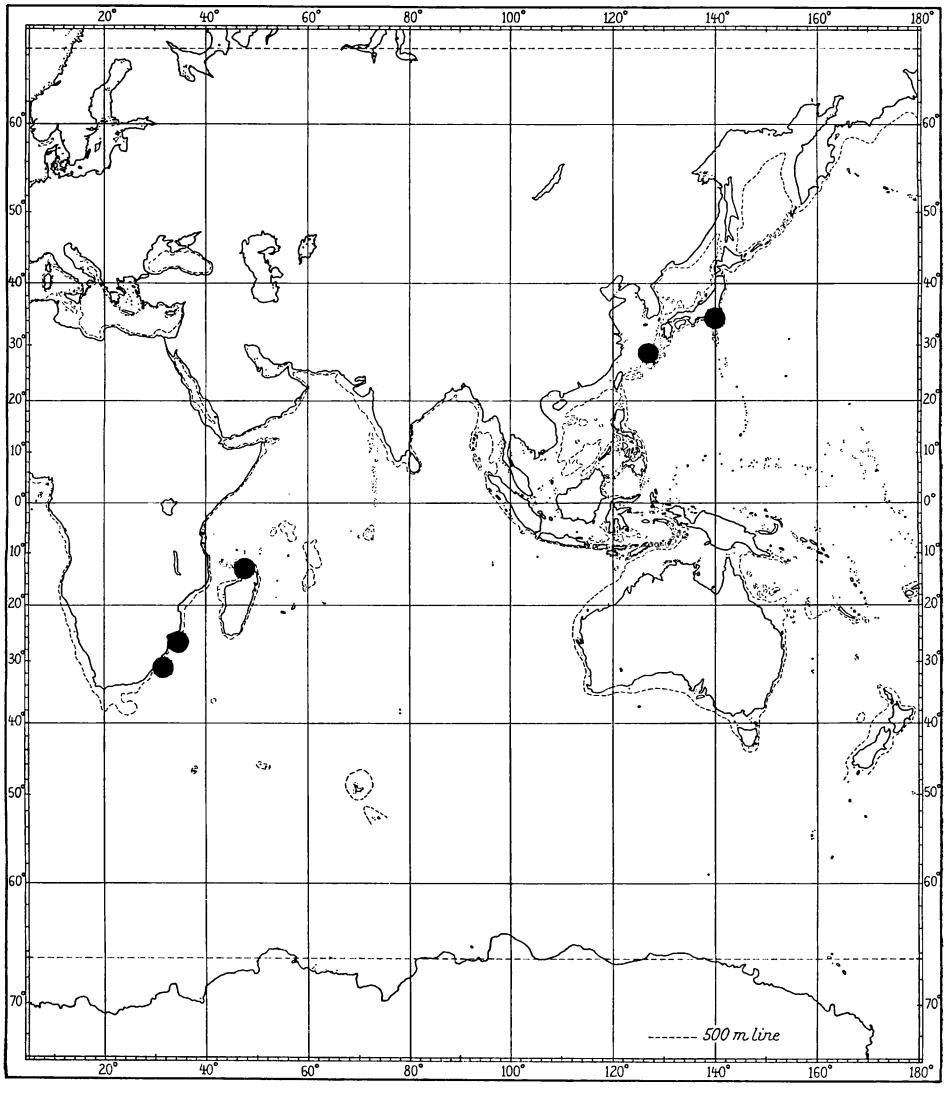

Fig. 4. Records of *Barathronus maculatus*.

and no fangs on premaxillaries and no teeth at all on the palatines.

The anterior gill arch is provided with 30–33 rakers all well developed and dentigerous. Two pseudobranchial filaments developed.

The most recently caught Japanese specimen (BSKU 28689) is an adult female with large, newly spent ovaries. Three of the remaining specimens are adult males two of which have ripe and one (USNM 150285) has unripe testes. Correspondingly, the penis is well developed in the two former and short in the latter specimen.

The copulatory apparatus of the specimen from off Madagascar is shown in Fig. 3. It consists of a fleshy hood, an elongate penis and a dorsal and a ventral clasper sorrounding the proximal part of the penis. The claspers of the *Albatross* male are almost completely united.

Shcherbachev (1976: fig. B) illustrated the copulatory apparatus of the holotype which seems to differ from Fig. 3 by only having a dorsal clasper. However, Shcherbachev (1976: 164) states the presence of both a ventral and a dorsal clasper which corresponds to what was found by one of us (JGN) when examining the holotype in 1979.

Distribution. The five known records are indicated on Fig. 4. The depths vary between 386 and 1,525 m. All specimens were caught in bottom trawls.

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日本からの初記録を含むソコオクメウオ科の *Barathronus maculatus* の再記載

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ソコオクメウオ科の *Barathronus maculatus* ミスジオクメウオ（新称）を再記載した．本種は南アフリカ産の 1 個体にもとづき Shcherbachev (1976) により記載されて以来，同地域から 1 個体の追加報告があるのみであったが，本研究でマダガスカルから 1 個体，日本から 2 個体が新たに追加された．

本種は頭部から背鰭前部にかけてと体側が濃い褐色をおびること，陰茎の基部の背腹側にそれをとりまく clasper があること，腹膜が青色をおびること，陰茎の基部に bulb がないこと，口蓋骨歯がないこと，脊椎骨数が 74～77 個であることを特徴とする．

本種の完模式標本を初めて図示するとともに，本種の交接器の特徴について言及し，近縁種についての若干の論議を行った．

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