

A review of the species of Indochinese fresh-water fishes described by H.-E. Sauvage

by Maurice KOTTELAT

Abstract. — 41 nominal species of fresh-water fishes described by SAUVAGE are revised. Their current status is given on table 1. The type material of 36 species is still extant. 10 lectotypes are designated in SAUVAGE's material. In correlation with this work, some other taxa have been examined and their relationships or synonymy with SAUVAGE's species reviewed.

Résumé. — 41 espèces nominales de poissons dulçaquicoles décrites par SAUVAGE sont révisées. Le tableau 1 indique leur statut actuel. Le matériel type de 36 espèces a été retrouvé. 10 lectotypes sont désignés parmi le matériel de SAUVAGE. En corrélation avec le présent travail, d'autres taxa ont été examinés et leurs relations ou synonymie avec les espèces décrites par SAUVAGE sont discutées.

M. KOTTELAT, *Laboratoire d'Ichtyologie, Case postale 46, 2764 Courrendlin, Switzerland.*

INTRODUCTION

Between 1874 and 1883, Henri-Émile SAUVAGE (1844-1917) described some 41 fish species collected in Indochinese fresh-waters. Several of them have been revised and still are considered as valid ones but others have been overlooked for years or actually present nomenclatorial problems.

While identifying a collection of fresh-water fishes of Kampuchea (KOTTELAT, *in press a*), it appeared that several nomenclatorial problems could not be solved without a critical reexamination of SAUVAGE's specimens and descriptions. For this reason, I decided to revise SAUVAGE's nominal species. I first intended to revise all Asiatic fresh-water fishes he described, but this quickly turned out to be infeasible in a short time span and would have delayed the appearance of the first results for a very long time. I thus restricted my interest to the species of the Mae Khong and Mae Nam Chao Phraya drainages.

The type specimens of all but 5 species have been traced in Muséum national d'Histoire naturelle, Paris. Comments on all species concerning current status and eventual synonymy are provided. To clear the exact position of several nominal species would require complete revisions of some genera, revisions which are far beyond the scope of the present paper. This is, for example, the case with *Pangasius*, *Cobitis* and *Labiobarbus*. For this reason, I have not been able to definitely clear up the status or validity of all species, and some results should be considered as provisory. It all the same seemed of interest to have these preliminary results published, most of SAUVAGE's descriptions being

so poor that it sometimes is very difficult to determine to which genera several species might belong. If technical and financial means allow it, it is my intention to revise most of these genera as material becomes available.

Three Gobiidae (*Gobius deilus*, *G. harmandi* and *Gobiodon flavus*) described by SAUVAGE (1880a) are not taken into consideration as they possibly are marine species; moreover, I have only a very poor knowledge of goby systematics.

I examined the holotype of *Hemiarius harmandi* Sauvage, 1878. It is an *Arius* (*sensu* SMITH, 1945). It is most probably a marine fish. It is thus not included in this report. Additionally, the systematics of Asiatic *Arius* are very poorly understood and I am unable to clear up the status of this taxon.

SAUVAGE's taxa are listed hereunder in the systematic order of the families and in alphabetical order within families. Unless necessary, only type specimens are listed. Table 1 gives a summary of the results.

TABLE 1. — Current status of the taxa of Indochinese fresh-water fishes described by H.-E. SAUVAGE. (* lectotype designation in the present paper, L type material lost, N new taxonomic data.)

DASYATIDAE

Trygon (*Himantura*) *oxyrhynchus* S., 1878 synonym of *Himantura uarnak* (Forskål, 1775)

CYPRINIDAE

Barbichthys nitidus S., 1878 (N) valid species : *Barbichthys nitidus* S., 1878
Barilius ornatus S., 1883 (N*) valid species : *Barilius ornatus* S., 1883; new synonymy

Bola harmandi S., 1880 synonym of *Raiamas guttatus* (Day, 1869)
Cirrhina aurata S., 1878 (L) synonym of *Cirrhinus microlepis* S., 1878
Cirrhina jullieni S., 1878 valid species : *Cirrhinus jullieni* S., 1878
Cirrhina microlepis S., 1878 valid species : *Cirrhinus microlepis* S., 1878
Cosmochilus S., 1878 (N) valid genus; new synonymy
Cosmochilus harmandi S., 1878 (N) valid species : *Cosmochilus harmandi* S., 1878; new synonymy

Cyclocheilichthys dumerili S., 1881 (N*) synonym of *Cyclocheilichthys armatus* (Valenciennes, 1842)

Cyclocheilichthys jullieni S., 1880 (LN) tentative synonym of *Probarbus jullieni* S., 1880
Dangila lineata S., 1878 valid species ? : *Labiobarbus lineatus* (S., 1878)
Dangila siamensis S., 1881 valid species ? : *Labiobarbus siamensis* (S., 1881)
Heteroleuciscus S., 1874 synonym of *Hampala* Kuhl & van Hasselt, 1823
Heteroleuciscus jullieni S., 1874 (*) synonym of *Hampala macrolepidota* Kuhl & van Hasselt, 1823

Labeo (*Labeo*) *aurovittatus* S., 1878 (LN) tentative synonym of *Cirrhinus microlepis* S., 1878

Lobocheilus pierrei S., 1880 (N) valid species : *Bangana pierrei* (S., 1880); new synonymy

Luciosoma harmandi S., 1880 synonym of *Luciosoma bleekeri* Steindachner, 1879

Morara siamensis S., 1881 (LN) valid species : *Henicorhynchus siamensis* (S., 1881); new synonymy

Paralaubuca harmandi S., 1883 valid species : *Paralaubuca harmandi* S., 1883
Probarbus S., 1880 valid genus

- Probarbus jullieni* S., 1880 (*)
Pseudolaubuca lateralis S., 1876
Puntius pierreii S., 1880 (N)
Puntius siamensis S., 1883 (N)
Rohita barbatula S., 1878
Rohita pectoralis S., 1878
Rohita sima S., 1878 (LN)
- valid species : *Probarbus jullieni* S., 1880
synonym of *Paralaubuca typus* Bleeker, 1863
valid species : *Barbus* (s.l.) *pierreii* (S., 1880)
synonym of *Mystacoleucus marginatus* (Valenciennes, 1842)
synonym of *Labeo chrysophekadion* (Bleeker, 1850)
synonym of *Labeo chrysophekadion* (Bleeker, 1850)
synonym of *Labeo chrysophekadion* (Bleeker, 1850)

COBITIDAE

- Botia helodes* S., 1876 (N)
Botia rubripinnis S., 1876 (*)
Misgurnus laosensis S., 1878 (N)
- valid species : *Botia helodes* S., 1876
synonym of *Botia modesta* Bleeker, 1863
valid species : *Cobitis* (s.l.) *laosensis* (S., 1878)

BAGRIDAE

- Pseudobagrus nudiceps* S., 1883
- valid species : *Pelteobagrus nudiceps* (S., 1883);
not an Indochinese fish !

SCHILBEIDAE

- Pseudeutropius siamensis* S., 1883
- valid species : *Platytrapius siamensis* (S., 1883)

PANGASIIDAE

- Helicophagus hypophthalmus* S., 1878 (*)
Pangasius bocourti S., 1880 (N)
Pangasius pleurotaenia S., 1878 (N*)
- valid species : *Helicophagus hypophthalmus* S., 1878
valid species : *Pangasius bocourti* S., 1880
valid species : *Pangasius pleurotaenia* S., 1878

ARIIDAE

- Hemipimelodus siamensis* S., 1878
- synonym of *Hemipimelodus borneensis* (Bleeker, 1851)

BELONIDAE

- Belone saigonensis* S., 1874
- synonym of *Tylosurus strongylura* (van Hasselt, 1823)

SYNGNATHIDAE

- Syngnathus jullieni* S., 1874
- synonym of *Microphis boaja* (Bleeker, 1851)

SOLEIDAE

- Synaptura* (*Anisochirus*) *harmandi* S., 1878
Synaptura (*S.*) *filamentosa* S., 1878
Synaptura siamensis S., 1878 (N)
- valid species : *Euryglossa harmandi* (S., 1878)
synonym of *Euryglossa orientalis* (Bloch & Schneider, 1801)
valid species : *Euryglossa siamensis* (S., 1878) :
new synonymy

CYNOGLOSSIDAE

- Cynoglossus* (*Arelia*) *solum* S., 1878 (*)
- synonym of *Cynoglossus microlepis* (Bleeker, 1851)

BELONTIIDAE

Trichopus parvipinnis S., 1876 (*) synonym of *Trichogaster microlepis* (Günther, 1861)

Abbreviations used are : HL, Head length ; KUMF, Kasetsart University, Museum of Fisheries, Bangkok ; MHNG, Muséum d'Histoire Naturelle, Genève ; MNHN, Muséum national d'Histoire naturelle, Paris ; NIFI, National Inland Fisheries Institute, Bangkok ; NMB, Naturhistorisches Museum, Basel ; RMNH, Rijksmuseum van Natuurlijke Historie, Leiden ; SL Standard length ; TL, Total length ; USNM, National Museum of Natural History, Washington.

DASYATIDAE

Trygon (Himantura) oxyrhynchus Sauvage, 1878a

MNHN 9639, holotype, 250 mm disc length (after SAUVAGE); Saigon ; JULLIEN.

This species, reported from Saigon, in fact seems to inhabit the seas. It has not since been reported in fresh waters. COMPAGNO & ROBERTS (1982) consider it as a synonym of *Himantura uarnak* (Forskål, 1775).

CYPRINIDAE

Barbichthys nitidus Sauvage, 1878c

MNHN 8587, lectotype, 179 mm SL.
MNHN B.2993, 4 ex., paralectotypes.
MNHN 3848, 7 ex., paralectotypes, 83-92 mm SL.
MNHN 1874-280, 5 ex., paralectotypes.

SAUVAGE (1881) considered this taxon to be synonymous with *B. laevis* (Valenciennes, in CUVIER & VALENCIENNES, 1842). BANARESCU (1980) designated a lectotype and considered the Indochinese specimens as constituting a distinct subspecies. Following ROSEN (1979), I do not see any reason to use subspecific taxa and consider the Indonesian and Indochinese populations to be two distinct species. Further studies on large samples and on living specimens may eventually prove them to constitute a single species. I sor- rily have not had the opportunity to examine specimens of *B. laevis*.

Barilius ornatus Sauvage, 1883 (fig. 1)

MNHN A.5074, lectotype (present designation), 90 mm SL ; Me Nam ; HARMAND.
MNHN B.2981, 1 ex., paralectotype, 92 mm SL ; same data.

Although several authors recently paid attention to the systematic position of the genus *Barilius* (last and best treatment is HOWES, 1980), their systematics at the species level is still poorly understood.

Morphometric and meristic data of both syntypes are given on table 2. SAUVAGE (1883b) described them as without barbels; in fact, they have a pair of small maxillary barbels. SAUVAGE indicated that they have 45 scales along lateral line; in fact, both specimens have 41.

TABLE 2. — Morphometric and meristic characters of type specimens of *Barilius ornatus* and *B. pellegrini*; in % of SL.

	<i>B. ornatus</i>		<i>B. pellegrini</i>
	lectotype	paralectotype	lectotype
SL (mm)	90	92	73
TL	—	—	123
Head length	25	26	27
Body depth	32	30	24
Depth of caudal peduncle	11	11	9
Length of caudal peduncle	14	16	15
Predorsal length	58	55	61
Prepelvic length	53	52	49
Preanal length	71	69	65
Pre-anus length	70	67	60
Snout length	7	7	—
Interorbital width	8	8	8
L.tr. from D to V	$\frac{1}{2}$ 7/1/2 $\frac{1}{2}$	$\frac{1}{2}$ 7/1/2 $\frac{1}{2}$	$\frac{1}{2}$ 9/1/9 $\frac{1}{2}$
Circumpeduncular scales	12	12	14
Predorsal scales	16	14	24
D	3/7	3/8	3/8
A	3/10-11 ?	3/10	3/13
C (branched rays)	—	9 + 8	9 + 8
P	14	15	12
V	9	10	8

Although a thorough revision of *Barilius* is far beyond the scope of the present paper, it seems worthwhile to make a few remarks concerning Indochinese species. The Indian (and Burmese) ones are not taken into consideration as I have seen very few specimens of them.

Barilius ornatus is the first described Indochinese species of the genus. VINCIGUERRA (1890) described *B. barnoides* from the "Paese dei Catcin" (literally "the country of the Kachin"), that is, according to his introductory chapter, East of Bhamo (24°15' N, 97°14' E), apparently in the Irrawaddy drainage. BOULENGER (1893) considered *B. barnoides* as a synonym of *B. ornatus* without any discussion. MUKERJI (1934) considered *B. barnoides* as a synonym of *B. barila* (Hamilton, 1822). Having no access to material of the last species, I can hardly comment on this, but according to SEN (1976) *B. barila* has 43-46 scales along lateral line while the examined specimens of *B. barnoides* have 38-41.

The specimens (MHNG 2100.76-84 & 2157.86, 12 ex., 62-81 mm SL) from the Mae Nam Yuan, a tributary of the Salween in Thailand, which I currently consider to be *B. barnoides*, may be distinguished from the two syntypes of *B. ornatus* by : a smaller eye (5.3-6.5 % SL, *vs* 7.4-7.6 ; 21-28 % HL, *vs* 38-40), a longer caudal peduncle (17-19 % SL, *vs* 14-16), shorter prepelvic length (47-48 % SL, *vs* 52-53), shorter preanal length (64-68 % SL, *vs* 69-72). Sorrowfully these data are based on very few specimens, particularly of *B. ornatus*. I tentatively consider *B. barnoides* as a valid species.

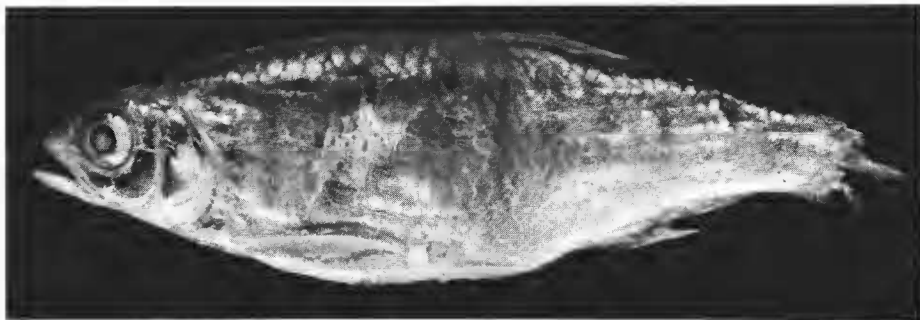


FIG. 1. — *Barilius ornatus*, lectotype, MNHN A.5074.

SMITH (1931) described *B. pulchellus* which may be distinguished at once by the dorsal fin origin which is slightly in advance of anal origin, while in *B. ornatus* and *B. barnoides* the anal origin is behind base of dorsal fin. *Barilius pulchellus* apparently has well developed tubercles on snout and mandible, while these are very small in the two other species. The last character should be used with caution, as it is known from other cyprinids that it may vary with age, season and sexual activity (see for example WILEY & COLLETTE, 1970).

Barilius buddhae Fowler, 1934, has been considered as a synonym of *B. pulchellus* by SMITH (1945). It exhibits the same characters as *B. pulchellus* when compared to *B. ornatus* and *B. barnoides*. I follow SMITH's synonymy.

Barilius infrafasciatus Fowler, 1934, agrees with *B. ornatus* in proportions, dorsal and anal fin positions, scale counts, colour pattern (as far as can be judged from the syntypes of *B. ornatus*) and tubercles. I consider it as a synonym of *B. ornatus*.

FANG (1938) described *B. pellegrini* from Szemao (22°47' N, 100°58' E), in the Mae Khong drainage in Southern China. It does not appear in recent treatments of Chinese cyprinids (WU *et al.*, 1964). A syntype, MNHN 1938-25, 73 mm SL, has been examined and is here formally designated as lectotype. It is a *Barilius* with long dorsal fin, well developed tubercles on snout and mandible, anal fin origin only slightly behind dorsal origin. It exhibits a close resemblance to the *B. buddhae* illustrated by FOWLER (1934, fig. 116). I do not hesitate in considering it as a synonym of *B. pulchellus*. Its morphometric and meristic data are given in table 2.

Danio monshiensis Wu *et al.*, 1964, has a dorsal origin well in advance of anal fin, 42-44 scales along lateral line, eye diameter 21 % HL, length of caudal peduncle 15 % SL,

prepelvic length 48 % SL, preanal length 65 % SL (measurements based on illustration). In these characters (except for length of caudal peduncle) it agrees with my concept of *B. barnoides*.

The remaining Indochinese species of *Barilius* are *B. koratensis* Smith, 1931 (and its possible synonym *B. nanensis* Smith, 1945, see KOTTELAT, *in press a*), *B. huahinensis* Fowler, 1934, and *B. bernatziki* Koumans, 1937.

***Bola harmandi* Sauvage, 1880b**

MNHN A.2399, holotype, 167 mm SL; Grands Lacs du Cambodge; HARMAND.

SMITH (1945) although not having examined the type material, stated that there is no significant differences between *Bola harmandi* and *Raiamas guttatus* Day, 1869, and he considered the former as a synonym of the latter. I confirm SMITH's synonymy. SMITH correctly noted that pl. 6 fig. 1 of SAUVAGE (1881) shows the specimen with a small maxillary barbel, while this character does not appear in the text. The holotype actually bears this barbel.

HOWES (1980) stated that *Luciosoma fasciata* Yang & Hwang (*in* WU *et al.*, 1964) apparently might also be a synonym of *R. guttatus*.

***Cirrhina aurata* Sauvage, 1878c**

The types of this taxon, mentioned by BANARESCU (1983), cannot be traced in MNHN. FANG (1943a) examined the two syntypes (MNHN 3849) and found them to be conspecific with *C. microlepis* Sauvage, 1878. This is also the conclusion reached by SMITH (1945) who could not be aware of FANG's paper which appeared after his death (in 1944). As the first reviser, SMITH chose *C. microlepis* as having priority over *C. aurata*. This procedure can be adopted, as FANG did not clearly indicated if he retained one of these names. From SAUVAGE's 1878 and 1881 descriptions, I would agree with them.

***Cirrhina jullieni* Sauvage, 1878c**

MNHN 8586, lectotype, 111 mm SL; Stung Strang; JULLIEN, 1874.
MNHN B.2960, 5 ex., paralectotypes, 88-97 mm; same data.

There are some minor differences between the original and the 1881 descriptions : eye diameter 3 times (*vs* nearly 4) in HL, body depth 3 times (*vs* 3.5) in SL, HL 4.33 times (*vs* 3.66) in SL ; D 15 (*vs* 12-13).

BANARESCU (1983) designated a lectotype. He considers *Cirrhinus jullieni* a valid taxa.

FANG (1943a) pointed out that figure 2 of plate 4 of SAUVAGE (1881) does not represent the species described either in 1878c or 1881, without stating how they differ. These

differences are : 5 scales between lateral line and dorsal origin (*vs* 7), D 11 (*vs* 15), eye 4 times (*vs* 3 in 1878*c*; 4 in 1881) in HL, 3 ½ scales between lateral line and pelvic origin (*vs* 5 or 4), body depth 3.8 times (*vs* 3 or 3.5) in SL, HL 4 times (*vs* 4.33 or 3.66) in SL. FANG described the illustrated specimens (MNHN 8598) as a new species, *C. sauvagei*, stating that it is possibly a synonym of *C. marginipinnis* Fowler, 1937. It is hereunder considered to be a tentative synonym of *Henicorhynchus siamensis* (Sauvage, 1881).

Cirrhina microlepis* Sauvage, 1878*c

MNHN 9648, holotype, 176 mm SL; Mékong à Tma-Kré; JULLIEN.

The original description indicates 24 dorsal rays and the 1881 one 14-15; the first figure is probably a typographical error. FANG (1943*a*) revised the type specimen and corrected some data. This is a valid species. A freshly preserved specimen is illustrated by TAKI (1974).

CUVIER (1817) proposed the new generic group of cyprinids he called "Cirrhines" but without using a latinized form. OKEN (1817) first used the latinized form *Cirrhinus* for them. The correct orthograph of the present taxon is *Cirrhinus microlepis*.

Cosmochilus harmandi* Sauvage, 1878*c

MNHN 9555, lectotype, 297 mm SL; Laos; HARMAND.

MNHN 9555, 1 ex., paralectotype, 230 mm SL; same data (lectotype and paralectotype have the same catalogue number as they are stored in a single jar).

SAUVAGE (1878*c*) indicated the locality as Laos. In 1881, he indicated that the only specimens are from "Grands Lacs du Cambodge (Great Lakes of Kampuchea)". The single jar in MNHN containing specimens collected early enough for having been used by SAUVAGE contains two specimens, 297 and 230 mm SL, 355 and 276 mm TL. In 1881, SAUVAGE indicated the length of a single specimen : 370 mm. This is to be understood as the total length of the largest specimen, which was designated as lectotype by BANARESCU (1908).

SAUVAGE created the monotypic genus *Cosmochilus* for *C. harmandi*. It is characterized by : a subinferior mouth with papillated lips and a continuous post-labial groove ; four barbels ; absence of tubercles or series of pores on snout ; dorsal fin high, with its fourth single ray ossified and serrated behind and eight branched rays ; anal fin with three simple and five branched rays. The type-species is recorded from the Mae Khong and Mae Nam Chao Phraya drainages.

REGAN (1906) described *C. falcifer* from Borneo which may be differentiated by its very high dorsal fin, which reaches or nearly reaches caudal fin when folded back (it never reach caudal fin in *C. harmandi*), by a stouter caudal peduncle (approximately as long as deep, *vs* 1.5 times longer than deep), and by the shape of the lip papillae (BANARESCU, 1980) which are globular in *C. harmandi* and digitated in *C. falcifer*.

DURAND (1940) described *C. pellegrini* which should be distinguished from *C. harmandi* by a shorter head, higher body and caudal peduncle, greater number of serrae on last simple dorsal ray and particularly by a lateral line constituted by branched tubes. Although this is not indicated by former reviewers (SMITH, 1945 ; BANARESCU, 1980), the two syntypes of *C. harmandi* have branched lateral line tubes (fig. 2). As to the other differences (see table 3), they may be attributed to individual variation. *Cosmochilus pellegrini* is thus a junior synonym of *C. harmandi*.

TABLE 3. — Morphometric and meristic data considered as diagnostic for *Cosmochilus harmandi* and *C. pellegrini* by DURAND (1940).

	<i>C. harmandi</i>	<i>C. pellegrini</i> (after DURAND)
Head length (% SL)	21-22	24-25
Body depth (% SL)	36-37	36-40
Depth of caudal peduncle (% HL)	62-63	56-67
Number of serrae on last simple dorsal ray	36	35-40

SMITH (1945) created *Papillocheilus* for *P. ayuthiae*. All the diagnostic characters of *Papillocheilus* are diagnostic for *Cosmochilus* too, the only difference being an inferior (vs subinferior) mouth. Although I have not examined the two syntypes (66 and 69 mm (TL ?)) of this taxon, I do not hesitate to consider them, as described and illustrated by SMITH, as mere juveniles of *C. harmandi*, of which *P. ayuthiae* is thus a junior synonym. Thus *Papillocheilus* is a junior synonym of *Cosmochilus*.



FIG. 2. — Scale with lateral line tube ; lectotype of *Cosmochilus harmandi*, MNHN 9555.

MATERIAL EXAMINED, OTHER THAN TYPES : Kampuchea : MHNG 2153.57, 1 ex., 67 mm SL ; Tonlé Sap, km 9 ; D'AUBENTON, 24.XI.1961. MNHN 1983-23, 1 ex., 173 mm SL ; same data, 30.XII.1960. MNHN 1983-127, 1 ex., 139 mm SL ; same data ; 12.II.1962. MHNG 2153.56, 1 ex., 70 mm SL ; same data, 7.I.1963. MNHN 1983-192, 1 ex., 113 mm SL ; same data, 14.XII.1960.

Cyclocheilichthys dumerili Sauvage, 1881

MNHN 1828, lectotype (present designation), 120 mm SL ; Bangkok ; BOCOURT.
MNHN B.2599, 1 ex., paralectotype, 118 mm SL ; same data.

SMITH (1945) noted the closeness of *C. dumerili* and *C. armatus* (Valenciennes, in CUVIER & VALENCIENNES, 1842). The stated differences and their exact values are given in table 4. It appears that differences in the size of the caudal peduncle in fact are not so important. The differences concerning the number of barbels is not significant as it is known that it is not definite in several *Cyclocheilichthys* (precisely *C. armatus* (see SMITH, 1945 : 148), *C. janthochir* (see KOTTELAT, 1982)). SAUVAGE (1881) described the colour pattern as plain. The specimens actually are silvery, but variations of the silver glence in fact would correspond to series of spots along series of scales and (possibly) a small dark spot on caudal peduncle as in most other species of *Cyclocheilichthys*. It appears that the lectotype of *C. dumerili* might agree with SMITH's concept of *C. armatus*.

TABLE 4. — Diagnostic characters of SMITH's (1945) *Cyclocheilichthys armatus* and *C. dumerili* compared to the syntypes of *C. dumerili*.

	<i>C. armatus</i> (after SMITH, 1945)	<i>C. dumerili</i> (after SMITH, 1945)	<i>C. dumerili</i> syntypes
Barbels	one maxillary pair with a rudimentary pair of rostral ones occasionally present	two pairs, well developed	two pairs of small barbels
Depth of caudal peduncle in HI.	1.75-1.85	2.35-2.75	1.38-1.64

The two syntypes no longer exhibit the typical series of sensory pores on head but I cannot find any other difference with typical *Cyclocheilichthys*. I assume that it is the result of a poor fixation and of the old age of the specimens.

For comments concerning the author of this name, see *Dangila siamensis*.

Cyclocheilichthys jullieni Sauvage, 1880b

The type(s) is lost. The 1880b and 1881 descriptions of this species are in concordance, the 1881 one just being somewhat expanded. The indication that the last simple

dorsal ray is osseous and non denticulated would exclude this fish from the genus *Cyclocheilichthys* in which this ray is always osseous and denticulated. There also is no mention of the numerous ridges of sensory pores on head which are diagnostic for *Cyclocheilichthys*.

Among all currently known Indochinese cyprinids, SAUVAGE's descriptions (if correct) may be applied to *Probarbus jullieni* Sauvage, 1880, and *Cirrhinus lineatus* Smith, 1945. The indication that the last simple dorsal ray is osseous and non denticulated would favour the first hypothesis, as *Cirrhinus* species do not have an osseous last simple dorsal ray. Awaiting an eventual rediscovery of the type(s), I tentatively consider *Cycloch. jullieni* as a synonym of *Probarbus jullieni*. I retain the second name for this species.

Dangila lineata Sauvage, 1878c

MNHN 9544, 3 ex., syntypes, 115-123 mm SL ; rapides de Stung Strang, Laos ; JULLIEN.

A *Labiobarbus* species, possibly synonym of *L. cuvieri* (Valenciennes, in CUVIER & VALENCIENNES, 1842). Dr BANARESCU (pers. comm.) has completed a revision of the genus and will designate a lectotype. See KOTTELAT (*in press b*) for data on the etymology, correct spelling and type species of *Labiobarbus*.

Dangila siamensis Sauvage, 1881

MNHN 1872, 2 ex., syntypes, 126-138 mm SL ; Petchaburi and Bangkok ; BOCOURT.

SMITH (1945) published results of a reexamination of these syntypes by PELLEGRIN. I would disagree with PELLEGRIN on the lateral line counts which are not 43-45 but 40 on right side of both specimens and 41 on left side of both. There is a lapsus calami in SMITH's text : the description of the colour pattern should read "interrupted longitudinal lines on the body formed by a black spot on each scale" (and not "on each side"). Dr BANARESCU (pers. comm.) has completed a revision of the genus *Labiobarbus*. He will discuss the status of this taxon and designate a lectotype.

SAUVAGE (1881 : 176) cited the name *D. siamensis* as a name given by BLEEKER. In synonymy, he indicated "*Dangila siamensis*, Blkr. in coll. Musée Paris". This means that BLEEKER had labelled the specimens and found them to represent an unnamed species. BLEEKER (1865a, b) and MARTENS (1878) used this name without description or indication. It is thus a *nomen nudum*. SMITH (1945) correctly noted that SAUVAGE is the author of this taxon, as he wrote at the end of the description (translation) : "This species was named but not yet described by Bleeker (...). The description is made from the specimens labelled by the learned ichthyologist himself". This clearly shows that SAUVAGE prepared the description alone on the basis of the specimens, without any access to any Bleekerian notes or description. The same remarks apply for *Cyclocheilichthys dumerili* and *Morara siamensis*.

Heteroleuciscus jullieni Sauvage, 1874

MNHN 8952, lectotype (present designation), 147 mm SL; Cochinchine; JULLIEN.
MNHN B.2968, 4 ex., paralectotypes, 119-191 mm SL; same data.

SAUVAGE created *Heterolenciscus* for this species. In 1881 (using the emended spelling *Heteroleuciscus*), he considered it as a synonym of *Hampala macrolepidota* Kuhl & van Hasselt, in VAN HASSELT, 1823. The five examined specimens correspond to the description of *Hamp. macrolepidota* by TAKI & KAWAMOTO (1977). *Heteroleuciscus* Sauvage, 1874, is thus a synonym of *Hampala* Kuhl & van Hasselt, in VAN HASSELT, 1823, and *Heter. jullieni* Sauvage, 1874, is a synonym of *Hamp. macrolepidota* Kuhl & van Hasselt, 1823.

Heterolenciscus is obviously an inadvertent error for *Heteroleuciscus*, a name based on *Leuciscus*, a widely known genus of palaeartic cyprinids. It is thus an incorrect original spelling and is to be corrected wherever it is found (Int. Code Zool. Nom., art 32 (a) (i) and 32 (c)).

Labeo (Labeo) aurovittatus Sauvage, 1878c

The type(s) of this taxon is lost. The description is very short (my translation) : " D 14, A 8, L.l. 58, L.tr. 11/9. Mouth as in *Labeo* (Bleeker); no barbels; lower lip thin, fringed; snout obtuse, with numerous tubercles, longer than one third of HL. Eye small, nearly 6 times in HL; interocular space convex, one half of HL. Head as long as body depth, 4 times in SL. Dorsal fin high, its upper margin being slightly concave, beginning above eleventh scale of lateral line; anal extending into the vicinity of base of caudal fin which is deeply forked. Body silvery, each scale with a golden vertical stripe. Laos; Jullien". The only species of the Mae Khong drainage to which most of these characters might be applied is *Cirrhinus microlepis* Sauvage, 1878. Thus I tentatively consider *Labeo aurovittatus* as a synonym of it.

Lobocheilus pierreï Sauvage, 1880b

MNHN A.4451, holotype, 520 mm SL; rapides de Dong Nai (province de Bien-Hoa); PIERRE.

This large specimen is illustrated by SAUVAGE (1881 : pl. 5 fig. 2). *Labeo behri* Fowler, 1937, described from the Mac Khong at Kemarat, is apparently a synonym of the present species, but I have not been able to see large specimens for comparison.

Labeo behri is placed in *Tylognathus* Heckel, 1842 (*sensu* REID, 1978) by KARNASUTA (1981). The type species of *Tylognathus* is *Varicorhinus diplostomus* Heckel, 1842 (BLEEKER, 1863). DAY (1876) considered *Cyprinus dero* Hamilton, 1822, and *V. diplostomus* as eventual synonyms. *Cyprinus dero* has been designated (JORDAN, 1919) type-species of *Bangana* Hamilton, 1822. If *C. dero* and *V. diplostomus* are congeneric, then the cor-

rect generic name is *Bangana*. *Bangana* has apparently not been used as a valid name since its original description. It thus present a great advantage over *Tylognathus*, as the last name has been used for a great variety of fishes absolutely not related to the type-species.

Luciosoma harmandi Sauvage, 1880*b*

MNHN 2398, holotype, 91 mm SL; Laos; HARMAND.

SMITH (1945) considered this species as a synonym of *L. bleekeri* Steindachner, 1879, stating that there are only differences in the colour markings of caudal fin. The caudal fin of the holotype actually is broken and the markings illustrated by SAUVAGE (1881 : pl. 6 fig. 4) cannot be checked; but 1 all the same concur with SMITH's synonymy.

Morara siamensis Sauvage, 1881

SAUVAGE's description of this species is very poor (my translation) : "D 11; A 8; L.l. 36; L.tr. 6/5. Body depth $4\frac{1}{3}$ times in TL, HL approximately 5 times in SL. Ros-tral profile convexe and slightly concave in front. Obtuse snout as long as eye whose diameter is $3\frac{1}{2}$ times in HL; suborbital large, covering half of the cheek; edge of lower jaw cutting. Dorsal fin inserted in front of pelvic fins, nearer tip of snout than origin of caudal fin; pectoral falciform, not reaching pelvic fins. Lateral line ending in middle of caudal fin (base). Coloration brilliant, somewhat brownish on the back; a thin dark edge at tip of dorsal fin, a series of brown spots near mid-height of that fin. Length : 110 mm. Bangkok : Bocourt". This description has been completed and slightly modified by PELLEGRIN (*in* SMITH, 1945) : L.l. 33-35, L.tr. $\frac{1}{2} 5/1/5\frac{1}{2}$, one scale between L.l. and pelvic origin; 11 predorsal scales, 16 circumpeduncular scales; D $3/8$, A $3/5$; first pelvic ray inserted below 2nd or 3rd branched dorsal rays.

The types cannot be traced in MNHN. It would actually appear that this description might apply to a group of nominal species whose systematics at the species level are poorly understood. *Morara siamensis*, as stated by SMITH (1945), is not an *Aspidoparia* (a senior synonym of *Morara*). Actually, the only available generic name seems to be *Henicorhynchus* Smith, 1945. A list of candidates to synonymy includes at least *Tylognathus siamensis* de Beaufort, 1927, *T. entnema* Fowler, 1934, *T. brunneus* Fowler, 1934, *Cirrhinus marginipinnis* Fowler, 1937, *C. sauvagei* Fang, 1942, and *H. lobatus* Smith, 1945. A critical revision of this complex is badly needed.

For comments concerning the author of this name, see *Dangila siamensis* above.

Paralabuca harmandi Sauvage, 1883*b*

MNHN A.6427, holotype, 147 mm SL; Me Nam; HARMAND.

BANARESCU (1971) redescribed, illustrated and discussed the status of this valid species. *Culter wolffi* Fowler, 1937, and *C. siamensis* Hora, 1923, are synonyms of *P. harmandi*.

Probarbus jullieni Sauvage, 1880*b*

MNHN 9647, lectotype (present designation), 268 mm SL ; Laos ; JULLIEN.

MNHN 9647, 1 ex., paralectotype, 158 mm SL ; same data.

MNHN A.5261, 1 ex., paralectotype ; same data.

A well characterized species which does not need any further comments. It is briefly diagnosed and described by SMITH (1945), TAKI (1974) and UK-KATAWEWAT (1979).

Pseudolaubuca lateralis Sauvage, 1876

MNHN 3932, lectotype ; rapides du Mékong ; JULLIEN.

MNHN 3933, 36 ex., paralectotypes, 87-133 mm ; same data.

MNHN 9391, 10 ex., paralectotypes, same data.

MNHN B.2358, 111 ex., paralectotypes ; same data.

SAUVAGE (1881) considered this taxon as a synonym of *Paralaubuca typus* Bleeker, 1863. BANARESCU (1971) confirmed this decision and designated a lectotype.

Puntius pierrei Sauvage, 1880*b*

MNHN A.2847, holotype, 253 mm SL ; rapides du Dang Nai (province de Bien-Hoa) ; PIERRE.

This dry, mounted specimen has the appearance of pl. 7 fig. 3 of SAUVAGE (1881). Its morphometric and meristic data are as follow (in % of SL) : total length 121 ; lateral length of head 20 ; dorsal length of head 16 ; predorsal length 51 ; prepelvic length 47 ; preanal length 76 ; head depth 16 ; body depth 36 ; depth of caudal peduncle 13 ; length of caudal peduncle 18 ; length of last simple dorsal ray 23 ; eye diameter 6 ; interorbital width 8. D 4/8, C 9 + 8 branched rays, A 3/5. L.l. 22 ; L.tr. from D to V $1\frac{1}{2}$ 5/1/3 ; 14 circumpeduncular scales ; predorsal scales 8-9. 15 serrae on hind-border of last simple dorsal ray.

With its two pairs of barbels, osseous and denticulated last simple dorsal ray, plain colour pattern, 14 circumpeduncular scales, this species corresponds quite well to *Barbus daruphani* (Smith, 1934). Two species (or species-groups) occur sympatrically in Indo-chinese waters which are usually referred to as *B. daruphani*. They may be distinguished as follow :

A — D 4/8, dorsal fin length 100-130 % HL, anal fin length 80-120 % HL, eyes not visible when the fish is seen from below, mouth slightly arched.

B — D 4/7, dorsal fin length 150-160 % HL, anal fin length 120-130 % HL, eyes visible from below, mouth strongly arched.

Additionally, B-type fishes are strongly compressed and have the general appearance of a *Scaphognathops* (but actually are *Barbus* s.l.).

In all these characters, *B. pierrei* corresponds to A-type fish. It seems to be the oldest available name for it. A syntype of *B. daruphani* (KUMF 565, 100 mm SL; Thailand : Mae Ping at Raheng (= Tak); H. M. SMITH, 17.X.1926) corresponds to type A. As there seems to be a great potentiality for variation in this group of fishes (several subspecies have been described from China and Malaysia) I cannot definitively clear their taxonomic status before having examined more material. *Barbus beasleyi* Fowler, 1937, seems to correspond to type A too (based on FOWLER's figure and description).

Barbus wetmorei Smith, 1931, might be the name to apply to B-type fishes.

***Puntius siamensis* Sauvage, 1883b**

MNHN A.5056, holotype, 86 mm SL; Menam; HARMAND.

With its nine branched anal rays, last simple dorsal ray osseous and denticulated and predorsal procumbent spine, this specimen belongs to the genus *Mystacoleucus*, as already stated by FANG (1943a).

Five other *Mystacoleucus* species have already been mentioned in Indochinese freshwaters : *M. argenteus* (Day, 1888), *M. marginatus* (Valenciennes, in CUVIER & VALENCIENNES, 1842), *M. atridorsalis* Fowler, 1937, *M. chilopterus* Fowler, 1935, and *M. greenwayi* Pellegrin & Fang, 1940. *Mystacoleucus atridorsalis*, if correctly described, is easily distinguished by a non osseous and non denticulated last simple dorsal ray; it may eventually belong to another genus. It has been described from the Mae Khong at Kemarat. *Mystacoleucus argenteus* is recorded from the Salween drainage and Tenasserim; it is distinguished from any other species of the genus by having only six branched anal rays (vs 7-9) and 33-35 scales along lateral line (vs 24-32). The distinctness of the four remaining nominal species cannot actually be determined but my impression from the few examined specimens is that *M. marginatus*, *M. siamensis* and *M. chilopterus* are synonyms. *Mystacoleucus greenwayi* might be synonym of *M. marginatus* as well as valid species.

Table 5 gives morphometric and meristic data of Indochinese and Indonesian specimens of *M. marginatus*. There seems to be a slight difference in HL, prepelvic length, eye diameter and interorbital width. There is no significant differences in colour pattern. The Indochinese specimens have small tubercles on snout and upper jaw, which do not exist in the (old) Indonesian material.

TABLE 5. — Morphometric and meristic data of *Mystacoleucus marginatus* from Indonesian and Indochinese waters; in % of SL.

	<i>M. siamensis</i> holotype	MHNG 2154.35 2 ex., Kampuchea	RMNH 4703 2 ex., Java
SL (mm)	86	98-99	98-105
Head length	27	26	21-23
Predorsal length	52	52-53	52-53
Prepelvic length	53	50-52	49-50

	<i>M. siamensis</i> holotype	MNHG 2154.35 2 ex., Kampuchea	RMNH 4703 2 ex., Java
Preanal length	74	70-74	71-72
Pre-anus length	69	66-69	69
Head depth	22	23	19-21
Body depth	41	39-40	38-41
Depth of caudal peduncle	14	13	13
Length of caudal peduncle	17	18	17-18
Eye diameter	9	8-9	7-8
Snout length	8	7-8	6-7
Interorbital width	9	9-11	8-9
Length of last simple D ray	21	23	20
Number of serrae on last simple D ray	18	18-23	18-22
D	4/8	4/8	4/8
A	3/9	3/9	3/8
C (branched rays)	9 + 8	9 + 8	9 + 8
P	16	14	14
V	8	9	9
L.l.	28	28	28-29
L.tr. from D to V	1/2 4/1/3	5/1/3	5/1/3
Circumpeduncular scales	14	14	14
Predorsal scales (in front of spine base)	8	7	7-8

***Rohita barbatula* Sauvage, 1878c**

MNHN 9641, holotype, 119 mm SL; Mékong au-dessus de Phnom Penh; JULLIEN.

This specimen exhibits all the diagnostic characters of *Labeo chrysophekadion* (Bleeker, 1850) as described by WEBER & DE BEAUFORT (1916): mouth construction, squamation, shape of fins, colour pattern. I do not hesitate in recognizing it as one more synonym of *L. chrysophekadion*.

***Rohita pectoralis* Sauvage, 1878c**

MNHN A.2405, holotype, 121 mm SL; Phnom Penh; HARMAND.

This taxon is considered as a synonym of *Labeo chrysophekadion* (Bleeker, 1850) by SMITH (1945) who noted some differences between SAUVAGE's 1878c description and his 1881 illustration. There actually are 42 scales along lateral line and not 46-48 as indicated in SAUVAGE (1878c). I agree with SMITH's synonymy.

Rohita sima Sauvage, 1878c

FOWLER (1935) and SMITH (1945) placed this species in *Osteochilus*. FANG (1943a : 168) stated that the type(s) is lost. SMITH (1945) stated the differences between SAUVAGE'S 1878c and 1881 descriptions. All the characters indicated by SAUVAGE correspond to the description of *Labeo chrysophekadion* (Bleeker, 1850) by WEBER & DE BEAUFORT (1916) and the few discrepancies (absence of pores on snout which are present in *L. chrysophekadion*, number of lateral line scales 48 vs 41-43) might be due to mistakes or typographical errors. I do not hesitate in recognizing it as a synonym of *L. chrysophekadion*, as well as the two other *Rohita* species described by SAUVAGE.

The type(s) was collected in Phnom Penh by HARMAND.

COBITIDAE

Botia helodes Sauvage, 1876 (figs. 3-4)

MNHN 8595, holotype, 62 mm SL; Tma-Kré; JULLIEN.

This species is usually referred to as *B. hymenophysa* (Bleeker, 1852), originally described from Sumatra. Comparison with specimens from that island revealed that their colour pattern is quite different :

SUMATRA	KAMPUCHEA
Body stripes light brown with well marked dark edges	Body stripes regularly dark brown without darker edges
Anteriormost body stripes forwards directed or vertical	Anteriormost body stripes backwards directed
12-15 body stripes	10-11 body stripes
Dorsal fin with a conspicuous black spot on upper part of anterior rays and 4-5 stripes continuous with body stripes (fig. 3 a)	Dorsal fin without a black blotch and only 3-4 regular rows of spots on fin rays (fig. 3 b)
No well marked black spot on upper part of caudal fin base	A conspicuous black spot on upper part of caudal fin base

Botia hymenophysa is illustrated by BLEEKER (1863) and WEBER & DE BEAUFORT (1916). Specimens from Borneo have similar coloration and represent the same species. The Indochinese colour form has been illustrated by FOWLER (1934 : fig. 51 ; 1937 : fig. 64-65) and TAKI (1974) and described by SMITH (1945). GÜNTHER (1868 : 369) after having described typical *Botia hymenophysa* from Sumatra noted that "A variety of this species from Siam has only eleven cross bands which do not appear to be edged with blue, and the last cross band terminates in a black spot superiorly on the root of the caudal fin"; this is obviously the Indochinese colour form. Most "*B. hymenophysa*" described and illustrated in aquarium literature also belong to *B. helodes*.

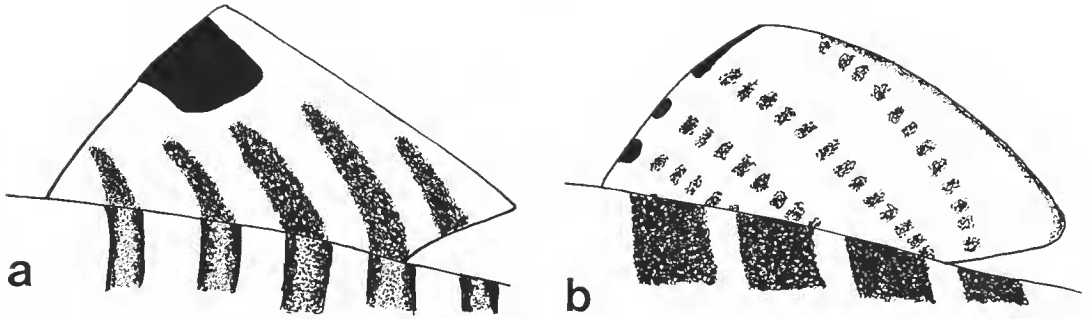


FIG. 3. — a, Dorsal fin of *Botia hymenophysa*; b, dorsal fin of *B. helodes*.

I am unable to find morphometric or meristic differences between the two forms (except for the shape of dorsal fin which has a nearly straight supero-posterior edge in Indonesian material while it is distinctly convex in Indochinese material). Nor am I able to see why these differences in colour pattern which are so constant and diagnostic should not have the same taxonomic value as morphologic differences. I consider these forms to represent valid species. *Botia hymenophysa* occurs in Sumatra and Borneo and *B. helodes* in Kampuchea, Laos, Viet Nam and Thailand.



FIG. 4. — a, *Botia helodes*, MNHN 1983-322, 85.8 mm SL; Kampuchea : Tonlé Sap; b, *Botia hymenophysa*, NMB 794, 58.5 mm SL; Sumatra.

Morphometric and meristic data of the holotype of *B. helodes* (in % of SL) : total length 128, lateral length of head 32, dorsal length of head 26, snout length 15, eye diameter 6, postorbital length of head 12, interorbital width 6, predorsal length 57, preanal length 79, pre-anus length 69, prepelvic length 59, head depth 17, body depth at dorsal origin 24, depth of caudal peduncle 17, length of caudal peduncle 15, length of anal fin 17, length of last simple dorsal ray 20, length of pectoral fin 18, length of pelvic fin 15, length of upper caudal lobe 26 (extremity broken), length of lower caudal lobe 29, length of median caudal rays 15 ; D 4/13, C 17 branched rays, A 3/5, V 8, P 15, first pelvic ray under 2nd-3rd branched dorsal ray.

Although SAUVAGE described it as having eight barbels, I have seen only six.

MATERIAL EXAMINED, OTHER THAN HOLOTYPE : *Botia helodes* : MNHN 1983-322, 1 ex., 86 mm SL ; Kampuchea : Tonlé Sap, km 9 ; D'AUBENTON, 18.II.1972. MHNG 2153.19, 1 ex., 49 mm SL ; Kampuchea : Kompong Réat ; D'AUBENTON, 17.XI.1960. Several other specimens, whose precise data are not available now, have been examined in NIFI and KUMF. — *Botia hymenophysa* : MNHN 3929, 1 ex., 95 mm SL ; Borneo ; BLEEKER, 1857. MHNG 2058.38, 1 ex., 62 mm SL ; Borneo : Kalimantan Tengah : Mentaya drainage in the vicinity of Sampit ; HANRIEDER, VI-VII. 1979. NMB 793-794, 2 ex., 60-61 mm SL ; Sumatra ; SCHNEIDER, 1900. NMB 825-828, 4 ex., 60-62 mm SL ; Sumatra : Indragiri ; SURBECK, 1904.

NOTE : Although MNHN 3929 is claimed by BERTIN & ESTÈVE (1948) to be a syntype of *B. hymenophysa*, it can not be, this species having been described from Palembang, Sumatra (BLEEKER, 1852).

***Botia rubripinnis* Sauvage, 1876**

MNHN 9545, lectotype (present designation), 61 mm SL ; Phnom Penh ; JULLIEN, 1874. MNHN B.2973, 7 ex., paralectotypes, 56-67 mm SL ; same data.

SAUVAGE (1876) described this species on the basis of material from Phnom Penh collected by HARMAND and JULLIEN (according to his text). In 1881, he only indicates HARMAND as collector of Phnom Penh material. In the same paper, he considers *B. rubripinnis* as a synonym of *B. modesta* Bleeker, 1864, an opinion followed by subsequent authors. The only Phnom Penh specimens housed in MNHN have been collected by JULLIEN.

TAKI (1972) claimed to have examined radiographs and photographs of the "holotype, MNHN 9545, ca. 59.5 mm, Thailand or Cambodia". This catalogue number in fact referred to the eight syntypes indicated above whose locality is recorded as Phnom Penh. It seems that TAKI got photographs of the specimen bearing the label which actually measures 61 mm SL and is here designated as lectotype. The seven paralectotypes receive a new catalogue number. All these specimens agree perfectly with BLEEKER (1864) and TAKI's (1972, 1974) descriptions and diagnoses of *B. modesta*.

***Misgurnus laosensis* Sauvage, 1878c (fig. 5)**

MNHN A.840, holotype, 106 mm SL ; Laos ; HARMAND.

Misgurnus is easily distinguished from any other cobitid genus by its anguilliform body and absence of a suborbital spine (REGAN, 1911). This single specimen is a large

massive cobitid with a compressed body and a distinctive *Cobitis*-like colour pattern and a bifid suborbital spine not hidden under skin. FANG (1943b) considered *Cobitis dolychorhynchus* Nichols, 1918, as a synonym of *M. laosensis*, itself considered as a subspecies of *C. taenia* Linnaeus, 1758. CHEN (1981) considered *C. dolychorhynchus* as a synonym of *C. sinensis* Sauvage & Dabry, 1874, but did not mention *C. laosensis* or the FANG's (1943b) paper.

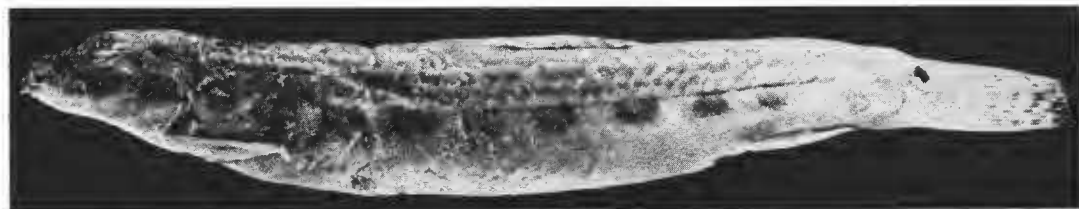


FIG. 5. — *Cobitis laosensis*, holotype, MNHN A.840.

Morphometric and meristic data, in % of SL : total length 114 ; head length 18 ; predorsal length 53 ; prepelvic length 55 ; preanal length 79 ; head height (at nape) 11 ; body depth (at dorsal origin) 17 ; depth of caudal peduncle 9 ; length of caudal peduncle 13 ; snout length 9 ; maximum head width 6 ; body width (at dorsal origin) 5 ; eye diameter 2 ; interorbital width 2 ; height of dorsal fin 13 ; length of caudal fin 18 ; length of anal fin 14 ; length of pelvic fin 12 ; length of pectoral fin 13. D 3/7, C 14 branched rays, A 3/5, V 7, P 9. Approximately 150 series of scales from opercle to caudal base. Lateral line incomplete, perforating scales as far back as end of pectoral fin.

Scales small with a subtriangular eccentric focal area (fig. 6c). Inner rostral barbels reach base of outer ones. The outer rostral barbels reach base of maxillary one which are approximately as long as median lobe of lower lip. Anterior lip thin ; posterior lip consisting of two superficial longitudinal lobes, posteriorly ending in a single tip (this tip is counted as a fourth pair of barbels by SAUVAGE). Both lips apparently papillated (fig. 6a). Suborbital spine very small, approximately equal to eye diameter, the longest point approximately 2.5 times longer than short one ; both are straight (fig. 6b).

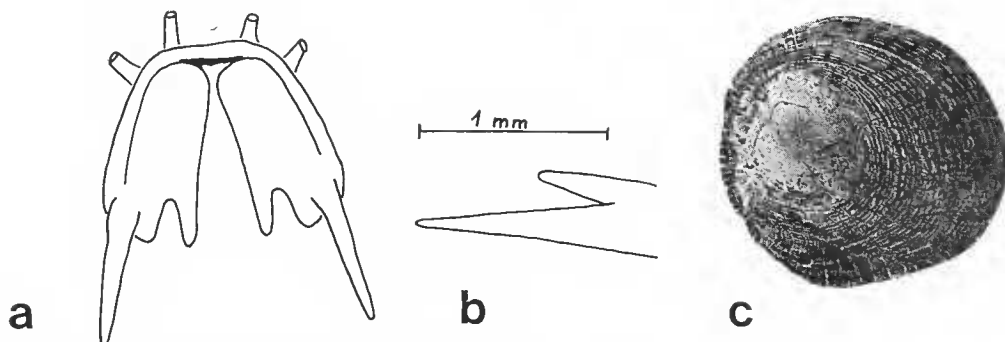


FIG. 6. — *Cobitis laosensis*, holotype : a, mouth ; b, right suborbital spine ; c, scale.

Colour pattern : 10-11 large rectangular blotches forming a mid-lateral line. Above this, two series of spots, more or less fused. Top of body and head marbled. A dark stripe from eye to snout. Dorsal fin with 5-7 rows of dark spots on rays. There is a black spot on upper half of caudal base. Caudal fin with approximately 7 vertical series of spots. Other fins hyalin.

The absence of Canestrini-scales on pectoral fin has no significance, these scales having been reported from males only (BACESCU, 1961). The present specimen is a female ; it contains ovulae 0.7-0.9 mm in diameter.

The systematic position and generic status of this species cannot be solved before a critical evaluation of all components of *Cobitis* s.l. (eventually including some *Lepidocephalus* species) is completed. I tentatively consider *M. laosensis* as a valid species in *Cobitis*. I cannot follow FANG (1943b) in considering *C. dolychorhynchus* Nichols, 1918, as a synonym of *C. laosensis* (this conclusion based on NICHOL'S 1918 description and 1943 figure). I also cannot agree that the present species is closely related to *C. taenia*.

BAGRIDAE

Pseudobagrus nudiceps Sauvage, 1883a, b

SMITH (1934) already mentioned that SAUVAGE (1883a, b) twice described this species in two contiguous papers, one on Japanese fishes and one on Siamese fishes. The two descriptions are nearly identical ; this is a lapsus. The holotype of *P. nudiceps* (MNHN A.6526) is a Japanese fish collected in Lake Biwa. *Pseudobagrus nudiceps* is considered to be a valid species of *Pelteobagrus* Bleeker, 1864, by JAYARAM (1968).

SCHILBEIDAE

Pseudeutropius siamensis Sauvage, 1883b

MNHN A.5002, holotype, 111 mm SL ; Me Nam ; HARMAND.

SMITH (1934) commented on the status of this species. HORA (1937) redescribed it and created *Platytropius* for its accommodation. I agree with HORA'S redescription.

PANGASIIDAE

Helicophagus hypophthalmus Sauvage, 1878c

MNHN A.745, lectotype (present designation), 630 mm SL ; Laos ; HARMAND.
MNHN A.744, 1 ex., paralectotype ; same data.
MNHN A.8832, 1 ex., paralectotype ; same data.

This taxon has been considered to belong to the genus *Pangasius* by HORA (1923) and FOWLER (1934). SMITH (1945) placed it in *Helicophagus* again. I can confirm this hypothesis, as the lectotype possesses the diagnostic character of *Helicophagus*, that is, absence of palatine teeth.

The lectotype is illustrated by SAUVAGE (1881, pl. 7 fig. 1). Its morphometric and meristic characters are as follows (in % of SL) : total length 114, head length 23, predorsal length 38, length from tip of snout to origin of adipose dorsal fin 79, prepelvic length 39, preanal length 52, head depth 12, body depth (at dorsal origin) 20, depth of caudal peduncle 8, length of caudal peduncle 15, length of anal base 33, mouth width 10, height of dorsal spine 15, eye diameter 2, postorbital length of head 14, interorbital width 13, snout length 9, length of lower caudal lobe 21 (upper one broken), length of median caudal rays 5, length of pectoral spine 14, length of pelvic fins 8, length of anal fin 13 ; D I/6, C 15 branched rays, A 33, P I/10, V 8. There are 23 serrae on distal half of the left pectoral spine and none on dorsal spine.

***Pangasius bocourti* Sauvage, 1880**

MNHN 9528, holotype, 255 mm SL ; Phnom Penh ; HARMAND.

Since its original description, this taxon seems to have been used on few occasions. The holotype is not well preserved and is somewhat disformed, this affecting particularly the ventral area. In order to complete SAUVAGE's brief description, the following morphometric data might be of interest (in % of SL) : total length 126 ; head length 27, predorsal length 40 ; preanal length 66 ; prepelvic length 49 ; length of caudal peduncle 15 ; depth of caudal peduncle 7 ; body depth (at dorsal origin) 25 ; head width 18 ; snout length 9 ; eye diameter 4 ; dorsal and ventral interorbital width both 15 ; length of dorsal spine 16 ; length of pectoral spine 16 ; length of pelvic fin 12 ; length of first branched anal ray 13 ; length of anal base 26 ; length of upper caudal lobe (broken) 21 ; length of median caudal rays 9 ; length of lower caudal lobe (broken) 20. The maxillary barbels nearly reach branchial opening ; mandibular barbels are approximately as long as eye diameter. The vomerine teeth are joined in a quadrate patch approximately 2.5-3.0 times as wide as long (fig. 7d). On each side, there is a small patch of palatine teeth, close but not joined to vomerine ones. A 32, D II/6, P I 10 i, V 6.

SMITH (1931) described *P. beani* from a single specimen from the Lopburi River near Ayuthia in Thailand. In 1945, he mentioned that this specimen still was the only known. According to SMITH, the vomerine teeth of this specimen should be united in a single patch approximately 3 times as wide as long, with a patch of palatine teeth on each side, close but not joined to the vomerine ones. I examined a specimen (KUMF 173, 169 mm SL ; Thailand : Lopburi River, Klong Ban Poh ; H. M. SMITH, 26.XI.1923) which, although not labelled as such, is apparently the holotype of *P. beani*. The vomerine and palatine teeth are in different patches which are closely joined, forming a single band. The last disposition is considered by SMITH (1945) to be diagnostic for *P. sanikwongsei* Smith, 1931. The conspecificity of the last two nominal species need to be tested. I consider *P. bocourti* as a valid species.

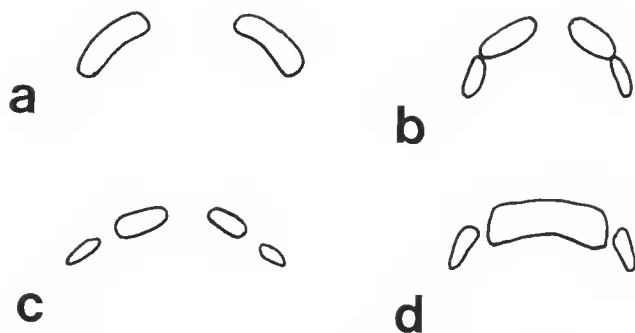


FIG. 7. — Vomerine and palatine teeth patches of : a, *Pangasius pleurotaenia* (from SAUVAGE, 1881) ; b, *P. pleurotaenia*, lectotype, MNHN 9529 ; c, *P. pangasius*, paralectotype of *P. pleurotaenia*, MNHN A.2389 ; d, *P. bocourti*, holotype, MNHN 9528.

***Pangasius pleurotaenia* Sauvage, 1878c (figs. 8, 7a-c)**

MNHN 9529, lectotype (present designation), 138 mm SL ; LAOS ; HARMAND.
 MNHN A.2389, 1 ex., paralectotype, 130 mm SL ; same data.

SAUVAGE (1878c) described this species on the basis of material collected by HARMAND in Laos. He did not give detailed locality data nor any length indication. In 1881, he indicated material from “Grand Lac du Cambodge (Harmand)” and from “Phnom Penh (Harmand)” and gave the total length of the largest specimen as 160 mm. There are only the two specimens above mentioned in MNHN ; they are labelled as syntypes of *P. pleurotaenia*. They belong to two species. Their morphometric and meristic data are given on table 6, as well as data from SAUVAGE (1878c, 1881). The two specimens have the same colour pattern (fig. 8) which corresponds to SAUVAGE’s descriptions.

From table 6, it is clear that the only characters of any use given by SAUVAGE are : body depth, head length, number of pelvic rays and disposition of teeth. It appears that only MNHN 9259 corresponds to these characters. Discrepancies would be in the number of pectoral rays (SAUVAGE might easily have overlooked the last small ray) and length of barbels (which are in a very poor state).

MNHN A.2389 differs in number of pelvic rays (which are easily counted in both specimens), body depth, head length, length of mandibular barbels (distinctly longer than in SAUVAGE’s descriptions).

For these reasons, I chose MNHN 9259 as lectotype of *P. pleurotaenia*. I am not even sure that MNHN A.2389 really is a syntype, as SAUVAGE (1878c) did not indicate how many specimens he had. This last specimen, in a quite poor state, keys out as *P. pangasius* (Hamilton, 1822) using SMITH’s (1945) key.

18 nominal species of *Pangasius* are reported from the Indochinese area. Most of them have fewer anal rays than *P. pleurotaenia* : *P. laraudi* Bocourt, 1866 (and its synonym *P. burgini* Fowler, 1937) (28-33), *P. sutchi* Fowler, 1937 (34-36), *P. nasutus* (Bleeker,

TABLE 6. — Morphometric and meristic data of *Pangasius pleurotaenia*.

	1878c	After SAUVAGE	1881	Lectotype MNHN 9254	Paralectotype MNHN A.2389
D	I 7		I 7	I 7	I 7
A	36-40		36-40	41	35
P	I 10		I 10	I 11	I 10
V	6		6	6	8
Body depth in TL	$5 \frac{1}{3}$		$5 \frac{1}{3}$	$5 \frac{1}{2}$	$6 \frac{3}{4}$
Head length in TL	$5 \frac{1}{3}$		$5 \frac{1}{3}$	$5 \frac{1}{3}$	$4 \frac{1}{2}$
Body depth in HL	1		1	1	$\frac{2}{3}$
Maxillary barbel	reach opercle		reach opercle	reach posterior rim of eye	reach opercle
Mandibular barbel	$\frac{1}{2}$ eye diameter		$\frac{1}{2}$ eye diameter	$\frac{1}{2}$ eye diameter	equal eye diameter
Vomerine teeth	« fused with palatine teeth and forming a band of same width as them »		see fig. 7a	see fig. 7b	see fig. 7c
Eye diameter in HL	—		slightly more than 3	2.8	4.9
TL	—		160 mm	minimum : 154 mm (caudal lobes are broken)	153 mm
SL	—		—	138 mm	130 mm

1863) (29-31), *P. beani* Smith, 1931 (29-31), *P. sanitwongsei* Smith, 1931 (30), *P. micronemus* Bleeker, 1847 (31-34), *P. taeniurus* Fowler, 1937 (28-29), *P. aequilabialis* Fowler, 1937 (33-34), *P. macronemus* Bleeker, 1851 (30-31), *P. bocourti* Sauvage, 1880 (see above) (32), *P. siamensis* Steindachner, 1879 (33-36), *P. altifrons* Durand, 1940 (31), *P. krempfi* Chauv & Fang, 1949 (31), *P. paucidens* Chauv & Fang, 1949 (32). The remaining nominal species are *P. polyuranodon* Bleeker, 1852 (35-40), *P. fowleri* Smith, 1931 (42), *P. longibarbis* Fowler, 1934 (39-41) and *P. cultratus* Smith, 1931 (39-42).

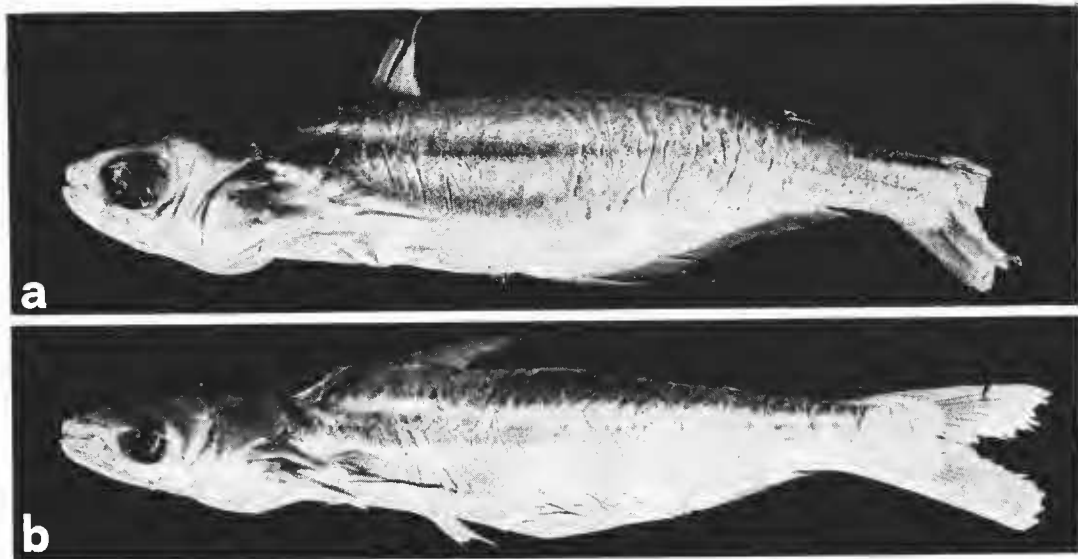


FIG. 8. — a, Lectotype of *Pangasius pleurotaenia*, MNHN 9529; b, *Pangasius pangasius* (?), paralectotype of *P. pleurotaenia*, MNHN A.2389.

Pangasius polyuranodon has a large rectangular patch of vomerine teeth flanked by a small lenticular mass of palatine teeth (SMITH, 1945). *Pangasius longibarbis* has very long barbels reaching to anal fin and palatine and vomerine teeth forming a single crescentic band (FOWLER, 1934). *Pangasius cultratus*, due to its keeled abdomen, has been placed in a distinct genus, *Pteropangasius* Fowler, 1937.

Pangasius fowleri seems to agree quite well with *P. pleurotaenia*. There is no significant disagreement between the lectotype of *P. pleurotaenia* and SMITH's (1931) description of *P. fowleri* except for the eye which is 3 times (*vs* 1.2 in *P. pleurotaenia*) in interorbital width and 3.75 times in HL (*vs* 3.0) (K. A. BRUWELHEIDE, USNM, provided data on the holotype of *P. fowleri*). Further studies on *Pangasius* spp. are needed in order to solve the relationships among them.

ARIIDAE

Hemipimelodus siamensis Sauvage, 1878c

MNHN 9649, holotype, 207 mm SL; Laos Siamois; JULLIEN.

This taxon, whose validity was considered as uncertain by SMITH (1945), is synonymous with *H. borneensis* (Bleeker, 1851) according to DESOUTTER (1977). I agree with the latter opinion.

BELONIDAE

Belone saigonensis Sauvage, 1879

MNHN 9646, 2 ex., syntypes, 223 (beak broken)-365 mm SL; Saigon; HARMAND.
MNHN 9645, 5 ex., syntypes; same data.

These specimens agree well with WEBER & DE BEAUFORT's (1922) diagnosis of *Tylosurus strongylura* (van Hasselt, 1823): no gill-rakers, caudal peduncle not keeled laterally, two pairs of dentigerous upper pharyngeals, D 2/11, A 2/14, scaly operculum, rounded caudal fin, a black spot at base of caudal fin. Scales along lateral line cannot be counted with accuracy due to the bad state of the specimens; an estimation for the 223 mm MNHN 9646 syntype would be 160 scales.

SYNGNATHIDAE

Syngnathus jullieni Sauvage, 1874

MNHN 8527, lectotype (present designation), 208 mm TL; Cochinchine; JULLIEN.
MNHN B.2974, paralectotype, 1 ex., 184 mm TL; same data.

WEBER & DE BEAUFORT (1922) and DAWSON (1981) considered this taxon as a synonym of *Doryichthys boaja* (Bleeker, 1851). I agree with them.

SOLEIDAE

Synaptura (Anisochirus) harmandi Sauvage, 1878b

MNHN 9517, holotype, 73 mm SL; Mékong; HARMAND.

This specimen, supposed to be the holotype of *S. harmandi* by STAUCH & D'AUBENTON (1966), corresponds well to the original description, but there are all the same some minor differences; SAUVAGE stated that the right pectoral was somewhat less developed than the left and is approximately 8 times in HL, the left one being 8.5 times in HL. Actually, the right pectoral is 11.5 times in HL and the left one 8 times. I do not see any reason for not agreeing with STAUCH & D'AUBENTON that this specimen is the holotype of *S. harmandi*. Further studies are needed in order to show if *S. aenea* Smith, 1931, originally described from the Mae Nam Chao Phraya drainage is a distinct species or not. I tentatively follow CHABANAUD (1930, 1931, 1938) in considering *S. harmandi* as a member of *Euryglossa*.

***Synaptura filamentosa* Sauvage, 1878b**

MNHN 9643, holotype, 109 mm SL; Laos Cambodgien; HARMAND.

This single specimen exhibits all the diagnostic characters of *S. orientalis* (Bloch & Schneider, 1801) as described by WEBER & DE BEAUFORT (1929) and STAUCH & D'AUBENTON (1966): scales ctenoid on both sides, scales of head and neck of same size as the others; interorbital width approximately 1.5 times eye diameter, scaly; no crossbars on body; D ca. 60, A ca. 48, L.I. ca. 77 (not 60 as indicated by SAUVAGE, 1878b); body depth 2 times in SL.

***Synaptura siamensis* Sauvage, 1878b**

MNHN 9644, holotype, 126 mm SL; Stung Strang (Laos); JULLIEN.

Synaptura krempfi Durand, 1940, and *Chabanaudetta smithi* Joglekar, 1971, cannot be differentiated from *S. siamensis*. NORMAN (in SMITH, 1945) considered this taxon as a synonym of *S. panoides* Bleeker, 1851. *Synaptura siamensis* differs from BLEEKER's (1851) description in several characters (particularly D, A, L.I.; see table 2). BLEEKER's type specimens of *S. panoides* cannot be traced in Rijksmuseum van Natuurlijke Historie, Leiden (M. J. P. VAN OIJEN, *in litt.*), British Museum (Natural History), London, National Museum of Victoria, Melbourne, and Australian Museum, Sydney (P. J. P. WHITEHEAD, *in litt.*) so that these characters cannot be checked. WEBER & DE BEAUFORT (1929: 174) redescription of *S. panoides* differs from BLEEKER's original description in a few points (L.I., body depth; see table 7); but these authors did not examine type specimens from Banjermassin. According to available data, I tentatively consider *S. siamensis* and *S. panoides* as specifically distinct.

WHITLEY (1931) created *Chabanaudetta* (type species: *Synaptura panoides*) as a replacement name for *Anisochirus* Günther, 1862, a name preoccupied twice. CHABANAUD (1931) considered *Chabanaudetta* as a synonym of *Brachirus* Swainson, 1839. JOGLEKAR (1971), apparently unaware of CHABANAUD's paper or at least without discussing his conclusions, considered SMITH's (1945) *S. panoides* (= *S. siamensis*) as belonging to *Chabanaudetta*.

detta and representing a new species, *C. smithi*. I tentatively place *S. siamensis* in *Euryglossa*, following CHABANAUD (1930, 1931, 1938).

TABLE 7. — Morphometric and meristic data of *Synaptura panoides* and *S. siamensis*.

	<i>Synaptura panoides</i>			<i>Synaptura siamensis</i>		
	after BLEEKER, 1851	after WEBER & DE BEAUFORT, 1929	holotype	after DURAND (as <i>S.</i> <i>krempfi</i>)	after STAUCH & D'AUBENTON (as <i>S. krempfi</i>)	after JOGLEKAR (as <i>Chab.</i> <i>smithi</i>)
Head length in SL	5.7	5.4	5.1	4.9-5.1	4.5-5.1	5.2
Body depth in SL	3.0	2.2	2.4	2.5-2.7	2.3-2.6	2.2-2.3
Interorbital width in HL	8-9	more than 6	7.7	8.5	—	9.0-9.4
D	82	80-83	70	70	69-75	65-68
C	16	—	15	16	—	17
A	63	63	56	56	48-56	51-56
L.I.	150	110	89	90	79-92	87-90

CYNOGLOSSIDAE

Cynoglossus (Arelia) solum Sauvage, 1878b

MNHN 9517, lectotype (present designation), 213 mm TL; Mékong; HARMAND.

SAUVAGE (1878b) indicated that he had several specimens from the Mae Khong collected by HARMAND and JULLIEN. Only one of them can be traced in MNHN. It is designated as lectotype. This taxon is considered as a synonym of *C. microlepis* (Bleeker, 1851) by PUNPOKA (1964) and MENON (1977) who did not examine any of the type specimens. Examination of the lectotype confirmed their views.

BELONTIIDAE

Trichopus parvipinnis Sauvage, 1876

MNHN 9536, lectotype (present designation), 84 mm SL; Laos Cambodgien; HARMAND.
 MNHN B.2967, 3 ex., paralectotypes, 73-89 mm SL; same data.
 MNHN 8563, 12 ex., paralectotypes, 51-73 mm SL; Laos Cambodgien; JULLIEN.

SMITH (1945) considered this taxon as a synonym of *Trichogaster microlepis* (Günther, 1861). I agree with his opinion. SAUVAGE (1881) redescribed it as having 35-40 scales

along lateral line. All type specimens have 60-66 scales along lateral line. According to SAUVAGE (1881), the type locality (simply indicated as "Laos Cambodgien" in 1876) might be Phnom Penh.

Acknowledgments

It is a pleasure to thank the following people without whose help it would not have been possible to complete this paper : Martine DESOUTTER (MNHN) helped in locating specimens, provided informations and comments on them as well as several papers to which I had no access ; Martien VAN OIJEN (RMNH), Peter WHITEHEAD (British Museum (Natural History)), Susan L. JEWETT, Kurt A. BRUWELHEIDE (USNM) and Volker MAHNER (MHNG) loaned specimens under their care or provided informations on them ; Prachit WONGRAT (KUMF) and Jaranthada KARNASUTA (NIFI) provided space facility and help in their institutions ; François D'AUBENTON gave me access to his collection of Kampuchean fishes ; Paul HOBELMAN checked my English.

LITERATURE CITED

- BACESCU, M., 1961. — Contribution à la systématique du genre *Cobitis*. Description d'une espèce nouvelle, *Cobitis calderoni*, provenant de l'Espagne. *Revue roum. Biol.*, **6** : 435-448, 4 pl.
- BANARESCU, P., 1971. — Revision of the genus *Paralabuca* Bleeker (Pisces, Cyprinidae). *Trav. Mus. Hist. nat. Gr. Antipa*, **11** : 347-355.
- 1980. — Remarks on the genera *Scaphiodonichthys*, *Barbichthys* and *Cosmocheilus* (Pisces, Cyprinidae). *Revue roum. Biol.*, *Biol. Anim.*, **25** (2) : 93-100.
- 1983. — On the taxonomy and synonymy of the South Asian species of *Cirrhinus* s. str. (Pisces, Cyprinidae). *Revue roum. Biol.*, *Biol. Anim.*, **28** (1) : 13-17.
- BERTIN, L., & R. ESTÈVE, 1948. — Catalogue des types de poissons du Muséum National d'Histoire Naturelle. 4. Ostariophysaires (Cypriniformes). Paris. 117 p.
- BLEEKER, P., 1851. — Vijfde bijdrage tot de kennis der ichthyologische fauna van Borneo met beschrijving van eenige nieuwe soorten van zoetwatervisschen. *Natuurk. Tijdschr. Ned.-Indië*, **2** : 415-442.
- 1852. — Diagnostische beschrijvingen van nieuwe of weinig bekende vischsoorten van Sumatra. Tiental I-IV. *Natuurk. Tijdschr. Ned.-Indië*, **3** : 569-608.
- 1863. — Atlas ichthyologique des Indes Orientales Néerlandaises. III. Cyprins. Amsterdam (Müller), 150 p., pl. 102-144.
- 1864. — Description de deux espèces inédites de Cobitoides. *Ned. Tijdschr. Dierk.*, **2** : 11-14.
- 1865a. — Nouvelle notice sur la faune ichthyologique du Siam. *Ned. Tijdschr. Dierk.*, **2** : 33-37.
- 1865b. — Sixième notice sur la faune ichthyologique du Siam. *Ned. Tijdschr. Dierk.*, **2** : 171-176.
- BOULENGER, G. A., 1893. — List of fishes collected by Mr. E. W. Oates in the Southern Shan States, and presented by him to the British Museum. *Annls Mag. nat. Hist.*, (6), **12** : 198-203.
- CHABANAUD, P., 1930. — Les genres de poissons hétérosomates (Pisces, Heterosomata) appartenant à la sous-famille des Soleinae. *Bull. Inst. océanogr.*, **555** : 23 p.
- 1931. — Sur divers poissons soléiformes de la région Indo-Pacifique. I. A propos des genres *Chabanaudetta* Whitley et *Normanetta* Whitley. II. Descriptions de trois nouvelles espèces de la Mer Rouge. *Bull. Soc. zool. Fr.*, **56** : 291-305.

- 1938. — Contribution à la morphologie et à la systématique des Téléostéens dyssymétriques. *Archs Mus. natn. Hist. nat., Paris*, (6), **15** : 59-140, 9 pl.
- CHEN, J. X., 1981. — [A study on the classification of the subfamily Cobitinae of China]. *Trans. Chin. Ichthyol. Soc.*, **1** : 21-32 [in Chinese, English summary].
- COMPAGNO, L. J. V., & T. R. ROBERTS, 1982. — Freshwater stingrays (Dasyatidae) of Southeast Asia and New Guinea, with description of a new species of *Himantura* and reports of unidentified species. *Environ. Biol. Fish.*, **7** (4) : 321-340.
- CUVIER, G. L. C. F. D., 1817. — Le règne animal distribué d'après son organisation pour servir de base à l'histoire naturelle des animaux et d'introduction à l'anatomie comparée. 2. Paris (Déterville), 532 p.
- DAWSON, C. E., 1981. — Review of the Indo-Pacific doryrhamphine pipefish genus *Doryichthys*. *Jap. J. Ichthyol.*, **28** (1) : 1-18.
- DAY, F., 1876-1878. — The fishes of India, being a history of the fishes known to inhabit the seas and freshwaters of India, Burma, and Ceylon. London, 2 vol., 778 p., 195 pl.
- DESOUTTER, M., 1977. — Révision du genre *Hemipimelodus* Bleeker, 1858 (Tachysuridae, Siluriformes, Pisces). *Cybiurn*, (3), **1977** (1) : 9-36.
- DURAND, J., 1940. — Notes sur quelques poissons d'espèces nouvelles ou peu connues des eaux douces cambodgiennes. *Notes Inst. océanogr. Indochine*, **36** : 40 p., 7 pl.
- FANG, P. W., 1938. — Description d'un Cyprinidé nouveau de Chine appartenant au genre *Bariilius*. *Bull. Mus. natn. Hist. nat., Paris*, (2), **10** : 587-589.
- 1943a. — Sur certains types peu connus de Cyprinidés des collections du Muséum de Paris (11). *Bull. Soc. zool. Fr.*, **67** : 165-169.
- 1943b. — Sur certains types peu connus de Cyprinidés des collections du Muséum de Paris. *Bull. Mus. natn. Hist. nat., Paris*, (2), **15** (6) : 399-405.
- FOWLER, H. W., 1934. — Zoological results of the Third de Schauensee Siamese Expedition. Part I. Fishes. *Proc. Acad. nat. Sci. Philad.*, **86** : 67-163, pl. 12.
- 1935. — Zoological results of the Third de Schauensee Siamese Expedition. Part VI. Fishes obtained in 1934. *Proc. Acad. nat. Sci. Philad.*, **87** : 89-163.
- 1937. — Zoological results of the Third de Schauensee Siamese Expedition. Part VIII. Fishes obtained in 1936. *Proc. Acad. nat. Sci. Philad.*, **89** : 125-264.
- GÜNTHER, A., 1868. — Catalogue of the fishes in the British Museum. 7. Physostomi. London (British Museum), xx + 512 p.
- HORA, S. L., 1923. — On a collection of fish from Siam. *J. nat. Hist. Soc. Siam*, **6** : 143-184, pl. 10-12.
- 1937. — A new genus of Siamese catfishes. *J. Siam Soc., Nat. Hist. Suppl.*, **11** : 39-46, pl. 2.
- HOWES, G. J., 1980. — The anatomy, phylogeny and classification of bariline cyprinid fishes. *Bull. Br. Mus. Nat. Hist., Zool.*, **37** (3) : 129-198.
- JAYARAM, K. C., 1968. — Contribution to the study of bagrid fishes (Siluroidea : Bagridae). 3. A systematic account of the Japanese, Chinese, Malayan and Indonesian genera. *Treubia*, **27** : 287-386.
- JOGLEKAR, A., 1971. — On a new sole of the genus *Chabanaudetta* Whitley (Pisces, Soleidae) from Nontaburi, Siam. *Zool. Anz.*, **187** : 369-371.
- JORDAN, D. S., 1919. — The genera of fishes, part II, from Agassiz to Bleeker, 1833-1858, twenty-six years, with the accepted type of each. A contribution to the stability of scientific nomenclature. Leland Stanford Junior Univ. Pub., Univ. Series, i-ix + 163-284 + i-xiii.
- KARNASUTA, J., 1981. — Revision of the Southeastern Asiatic cyprinid genus *Osteochilus* Günther. Unpubl. Ph. D. thesis, Univ. of Alberta, 318 p.

- KOTTELAT, M., 1982. — A small collection of fresh-water fishes from Kalimantan, Borneo, with description of one new genus and three new species of Cyprinidae. *Revue Suisse Zool.*, **89** (2) : 419-437.
- *In press a.* — Fresh-water fishes of Kampuchea. An annotated checklist. *Hydrobiologia*.
- *In press b.* — Authorship and status of the Javanese fish names created by Kuhl and van Hasselt (1823).
- MARTENS, E. VON, 1865-1876. — Die preussische Expedition nach Ost-Asien. *Zool. Abtheil.*, **1** : 1-412, 15 pl.
- MENON, A. G. K., 1977. — A systematic monograph of the tongue soles of the genus *Cynoglossus* Hamilton-Buchanan (Pisces : Cynoglossidae). *Smithson. Contr. Zool.*, **238** : 129 p., 21 pl.
- MUKERJI, D. D., 1934. — Report on Burmese fishes collected by Lt.-Col. R. W. Burton from the tributary streams of the Mali Hka River of the Myitkyina District (Upper Burma). *J. Bombay nat. Hist. Soc.*, **37** (1) : 38-80.
- NICHOLS, J. T., 1918. — New Chinese fishes. *Proc. biol. Soc. Wash.*, **31** : 15-20.
- 1943. — The fresh-water fishes of China. In : Natural History of Central Asia, R. TYLER (ed.). New York (Am. Mus. Nat. Hist.), **9** : xxxv + 322 p., 10 pl.
- OKEN, L., 1817. — Ueber die Einführung einer neuen Zusammenrückung der Klassen, woraus das Tierreich besteht, von Cuvier. *Isis (von Oken)*, **1** : 1145-1185.
- PUNPOKA, S., 1964. — A review of the flatfishes (Pleuronectiformes = Heterosomata) of the Gulf of Thailand and its tributaries in Thailand. *Kasetsart Univ. Fish. Res. Bull.*, **1** : 86 p.
- REGAN, C. T., 1906. — Description of five new freshwater fishes from Sarawak, Borneo, collected by Dr. C. Hose. *Annls Mag. nat. Hist.*, (7), **18** : 66-68.
- 1911. — The classification of the teleostean fishes of the order Ostariophysi. — 1. Cypri-noidea. *Annls Mag. nat. Hist.*, (8), **8** : 13-32, pl. 2.
- REID, G. M., 1978. — A systematic study of labeine cyprinid fishes with particular reference to the comparative morphology, functional morphology and morphometrics of African *Labeo* species. Unpubl. Ph. D. thesis, Univ. of London, 770 p.
- ROSEN, D. E., 1979. — Fishes from the uplands and intermontane basins of Guatemala : revisionary studies and comparative geography. *Bull. Am. Mus. nat. Hist.*, **162** (5) : 269-375.
- SAUVAGE, H. E., 1874. — Notices ichthyologiques. I. Sur deux siluroïdes de genre nouveau du Thibet Oriental. II. Sur un cyprin de genre nouveau provenant de Chine. III. Sur un nouveau genre de gobiode provenant du Tonkin. IV. Sur un blennioïde de la Nouvelle-Calédonie. V. Sur un syngnathe d'espèce nouvelle provenant de la Cochinchine. VI. Sur un cyprin de genre nouveau provenant de la Cochinchine. *Revue Mag. Zool.*, **1874** : 332-340.
- 1876. — Sur quelques poissons des eaux douces du Laos Cambodgien. *Bull. Soc. philomath., Paris*, (6), **13** : 97-100.
- 1878a. — Sur une *Himantura* de Cochinchine. *Bull. Soc. philomath., Paris*, (7), **2** : 90-92.
- 1878b. — Sur quelques pleuronectes appartenant aux genres *Synaptura* et *Cynoglossus* et provenant de la Cochinchine et du Laos. *Bull. Soc. philomath., Paris*, (7), **2** : 92-95.
- 1878c. — Note sur quelques poissons d'espèces nouvelles provenant des eaux douces de l'Indo-Chine. *Bull. Soc. philomath., Paris*, (7), **2** : 233-242.
- 1879. — Descriptions de quelques poissons d'espèces nouvelles de la collection du muséum d'histoire naturelle. *Bull. Soc. philomath., Paris*, (7), **2** : 204-209.
- 1880a. — Description des gobioides nouveaux ou peu connus de la collection du muséum d'histoire naturelle. *Bull. Soc. philomath., Paris*, (7), **4** : 40-58.
- 1880b. — Notice sur quelques poissons de l'île Campbell et de l'Indo-Chine. *Bull. Soc. philomath., Paris*, (7), **4** : 228-233.
- 1881. — Recherches sur la faune ichthyologique de l'Asie et description d'espèces nouvelles de l'Indo-Chine. *Nouv. Arch. Mus. Hist. nat., Paris*, (2), **4** : 120-193, pl. 5-8.

- 1883a. — Sur une collection de poissons recueillis dans le lac de Biwako (Japon) par M. F. Steenackers. *Bull. Soc. Philomath., Paris*, (7), **7** : 144-150.
- 1883b. — Sur une collection de poissons recueillie dans le Mé-Nam (Siam) par M. Harmand. *Bull. Soc. philomath., Paris*, (7), **7** : 150-155.
- SEN, T. K., 1976. — *Barilius menoni*, a new cyprinid fish from Bihar (India) with a key to the Indian species of *Barilius*. *Curr. Sci.*, **45** (2) : 58-60.
- SMITH, H. M., 1931. — Descriptions of new genera and species of Siamese fishes. *Proc. U.S. natn. Mus.*, **79** (7) : 48 p., 1 pl.
- 1934. — Contributions to the ichthyology of Siam. IX. Siamese clariid catfishes. X. Note on the mountain catfish *Oreoglanis*. XI. Status of the catfishes *Mystus tengara* and *Mystus vittatus* in the Siamese fauna. XII. The catfish *Pseudobagrus nudiceps* as a Siamese fish. XIII. Siamese species of *Glyptothorax*. XV. The catfish *Tachysurus leiotocephalus*. XVI. Note on eggs and young of the sea swamp eel *Fluta alba*. XVII. New cyprinoid fishes. XVIII. The blennioid fishes of Siam, with descriptions of new species. XIX. New and rare fish records from Siam. *J. Siam Soc.*, Nat. Hist. Suppl., **9** (3) : 287-325, 5 pl.
- 1945. — The fresh-water fishes of Siam, or Thailand. *Bull. U. S. natn. Mus.*, **188** : xii + 622 p., 9 pl.
- STAUCH, A., & F. D'AUBENTON, 1966. — Poissons pleuronectiformes du Cambodge. *Cah. ORSTOM, Océanog.*, **4** : 137-158.
- TAKI, Y., 1972. — *Botia eos*, a new spiny loach from Thailand and Laos, with notes on some related forms in Asia. *Jap. J. Ichthyol.*, **19** (2) : 63-81.
- 1974. — Fishes of the Laos Mekong basin. Vientiane. (USAID, Mission to Laos, Agric. Div.), 232 p.
- TAKI, Y., & A. KAWAMOTO, 1977. — Differentiation of the cyprinids, *Hampala macrolepidota* and *H. dispar*. *Jap. J. Ichthyol.*, **24** (1) : 61-65.
- UK-KATAWEWAT, S., 1979. — The taxonomic characters and biology of some important fresh-water fishes in Thailand. Bangkok, Natn. Inland Fish. Inst., freshwater Fish. Div., Dept. Fish., Tech. Pap., **3** : iii + 43 p.
- VINCIGUERRA, D., 1890. — Viaggio di Leonardo Fea in Birmania e regione vicine. XXIV. Pesci. *Annali Mus. civ. Stor. nat. Giacoma Doria*, Genova, (2), **9** : 129-360, pl. 7-11.
- WEBER, M., & L. F. DE BEAUFORT, 1916. — The fishes of the Indo-Australian Archipelago. Leiden (Brill), **3** : xv + 455 p.
- WEBER, M., & L. F. DE BEAUFORT, 1922. — The fishes of the Indo-Australian Archipelago. Leiden (Brill), **4** : xii + 410 p.
- WEBER, M., & L. F. DE BEAUFORT, 1929. — The fishes of the Indo-Australian Archipelago. Leiden (Brill), **5** : xiv + 458 p.
- WHITLEY, G. P., 1931. — New names for Australian fishes. *Aust. Zool.*, **6** : 310-314, pl. 25-27.
- WILEY, M. L., & B. B. COLLETTE, 1970. — Breeding tubercles and contact organs in fishes : their occurrence, structure and significance. *Bull. Am. Mus. nat. Hist.*, **143** (3) : 143-216.
- WU, H. W., et al., 1964. — [The cyprinid fishes of China]. Shanghai, Tech. Printing House, **1** : 1-228, 78 pl. [in Chinese].

Achévé d'imprimer le 21 décembre 1984.

Le Bulletin du 2^e trimestre de l'année 1984 a été diffusé le 15 oct. 1984.

IMPRIMERIE NATIONALE

4 564 003 5