THE FISHES OF THE INDO-AUSTRALIAN ARCHIPELAGO

III

LEIDEN 1916 - E. J. BRILL LTD

THE FISHES

OF THE

INDO-AUSTRALIAN ARCHIPELAGO

III

OSTARIOPHYSI: II CYPRINOIDEA, APODES, SYNBRANCHI

with 214 illustrations

BY

Dr. MAX WEBER
Professor at the University of Amsterdam

AND

Dr. L. F. DE BEAUFORT

LEIDEN — 1916.
E. J. BRILL Ltd.

INTRODUCTION.

In continuation of the preceding volume of this series, in which, besides other groups, were treated the *Siluroidea*, as first suborder of the Order *Ostariophysi*, the present or third volume of the "Indo-australian fishes" contains the remaining suborder of the *Ostariophysi*: the *Cyprinoidea* and the Order *Apodes*, to which is added the Order *Synbranchi*.

We refer to the introduction of that preceding volume for the geographical limits of the faunistical region, wherefrom the fishes are here described.

In the quoted introduction we have also made some remarks about the material in general at our disposal. The following may be added for the present volume.

A great part of it, as far as it contains the descriptions of the *Cyprinoidea*, is devoted to fishes living in the fresh water of streams, brooks, ponds and lakes from the western part of the Indo-australian Archipelago, especially from Sumatra, Borneo, Java and neighbouring Islands, reaching eastwards not farther than Borneo and Sumbawa.

The *Synbranchi* and some of the *Apodes* have a wider distribution in the fresh water of the Archipelago.

The remaining *Apodes* are inhabitants of the coral reefs, of the sandy and muddy litoral region, of the brackish water of aestuaries, of the bottom of deeper water, a few even of the true deep sea. Many live below stones, below blocks of coral or find shelter in crevices of rocks or coral reefs, some burrow in sand or mud, while others are met with in surface water.

For the study of the fishes treated in this volume we could dispose of the various collections named in the introduction to the second volume of this series. Since then we received valuable material from Dr. L. PH. DE BUSSY from Deli, from Mr. EDWARD JACOBSON from West-Sumatra (Padangsche Boven- and Beneden-Landen), from Mr. P. BUITENDIJK from the Java Sea, from Mr. G. HERMAN from Sabang, Pulu Weh.

We are glad of the opportunity to thank Dr. J. C. KONINGSBERGER, Director of 's Lands Plantentuin at Buitenzorg, Java, for the great advantage of his collaboration and interest in our work. He allowed us to study all the *Cyprinoidea*, *Apodes* and *Synbranchi* belonging to the Zoological Museum at Buitenzorg and to the "Visscherijstation" at Batavia. Our thanks are therefore also due to Major P. A. OUWENS, keeper of that Museum and to Dr. A. L. J. SUNIER, head of the Station for Fishery Investigation at Batavia, who was kind enough to forward the collection to us and gave us valuable information about its content.

Greatfully we acknowledge the great help we had, in preparing this volume, from the ichthyological material of the Rijks Museum at Leiden. Through the kindness of its Director Dr. E. D. VAN OORT its riches were always at our disposal and by the untiring help of Miss Dr. C. POPTA, we could make use of the types described by herself, by VAILLANT and of some of the types and cotypes of BLEEKER and KAUP.

The bulk of BLEEKER's types of *Cyprinoidea* and *Apodes* is contained in the British Museum (Natural History). One of us had the opportunity to study them: an opportunity without which our work had been insufficient and incomplete. We are therefore glad to thank the Director of the Zoological Department of that Museum, Dr. SYDNEY HARMER and especially Mr. C. TATE REGAN, under whose able superintendance the fish collection is placed, for the valuable and liberal help we always received.

Dr. G. DUNCKER from the Hamburg Museum was kind enough to send us for inspection all the *Cyprinoidea* from the Archipelago, which are under his charge. This important collection was of much help in our study.

We have also to thank Dr. J. PELLEGRIN for very valuable informations about some types preserved in the Muséum d'histoire naturelle at Paris and Dr. R. GESTRO, Director of the Museo Civico of Genova, for some cotypes of species described by PERUGIA.

For the benefit of those who make use of this volume we repeat the technical informations, given in the introduction to the second volume of this series.

In describing the fishes we understand by *Length*, in the

discussions of the proportions, the distance between the snout and the base of the caudal fin; in giving the largest size known for a species, we include the caudal fin.

The *Head* is measured from the tip of the snout to the end of the opercle, its proportion to the length is indicated e.g. as follows: head $4—4^1/_2$ means, that the length of the head is contained 4 to $4^1/_2$ times in the length.

Height is the maximum height; in special cases it is indicated how it is measured; the figures placed behind "height" indicate how many times it is contained in the length.

The size of the *Eye*, the length of the *Snout*, of the *Jaws* etc. are compared with the length of the head; thus "eye 4" means, that its diameter is $^1/_4$ of the length of the head.

In counting the *Scales*, under "*L. l.*" is given the number of scales, with or without sensory organs, between the head and the caudal fin or, in most cases, between that fin and the upper corner of the opercle.

L. t. $\frac{3^1/_2}{6\,(7)}$ signifies, that there are $3^1/_2$ rows of scales between the dorsal fin and the lateral line and 6 to 7 below it, the lateral line itself is in this case not counted. In other cases the lateral line itself is also counted f. i. *L. t.* $\frac{4^1/_2}{1^\bullet\ \ 1}$ (between D. and V.), which signifies, that there are $4^1/_2$ rows of scales between the dorsal fin and the lateral line, one in the lateral line itself and one between it and the ventral fin.

In the *Fin formulae* the spines and the simple, non-branched rays are generally indicated by a figure, separated by a point from that of the number of the branched rays.

The last soft ray of the dorsal and anal, in case it is cleft to the base and therefore counted as two by some authors (BLEEKER e. g.), is reckoned as one, being supported by a single pterygophore.

The *Gillmembranes* may be totally free from each other and from the isthmus; they may be united, but still remain free from the isthmus; or they may be connected with the isthmus and with each other. When in the last case the posterior border of the united gillmembranes is not quite adnate to the isthmus, there remains a free posterior margin, running as a fold over the isthmus from one gillopening to the other.

The complicated structure of the parts of the *mouth* of many *Cyprinoidea* has found ample discussion, illustrated by figures, in the text.

In describing the *Apodes* their dentition is of great importance. To facilitate its description we have added in many cases a figure of the dentition as it is seen on an impression of the teeth in a bit of plasticine. For this purpose we introduce a thin piece of this material in the opened mouth of the fish, close it and extricate afterwards the piece with some caution from the reopened mouth. In this way often teeth are indicated, which otherwise are difficult to detect.

We follow the law of priority and use the oldest name which can with certainty be made out by the description, belonging to a certain species. Its author is cited as the author of the species and his paper is quoted in the first place.

Mention is further made of all synonyms; besides, we have quoted those papers, which contain a description of the species. If it is a widely spread one, only those papers are quoted, which contain a description of or give some informations — others than those regarding locality only — about Indo-Australian specimens of that species.

According to the international rules of nomenclature we have neglected the generic names, as e.g. those of Swainson, which are not accompanied by a description.

We have recorded under: "nomina indigena" those native names, which seemed to us to be trustworthy. We are of opinion that no great value ought to be attached to them, as the unavoidable series of difficulties is still enlarged by the fact, that the authorities for those names have mostly been European ichthyologists and no linguists.

There remains for us the pleasing duty of expressing our thanks to Mr. C. PELTENBURG, head of the firm E. J. BRILL Ltd of Leiden for the interest he took in publishing also this volume and to Mr. J. F. OBBES, the able artist to whom we are indebted for the faithful figures, which illustrate this volume.

MAX WEBER.
L. F. DE BEAUFORT.

Eerbeek, Holland, July 1916.

SYSTEMATIC INDEX

2. Suborder **Cyprinoidea.**

(Eventognathi Gill).

Skin with cycloid scales, exceptionally naked. Parietals not united with supraoccipital, distinct from each other by median suture or by a fontanel. Mouth more or less protractile, toothless. Maxillaries generally excluded by the intermaxillaries from the border of the mouth. Barbels present or absent. The maxillary barbel not supported by the maxillary as in Siluroidea. No adipose fin. Symplectic and opercular bones all present. Inferior pharyngeal bones falciform, parallel with the branchial arches, armed with mostly large and specialized teeth. Branchiostegals 3. Pseudobranchiae nearly always present. Anterior vertebrae more or less distinct. Ribs mostly sessile. No parapophyses in the thoracic region. Rays of fins articulated, the segments of the second and third dorsal ray may coossify and form a spine consisting of two coossified halves. None of the pectoral rays are ossified. Lateral line nearly always present and complete.

Key to the indo-australian families of the suborder of Cyprinoidea.

1. Pectoral and ventral fins horizontally inserted, the former generally with several of their outer and sometimes of their inner rays simple. No movable spine before or below eye. At least 6 barbels . . . . . *Homalopteridae* p. 2.
2. Pectoral and ventral fins not horizontally inserted, only one of their outer rays simple.
   a. A simple or bifid movable spine may be present before or below eye, which has a free orbital margin or is covered by skin. Mouth inferior, with 6, 8 or more barbels . . . . . *Cobitidae* p. 21.
   b. No movable prae- or subocular spine; eye with a free orbital margin; mouth anterior or inferior with never more than 4 barbels. . . . . *Cyprinidae* p. 43.

1. Fam. HOMALOPTERIDAE.

Head and anterior part of body depressed, lower surface flattish. Pectorals and ventrals horizontally inserted, generally several of their outer and sometimes of their inner rays simple. No movable spine before or below eye. Dorsal and anal fins short, the former opposite to ventrals. Mouth inferior, its upper border formed by intermaxillaries only. At least three pairs of barbels, which may be nasal, rostral or maxillary barbels. Scales small, cycloid. Lateral line present. Gillopenings narrow. Gillmembranes united with isthmus. No pseudobranchiae. Pharyngeal teeth in a single series, eight to numerous in number. Airbladder reduced, divided into two lateral portions, each enclosed in a bony capsule.

Distribution: Southern Asia, in fresh water.

Key to the indo-australian genera.

1. Ventrals with 18—21 rays, united to form a suctorial disk . . . . . *Gastromyzon* p. 2.
2. Ventrals separated, with 8—11 rays.
   a. Five pairs of barbels, one nasal pair . . . . . *Glaniopsis* p. 5.
   b. Three to four pairs of barbels, no nasal ones.
      α. Three pairs of barbels, two of which in front of snout . . . . . *Homaloptera* p. 6.
      β. Four pairs of barbels, three pairs of which in a horse-shoe shaped groove before mouth. . . *Parhomaloptera* p. 20.

1. **Gastromyzon** Günther.

(GÜNTHER, Ann. Mag. Nat. Hist. (4) XIV. 1874, p. 454).

(*Lepidoglanis* Vaillant, *Neogastromyzon* Popta).

Head and anterior part of body ventrally flattened. Head and snout broad, rounded, eye superior, with a free orbital margin. Anterior and posterior nostrils separated by a cutaneous flap. Mouth inferior, transverse, slightly curved; at its corner a more or less rudimentary barbel, 4 others before the mouth. Pectorals with a long base beginning vertically below eye; ventrals with a long curved base, united posteriorly; between base of pectorals and ventrals a lateral extension of the abdominal skin (Fig. 1*a*). By this arrangement the whole flattened abdominal surface, together with the fins and the flattened

lower surface of the head forms an enormous suctorial disc. Ventrals with 18—21 rays. Dorsal and anal short. Scaly with

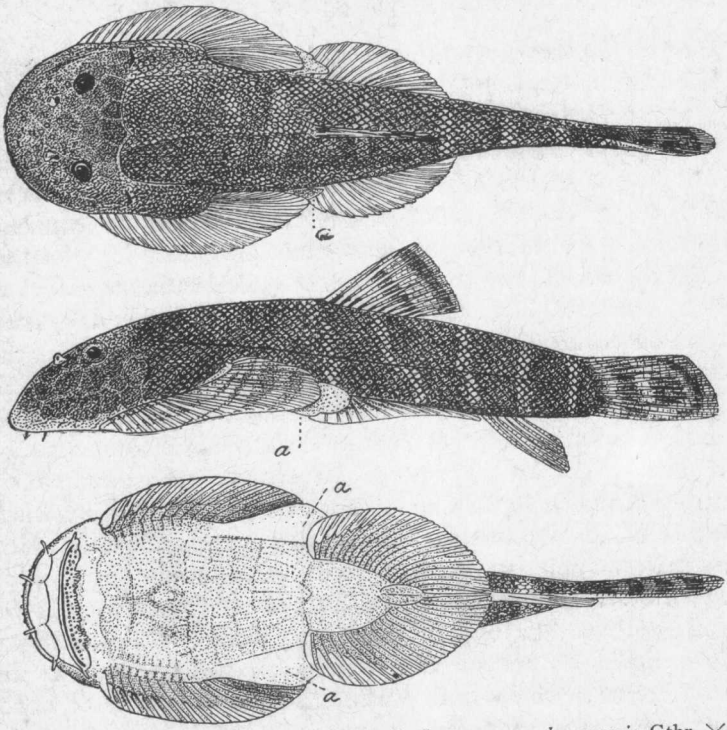

Fig. 1 Upper, lateral and ventral view of *Gastromyzon borneensis* Gthr. × 2.
a. lateral extension of the abdominal skin.

exception of head and lower surface. Branchial openings small, above base of pectorals.

Distribution: Borneo, in mountain streams.

Key to the species.

1. Breadth of body 3.2 in length. Ventrals reaching anal. *G. borneensis* p. 3.
2. Breadth of body 5 in length. Ventrals far remote from anal. . . . . *G. nieuwenhuisi* p. 4.

1. Gastromyzon borneensis Gthr. [Fig. 1].

Gastromyzon borneensis Günther, Ann. Mag. Nat. Hist. (4) XIV. 1874, p. 454.
Lepidoglanis monticola Vaillant, Compt. rend. Congrès intern. Zool. 1889, p. 81.
Gastromyzon monticola Vaillant, Compt. rend. sommaires Soc. Philom. de Paris nº. 2, 9 Nov. 1891. — Nouv. Arch. Mus. Hist. Nat. (3) V. 1893, p. 94.
Gastromyzon borneensis Steindachner, Abh. Senckenb. Naturf. Ges. XXV. 1901, p. 455.

Gastromyzon borneensis Fowler, Proc. Acad. Nat. Sc. Phil. (2) LVII. 1905, p. 477.
Gastromyzon borneensis Popta, Notes Leyden Mus. XXVII. 1906, p. 187.

D. 3.8; A. 1.6; P. 26—28; V. 20—21; L. l. circa 65; L. tr. $\frac{19}{1}$.
$\frac{}{12}$

Height 5. 5 or more, about 7 in length with caudal. Breadth of body 3. 2 in length, 4 in length with caudal. Head $3^1/_2$, $4^3/_4$ to more than 5 in length with caudal. Eye 5. 5—8, 2. 5—4 in interorbital space, according to size; situated in the third fourth of the length of the head. Mouthopening very slightly curved, $^2/_3$ of the greatest breadth of the head. Upper lip concealed by rounded frontborder of head, consisting anteriorly of three oval portions, a larger median and two lateral ones; at the outer corner of lastnamed a small barbel, an equally small barbel on each side between the median and lateral one; they are shorter than the eye. A smaller one on a fold at the corner of the mouth, which is continued in the fringed lower lip. Origin of dorsal nearer to root of caudal than to snout. The anal reaches, when depressed, on caudal. Innermost rays of ventrals reaching anal. Caudal about equal to head, obliquely truncated. More or less dark brown, lower surface whitish. Head and back may be uniform or have small brown spots, which may form an irregular network. There may be narrow, yellowish white, more or less regular, transverse lines on the hinderpart of the body. Upper surface of pectorals and ventrals as also the other fins with more or less distinct brown spots or bands. Length over 100 mm.

Nomen indig.: Dekŏt ok (Bongan), Tapat (Howong), Lēkēt or Kētipit (Kajan), Dehat (Mahakam).

Habitat: Borneo (Upper Kapuas, Bongan, Upper Mahakam with its affluents Bŏ, Blūū, Howong!, Kajan, source of the Mingalong, Kadamaian river on Kina Balu, Mount Dulit).

Living in mountain torrents. According to Günther, they dart rapidly across the swiftest currents from one stone to another, and stick like limpets to the stones, along which they crawl slowly like a molluscous animal.

2. **Gastromyzon nieuwenhuisi** (Popta).

Neogastromyzon Nieuwenhuisii Popta, Notes Leyden Mus. XXV. 1905, p. 181. — ibid. XXVII. 1906, p. 192.

D. 2.7; A. 2.5; P. 1.24; V. 18; L. l. 90; L. tr. $\frac{21}{1}$.
$\frac{}{10}$