Synonymization of the Family Oxudercidae, with Comments on the Identity of *Apocryptes cantoris* Day (Pisces: Gobiidae)

VICTOR G. SPRINGER

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ABSTRACT

Springer, Victor G. Synonymization of the Family Oxudercidae, with Comments on the Identity of *Apocryptes cantoris* Day (Pisces: Gobiidae). *Smithsonian Contributions to Zoology*, number 270, 14 pages, 6 figures, 2 tables, 1978.—The holotype of *Oxuderces dentatus* Eydoux and Souleyet, 1842, type-genus and species (and only reported specimen) of the Family Oxudercidae, is an aberrant specimen lacking pelvic fins of a gobiid species normally having pelvic fins. Oxudercidae Günther, 1861, is a junior synonym of Gobiidae Cuvier, 1816. Oxudercidae, Amblyopina, and Trypauchenina (all Günther, 1861) are the next oldest family-group names available in the Gobiidae.

Normal specimens of *Oxuderces dentatus* have been described as *Apocryptichthys sericus* Herre, *Apocryptes pellegrini* Wu, and *Apocryptichthys livingstoni* Fowler, all of which are junior synonyms of *O. dentatus*. In current literature, normal specimens of *O. dentatus* are generally assigned to the genus *Apocryptichthys* Day, 1876 (type-species: *Apocryptes cantoris* Day, 1871) and often reported as *Apocryptichthys cantoris*. Subsequent to the original description of *A. cantoris*, Day changed his concept of the species and caused later workers much confusion. The number of species or specimens comprising Day's type material of *Apocryptes cantoris* is unknown, but only one specimen is extant. The specimen. which conforms to current concepts of the genus *Boleophthalmus* Valenciennes. 1837, is designated lectotype of *Apocryptes cantoris*.

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Contents

Synonymization of the Family Oxudercidae, with Comments on the Identity of *Apocryptes cantoris* Day (Pisces: Gobiidae)

Victor G. Springer

Introduction

It is the purpose of this study to expose the systematic relationships of the monotypic fish family Oxudercidae and its type-genus and species, *Oxuderces dentatus* Eydoux and Souleyet (1842),[1] which was based on a single specimen. Since the original description of *O. dentatus,* no additional specimens have been reported, nor has anyone reported reexamining the holotype. The taxonomy of *Oxuderces dentatus* is intertwined with the taxonomy of *Apocryptes cantoris* Day (1871), type-species of *Apocryptichthys* Day (1876), and requires discussion of Day's taxa.

[1] It is questionable whether the authorship of the new taxa appearing in Eydoux and Souleyet (1842) should be credited to them or to Valenciennes. The confusion results from a footnote in Eydoux and Souleyet that states that all the identifications of fishes that were figured on the plates accompanying the publication were owed to Valenciennes, and all the fishes Eydoux and Souleyet treated were so figured. It is not clear whether the descriptions and new names are also the work of Valenciennes or if he merely informed Eydoux and Souleyet that certain taxa were undescribed. Most authors credit Valenciennes with the new names. For convenience of citation, however, I credit Eydoux and Souleyet with the new taxa contained in "their" study.

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Abbreviations used in the text have become standard in ichthyological studies, but are defined in Springer and Gomon (1975).

ACKNOWLEDGMENTS.—Specimens used in this study were generously provided by M.-L. Bauchot (MNHN), M. Boeseman (RMNH), E. Böhlke (ANSP), D. Hoese (AMS), P. Sonoda (CAS), and P. J. Whitehead (BMNH). A. E. Spreitzer (National Museum of Natural History, Smithsonian) prepared the photographs. A draft of the manuscript was critically reviewed by R. S. Birdsong, R. H. Gibbs, Jr., E. A. Lachner, J. F. McKinney, and A. E. Spreitzer.

Historical Review

The following discussion reviews the classificatory history of *Oxuderces* and the Oxudercidae. Eydoux and Souleyet (1842) placed *Oxuderces* in the family Gobioides, which agrees with the family Gobioïdes (later emended to Gobiidae), first proposed by Cuvier (1816). *Oxuderces* was differentiated from all other gobies by lacking pelvic fins and having a peculiar gill opening: continuous across the isthmus and restricted to the ventral surface of the head. Although it was not commented on, the anal fin was reported to have six spines, which would be extraordinary for a gobiid.

Oxuderces was next treated by Günther (1861), who erected the family Oxudercidae for it. Günther united his Discobili, Gobiidae, and Oxudercidae in a Division Gobiiformes of the Acanthopterygii, but Gill (1872) isolated the Oxudercidae and excluded it, without comment, from the families included in his Gobioidea. Bleeker (1873), however, retained *Oxuderces* in his family Gobioidei, but omitted mention of *Oxuderces* in his important treatise (1874) on generic groupings in the family. Günther (1880) questionably included *Oxuderces* in the Gobiidae and made no mention of the Oxudercidae, which he had earlier proposed, but Gill (1893) recognized the Oxudercidae and Gobiidae as the only families in his Gobioidea.

Boulenger (1904) included *Oxuderces* in the Gobiidae, stating that *Oxuderces* appeared to differ from *Trypauchen* only in the absence of pelvic fins, a strange comment in view of the numerous other pecularities given in the original description of *Oxuderces*. Jordan (1905) also placed *Oxuderces* in the Gobiidae, stating that *Oxuderces* had very short dorsal and anal fins, facts belied by information in the original description. Jordan (1923), however, without comment, chose to recognize the Oxudercidae, and placed it in his order Jugulares under his series Percophidiformes, which also included such families as the Trichonotidae, Mugiloididae, and Percophididae, but not the Gobiidae. Reeves (1927) and Chu (1931) listed the Oxudercidae without comment.

Berg (1940, 1955) placed the Oxudercidae as incertae sedis in his superfamily Trachinoidae, and Fowler (1956), apparently following Berg, placed it in the superfamily Trachinicae. Schultz (1960) included *Oxuderces*, "for convenience," in his key to the genera related to the families Trichonotidae and Percophididae, but made no mention of the Oxudercidae. Golvan (1962) allocated *Oxuderces* as "(Gobioid.) Gobiid." but later (1965) placed it in the Oxudercidae, which he included in the suborder Trachinoidei. Breder and Rosen (1966) listed the Oxudercidae without comment, and Greenwood, et al. (1966) recognized the Oxudercidae in the suborder Trachinoidei. Gosline (1968) placed the Oxudercidae in the suborder Blennioidei, but McAllister (1968), following Berg (1940, 1955), included it as incertae sedis in the suborder Trachinoidei. Lindberg (1971) included the Oxudercidae in the superfamily Trachinoidea.

Wheeler (1975) wrote of the Oxudercidae, "Its standing as a family is open to serious doubt," and of *Oxuderces dentatus*, "There seems to be considerable doubt as to whether it is a valid species, and if it is, where it should be placed in the systematic arrangement." Finally, Nelson (1976) included the Oxudercidae in the infraorder Trachinoidea of the suborder Blennioidei.

Given the interest in, and doubt expressed about, the Oxudercidae and *Oxuderces dentatus* during the past 135 years, it is surprising that no one has reported reexamining the holotype of *O. dentatus*. M.-L. Bauchot (in litt.) does not believe that the holotype was ever loaned, and she located it only after a long search, "oublié sur un étagère a côté des Lophiidae," in the collections of the Muséum in Paris. Nevertheless, accompanying the holotype (MNHN A.1822), which was lent me, was a tiny vial containing some stained (alizarin?) scales that appear to have been removed from the type, but by whose action for what purposes, I am unaware.

Identity and Redescription of *Oxuderces dentatus*

My examination of the holotype of *O. dentatus*, now in poor condition, confirms much of the information contained in the original description, which, in general, is very good, but there are some corrections that must be noted (Table 1), particu-

TABLE 1.—Comparison of certain characters given in the original description of *Oxuderces dentatus* with the same characters as observed on the holotype

Character	Original description	Holotype
Eyelids	Present, resembling those of Periophthalmus	Absent
Dorsal fin	6/24	VI,27 (last ray split to base, counted as one ray)
	5th & 6th spines illustrated as well separated from first four spines, from each other, and from 1st ray	5th spine about same distance from 4th as 3rd is from 4th; 6th spine well separated from 5th spine and 1st ray
	No mention	Dark blotch on third and fourth rays from posteriormost ray
Anal fin	6/21	26 (last ray split to base, counted as one ray)
Caudal fin	18	17 segmented (16 branched)
Pectoral fin	18	24, each fin
Scales	Very small, over entire body	Tiny anteriorly on body, grading into relatively large scales posteriorly
	Head naked	Few tiny scales dorsally on head

larly the anal-fin formula. The absence of pelvic fins and the erroneous report of six anal-fin spines were undoubtedly the major sources of the classificatory confusion surrounding *O. dentatus*. To their credit, Eydoux and Souleyet correctly assigned *Oxuderces* to the Gobiidae. My immediate impression on first examining the holotype was that it was a malformed specimen of a gobiid species that normally has pelvic fins. The anomalous absence of pelvic fins occurs in a wide variety of fishes (see bibliographies of anomalies by Dawson, 1964, 1966, 1971, and Dawson and Heal, 1976), and although unreported in gobiids, should not be unexpected. A search of museum collections uncovered numerous specimens that appeared to be conspecific with *O. dentatus*. The specimens differed significantly from *O. dentatus* only in having pelvic fins and in having the gill openings restricted on each side of the head. One of these specimens (CAS SU61139) was obtained at the Macao fish market, a fortunate circumstance as the type-locality of *O. dentatus* is also Macao. My comparison of the holotype of *O. dentatus* with the fish market specimen convinces me that the two specimens are conspecific. The fish market specimen, under current taxonomic concepts, clearly belongs in the Gobiidae.

Although Oxudercidae thus becomes a junior synonym of the Gobiidae, it is coequal in seniority with Amblyopina and Trypauchenina, all three names dating from Günther (1861), as the next oldest family-group names available in the Gobiidae. As such, Oxudercidae has priority over such well-known gobiid taxa as Apocryteinae, Periophthalminae, and Boleophthalminae (all Bleeker, 1874; see Miller, 1973, for a list and discussion of available family-group taxa of gobiids, except Oxudercidae), which heretofore have either included taxa synonymous with *Oxuderces dentatus* or closely enough related to *O. dentatus* to have included it also.

Many of the normal specimens of *O. dentatus* I located were registered in museum collections under the gobiid genus *Apocryptichthys* Day (1876; type-species: *Apocryptes cantoris* Day, 1871). A search of the literature educed four nominal species that appeared to refer to normal specimens: *Apocryptes cantoris* Day, *Apocryptichthys sericus* Herre (1927), *Apocryptes pellegrini* Wu (1931), and *Apocryptichthys livingstoni* Fowler (1935).

Before discussing *Apocryptes cantoris*, which is not particularly closely related to *Oxuderces dentatus*, it is easiest to dispense with Herre, Wu and Fowler's species. *Apocryptichthys sericus* Herre was described from four specimens, three from Amoy (Hsia-men) and one from Fuchow, China. The locality for the holotype was not given. The type material, deposited in the Philippine Bureau of Science collections, was destroyed during World War II; however, a specimen (CAS SU25524) is available from Amoy that was identified as *A. sericus*, apparently by Herre, which was collected in 1927, the same year in which Herre's description appeared (the specimen was collected by Johnson Chen, whereas Herre's types were collected by S. F. Light). Herre did not compare his species with any other except to state, "In general appearance this species is very close to Day's *A. cantoris* . . . ." *Apocryptichthys sericus* is the oldest name available for a normal specimen of *Oxuderces dentatus*, but is, nevertheless, a junior synonym of that species. Herre's illustration of *A. sericus* is reproduced herein as Figure 1*a*.

Apocryptes pellegrini Wu was described from Foochow, China, based on a single specimen. The depository of the holotype was not specified. The species was stated to be "nearly related" to *Apocryptes nexipinnis* Cantor (1850), from which it was differentiated. It was also compared with other species of *Apocryptes* from China, but none of the compared species are synonymous with *Oxuderces dentatus*. Wu's (1931) description and illustration (here reproduced as Figure 1*b*) can be identified only with *Oxuderces dentatus*, and Wu (in Chen, 1934) acknowledged this identification implicitly by stating that his *A. pellegrini* was a synonym of *Apocryptichthys sericus*. (I believe that *A. nexipinnis* is the nearest relative of *O. dentatus*, from which *A. nexipinnis* differs most notably in having a pair of canines posterior to the dentary symphysis, the entire head and body scaled, and more dorsal, anal, and pectoral-fin rays. I hazard the opinion that *A. nexipinnis* will be assigned to *Oxuderces* when the genera of Gobiidae are better delimited. A cursory review of the literature indicates to me that there are probably several synonyms, both junior and senior, available for *A. nexipinnis*.)

Apocryptichthys livingstoni Fowler (holotype herein illustrated in Figures 2*a*, 3*a*, 4*a*) was described from three specimens from Paknam, Thai-

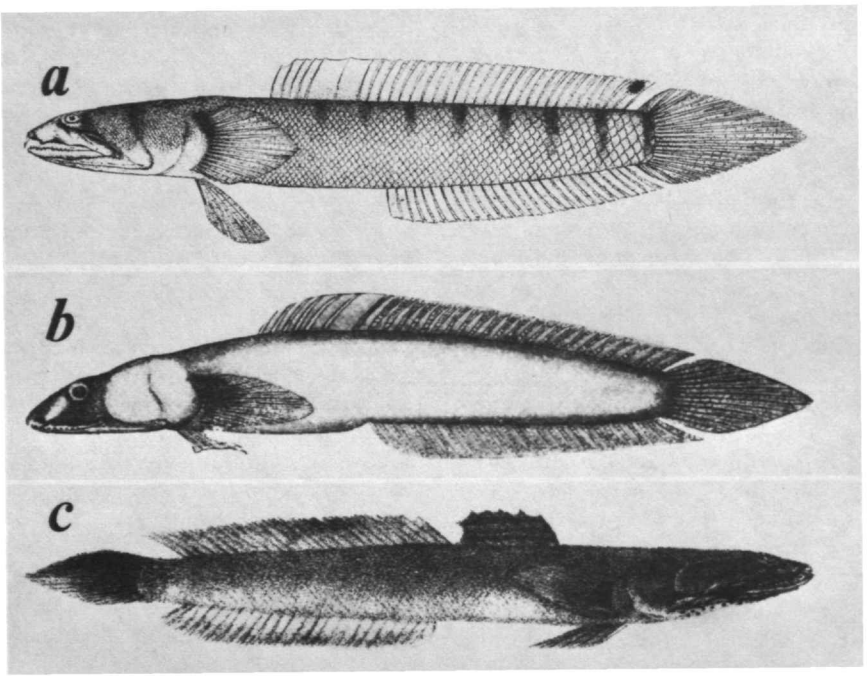

FIGURE 1.—*a*, *Apocryptichthys sericus* (= *Oxuderces dentatus*) after Herre (1927); *b*, *Apocryptes pellegrini* (= *Oxuderces dentatus*), after Wu (1931); *c*, illustration accompanying Day's 1876 account of *Apocryptichthys cantoris*.

land. It was differentiated only from Day's *A. cantoris*. All the type specimens are available and are conspecific with *A. sericus* and, hence, *Oxuderces dentatus*.

Oxuderces dentatus Eydoux and Souleyet

FIGURES 2*b*, 3*b*, 4*b*

Oxuderces dentatus Eydoux and Souleyet, 1842:182, pl. 8: fig. 2 [original description; Macao; holotype MNHN A.1822].—Günther, 1861:165 [description after original; placed in new family].—Bleeker, 1873:129 [included in Gobiidae].—Jordan, 1905:468 [listed, brief comment].—Jordan, 1919:213 [listed].—Reeves, 1927:14 [listed].—Chu, 1931:169 [listed].—Fowler, 1956:343, fig. 61 [description and figure after original].—Schultz, 1960: 274 [listed].—Lindberg, 1971:191, fig. 743 [figure after original].—Wheeler, 1975:275 [figure after original; validity questioned].—Nelson, 1976:265 [listed].

Apocryptichthys cantoris [not Day, 1871] Day, 1876:302 [in part; pl. 62: fig. 7 does not pertain; Madras].—Day, 1889:279 [in part; figure 94 does not pertain; Madras].—Smith, 1931: 189 [off mouth of Meklong, Gulf of Siam].—Koumans, 1932:16 [estuaries, eastern Java].—Koumans, 1941:276 [in part, description].—Smith, 1945:564 [comments; habitat].—Koumans, 1953:252, fig. 62 [description; distribution].

Apocryptichthys sericus Herre, 1927:264, pl. 21: fig. 1 [original description; Amoy and Fu-chow; holotype, Philippine Bureau of Science 11009].—Chen, 1934:39 [Foochow; *Apocryptes pellegrini* synonymized].—Koumans, 1940:191 [reexamination of types].—Fowler, 1962:3, fig. 72 [description after original].—Chu and Wu, 1965: 133 and 134 [South and East China seas].

Apocryptes pellegrini Wu, 1931:48, fig. 8 [original description, Foochow].

Apocryptichthys livingstoni Fowler, 1935:162, figs. 131 and 132 [original description; Paknam, Siam; holotype, ANSP 63091].—Smith, 1945:564 [comparison].

Apocryptes cantoris [not Day, 1871].—Whitehead and Talwar, 1976: 161 [in part; location of Day's Madras specimen].

DESCRIPTION.—Dorsal fin VI, 25–27; terminal pterygiophore supporting two rays, posteriormost of which is greatly reduced (the two rays here tabulated as one ray, but tabulated separately for Madras specimen in Table 2); spinous dorsal-fin pterygiophore formula (Birdsong, 1975): 3(12210)

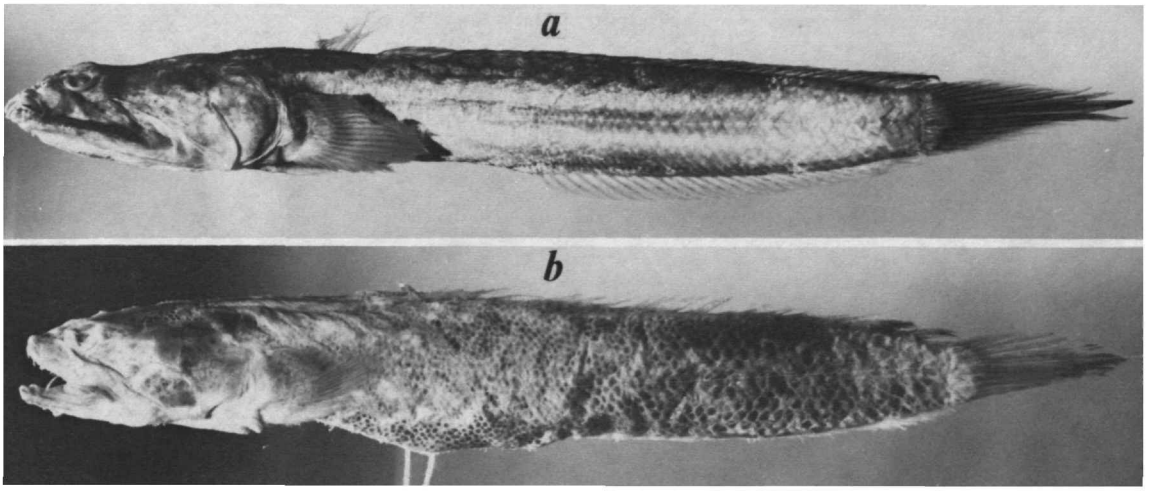

FIGURE 2.—*Oxuderces dentatus: a,* ANSP 63091, holotype of *Apocryptichthys livingstoni* Fowler; *b,* MNHN A.1822, holotype of *Oxuderces dentatus* Eydoux and Souleyet.

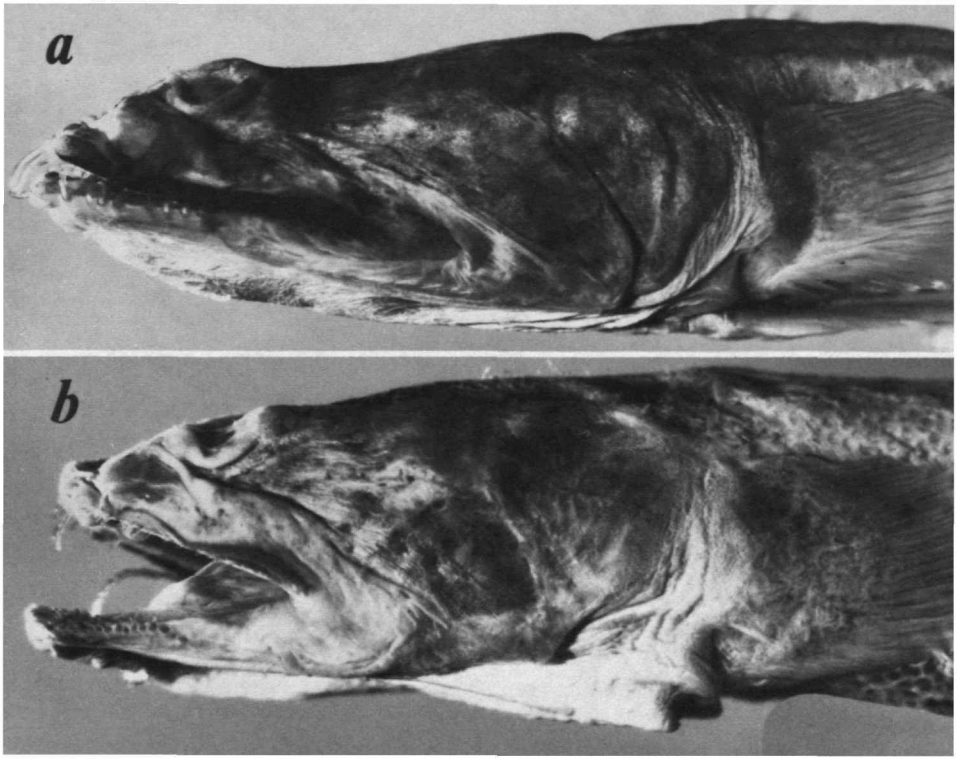

FIGURE 3.—*Oxuderces dentatus,* lateral view of head region: *a,* ANSP 63091, holotype of *Apocryptichthys livingstoni* Fowler; *b,* MNHN A.1822, holotype of *Oxuderces dentatus* Eydoux and Souleyet.

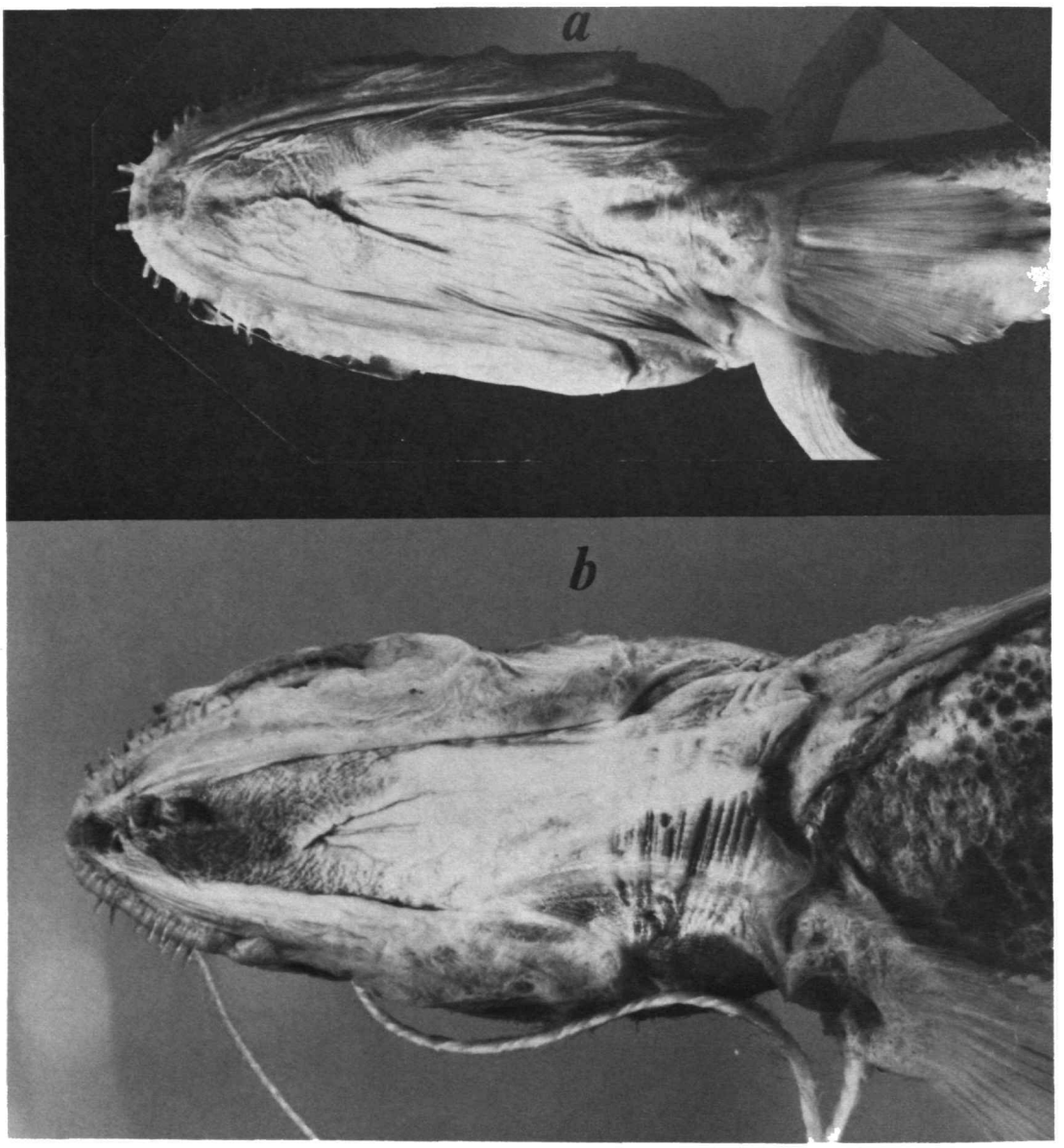

FIGURE 4.—*Oxuderces dentatus*, ventral view of head region: *a*, *ANSP* 63091, holotype of *Apocryptichthys livingstoni* Fowler; *b*, MNHN A.1822, holotype of *Oxuderces dentatus* Eydoux and Souleyet.

(note: this particular formula typifies a large number of gobiids that are probably related to *Oxuderces,* including some that have only five dorsal-fin spines; the posteriormost spine, the sixth of the related forms, may be lacking, but its pterygiophore remains); base of sixth spine positioned about midway between bases of fifth spine and first segmented ray; first four interspinous spaces about equal; spinous and segmented-ray portions connected by membrane; separation between portions marked by broad, shallow depression in membrane margin; fifth spine is longest fin element, but only slightly exceeds longest segmented ray; however, spinous portion not higher than segmented-ray portion because of strong dorsoposterior arching of spines; insertion of last segmented ray anterior to caudal-fin base, but tips of depressed posterior rays extend posteriorly beyond base; last ray not connected by membrane to caudal-fin base; color pattern variably pale and dusky, not remarkable except for darkly pigmented membranes between last three or four rays, often appearing as dark blotch at end of fin.

Anal fin 24–27 (usually 25 or 26), all rays segmented and branched; terminal pterygiophore supporting two rays, posteriormost of which is greatly reduced (the two rays here tabulated as one ray, but tabulated separately for Madras specimen in Table 2); insertion of last ray below or anterior to vertical from base of penultimate dorsal-fin ray; tips of depressed posterior rays extend posteriorly beyond caudal-fin base; no membrane attaching last ray to caudal peduncle; color almost immaculate.

Pectoral fin 22–24, ventralmost rays shortest, finest, difficult to delineate; color mostly immaculate but fleshy base darkly dusky.

Pelvic fin I,5, joined by membrane with fin of opposite side to form cup; frenum well developed; color immaculate.

Caudal fin lanceolate, with 17 segmented rays, of which 15 or 16 are branched; dorsal and ventral procurrent rays each 5 or 6; parhypural, ventral hypural plate (composed of fused hypurals 1 and 2), hypural 5, and two epurals all autogenous; dorsal hypural plate (composed of fused hypurals 3 and 4) fused to urostylar complex; uroneurals not present; color dusky.

Vertebrae 10 + 16. Branchiostegals 5.

Scales cycloid, covering most of body, sparse and embedded or absent on sides of head, varying from an elongate patch on either side on top of head to covering top of head to level just posterior to eyes, absent on prepectoral and prepelvic areas, smallest anteriorly on head and body, largest on caudal peduncle and caudal fin basally; diameter of anterior body scales about one-sixth to one-fifth diameter of largest scales; diagonal scale rows irregular, impossible to count accurately, about 60–70 scales along line between pectoral-fin axil and caudal-fin base.

Gill opening restricted, extending dorsally from point somewhat dorsal to pelvic-fin origin to opposite level of about sixth to eighth from ventralmost pectoral-fin ray.

All teeth with obtuse tips; upper jaw with one or two prominent, elongate teeth ("canines") on each side of premaxillary symphysis; canines extending ventrally beyond lower lip when mouth is closed; row of 3–19 (usually 12–14) much smaller teeth on each side of jaw posterior to canines; lower jaw with row of 7–14 (usually 10–14) more or less laterally projecting teeth on each side; lower jaw teeth shorter than canines, but longer than small teeth of upper jaw; no erect canine tooth on each side of symphysis internal to anterior margin of lower jaw; upper jaw teeth extending about half length upper jaw further posteriorly than lower jaw teeth; vomer and palatines edentate.

Gape relatively large; posterior tip of maxillary about two eye diameters posterior to vertical from posterior margin of eye, but rictus only one diameter posterior to vertical. Upper lip conspicuously dark dusky for most of length. Lower jaw spoon shaped, tongue adnate; posterior free edge of lower lip juts laterally, bears about six acutely to obtusely tipped crenulae. On each side of roof of mouth, just posterolateral to vomer, is a pendulous flap that questionably has a minute opening at its tip.

Eyes located dorsally on anterior third of head length; ventral eyelid absent. Small pore (posterior nostril?) just anterolateral to midanterior margin of eye; unpaired (common) opening located anteriorly in interorbital region, connected by internal canal on each side of head to large pore located midway between anterior edge of upper lip and anterior margin of eye. Lateral to large pore, above upper lip, a pendulous fleshy tube with minute pore (anterior nostril?) at tip overhangs lower jaw

when mouth is closed; canal of tube leads to large, glandlike organ (nasal rosette?).

In many specimens, the color pattern, except for the dark spot posteriorly on the dorsal fin and the dark edge of the upper lip, was not noteworthy, but in other specimens the dorsal portions of the head and, anteriorly, the body exhibited an irregular pattern of small, dusky vermiculations. Herre (1927) illustrated a specimen with seven or eight barlike marks on the body (see Figure 1*a*). I have not seen these marks on any of the specimens I examined.

DISTRIBUTION.—See "Material Examined" and Figure 5.

MATERIAL EXAMINED.—INDIA: Madras, AMS B.8336 (47.2 mm SL). INDONESIA: Pulu Weh, NW Sumatra, RMNH 17382 (71.6); E Java, RMNH 12091 (3: ca. 68 – ca. 80), RMNH 12092 (19: 62.5–79.5), RMNH 12433 (55.0); Surabaja, Java, RMNH 12570 (79.7). THAILAND: Paknam, ANSP 63091, (holotype of *Apocryptichthys livingstoni*, 73.4), ANSP 63092-3 (2: 73.7, 76.1); off mouth of Meklong, USNM 119547 (67.9). MACAO: MNHN A.1822 (holotype of *Oxuderces dentatus*, ca. 75; fish mkt, CAS SU61139 (76.7). CHINA: Foochow and vicinity, USNM 86378 (2: 56.7, 70.3), USNM 86954 (2: 80.5, 81.5); Fengsien (also Feng-hsien, near Shanghai, 2: ca. 81, ca. 93); Amoy, CAS SU25524 (65.6).

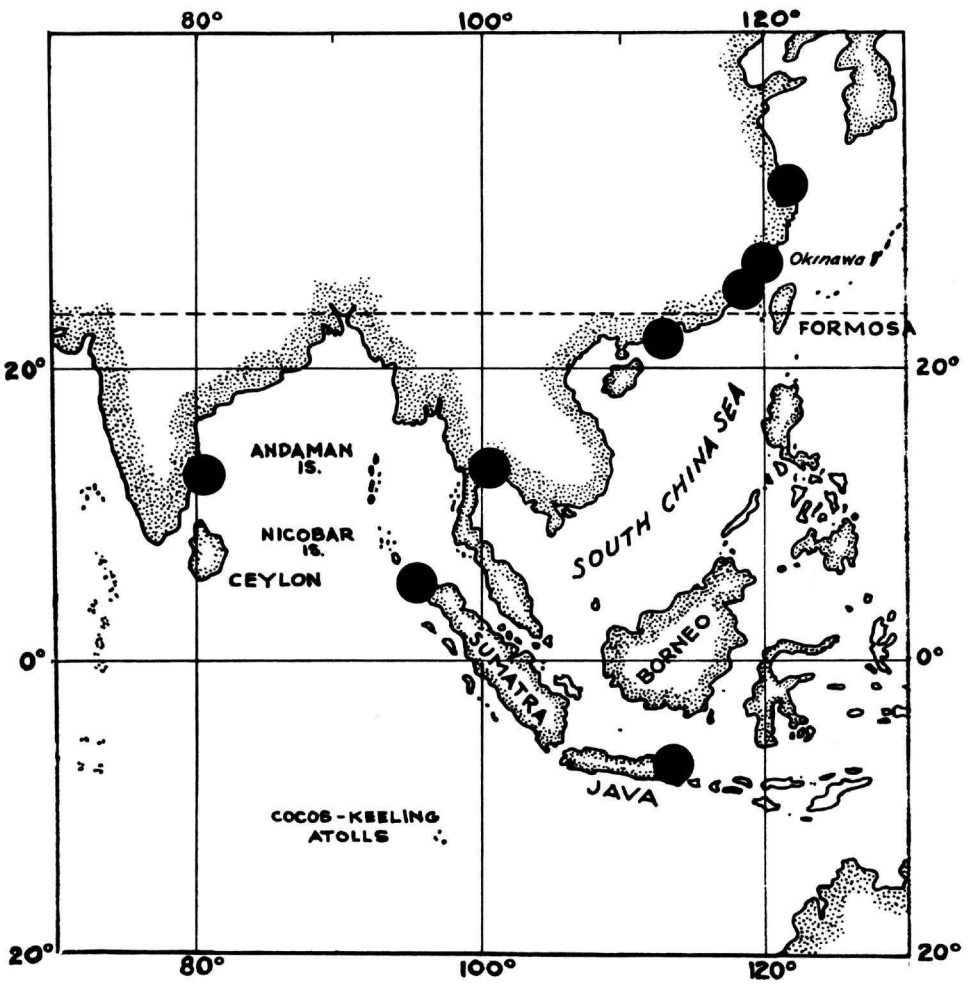

FIGURE 5.—Distribution of *Oxuderces dentatus*.

Identity of *Apocryptichthys* and Redescription of *Apocryptes cantoris*

All references to *Apocryptichthys* in keys to gobiid genera refer to *Oxuderces,* and the name *Apocryptichthys cantoris* is often assigned in the literature and in museum collections to specimens of *Oxuderces dentatus.* Neither of these names, however, is a strict synonym of *Oxuderces* or *O. dentatus.* The circumstances surrounding and following Day's (1871) description of *Apocryptes cantoris* have caused much confusion. *Apocryptes cantoris* was described in a paper on Andaman Island fishes, but Day mentioned that he included some fishes from the Nicobars as well. All of the new species descriptions, except that of *A. cantoris,* included in Day's paper specify the locality (Andamans or Nicobars) from where the species came. Because Day, in later publications, did not report *A. cantoris* as occurring in the Nicobars, we can assume that it came from the Andamans (a locality at which *Oxuderces dentatus* is not known to occur). Day also did not indicate the number or sizes of the specimens on which the species account was based, although it could have been based on only one specimen as no variation was mentioned. The species was not illustrated in the original description.

Day's next reference to *Apocryptes cantoris* was in 1876, at which time he erected the genus *Apocryptichthys* for it alone, expanded and changed the description of the species, included a figure (herein reproduced as Figure 1*c*), and gave the geographic range of the species as Andamans and Madras. The illustration conforms to no specimen or other species description of which I am aware. The 1876 description of *A. cantoris,* which agrees with the only other report of *A. cantoris* given by Day (1889), differs significantly from the 1871 description. A comparison of the important features of the 1871 and 1876 descriptions, together with the same features as taken from the only two specimens known to have been identified by Day as *A. cantoris* (one each from the Andamans and Madras) is given in Table 2. A supposed third specimen, from the Andamans, on which, according to Day, the 1876 figure is also supposedly based, is reported to be lost or destroyed (Whitehead and Talwar, 1976). Of the two extant specimens, the one from Madras, which has no status as a type, is a normal specimen of *Oxuderces dentatus;* the one from the Andamans is referable to the genus *Boleophthalmus,* as currently treated in the literature,[2] and I am unable to assign a species name other than *cantoris* to it.

One can readily conclude from the information in Table 2 and the above discussion that Day changed his concept of *Apocryptes cantoris* between 1871 and 1876 to conform more closely with normal specimens of *Oxuderces dentatus,* and that the original description of *A. cantoris* was either based on more than one species (and genus), or contained errors, or both. The simplest solution to the problem is to assign Day's species name to a specimen. Inasmuch as there is an extant specimen from the Andaman Islands that Day identified as *Apocryptes cantoris* (presented to the British Museum in 1870), and which largely agrees with his original description, it appears that this specimen was part of, if not entirely, Day's type material of *A. cantoris.* I, therefore, designate this specimen (BMNH 1870.5.12.23) lectotype of *Apocryptes cantoris* Day. As a result of my action, *Apocryptichthys* becomes, for the moment, a junior subjective synonym of *Boleophthalmus* Valenciennes.

Boleophthalmus cantoris (Day)

FIGURE 6

Apocryptes cantoris Day, 1871:693 [original description; Andamans].—Whitehead and Talwar, 1976:161 [in part; location of Day's type specimens].

[2] Valenciennes (in Cuvier and Valenciennes, 1837) cited page 130 of Osbeck (1757; reference unavailable to me) as the original source of the genus *Apocryptes.* Valenciennes also cited page 170 of the German translation (1765) of Osbeck as a second source for *Apocryptes.* The name *Apocryptes* does not appear in the German translation (nor in a later English translation). Even if *Apocryptes* is cited in the pre-Linnean original edition of Osbeck, it is not available from the date of that publication. Jordan (1917, 1919) reported that *Boleophthalmus* Valenciennes in Cuvier and Valenciennes (1837) possibly should be synonymized with *Apocryptes* Osbeck, German edition, which Jordan erroneously dated 1762. Jordan also erroneously cited page 130 of the German edition as containing the reference to *Apocryptes* (however, he accurately stated that *Albula* appeared on page 309). Koumans (1931) summarized Jordan's discussion of *Apocryptes* and *Boleophthalmus* and also gave 1762 as the date for the German translation. The *Apocryptes-Boleophthalmus* problem is nomenclaturally complex and decisions must rest with the first reviser. I follow Koumans (1931), who, for convenience, recognized both these genera as valid senior synonyms.

TABLE 2.—Comparison of certain characters in Day's descriptions of *Apocryptichthys cantoris* with the same characters as exhibited by specimens identified as *A. cantoris* by Day

Characters	Descriptions			Specimens	
	Day (1871)	Day (1876)	Illustration in Day (1876)	BMNH 1870.5.18.23 Andaman Islands	AMS B.8336 Madras
Dorsal-fin rays	6/27	6/27	VI,26	V,27; last element distinct	VI,27; last element indistinct
Anal-fin rays	26	26	25	25; last element distinct	26; last element indistinct
Pectoral-fin rays	19	19	?	19-19	23-23
Total length (TL) mm	Not given	Not given	80, reportedly natural size	82.3	58.0
Head length	2/9 TL (22.2%)	1/4 TL (25.0%)	about 25% TL	20.3% TL	23.6% TL
Caudal-fin length	2/9 TL (22.2%)	1/5 TL (20.0%)	about 16% TL	21.0% TL	18.3% TL
Body depth	1/6 TL (16.7%)	1/9 TL (11.1%)	about 10% TL	8.9% TL	10.8% TL
Teeth	"The anterior of the upper jaw enlarged, whilst those of the lower jaw are horizontal. A pair of canines at the symphysis."	"...in premaxillaries curved,pointed,elongated...a long canine on either side of the symphysis...in lower jaw sub-horizontal...no posterior canines above the symphysis of the lower jaw."	Not illustrated	Upper jaw: anterior 14 teeth curved, pointed, not elongate, 2X size of lateral teeth; no elongate canines. Lower jaw: curved, pointed, subhorizontal; 2 erect canines posterior to symphysis.	Upper jaw: elongate canine on each side of symphysis, 4X size of lateral teeth. Lower jaw: curved, tips obtuse, horizontal; no canines posterior to symphysis.
	Not mentioned	"about 13 on either side of both jaws"	Not illustrated	31 in upper jaw; 48 + 2 canines in lower jaw	30 in upper jaw, 18 in lower jaw
Maxillary	"...extends to below middle of the orbit."	"...reaches to 1 diameter of the orbit behind its [orbit's] posterior edge."	Extends well posterior to vertical from posterior margin of eye.	Extends to below level of posterior half of eye.	Extends posteriorly more than one eye diameter beyond vertical from posterior margin of eye.
First dorsal fin	"...some distance from second; its first three rays... elongated."	"First and second dorsals of about same height; the membrane of the first dorsal continued almost to the base of the second."	Close to, but completely separated from, second dorsal; spines not elongate.	Well separated from, and not connected by membrane to, second dorsal; 3rd-5th spines elongate, 4th filamentous.	Much closer to second dorsal than in BMNH specimen; connected by membrane to second dorsal; spines not elongate.
	"dark, with three black bands along it."	"dark, longitudinally banded"	Dark, with three dark stripes.	Dusky, no stripes.	Dusky, no stripes.
Second dorsal fin	"only a notch between it and the caudal"	Not mentioned	Well separated from caudal fin.	Terminal membrane notched, but continuous with caudal fin.	Well separated from caudal fin.
	Not mentioned	Not mentioned	Variably dusky, no stripes	With three dark stripes.	Dusky, with dark,distal blotch over terminal three or four rays.
Scales	"very minute, most visible in the posterior part of the body."	"cycloid, absent from head, becoming largest posteriorly."	Not discernible	Cycloid, minute, tuberculate on head and body anteriorly, most visible posteriorly.	Cycloid, minute anteriorly, quite large posteriorly; absent on head and body anteriorly.
	Not mentioned	"about 90 rows along the body"	Not discernible	More than 100 in linear series along body.	About 65 in linear series along body.
Head coloration	"Cheeks and under surface...with black spots."	Not mentioned	Dark spots on cheeks.	Dark spots on cheeks; ventral surface evenly pale.	No dark spots.

Apocryptichthys cantoris (Day).—Day, 1876:302 [in part; pl. 62: fig. 7 does not pertain; Andamans].—Day, 1889:279 [in part; figure 94 does not pertain; Andamans].—Koumans, 1931:132 [listed].—Koumans, 1941:276 [in part; description).

DESCRIPTION OF LECTOTYPE OF *Apocryptes cantoris*.—Dorsal fin V,26; terminal pterygiophore supporting two subequal rays (the two rays here tabulated as one ray, but tabulated separately in Table 2); spinous dorsal-fin pterygiophore formula (Birdsong, 1975): 3(122*1*0) (note: the posteriormost of these pterygiophores is not associated with an external element); interspinous spaces equal; spinous

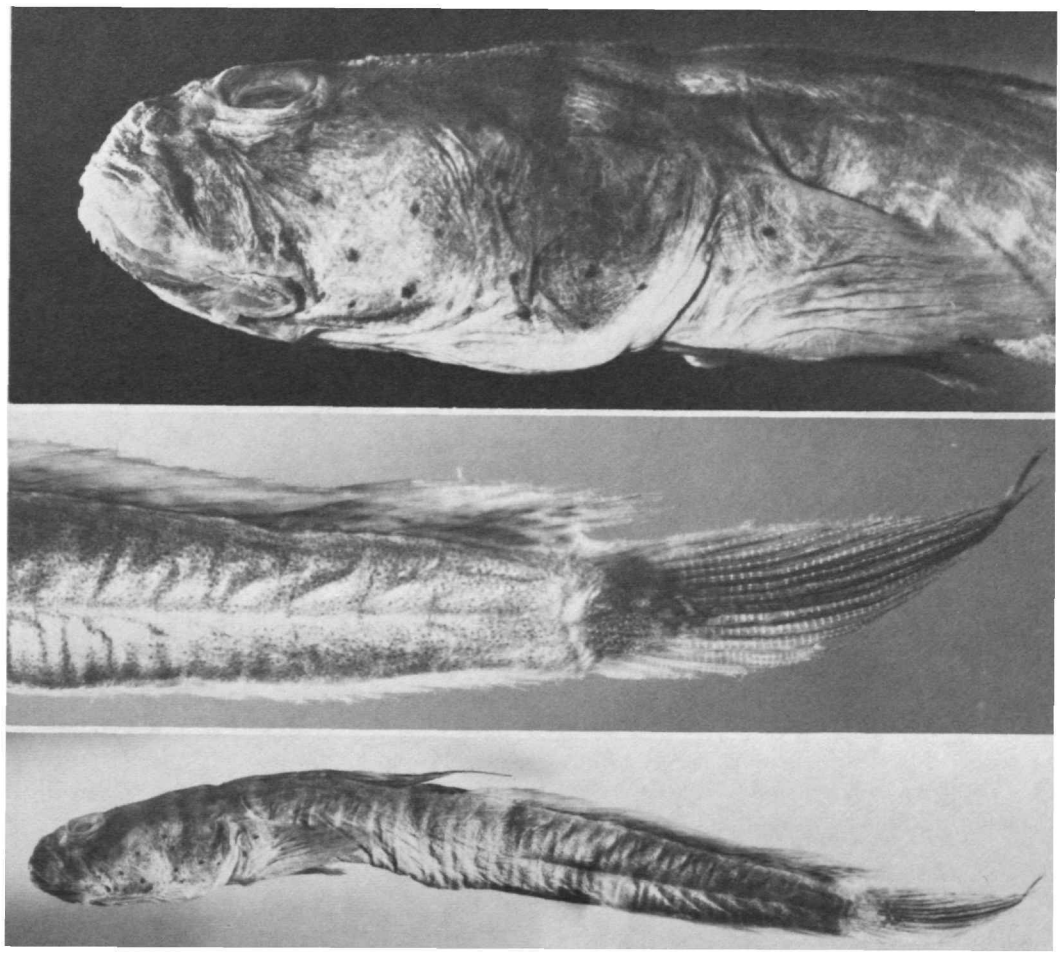

FIGURE 6.—Lectotype of *Apocryptes cantoris* Day, BMNH 1870.5.18.23.

and segmented ray portions of fin well separated, not connected by membrane; fourth spine filamentous, by far the longest dorsal-fin element; insertion of last segmented ray anterior to caudal-fin base, but depressed last rays extending posteriorly well beyond caudal-fin origin; last ray connected by membrane to caudal fin basally; color pattern, spinous portion pale dusky except second spine dark dusky distally; segmented ray portion pale anteriorly, with dusky stripe gradually making appearance at about midlength of fin, grading into three dusky stripes at posterior end of fin.

Anal fin 24, all rays segmented and branched; terminal pterygiophore supporting two subequal rays (the two rays here tabulated as one ray, but tabulated separately in Table 2); insertion of last ray below vertical from base of last dorsal-fin ray; tips of depressed posterior rays extend posteriorly beyond caudal-fin base; membrane attaches last ray for most of its length to caudal peduncle; color almost immaculate.

Pectoral fin (each) 19, ventralmost ray shortest, about equal to dorsalmost ray but much stouter; color variably dusky with one or two small, promi-

nent, dark spots; fleshy base with two or four small, prominent, dark spots.

Pelvic fin, I,5, joined by membrane with fin of opposite side to form cup; frenum well developed; color mostly immaculate with faintly dusky pigment in membranes between three innermost rays.

Caudal fin lanceolate with 16 segmented rays, of which only dorsalmost is simple; dorsal procurrent rays 2, ventral procurrent rays 1; parhypural, ventral hypural plate (composed of fused hypurals 1 and 2), hypural 5, and two epurals all autogenous; dorsal hypural plate (composed of fused hypural 3 and 4) fused to urostylar complex; uroneurals not present; color pattern generally dark dusky, except immaculate over ventralmost three rays, and several dark-margined pale spots slightly distal to fin base.

Vertebrae 10 + 16. Branchiostegal number could not be determined without dissection.

Scales cycloid, tiny, subequal throughout, covering body and sides and top of head, absent from head ventrally and prepectoral and prepelvic areas; minutely tubercular or imbedded on head and anteriorly on body; diagonal rows impossible to count; more than 100 scales along line between pectoral-fin axil and caudal-fin base.

Gill opening restricted, extending dorsally from point slightly dorsal to pelvic-fin origin to opposite level of eighth or ninth from ventralmost pectoral-fin ray.

All teeth with acute tips; upper jaw teeth uniserial, composed of 14 large, subequal teeth anteriorly, followed posteriorly on each side by eight or nine much smaller teeth, about half length of large teeth; lower jaw with large erect canine internally on each side of symphysis and outer row anteriorly of 15 or 16 large teeth, equal in size to small teeth of upper jaw, followed posteriorly on each side by offset row of 4 or 6 much smaller teeth, about half size of anterior teeth, followed posteriorly by another offset row of 3 or 4 teeth equal in size to first offset row; total lower jaw teeth, excluding erect canines, 48; lower jaw teeth (except erect canines) inclined somewhat laterally; teeth extend posteriorly for same distance in both jaws; vomer and palentines edentate.

Gape moderate; posterior tip of maxillary failing to reach vertical from posterior margin of eye; upper lip minutely papillose posteriorly, not modified anteriorly; color dusky but unremarkable; lower lip not modified. Lower jaw rounded anteriorly, not remarkable; tongue adnate; roof of mouth with broad, fleshy flap on either side of vomer.

Eyes located dorsally on anterior third of head; ventral eyelid well developed; small pore (posterior nostril?) opening just anterolateral to midanterior margin of each eye; no openings in interorbital region (see description of *Oxuderces dentatus);* only other opening is minute pore (anterior nostril?) at end of short ventrally directed tube originating above upper lip anteriorly on each side; tube does not extend ventrally beyond ventral margin of upper lip.

Head dusky dorsally and laterally, with two dusky bands dorsoposteriorly; sides with sparse scattering of small dark spots limited to area posterior to snout. Body dusky, with fine peppering of dark melanophores (visible only under magnification); numerous faint, slender, pale bars on sides; bars most obvious in nape area and below spinous dorsal fin; venter pale.

DISTRIBUTION.—Known only from the lectotype from the Andaman Islands.

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