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# B R E V I O R A

## Museum of Comparative Zoology

CAMBRIDGE, MASS.

25 FEBRUARY, 1972

NUMBER 384

### AN ATTEMPT TO DETERMINE THE SYSTEMATIC POSITION OF *ELLOPOSTOMA MEGALOMYCTER*, AN ENIGMATIC FRESHWATER FISH FROM BORNEO

Tyson R. Roberts<sup>1</sup>

**ABSTRACT.** The types and only known specimens of *Ellopostoma megalomycter* (Vaillant) are figured and redescribed. This highly distinctive fish may have a Weberian apparatus with osseous swimbladder capsules similar to those in Cobitidae, but it differs from all Cobitidae in several important respects. Resemblance between *Ellopostoma* and Kneriidae evidently is mainly superficial. *Ellopostoma* cannot be classified with assurance because fundamental osteological information about it is lacking, owing to the present condition of the specimens. Its relationships, when worked out on the basis of fresh material, are likely to be of phyletic significance. The present account will permit the identification of new material of *Ellopostoma* with greater facility than the older accounts, because some errors are now corrected and more descriptive details are given.

#### INTRODUCTION

The rich fish collections obtained by the Netherlands Borneo Expedition of 1893–97 included specimens of a peculiar little fish that Vaillant (1902: 141–149, figs. 42–45) described as *Aperiopus megalomycter* and assigned to the Cobitidae. He also proposed a provisional new genus, *Ellopostoma*, for it. Vaillant's figures depict a moderately elongate, small-scaled fish with very large nostrils and eyes, and a most peculiar inferior mouth with a single pair of barbels. No modern ichthyologist has found it possible to assign a firm systematic position to this strange fish. Despite

<sup>1</sup> Museum of Comparative Zoology, Cambridge, Mass. 02138.

Vaillant's placement with the cobitids, later accounts of that family have neglected the species. Its appearance calls to mind the Kneriidae, a family of gonorynchiform fishes known only from fresh water in Africa. Weber and de Beaufort (1916: 237-239, fig. 97) examined the type specimens and doubted that they belong to the Cobitidae. They reproduced Vaillant's figures and pointed out that the species is not an *Aperioptus* and should be known as *Ellopostoma megalomycter* (Vaillant) (see below). No additional specimens have been found and nothing further about it has appeared in print.

Dr. M. Boeseman, Curator of Fishes of the Rijksmuseum van Natuurlijke Historie in Leiden, kindly lent his institution's type specimens of *Ellopostoma* so that I might try to classify it. The following account gives an emended description of *Ellopostoma* and points out the difficulties in trying to place it on the basis of the available material. There remains a major question as to whether the structures interpreted as a Weberian apparatus by Vaillant are really such. If they are, *Ellopostoma's* closest relationship probably is with Cobitidae. If its postcranial bony capsules have some other origin the relationships are more problematic and might lie with Kneriidae. In the description given below its characteristics are compared with those of both Cobitidae and Kneriidae.

I wish to thank Mr. Andrew Konnerth for preparing radiographs and Professor George S. Myers for reading the manuscript, and Dr. M. L. Bauchot for information about the Paris specimen of *Ellopostoma*.

#### *ELLOPOSTOMA* Vaillant 1902

*Type species.* *Aperioptus megalomycter* Vaillant 1902, by monotypy.

*Note.* In describing *Aperioptus megalomycter*, Vaillant proposed for it the new generic name *Ellopostoma* in a footnote in case it should prove not congeneric with *Aperioptus*. *Aperioptus* Richardson 1848 (type species *Aperioptus pictorius* Richardson 1848, by monotypy) was based on a rather unsatisfactory drawing and notes made before the only two specimens were inadvertently thrown away, and its identity may never be resolved. The only locality information for the specimens is that they came

from Borneo. If they were freshwater they may have been cobitids, as implied by Günther (1868: 371). In any event, Richardson's description and figure (reproduced on pp. 238-239 in Weber and de Beaufort, 1916) indicate a fish differing in several major respects from Vaillant's fish, the proper designation for which is thus *Ellopostoma megalomycter*, as pointed out by Weber and de Beaufort.

*Ellopostoma megalomycter* (Vaillant)

Figure 1

*Material.* The type series of *Ellopostoma* consists of four specimens. No holotype was designated and thus they are equivalent syntypes. Three specimens, 24.3, 39.5 and 41.4 mm in standard length, were retained by the Rijksmuseum in Leiden (RMNH 7777) and one specimen, 40.5 mm in standard length, was presented to the Museum National d'Histoire Naturelle in Paris (MNHN 03-202). I have examined all four and find them very soft and poorly preserved. The 24.3-mm specimen belongs to the genus *Noemacheilus*. It has the characteristic three pairs of barbels and 11 dorsal fin rays. Its eye is relatively smaller than that of *Ellopostoma*, but unusually large for a *Noemacheilus*. The Paris specimen has the mouth, snout, orbit on one side and possibly some gill arches badly damaged. The 41.4-mm specimen, badly damaged to begin with, was dissected by Vaillant; the posterior gill arches are missing and structures in the anterior region of the vertebral column are missing or badly damaged. The 39.5-mm specimen (RMNH 7777) is intact and is hereby designated lectotype. The following description is based primarily on the lectotype and 41.4-mm paralectotype. Vaillant reported that the 41.4-mm specimen contained eggs which seemed ripe or nearly so. It is now completely eviscerated.

The specimens arrived in the Netherlands along with other unlabelled material collected by Dr. J. Büttikofer in the vicinity of Sintang, near the middle portion of the Kapuas River (Vaillant, 1902: 149).

*Coloration.* The specimens are now discolored and their original color pattern has largely disappeared. Vaillant (p. 147, fig. 42) gave a rather good color description, to which I can add but little: "La coloration est identique sur les trois grands ex-

emplaires [i. e., in all but the 24.3-mm specimen, which is a *Noemacheilus*] et doit se rapporter sans doute à une livrée fondamentale, plus ou moins masquée peut-être sur le vivant, mais qui se rétablit lorsque les animaux sont plongés dans la liqueur. Dans l'état actuel la teinte générale est roux très pâle, devenant blanchâtre argenté en descendant vers le ventre, tout à fait argentée à la région operculaire, ainsi que sur les côtés et le dessous de la tête. Une série de taches plus ou moins en quadrilatères, occupant de 3 à 5 rangées d'écailles, ornent le dos et les flancs. Sur le premier on en compte 7, les deux antérieures, les plus petites, sont l'une à la région nuchale, l'autre à mi-distance de la dorsale, les trois suivantes, respectivement sous l'origine de cette dorsale, en son milieu, enfin juste en arrière d'elle; les deux dernières l'une à distance égale de cette tache métépiptérique et de la septième tache, celle-ci placée un peu en avant de l'insertion de la caudale. Sur la ligne latérale se voient 7 ou 8 taches, les antérieures peu distinctes; la dernière est au milieu du pédoncule caudal à l'insertion même de l'uroptère, les deux précédentes répondent aux intervalles clairs des trois dernières taches dorsales, disposées par rapport à celles-ci en damier; la quatrième en procédant toujours d'arrière en avant est sous la partie antérieure de la tache dorsale métépiptérique, les 3 ou 4 taches antérieures

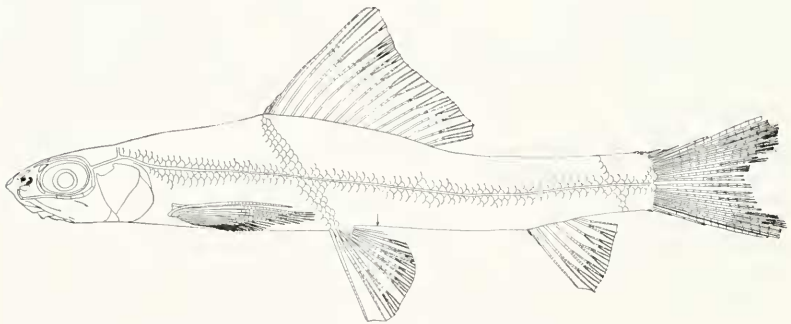


Figure 1. *Ellopostoma megalomycter*, 39.5-mm lectotype, RMNH 7777 (camera lucida). First elongate ray of anal and one or two rays of dorsal fin that are broken off restored on basis of 41.4-mm paralectotype. Arrow indicates position of vent. Base of pectoral fin should be slightly more anterior than figured.

moins développées, moins distinctes, sont plutôt placées au-dessous de la ligne latérale, la plus avancée serait juste en avant de l'origine de la dorsale; dans l'espace compris entre ces taches latéroantérieures et les taches dorsales se voient 4 macules, nuageuses, répondant aux intervalles des cinq taches dorsales antérieures. Enfin il ne faut pas négliger d'attirer l'attention sur une petite tache de forme demi-circulaire, d'un noir bleuâtre accentué, qui pourrait bien être cerclée de blanc, c'est-à-dire ocellée, laquelle orne la caudale dans sa partie inférieure au point d'insertion avec le pédoncule. L'iris paraît sombre; un cercle pupillaire argenté." The silvery white coloration on the opercle and lower side of the head is still evident, as is the small black spot on the ventral half of the caudal peduncle. A similar spot is present on the caudal peduncle in many Cobitidae and in some Kneriidae.

*Proportional measurements.* Proportional measurements expressed as times in standard length, those of 39.5-mm lectotype followed in parentheses by those of 41.4-mm paralectotype: head 4.4 (4.8); eye 14.9 (13.8); snout 16.5 (17.6); bony interorbital 27.3 (26.7); depth 6.5 (5.9); depth of caudal peduncle 11.5 (10.6); snout-tip to dorsal origin 2.5 (2.45); snout-tip to pelvic origin 2.08 (1.91); snout-tip to vent 1.80 (1.72); snout-tip to anal origin 1.23 (1.20); length of dorsal base 3.9 (3.75); length of anal base 12.4 (14.3); length of caudal peduncle 8.0 (8.6); length of pectoral fin 5.1 (4.9); length of longest dorsal ray 4.5 (broken); length of anal fin 6.7 (6.2).

*Fins* (Fig. 1). Dorsal iii 16, last ray divided to base. Anal iii 5 or iii 6, last branched ray divided to base. Pectoral i 11 or i 12. Pelvic i 7 (pelvic splint present). Caudal with nine principal rays in both lobes, about seven procurrent rays in upper lobe and four in lower lobe.

Dorsal fin origin slightly posterior to a vertical midway between insertions of pectoral and pelvic fins. Pelvic insertion slightly anterior to a vertical through base of seventh segmented ray of dorsal fin. Anal fin set far back, its origin somewhat anterior to a vertical midway between base of last dorsal fin ray and end of hypural fan. Origin of dorsal on a vertical through ninth vertebra. Pelvic insertion on a vertical through 13th or 14th vertebra. Anal origin on a vertical through 25th vertebra.

Pectoral fin somewhat larger than pelvic fin, none of its rays hypertrophied or otherwise modified, its longest ray reaching almost to insertion of pelvic fin. Height of dorsal fin almost twice that of anal fin. Dorsal fin base about three and one half times longer than anal fin base. Dorsal fin margin slightly falcate, the first three branched rays slightly longer than the rest. Anal fin margin more or less straight. Caudal deeply forked (damaged in both specimens). Membranes between rays in all fins uniformly thin.

Anal fin position variable in Kneriidae, several of them having the anal fin as far posterior as in *Ellopostoma*. In Kneriidae dorsal fin short-based, never with more than 10 rays. Fin counts and placements highly variable in Cobitidae. Relatively few cobitids have the anal fin as far posterior as *Ellopostoma*. Some (e.g., *Noemacheilus pavonaceus*) have fin placements and number of fin rays near those of *Ellopostoma*. Number of principal caudal rays variable in both Cobitidae (from 17 to 19) and Kneriidae (16 in *Grasseichthys*, 18–20 in *Parakneria*).

*Position of vent* (Fig. 1). Vent located between pelvic fins, somewhat closer to insertion of outermost pelvic ray than to tip of longest pelvic ray. In cobitids the vent position varies from midway between pelvic insertion and anal origin (in some Noemacheilinae) to immediately anterior to anal fin origin (in some Cobitinae and Botiinae). In at least some (all?) kneriids vent slightly or immediately anterior to anal fin origin.

*Squamation* (Fig. 1). Head scaleless. Body entirely scaled except for a small area in front of pectoral base. Isthmus scaled up to attachment of gill membranes. Fin bases scaleless. Approximately 75 scales in a lateral series from upper angle of gill opening to base of caudal fin, 20 scales between supraoccipital spine and dorsal fin origin, 20 scales between dorsal fin origin and pelvic fin insertion (11 rows above and eight rows below lateral line), and 17 scales around caudal peduncle.

Scales cycloid, height about 1.25 times width. A scale from side of body above pectoral fin has 12 radii and 22 circuli on its anterior field and 14 radii and 16 circuli on its posterior field. Focus well within anterior half of scale.

Vaillant regarded the scales of *Ellopostoma* as belonging to the type (multiradiate) characteristic of Cobitidae, and quite distinct from the type (pauciradiate) characteristic of Cyprinidae.

*Mouth* (Figs. 1-4). Mouth inferior. No teeth on jaws or roof of mouth. Upper jaw apparently bordered exclusively by premaxillaries, which have broad-based ascending processes and are well separated from each other at midline. Approximate shape of premaxillaries and of portion of dentaries bordering mouth as in Figure 4. Preoral and oral barbels absent. A median fleshy thickening or mentum on lower lip behind symphysis of mandibles (Figs. 2, 3). The name *Ellopostoma* was given because the mouth resembles that of a sturgeon (Vaillant, 1902: 145).

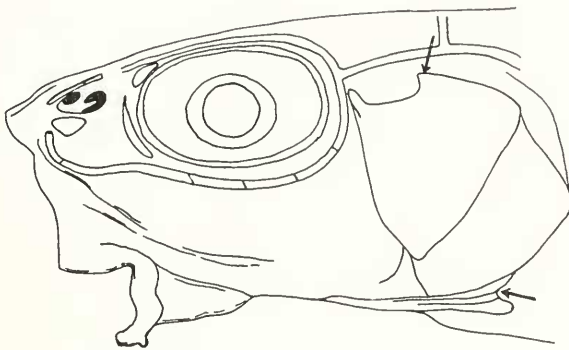


Figure 2. Close-up of head with mouth almost fully open, 39.5-mm lectotype (camera lucida). Arrows indicate extent of gill opening.

Vaillant recorded a pair of barbels, one at each side of the mouth, at the junction of the upper and lower jaws, which he supposed were located at the ends of the maxillary bones (I am unable to ascertain the presence of maxillaries, although they may be present). He was able to view the barbels only with difficulty. There is a fold or flap of skin in the lip at or near the rictus of the jaws, but this can hardly be described as a barbel. Certainly there are no structures corresponding to the elongate pair of barbels depicted in Vaillant's figure 43 in either the lectotype or the 40.5 and 41.4-mm paralectotypes. As noted above, the 24.3-mm paralectotype is actually a specimen of *Noemacheilus*, and has three pairs of barbels.

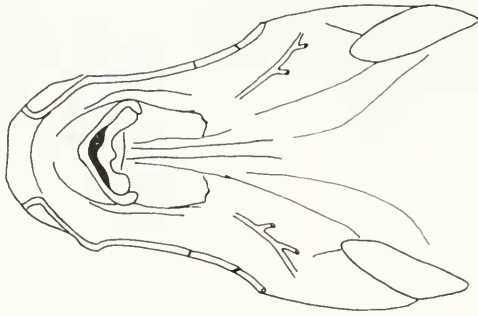


Figure 3. Ventral view of head, 39.5-mm lectotype (camera lucida).

*Snout* (Figs. 1-3, 5). Snout obliquely truncate and very rigid. Mesethmoid immovably articulated to frontals. Nasal organs occupying a large cavity, its diameter about one-third that of eye. Nostrils separated by a membranous strip with a small, posteriorly directed flap (vestigial nasal barbel?). Dorsal to nostril a slender nasal bone, ventral to nostril a small, broad-based triangular shaped bone (antorbital?) with its apex directly ventrally, and posterior to nostril a supraorbital bone and the lateral margin of the lateral ethmoid bone. Lateral ethmoid forming part of anterior rim of orbit, not extending ventrally to orbit, of generalized morphology. The snout is unlike that in any other teleost I have seen.

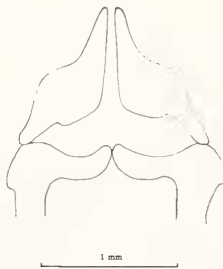


Figure 4. Ventral view of jawbones bordering mouth, 39.5-mm lectotype (freehand).



*Eye* (Figs. 1, 2, 5). The eye is misshapen in all three specimens of *Ellopostoma*. Figures 1, 2 and 5 depict its approximate shape. It presumably is oblong in live specimens, not perfectly round as in Vaillant's figures. Orbital rim free. Adipose eyelid absent. The combination of large eye and exceptionally large nostrils found in *Ellopostoma* is unusual. The eye is relatively much smaller in Cobitidae and Kneriidae (in both of which orbital rim usually attached) with the exception of the minute kneriid *Grasseichthys*, which has relatively small olfactory organs.

*Laterosensory canals* (Figs. 1-3, 5). Laterosensory system with supraorbital, infraorbital, preopercular, temporal, occipital and lateral canals. Supraorbital canal enclosed in a superficial bony tube on frontal bone until anterior margin of eye, then continued unenclosed for a short distance before it is again enclosed by the tubular nasal bone, without ethmoidal commissure or medially-directed branches. Infraorbital canal enclosed in a superficial, segmented bony tube (the infraorbital series?), continued anteriorly onto snout, where it turns upwards abruptly and terminates immediately anterior to nostrils. The appearance of the infraorbital canal is similar to that in Cobitidae (and Kneriidae?). Preopercular canal with two or three short lateral branches terminating in a small pore (Fig. 3). Occipital canal

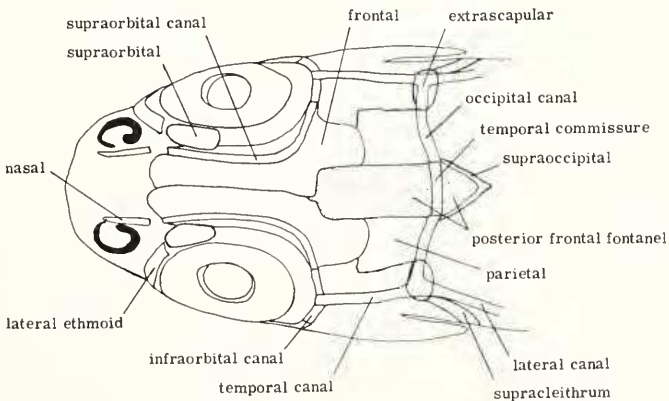


Figure 5. Dorsal view of head, based mainly on 39.5-mm lectotype (camera lucida).

with a temporal commissure, the lateral portions enclosed in a superficial bony tube, the median portion unenclosed, traversing the posterior frontal fontanel distinctly anterior to supraoccipital bone (Fig. 5). The temporal commissure is usually (always?) present in Cobitidae and Kneriidae but usually it lies flush with the anterior margin of the supraoccipital bone, sometimes entirely enclosed in a bony tube well within the supraoccipital bone (cf. Ramaswami, 1953; Greenwood *et al.*, 1966). Lateral canal of *Ellopostoma* extending along middle of body to base of caudal fin, as in Cobitidae and Kneriidae.

*Roof of cranium* (Fig. 5). Cranial roof exposed, with only a thin cover of skin, unlike most Cobitidae in which dorsum of head is usually rather fleshy or at least covered with moderately thick skin. No anterior frontal fontanel. Posterior frontal fontanel slightly longer than eye, bordered by frontals, parietals, and supraoccipital, very similar to posterior frontal fontanel in Cobitidae (cf. Ramaswami, 1953). In adults of the larger kneriids (cf. Greenwood *et al.*, 1966; Giltay, 1934) the cranial roof is complete. *Cromeria* (cf. Swinnerton, 1903) and *Grasseichthys* have a frontal fontanel extending to the snout, quite unlike that in either Cobitidae or *Ellopostoma*.

*Posterior region of basicranium* (Fig. 6). Parasphenoid extending posteriorly to anterior margin of supraoccipital, with which it is firmly sutured. Parasphenoid with a median sutural process. In Cobitidae and Kneriidae (cf. Ramaswami, 1953; Greenwood *et al.*, 1966, fig. 6 on p. 376) posterior portion of

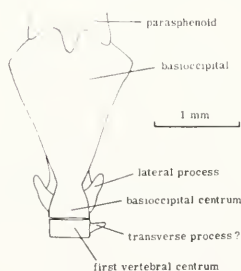


Figure 6. Ventral view of part of basicranium and first vertebral centrum, 41.4-mm paralectotype (freehand).

parasphenoid divided, the two divisions extending distinctly posterior to anterior margin of basioccipital; parasphenoid without median sutural process. Basioccipital centrum of *Ellopostoma* with anteriorly directed lateral processes, otherwise devoid of processes that might be identical with pharyngopophyses of Cobitidae. Pharyngopophyses of Cobitidae frequently poorly developed or absent; if present, they are posteriorly directed. Pharyngopophyses absent in Kneriidae.

*Gill cover* (Figs. 1, 2). Subopercle relatively large. Shape of opercle and subopercle generalized compared to cobitids in which they are often highly modified. Gill opening wide; gill membranes broadly united to isthmus at a point below middle of subopercle (Fig. 2). Branchiostegal rays apparently three, as Vaillant reported. Cobitidae invariably have three branchiostegal rays as do other cyprinoids. The number of branchiostegal rays is also reduced in Kneriidae, *Kneria* and *Cromeria* with three (Giltay, 1934; Swinnerton, 1903), *Grasseichthys* with only two (Géry, 1965). The extent of the gill opening, variable in Cobitidae, is always very narrow in Kneriidae.

*Gill arches* (Fig. 7) The following notes on the gill arches are based on the damaged 41.4-mm paralectotype in which only the first three arches of the left side and the first arch of the right side are present. Suspensory pharyngeals large. First arch of right side with about ten gill rakers on leading edge (none on suspensory pharyngeal) and 15 gill rakers on trailing edge

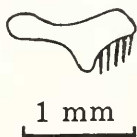


Figure 7. Dorsal view of left suspensory pharyngeal 1 with gill rakers, 41.4-mm paralectotype (camera lucida).

(including a few on suspensory pharyngeal). First arch of left side with about 12 rakers on leading edge (none on suspensory pharyngeal) and 18 on trailing edge (of which five are on suspensory pharyngeal). The rakers on the first arch are all on the

uppermost third of the arch. Perhaps the rakers from the lowermost two-thirds have been stripped away. Second and third gill arches with a full complement of gill rakers, at least 25 on both leading and trailing edges. Teeth absent on first three gill arches.

Vaillant did not mention the gill arches or rakers; he was unsuccessful in an attempt to remove the pharyngeals intact from the 41.4-mm specimen, and they are now missing.

*Pectoral skeleton.* Extrascapular bone present, bearing junction of temporal, occipital, and lateral branches of laterosensory canal system on its dorsal surface (Fig. 5). Pectoral arch of left side of 41.4-mm specimen detached from cranium and with supraclithrum exposed; posttemporal missing (normally absent?), postcleithrum evidently absent.

In Cobitidae the posttemporal is reduced, sometimes absent, and there are no postcleithra (Rendahl, 1930, 1933a; Băcescu-Meşter, 1970). The pectoral skeleton of the more typical kneriids, *Kneria* and *Parakneria*, is undescribed. Swinnerton (1903: 67, fig. N) described the pectoral skeleton of *Cromeria*, which has a posttemporal with a very elongate upper limb articulated directly to the supraoccipital (quite unlike the posttemporal of Cobitidae) and a slender postcleithrum.

*Anterior region of vertebral column, postcranial bony capsules, swimbladder.* Radiographs of the lectotype and 41.4-mm paralectotype and examination of the latter reveal a pair of large, rounded, bony capsules, one on either side of the vertebral column almost immediately posterior to the cranium. The capsules of the 41.4-mm specimen are broken (their ventral portions missing) and detached from the vertebral column. Their transverse diameter is about three-fourths of the eye diameter. Portions of a tough membrane, presumably that of the swimbladder, remain inside the capsules. Vaillant interpreted these structures as homologues of the swimbladder capsules in Cobitidae. As the anterior portion of the vertebral column itself is also damaged and detached, and some parts possibly missing, it is impossible to tell precisely what structures contribute to form the capsules. The appearance of the capsules in radiographs of various Cobitidae is at least superficially similar to that of the capsules of *Ellopostoma*. The first centrum of *Ellopostoma* is free and relatively short, and bears a small lateral projection on one side

(a transverse process?) which is absent (broken off?) on the other side (Fig. 6).

Either *Ellopostoma* has a Weberian apparatus with swimbladder capsules like Cobitidae or else it has complicated bony structures superficially similar and perhaps comparable in function to the swimbladder capsules of Cobitidae. I am inclined toward the first possibility. I am unable to make a detailed comparison of the capsules of Cobitidae with *Ellopostoma* on the basis of the present material. Nothing comparable to the capsules of Cobitidae or *Ellopostoma* has been reported in Kneriidae.

Vaillant (1902) was unable to find a swimbladder in *Ellopostoma* and stated (p. 142): "Pour la vessie natatoire je n'ai pu en trouver trace, pas plus que d'enveloppe osseuse pouvant la contenir, l'état de l'exemplaire [41.4-mm] paraissait cependant devoir permettre d'en constater l'existence." The development of the swim bladder is variable in Cobitidae. Frequently it is reduced to only the left and right halves of the anterior portion enclosed in the bony capsules, but some forms also have a nonenclosed posterior portion, the genus *Noemacheilus* with several species in which it is particularly large (Rendahl, 1933b). The swimbladders of Kneriidae have not been described in detail; Rosen and Greenwood (1970: 11) indicated that Kneriidae possess a swimbladder divided by a distinct constriction into a small anterior and a much larger posterior chamber, as in *Chanos* and in ostariophysans generalized with respect to their swimbladders.

*Vertebral counts.* Radiographs reveal about 32 vertebrae (excluding hypural centrum) in the lectotype of *Ellopostoma* and about 31 in the 41.4-mm paralectotype.

The following vertebral counts have been recorded for Kneriidae: *Grasseichthys* 36-37 (Géry, 1965); *Parakneria* 41-42 (Poll, 1965); and *Cromeria* 42 and 45 (Swinnerton, 1903). Vertebral counts of Cobitidae range very widely.

*Caudal skeleton* (Fig. 8). Figure 8 is based on a radiograph of the 41.4-mm specimen in which some elements are relatively well defined but others are indistinct, so that it is somewhat interpretive and should be used with caution. Hypurals apparently five. Proximal ends of hypurals 1-4 indistinct; impossible to determine from radiographs whether hypural 2 separate or fused with ural centrum. Parhypural evidently united to ural

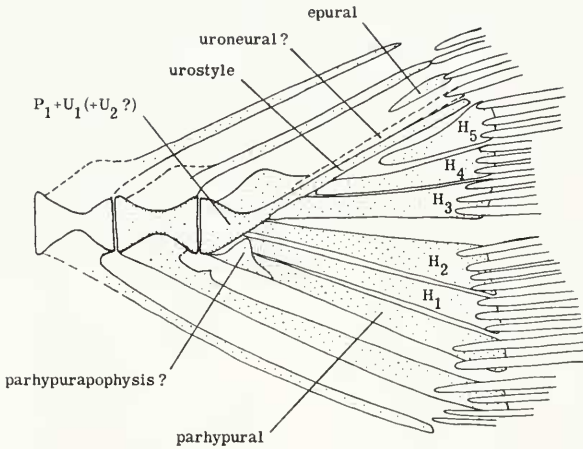


Figure 8. Caudal skeleton, 41.4-mm paralectotype (camera lucida of radiograph).

centrum by a saddlelike joint, and bearing a well-developed parhypurapophysis. A single epural. Urostyle slender. What appears to be a slender separate ossification (uroneural?) dorsal to urostyle may actually be part of it. Bases of neural and hemal spines of vertebrae 1 and 2 indistinct.

The caudal skeleton of *Ellopostoma*, so far as can be determined, agrees in almost all respects with the caudal skeletons of both Cobitidae (undetermined cobitid; *Botia macracanthus*) and Kneriidae (*Cromeria*, *Grasseichthys*) described and figured by Monod (1968). The cobitids and kneriids lack uroneurals; it is possible that one is present in *Ellopostoma*. The cobitids have hypural 2 fused to the ural centrum, whereas it is evidently free in the kneriids; the condition of hypural 2 in *Ellopostoma* is undetermined. All agree in having a single epural and five hypurals, except *Botia macracanthus*, which has six hypurals. Rosen and Greenwood (1970: 13, fig. 10) found six hypurals and two epurals in *Kneria wittei* and in *Parakneria* sp. In *K. wittei* the first epural is very reduced, but in *Parakneria* sp. both epurals are large.

## DISCUSSION

*Ellopostoma* differs from all Cobitidae and Kneriidae in the relatively large size of its nostrils and eyes and in the morphology of its snout, mouth, and (so far as known) parasphenoid bone. It also differs from all Cobitidae in lacking barbels, and from all Kneriidae in its possession of postcranial bony capsules, a long-based dorsal fin with relatively numerous rays, and an extensive gill opening, and in the morphology of its posterior frontal fontanel.

*Ellopostoma* cannot be classified with reasonable assurance because important information about the structure of its snout, mouth, pharyngeal bones, and postcranial bony capsules is lacking. If the postcranial bony capsules are part of a Weberian apparatus (as seems likely), then it is probably closer to Cobitidae than to any other living group. It does not show the specialized traits (mesethmoid movably articulated to frontals, lateral ethmoid highly modified as an erectile suborbital spine) of the subfamilies Botiinae and Cobitinae, and differs greatly from them in general appearance. It shares many characters with the Noemacheilinae and is somewhat like them in general appearance, but the resemblances may be due to convergence and retention of generalized characters. Cobitidae, Kneriidae, and *Ellopostoma* are similar in many respects, and this is of particular interest in view of evidence that gonorynchiforms and ostariophysans are closely related (Greenwood *et al.*, 1966; Rosen and Greenwood, 1970). Whatever the relationships of *Ellopostoma*, it is likely to be of major phyletic significance.

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