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VAILLANTELLINAE, A NEW SUBFAMILY OF COBITIDAE (PISCES, CYPRINIFORMES)

by

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With 10 text-figures

INTRODUCTION

It is generally accepted that the Eurasian freshwater fish family Cobitidae includes three main divisions, usually considered as subfamilies: Cobitinae, Botiinae and Noemacheilinae (Berg, 1940; Ramaswami, 1953; Nalbant, 1963). The two first named, in which the lateral ethmoids are movable, are usually considered closer to each other than either of them to the Noemacheilinae. The largest subfamily is Noemacheilinae; some 180 species are presently accepted as valid, most of them being still ascribed to a single genus, *Noemacheilus*. Quite a few other genera are accepted besides *Noemacheilus*, one of these being *Vaillantella* Fowler, 1905. Its original description (Fowler, 1905, in a footnote) is quite short, mentioning only the very long dorsal fin; a somewhat more complete diagnosis by Weber & De Beaufort (1916) does not add any characters useful for clarifying the phylogenetic position of the genus.

Having had the opportunity to examine the type material of two of the three known species of the genus, we realized that it differs from all other Noemacheilinae in several important characters. Hence we consider it to represent a fourth subfamily of Cobitidae.

The specimens on which this study is based belong to two museums: Rijksmuseum van Natuurlijke Historie, Leiden (RMNH) and Zoölogisch Museum, Amsterdam (ZMA).

Systematic account

Vaillantellinae, subfamilia nova
(Type genus: *Vaillantella* Fowler, 1905)

Body elongate, compressed. Dorsal fin very long, with 59-71 branched rays. Caudal deeply forked, its upper lobe longer than the lower. Mouth less inferior than in other Cobitidae, almost subterminal. Lips fleshy but smooth, without lobes or papillae, continuous (but groove behind lower lip interrupted (figs. 3, 8). Two rostral and one maxillar pairs of barbels; the rostral barbels very close to each other, starting from a common base. Body completely scaled; head naked. Scales rather large (for Cobitidae), imbricated, elongate, with small and excentric focal zone (fig. 6). Lateral line present but incomplete. Genipores, both on sides and on inferior face of head, very large (figs. 2, 3). Anus well in advance of anal fin insertion, closer to pelvic axil. Gill opening in its lower part oblique, as in Botiinae (in Noemacheilinae it is vertical). Stomachal dilatation of the intestine less developed than in Noemacheilinae; posterior part of intestine straight (figs. 4, 9). Capsule of the anterior chamber of the air-bladder unique, consisting of two distinct lateral plates; posterior part of the air-bladder very long, free, subdivided in two chambers separated by a constriction (figs. 5, 10). Lateral ethmoids firmly attached to the skull (no movable suborbital spine). Apparently no sexual dimorphy.

Comparative observations. — The most striking difference between *Vaillantella* and the Noemacheilinae concerns the air-bladder capsule, which in *Vaillantella* is unique, while in the Noemacheilinae it consists of two lateral dilatations, generally connected by a narrow median part. In this character, *Vaillantella* is closer to the Botiinae. The fact that the air-bladder capsule is incompletely ossified, having only the median part ossified, reminds of the situation present in some Botiinae (*Leptobotia fasciata, Botia modesta*). A transversal subdivision of the large free posterior part of the air-bladder in an anterior and a posterior chamber occurs also in some Noemacheilinae (Rendahl's "*Triplophysa*-type" in several High (= central) Asian species and in *Micronoemacheilus cruciatus*); but the shape of the air-bladder of these *Noemacheilinae* is quite different from that in *Vaillantella*. *Vaillantella* ressembles the Botiinae, but also some primitive Noemacheilinae (*Noemacheilus* s.str. and a few *Acoura*) in the fact that both pairs of rostral barbels spring from a common base, while in most Noemacheilinae each barbel is completely independent. *Vaillantella* is similar to the Botiinae also in having smooth lips (in all Noemacheilinae these are at least slightly

furrowed) and in the shape of the gill opening. But in one character it is evidently closer to the Noemacheilinae: in lacking the movable suborbital spine (i.e., in having the lateral ethmoid firmly attached to the skull).

A peculiarity of the Vaillantellinae is the great variability of the number of branched anal rays: 5 in *V. euepiptera,* 10-13 in *V. maassi,* 9-12 in *V. flavofasciata*; all other Cobitidae have only 5, with the exception of *Noemacheilus gallilaeus* (now relegated to a separate genus) and perhaps of *N. abyssinicus,* which have six.

It is difficult to say if the Vaillantellinae are closer to the Noemacheilinae or to the Botiinae. They ressemble the Botiinae in more characters, but the absence of a movable suborbital spine (a character shared with the Noemacheilinae) may be phyletically more significant. Their intermediate position between the two subfamilies mentioned warrants a reconsideration of the relationships within the family Cobitidae. Most authors are of the opinion that the Botiinae and the Cobitinae (both characterized by a movable suborbital spine) are closer to each other, the Noemacheilinae being more differentiated. Yet *Vaillantella* is similar to the Noemacheilinae in some characters, to the Botiinae in others, sharing no common characters with the Cobitinae. It must be remembered that this is the only subfamily having a single pair of rostral barbels, the second pair being intermediate in position (neither rostral, nor maxillar). It may be surmised that the Noemacheilinae, Vaillantellinae and Botiinae represent one major subdivision of the Cobitidae and the subfamily Cobitinae a second.

Most characters shared by the Vaillantellinae and the Botiinae may be considered as primitive (plesiomorph); the exceptionally long dorsal fin is evidently a derived (apomorph) character.

Vaillantella Fowler, 1905
(Type species: *Noemacheilus euepipterus* Vaillant, 1902)

Same characters as the subfamily; three species:

Vaillantella euepiptera (Vaillant, 1902) (figs. 1-6)

Noemacheilus euepipterus Vaillant, 1902: 137; *Vaillantella euepipterus:* Weber & De Beaufort, 1916: 37, fig. 17.

Specimens examined: syntypes of *N. euepipterus,* RMNH 7781, Pontianak, Kalimantan (= Borneo), leg. Moret, 1895, two ex., 67.0 and 61.0 mm; the largest specimen is here declared lectotype, retaining the original register number; the second specimen, now paralectotype, was removed to RMNH 27638. — RMNH 7782, Sintang, Kalimantan, leg. Dr. J. Büttikofer, 1894, two ex., 63.0 and 47.0 mm (a third specimen of the series

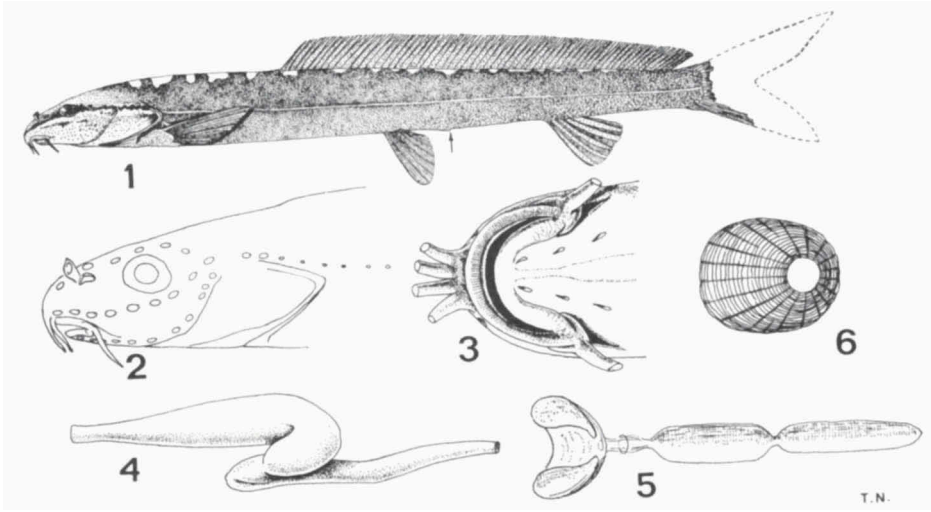

Fig. 1. *Vaillantella euepiptera,* lectotype (RMNH 7781); lateral view. — Fig. 2. *Vaillantella euepiptera,* lectotype; lateral view of head. — Fig. 3. *Vaillantella euepiptera,* lectotype; ventral view of head. — Fig. 4. *Vaillantella euepiptera,* paralectotype; intestinal tract. — Fig. 5. *Vaillantella euepiptera,* paralectotype; air bladder. — Fig. 6. *Vaillantella euepiptera,* paralectotype; subdorsal scale.

proved to be a *V. maassi*); these specimens, belonging to the syntypic series, become paralectotypes. [1])

D 3/52-62; A 2/5; Vert. 50-51 (without the hypurals).

In % of standard length: body maximum depth 7.9-10.4; least depth 4.2-4.9; caudal peduncle length 14.8-19.8; predorsal distance 34.2-36.1; preanal 73.0-76.5; preventral 51.4-54.2; distance from pectoral to pelvic insertion 34.0-39.0; distance from pelvic to anal 19.4-23.0; length of pectoral 9.6-13.1; of pelvic 9.5-10.6; dorsal base 57.7-65.5; dorsal height 9.7-11.8; anal base 6.4-7.4; anal height 8.6-10.4; head length 17.1-18.7; snout 4.5-6.4 (and 26.1-33.9 % of head); eye diameter 1.9-2.2 % of standard length (9.2-11.3 % of head and 75-100 % of interorbital width).

Colour pattern (see fig. 1). — Back and sides reddish brown, ventral face lighter; a longitudinal median row of irregular whitish spots on back, some of them confluent. Fins pale. A blackish stripe on head, from end of opercle to

[1]) Bertin & Estève (1947) mention a specimen in the collections of the Museum National d'Histoire Naturelle, Paris (MNHN 03.201), received from the Leiden Museum, as holotype of *N. euepipterus*. It evidently belonged to the same series as the five syntypes examined by us and was retained in Paris by Vaillant who studied the whole series. Since that specimen actually is a syntype and as it is normal that the lectotype remains in the original collection, the specimen in the Paris Museum should be considered not as a holotype, but as a paratype or paralectotype.

tip of snout, crossing the eye; a less marked greyish stripe on the anterior half of head, below the blackish one.

Vaillantella maassi Weber & De Beaufort, 1916 (figs. 7-10)

Vaillantella maassi Weber & De Beaufort, 1916: 38, fig. 18.

Specimens examined: holotype, ZMA 100993, Goenoeng Sahilan on Kampar kiri R., Sumatra, leg. J. P. Kleiweg de Zwaan, 79.0 mm; — out of RMNH 7702, Sintang, Kalimantan, one ex., 55.5 mm (now RMNH 27619).

D 3/68-71; A 2/10-13; Vert. 53 (without hypural).

In % of standard length: body depth 7.6 in both specimens; least depth 4.5 in holotype, 5.4 in second specimen; caudal peduncle 15.2 and 14.4; predorsal distance 31.2 and 34.8; preanal distance 71.0 and 76.0; preventral distance 44.2 and 47.7; distance from pectoral to pelvic 27.2 and 31.6; from pelvic to anal 25.5 and 24.0; length of pectoral 8.6 and 9.0; of pelvic 8.6 and 9.9; dorsal base 60.2 and 64.2; dorsal height 8.2 and 8.3; base of anal 15.4 and 10.8; anal height 6.7 and 7.2; head 16.2 and 18.4; snout 5.0 and 6.4 (28.8 and 34.4 % of head); eye diameter 1.5 and 1.8 (9.4 and 9.8 % of head and 54.5 and 67.0 % of interorbital width).

Colour pattern. — Not well preserved, uniform brown according to Weber & De Beaufort (1916).

Remarks. — This species was described after a single specimen, from Kampar kiri R., Sumatra, characterized by A 2/13, as against 2/5 in *V. euepiptera*. We identified a second specimen of *V. maassi* with A 2/10, among the syntypes of *V. euepiptera*, from Kalimantan. This may represent a

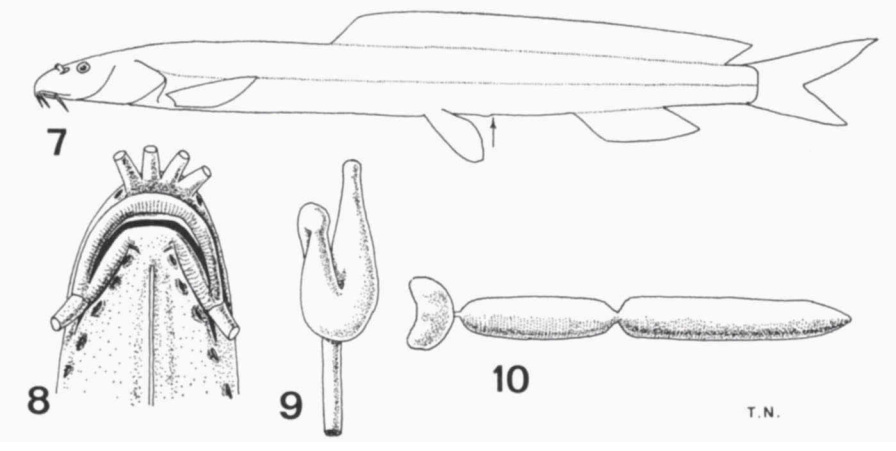

Fig. 7. *Vaillantella maassi*, holotype (ZMA 100993); lateral view. — Fig. 8. *Vaillantella maassi*, holotype; ventral of head. — Fig. 9. *Vaillantella maassi*, holotype; intestinal tract. — Fig. 10. *Vaillantella maassi*, holotype; air bladder.

separate subspecies but more specimens are necessary to decide in this matter. When comparing the body proportions of the four specimens of *V. euepiptera* and the two of *V. maassi* one remarks several differences: prevental distance and pectoral-pelvic distance shorter, pelvic-anal distance longer, height of dorsal less, base of anal much longer, eye diameter smaller in *V. maassi,* besides the number of branched anal rays, which provides the most striking difference between both species.

Vaillantella flavofasciata Tweedie, 1956

Vaillantella flavofasciata Tweedie, 1956: 59, pl. 6, b.

No specimens available. Judging by the original description by Tweedie, this Malayan species has 61-67 rays in the dorsal fin (probably 58-64 branched ones) and 11-14 in the anal fin (probably 9-12 branched ones); it is evidently closest to *V. maassi* and, curiously, seems closer to the only specimen known from Kalimantan than to the single Sumatra specimen, in spite of the geographical proximity of Malaya and Sumatra.

The range of the genus *Vaillantella* includes the southern part of Malaya, the north-eastern slope of Sumatra and the western slope of Kalimantan (or Borneo), i.e. areas which until geologically recent times belonged to the so-called "Sundaland" peninsula. Specimens were recorded only from few and isolated localities, yet it seems possible that the genus has a continuous range. Probably it has a hidden way of life, as a consequence of which it is very poorly represented in collections. Its general range may be wider than known, but it seems not to include North Borneo, which was thoroughly investigated by Inger & Chin (1962) and where no *Vaillantella* was found.

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