FISHES OF THE LAO MEKONG BASIN

BY YASUHIKO TAKI

FISHERIES TEAM

UNITED STATES CONSULTANTS, INC.

CONTRACT NO. AID-439-699

UNITED STATES AGENCY FOR
INTERNATIONAL DEVELOPMENT
MISSION TO LAOS
AGRICULTURE DIVISION

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KHENYB ZILLAF
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PREFACE

Laos is in many ways an exciting as well as charming country in which to live and work. To take one instance, the scope which still exists here for doing original, even pioneer studies in the field of natural history is remarkable. Such work is all the more rewarding and stimulating if it bears on the important questions of natural resources and food supplies, questions to which the whole human race is now alert and which must be of especial concern to the people of Laos after twenty years of almost continuous war in their country.

Dr Taki's new book on the fish of Laos is a major achievement in this field. He has in effect tripled the number of species which are properly documented and described as indigenous to Laos. Of course, this is astonishing progress. There are few places in the world where such a feat is imaginable, or more to be desired. The co-operation of the Laotian Fishery authorities, the generous and far-sighted sponsorship of the United States Government and the patient research conducted by Dr Taki himself have produced results which will be of great benefit to the people of Laos.

Naturally, the fish which Dr Taki has identified and studied are not unknown to the Lao people. The majority of them are familiar, at least in the places where they are relatively abundant, to the local inhabitants. But hitherto there has been nothing which could be described as a scientific catalogue of the fish of Laos available for all to consult and providing a proper basis for work in that field. This is what we now have; and people who are working in many different disciplines towards the development of Laos will be helped by it.

Nor is it only in Laos that these benefits will be felt. They apply also to all the riparian states of the Mekong and indeed to all the neighbours of Laos - which is a country with many neighbours. One could justly add that Dr Taki's work has aroused the interest of ichthyologists the world over.

It so happens that I am one of the numerous people who will benefit directly from his work. It is exactly what I need as a scientific framework on which to base a small study of mine about the principal edible fish of Laos and the Lao ways of preparing them. So it is with keen personal gratitude, as well as a more objective appreciation of his achievement, that I congratulate Dr Taki and salute the appearance of his book.

Vientiane, Laos
July 1974

Alan E. Davidson

FOREWORD

This publication by Dr. Yasuhiko Taki has developed in greater detail and volume the work earlier prepared in his Notes on a Collection of Fishes from Lowland Laos, 1968. The work of collecting fish was undertaken as a side-activity to his duties of assisting the Royal Lao Government Fisheries Service develop the fish hatchery at Pakse. As USAID Contract Representative to the United States Consultants, Inc. contract team, cooperation was given to allow periodic collection of fish in different geographic areas of Laos.

The scientific descriptions provided by Dr. Taki have been developed from several periods of work in Laos. Final refinement of field data was done at his position with the Institute for Breeding Research at Tokyo University of Agriculture.

The results of this work are an important step in classifying and describing much of the fish population of Laos. With the illustrations and descriptions, a handbook is now available for workers in the field of fisheries to know the fish species in common terms.

USAID has been most fortunate to have Dr. Taki working with the fisheries development team. This publication is a valuable additional result which will have long-lasting influence in Laos.

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I. INTRODUCTION

Scope and Presentation

The present work is based primarily on a collection of fishes made in Laos by the author in the year 1970-1971 as a part of the fisheries development project sponsored by USAID Mission to Laos, and to a lesser extent on a collection made there by the author in 1969. All species derived from these collections, 146 in number, are fully described and illustrated. This catalogue also deals with published accounts pertaining to Laos by recent authors, i.e. Fowler (1934a, 1935b, 1937), Pellegrin and Fang (1940), Smith (1945), Serrene (1951), and Taki (1968), from which 57 species are cited. The citation includes a number of fishes collected in Thailand at several places on the Mekong River where the flow is shared by Laos and Thailand. These fishes taken in the Thai-Lao Mekong, although they have been included in Thai fish fauna, are regarded as inhabitants of Laotian water as well as of Thai. Thus the present publication reports altogether 203 species falling into 31 families from the Lao Mekong basin.

In 'The Fresh-Water Fishes of Siam or Thailand,' Smith (1945) described as many as 560 species. Even if scores of species that normally occur in the sea and esturine water are excluded from his list, the number of freshwater fishes in Thailand is far greater than that of Laotian fishes encountered in the present catalogue. However, this by no means indicates poorer fish fauna in Laos, but merely notes the scantiness of studies thus far made of Laotian fishes.

The classification and sequence of orders and families follow Gosline's (1971) arrangement with a modification as follows: The Siluriformes and Cypriniformes are assigned to distinct orders as in Greenwood et al. (1966). The subdivision of the Cyprinidae and of the Cobitidae is that of Bănărescu (1968). Identification of species was based mainly on Bleeker (1851a, b, c, d, e, 1852a, b, c, 1853a, b, 1854, 1855a, b, 1857, 1859-1860), Weber and de Beaufort (1911-1962), Fowler (1934a, b, 1935a, b, 1937, 1939), and Smith (1945). Also, for some limited groups of fishes, Regan (1909), Hora (1922, 1932), Smith (1931, 1933a, b, 1934), Chevey (1932) Pellegrin and Fang (1940), Silas (1952), Brittan (1954), Klausewitz (1957a, b, 1959), Alfred (1963a, b), d'Aubenton and Blanc (1966), and Bănărescu (1969) were referred to.

Each family or subfamily to which Laotian fishes belong is given a diagnosis with an outline sketch of a Laotian representative in ILLUSTRATED DESCRIPTION OF FAMILIES. For each species obtained from the collection in 1969 and 1970-1971, an illustration or illustrations and a description are given stating its synonymy, collection and material data, and diagnostic characters. Further detailed legend to the description is given in DESCRIPTION OF SPECIES. For fishes cited from the literature, only their references are given.

Technical terms, counts and measurements used in the description of fishes are explained below:

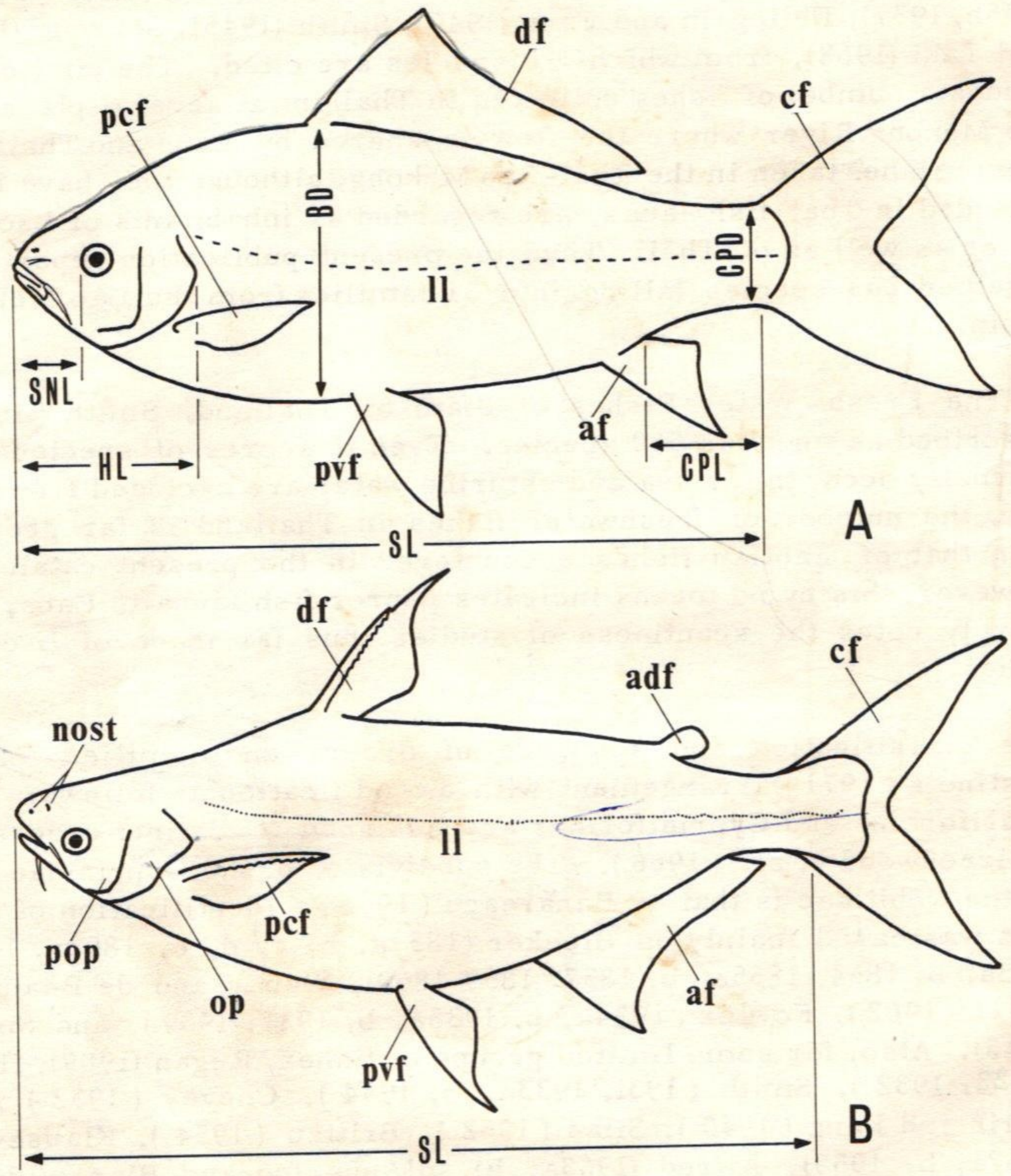


Fig. 1. Body parts and measurements used in describing fish species in the text. A--Osteochilus hasselti; B - Pangasius larnaudii. BD - body depth; CPD - depth of caudal peduncle; CPL - length of caudal peduncle; HL - head length; SL - standard length (= distance from the tip of the snout to the posterior margin of the hypurals; the margin of the bones corresponds in position to the flexure of the caudal fin); SNL - snout length; adf - adipose fin; af - anal fin; cf--caudal fin; df - dorsal fin; ll - lateral line; nost - nostrills; op - operculum; pcf - pectoral fins; pop - preoperculum; pvf - pelvic or ventral fins.

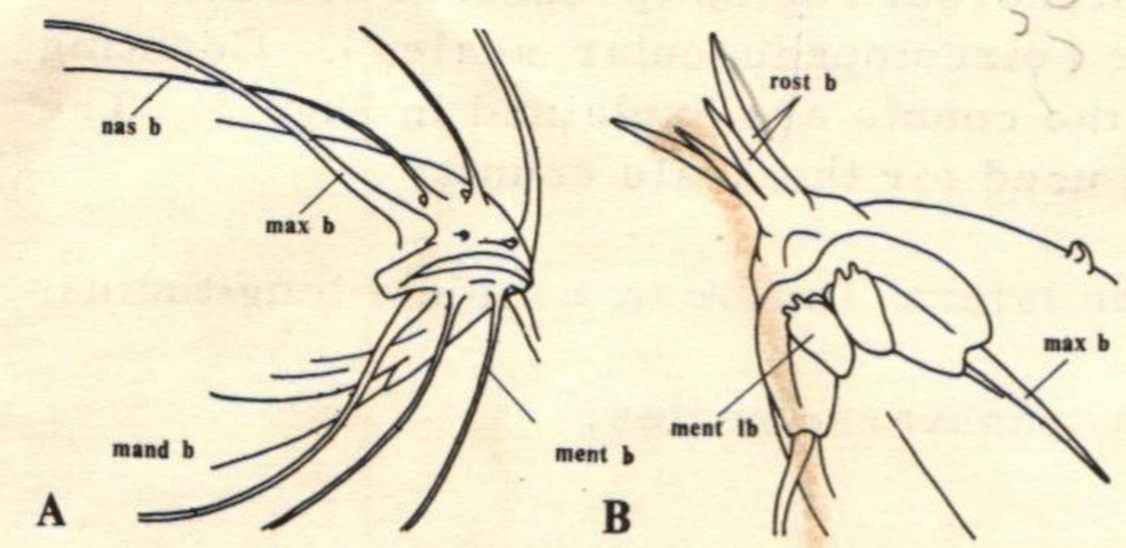


Fig. 2. Disposition of barbels and mental lobas in: A - *Mystus cavasius*; and B-*Botia modesta*. Mand b-mandibulary barbels; max b -maxillary barbels; ment b - mental barbels; ment lb - mental lobes; nas b - nasal barbels; rost b - rostral barbels.

Fin ray counts: In the fin formulae employed in the present work the structure and number of fin rays are indicated according to the following notation:

A. - Number of anal fin rays.
D. - Number of dorsal fin rays.
Arabic numerals - Soft rays either branched or unbranched; for the Clupeidae, Cyprinidae, Cobitidae, and some other fishes unbranched dorsal and anal fin rays, which may be ossified or unossified, are separated from branched rays by an oblique stroke (/); the posteriormost deeply bifurcated soft ray in the dorsal and anal fins is counted as one ray.
Capital Roman numerals - Spines.

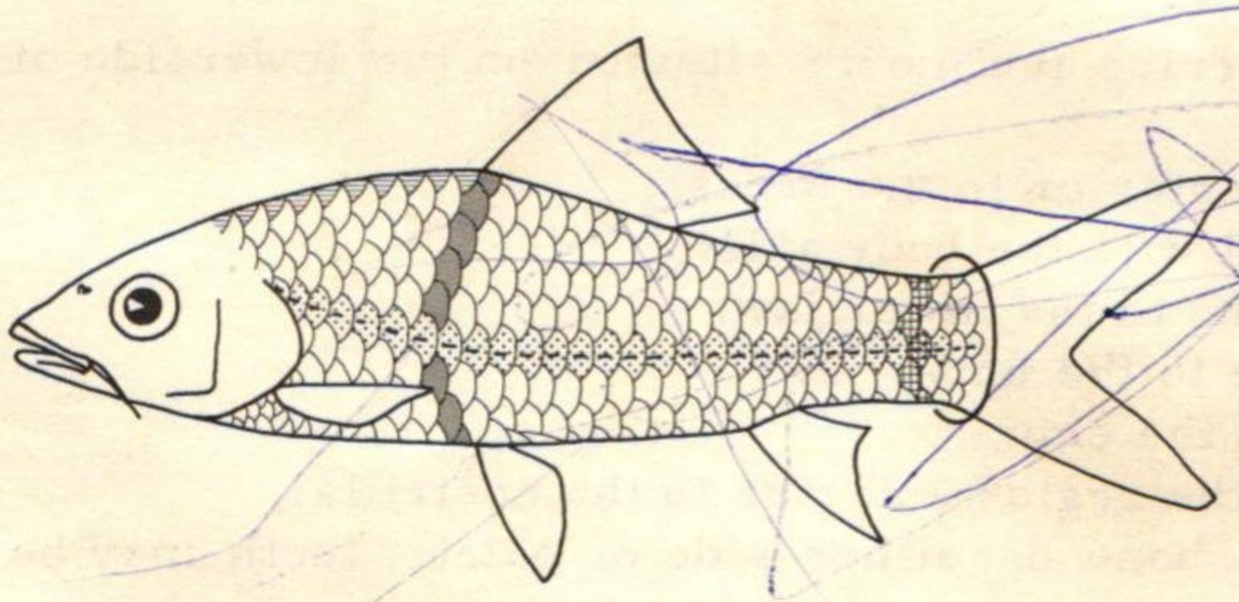


Fig. 3. Diagrammatic representation of the arrangement of scales and their counts in *Hampala macrolepidota*. Coarsely stippled - lateral line scales; counted posteriorly to the scale on the hind edge of the hypurals (= to the flexure line of the caudal fin), and expressed 'Ll. 28': darkly stipple - scales in a transverse series; scales above, in, and below the laterall line are counted separately, and indicated 'Tr. 4.5/1/2.5': stripped - predorsal scales: cross-striped - circum peduncular scales; all scales around the caudal peduncle at its narrowest part, including lateral line scale on each side, are counted.

Scale counts: The number of scales is counted along the lateral line or a middle longitudinal series, in a transverse series, along the mid-dorsal line in the predorsal region (predorsal scales), and around the caudal peduncle (circumpeduncular scales). Counting methods and expression of the counts are explained in Fig. 3. The following abbreviations are used for the scale counts:

Ll. - Number of scales in the lateral line or in a middle longitudinal series.
Tr. - Number of scales in a transverse series.

Measurements: The measurements used in the description of fishes are illustrated in Fig. 1. Unless otherwise stated, the length of a fish is expressed as the standard length. Body proportions are expressed as a ratio of two dimensions, and indicated by such an expression as "head length 3.5 in standard length" (=standard length divided by head length gives 3.5).

Technical terms used in the description of fishes:

Branchial: Pertaining to the gills;
Branchiostegals: = Branchiostegal rays. Membrane bones supporting the gill membranes under the operculum;
Compressed: Flattened side to side;
Deciduous: Shed easily; used in describing the scales;
Depressed: Flattened from top to bottom;
Hypurals: = Hypural bones. Modified last few vertebrae supporting the rays of the caudal fin;
Inferior: Used to describe the mouth situated on the lowerside of the head;
Isthmus: The region anterior to the breast;
Longitudinal: Parallel with the body axis;
Mandibular: Pertaining to the lower jaw;
Maxillary: Pertaining to the upper jaw;
Mental: Pertaining to the chin;
Nasal: Pertaining to the region anterior to the nostrills;
Palatines: Membrane bone on either side of palate; teeth may be borne on the bones;
Pharyngeals: Bones behind the gills in pharinx; often teeth are borned on the bones;
Rostral: Pertaining to the anterior tip of the head;
Terminal: Used to describe the mouth situated at the anterior end of the head;
Transverse: Crosswise; vertical to the body axis;
Vomer: A bone in the anterior part of the palate; teeth may be borne on it.

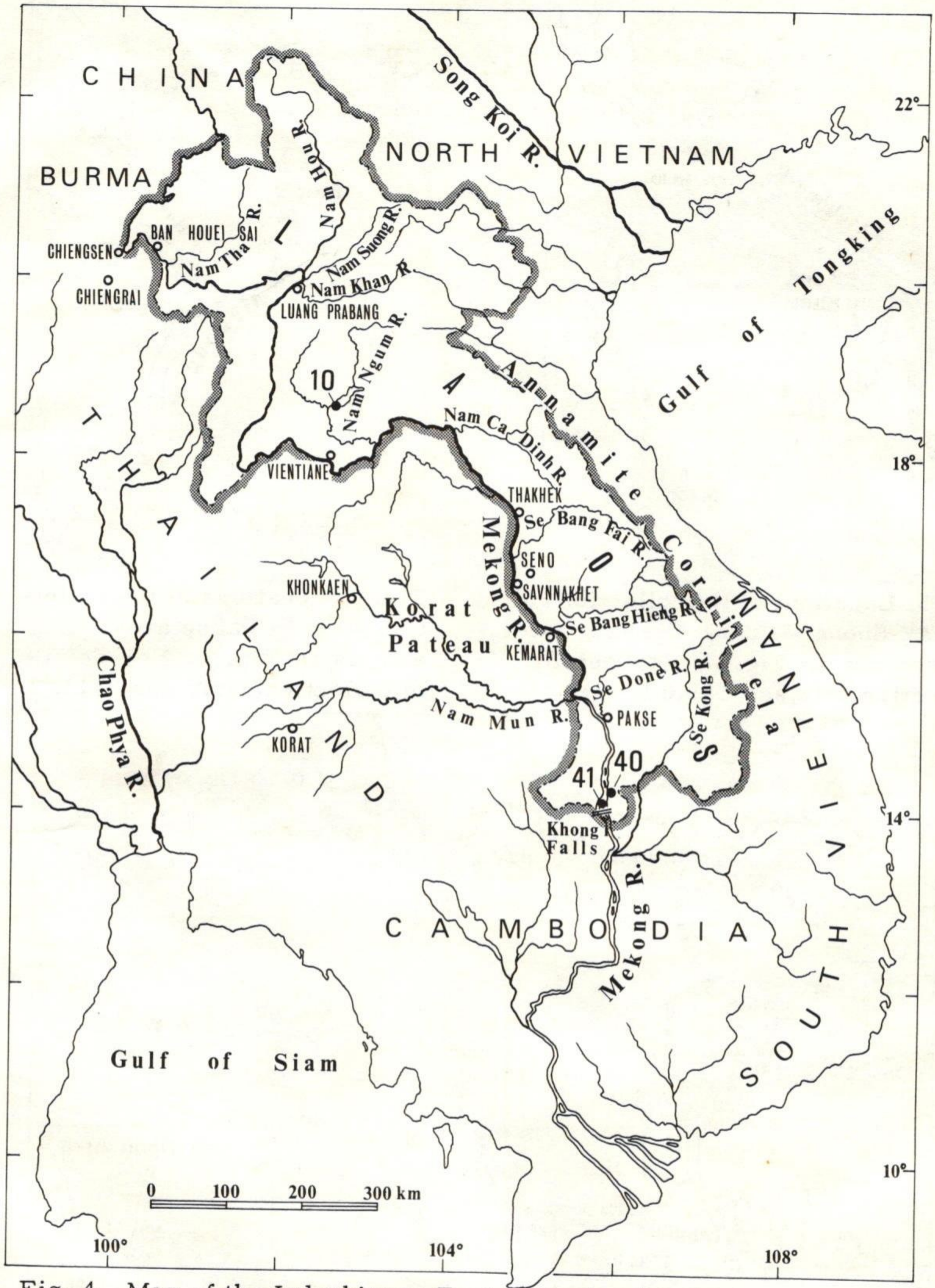


Fig. 4. Map of the Indochinese Peninsula showing the lower Mekong basin and neighboring river systems, collection sites other than those given in Figs. 5 - 7, and other localities mentioned in the text. Open circle - city; solid circle - collection site shown by station number as designated in Table 1. Country border is drawn only for Laos.

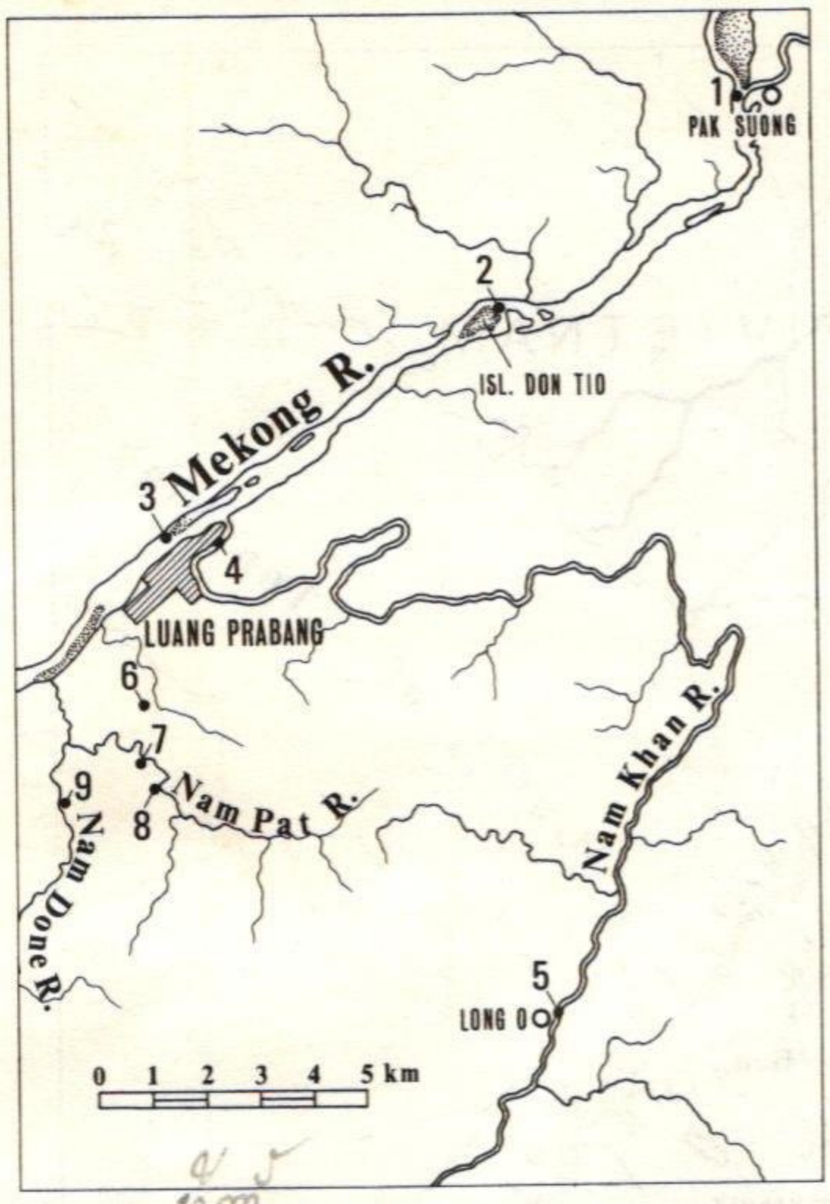


Fig. 5. Locations of the collection sites in Pak Suong - Luang Prabang area. Legend as in Fig. 4. For details of collection data, see Table 1.

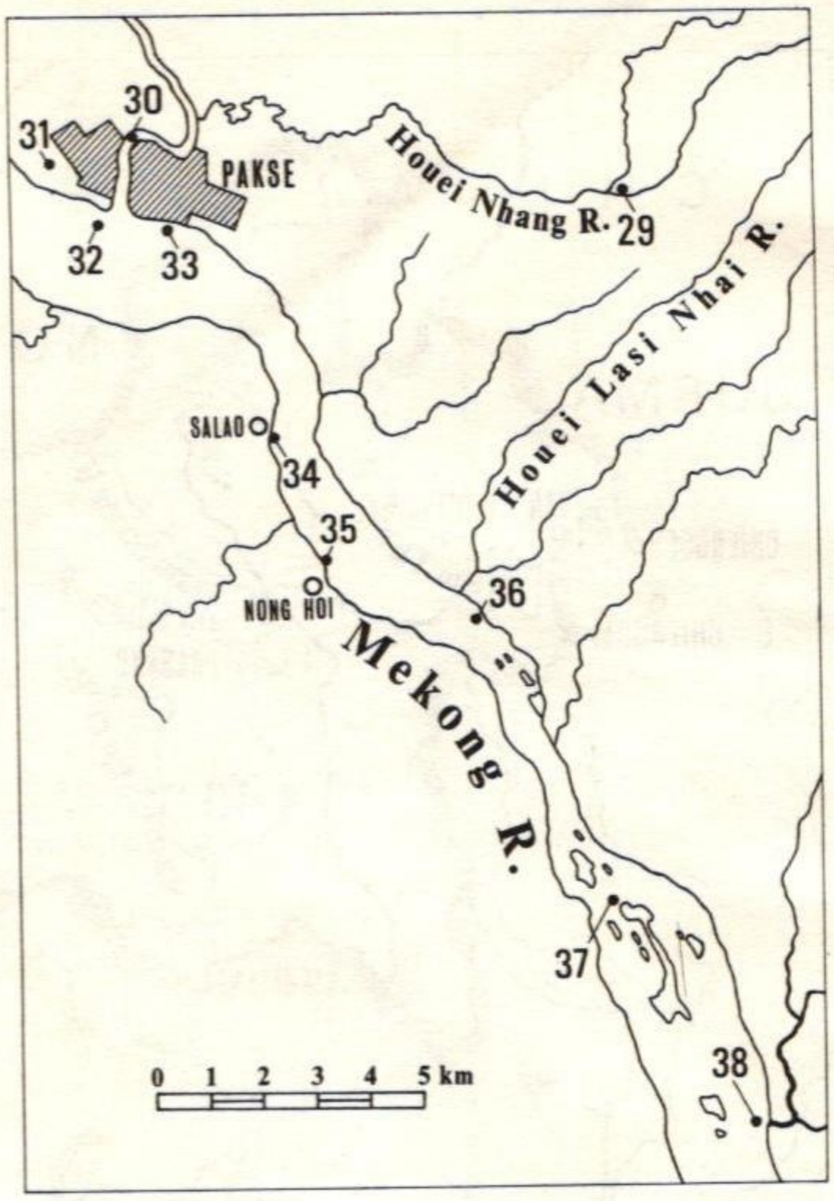


Fig. 6. Locations of the collection sites in Pakse area. Legend as in Fig. 4. For details of collection data, see Table 1.

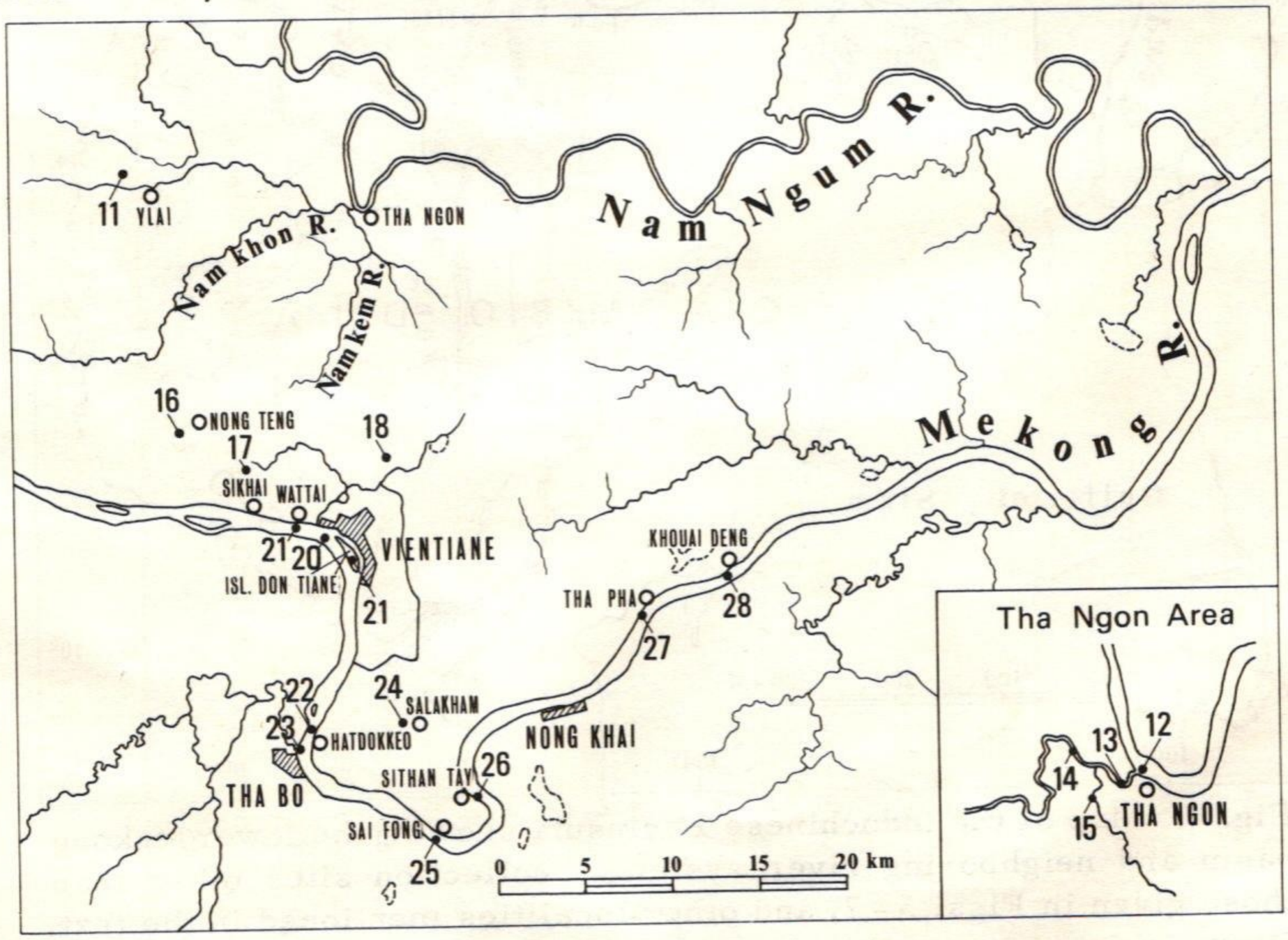


Fig. 7. Locations of the collection sites in Nam Ngum - Vientiane area. Legend as in Fig. 4. For details of collection data, see Table 1.

Table 1. Localities, dates, and methods of the collection made in Laos by the author in 1966-1967, 1969, and 1970-1971.
For the location of stations, refer to Figs. 4 - 7.

Station No.	Locality	Date	Gear
Pak Suong - Luang Prabang area			
1	Mekong R. at mouth of Nam Suong R., near Pak Suong	Jun. 15, Aug. 10, 1970	Trap basket
2	Mekong R. at Isl. Don Tio, about 7 km upstream from Luang Prabang	Mar. 7, 8, 1971	Casting net, drag-net
3	Mekong R. at Luang Prabang	Dec. 15, 1966, Jan. 19, 24, 1967, Jun. 13, 1970, Mar. 8, 1971	Gill-net, drag-net, trap basket
4	Nam Khan R. about 500 m above its mouth to Mekong R., at Luang Prabang	Jun. 13, Dec. 14, 1970	Drag-net
5	Nam Khan R. at Long O	Dec. 12, 1970	Drag-net
6	Canal at Luang Prabang Fish Culture Station	Dec. 17, 1966	Scoop-net
7	Nam Pat R. about 4 km above its mouth to Mekong R.	Jun. 14, 1970	Scoop-net
8	Nam Pat R. about 5 km above its mouth to Mekong R.	Jun. 15, 1970	Drag-net, scoop-net
9	Nam Done R. at water falls near Na Deuai	Jun. 15, 1970	Scoop-net
Nam Ngum - Vientiane area			
10	Nam Ngum R. at the Nam Ngum dam site, near Thalat (collected by Gonjiro Suzuki)	Oct. 14, 1970	Scoop-net
11	Small stream at Ylay	Aug. 27, 1966	Scoop-net

Table 1. -continued-

Station No.	Locality	Date	Gear
12	Nam Ngum R. at mouth of Nam Khon R., at Tha Ngon	Oct. 3, 1966, Jan. 24, 1967, Nov. 27, 30, 1969, Jun. 10, Aug. 4, Sep. 10, Oct. 6, 7, 9, Dec. 9, 16, 1970, Jan. 5, 6, Feb. 18, 19, Mar. 11, 12, Apr. 7, 8, 9, May 6, 8, 19, 1971	Dip-net
13	Nam Khon R. about 100 m above its mouth to Nam Ngum R., at Tha Ngon	Jul. 17, 18, Aug. 5, Sep. 10, Oct. 6, Nov. 5, 1970, Jan. 7, 1971	Dip-net
14	Nam Khon R. about 1 km above its mouth to Nam Ngum R., near Tha Ngon	Oct. 3, 1966, Jun. 17, 1970	Dip-net
15	Nam Kem R. about 400 m above its mouth to Nam Khon R., near Tha Ngon	Oct. 10, 1966, Sep. 12, Nov. 5, 7, 1970	Dip-net
16	Reservoir, pond and canal at Nong Teng Fish Culture Station	Aug. 2, Oct. 25, 1966	Drag-net, scoop-net
17	Flooded paddy field at Sikhai	Sep. 16, 1966	Dip-net
18	Canal in paddy field about 7 km north of Vientiane	Jul. 18, 1970	Scoop-net, dip-net
19	Mekong R. at Wattai	Sep. 28, 1966	Gill-net
20	Mekong R. at Vientiane	Jul. 21, Aug. 30, Nov. 16, 1966	Drag-net, gill-net
21	Mekong R. at Isl. Don Tiane, at Vientiane	Jul. 16, 1970	Drag-net
22	Mekong R. at Hatdokkeo	Oct. 20, 1966, Dec. 2, 1969, Jun. 11, 1970	Long-line, gill-net
23	Mekong R. at mouth of Houei Mong, near Tha Bo, Thailand	Dec. 2, 1969, Jul. 15, Aug. 5, Sep. 14, Oct. 8, Nov. 6, Dec. 9, 1970, May 6, 8, 1971	Dip-net Dip-net
24	Flooded paddy field at Salakham	Aug. 29, Sep. 16, 1966	Dip-net

Table 1. -continued-

Station No.	Locality	Date	Gear
25	Mekong R. at Sai Fong	Jun. 11, 12, 1970	Drag-net
26	Mekong R. at Sithan Tay	Jun. 17, Aug. 6, 7, Dec. 16, 1970, Jan. 6, 7, Feb. 18, 19, Mar. 11, 12, Apr. 9, 10, May 5, 8, 1971	Drag-net, gill-net
27	Mekong R. at Tha Pha	Sep. 10, 1970	Gill-net
28	Mekong R. at Kouai Deng	Aug. 2, Oct. 20, 1966, Nov. 29, 1969	Gill-net, beach seine
Pakse - Khong Falls area			
29	Houei Nhang R. at Pakse Fish Culture Station	Mar. 16, 1967, Dec. 4, 1969	Scoop-net
30	Se Done R. near its mouth to Mekong R.	Sep. 15, 1970	Drag-net
31	Flooded backwater area at Pakse	Aug. 29, 1970	Drag-net, scoop-net
32	Mekong R. at mouth of Se Done R., at Pakse	Aug. 11, 1966, Feb. 9, 1967, Dec. 5, 1969	Gill-net, dip-net
33	Mekong R. at mouth of Houei Deua Stream, at Pakse	Jul. 12, 1970	Scoop-net
34	Mekong R. at Hatsalao, near Salao	Dec. 22, 1966, May 26, Jun. 26, Jul. 12, 1970, Feb. 9, 10, Mar. 2, Apr. 2, 23, 1971	Beach-seine, drag-net
35	Mekong R. at Nong Hoi	Feb. 8, 1967	Gill-net
36	Mekong R. near mouth of Houei Lasi Nhai R.	Feb. 8, 1967	Gill-net, long-line
37	Mekong R. at Isl. Hin Soune	Feb. 8, 1967	Gill-net, long-line
38	Mekong R. at mouth of Houei Bang Lieng R., near Bang Lieng	Feb. 8, 1967, May 26, 1970	Gill-net
39	Mekong R. at Pathoum Phon	Jun. 27, 1970	Drag-net
40	Mekong R. at Khinak	Jun. 3, 1970	Gill-net, long-line
41	Mekong R. at Khong Falls	Jun. 2, 1970	Casting-net

Locality of the collection and depository of the specimens

The collections in 1969 and 1970-1971 were conducted at 31 stations in the drainage of the Mekong River. The collection sites, together with the other 10 stations of the author's previous collection (Taki, 1968), are plotted in Figs. 4 - 7. Detailed data for these collections are given in Table 1.

A large part of the specimens collected is deposited in the Institute for Breeding Research, Tokyo University of Agriculture (IBRP), but a series of specimens constituting Laotian fish fauna is also deposited at the Laboratory, Direction des Eaux, Forêts et Chasses, Vientiane. Some of the specimens have been distributed to the Academy of Natural Sciences of Philadelphia (ANSP), Museum National d'Histoire Naturelle, Paris (MNHN), and National Science Museum, Tokyo (NSMT-P).

A history of studies on Laotian fishes

The first Laotian fish species introduced to science is, so far as I am aware, *Barbus laoensis (=Puntius laoensis)*, which was described by A. Günther in 1868 from a single specimen collected by H. Mouhot. The specimen was obtained in 'Laos mountains', but exact locality is not noted. H. E. Sauvage, in a series of publications on fishes of Southeast Asia (1876, 1878a, b, 1880, 1881), recorded a considerable number of Laotian species, including five new species, from a collection made by Jullien and Harmand. Among the new species is the gigantic Mekong carp, *Probarbus jullieni,* which is known as 'pa eun' throughout the country. P. Chevey (1932), in "Poissons des campagne du "de Lanessan" ', referred to the occurrence of some Cambodian species in Laotian waters. It is also noteworthy that the celebrated giant catfish of the Mekong, *Pangasianodon gigas,* or 'pa beuk' as it is called in Laos, was made known to science by Chevey (1930).

Although it was not made for ichthyology of Laos, mention should be made of a series of papers by H. W. Fowler under the title 'Zoological results of the third de Schauensee Siamese Expedition' (1934a, b, 1935a, b, 1937, 1939). The material obtained by the expedition contained a large amount of samples taken from the Thai-Lao Mekong at Chiengsen, Chiengsen Kao (Old Chiengsen) and Kemarat (see Fig. 4), from which he reported 75 species including 26 new forms, such as *Paralaubuca stigmabrachium, Mekongina erythrospila* and *Ctenogobius ocellatus.*

It is by J. Pellegrin and P. W. Fang (1940) that Laotian fishes in strict sense were first studied on an extensive basis. They recorded 34 species containing five new species and one new subspecies based on a collection made at Ban Nam Khueng, about 30 km northwest of Ban Houei Sai (see Fig. 4), by J. Delacour, F. Edmond Blanc and J. Greenway.

In his elaborated faunal work 'The fresh-water fishes of Siam, or Thailand', H. M. Smith (1945) described several new species from a collection made by H. G. Deignan in Laos and in northeastern Thailand. Among them are *Daniops myersi*, *Acanthorhodeus deignani*, and *Noemacheilus bucculentus* from the Houei Nam Puat Stream at Ban Nam Puat, Sayabouri Province in Laos.

In 1951, R. Serene published the article 'Sur la faune ichthyologique du Laos', in which he listed 80 species falling into 16 families on the basis of his collection made in the country in 1939. His work may be the first account mentioning the ecological aspects of Laotian fishes such as habitat, migration and spawning. He divided the fishes into four groups according to their distribution and habitat preference, i.e., 1) species inhabiting the main streams and large tributaries of the Mekong, 2) those spending most part of the year in the main streams and migrating into affluents once a year, 3) inhabitants of lakes and swamps, and 4) fishes living in mountain streams.

In 'Notes on a collection of fishes from lowland Laos', Y. Taki (1968) reported 119 species from Laotian waters based on his collection conducted in 1966 - 1967. In 1972 he described *Botia eos* from Laos and Thailand as new to science.

Geography, climate and seasonal movement of fishes

From its physical features, Laos can be divided into two sections, northern and southern Laos. Northern Laos is mountainous, with ridges generally running northeast to southwest in the height of 1,000 to 1,200 m above sea level. Southern Laos is situated on the slope between the watersheds of the Annamite Cordillera and the Mekong River. West of the range is a series of plateaus of about 200 to 400 m in altitude, which gradually slope down toward low-lying plains along the Mekong. The lowlands consist in principle of river levees, floodplains, low alluvial terraces, and high alluvial and bedrock terraces (U.S. Bureau of Reclamation, 1970).

In northern Laos the Mekong restricted in width flows through partly deep and partly open valleys until turning westward to emerge from the mountains. The mean water level measures about 360 m above sea level at Chiengsen, Thailand, which is located 2,400 km above

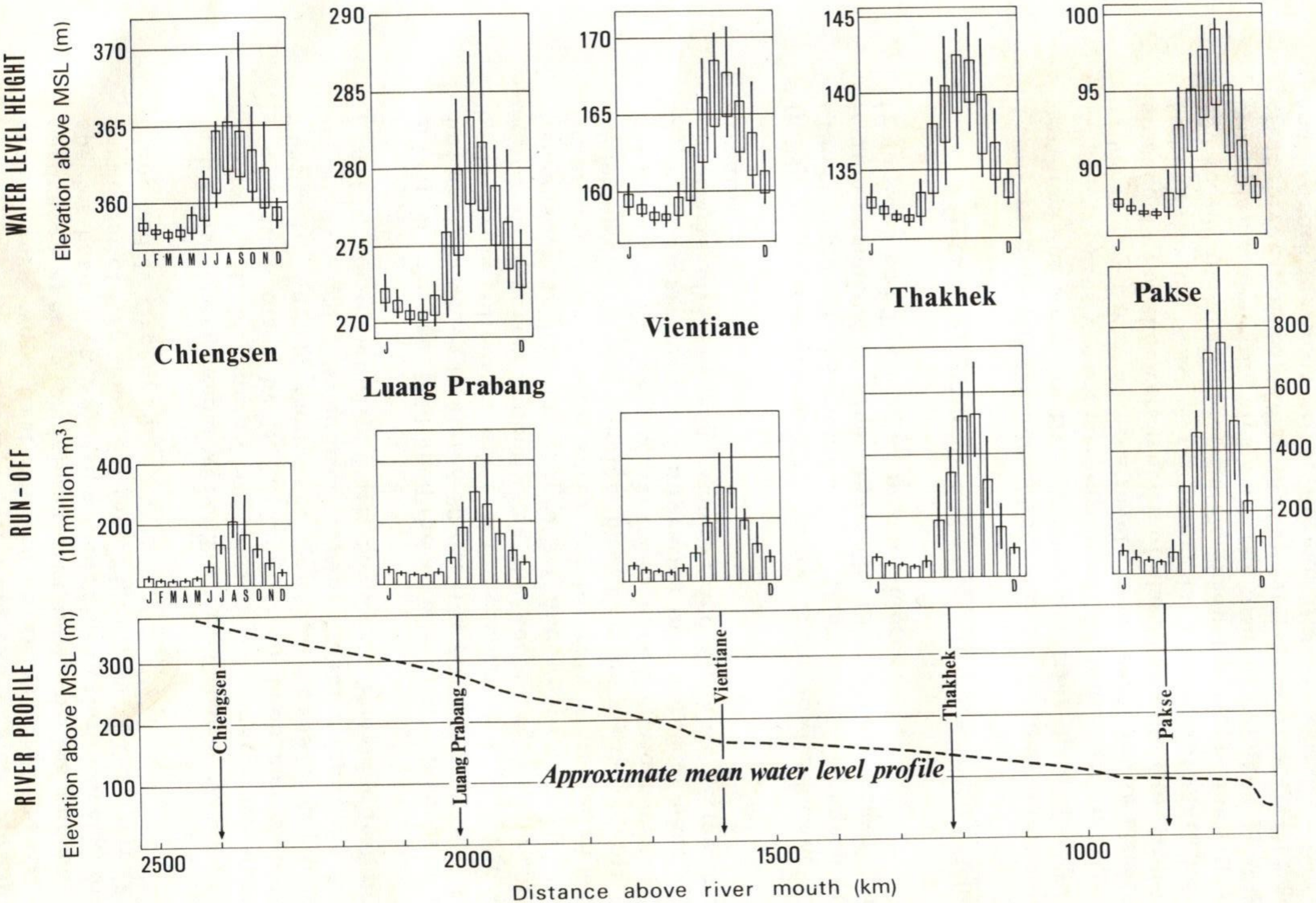


Fig. 8. Profile of the Lao Mekong, its monthly run - off, and its monthly water-level height at the five stations in Laos and Thailand. Run-off: Each symbol represents total run-off in the given month. Vertical lines indicate ranges, and hollow histograms means, both for last eight years (1960 - 1967). Water level height: Each symbol represents fluctuation of water level in meter above mean sea level (Ko Lak datum) in the given month. Vertical lines indicate extreme ranges, and open boxes mean ranges, both for last seven years (1961 - 1967) for Chiengsen, eight years (1960 - 1967, 1969) for Luang Prabang, and ten years (1960 - 1969) for Vientiane, Thakhek and Pakse. Source: Harza Engineering Co., Hydrologic data, Mekong River basin 1960, 1961; Committee for Coordination of Investigations of the Lower Mekong Basin, Lower Mekong hydrologic year book 1962 - 1969; U.S. Department of the Interior, Bureau of Reclamation, 1970, Pa Mong Stage One Feasibility Report.

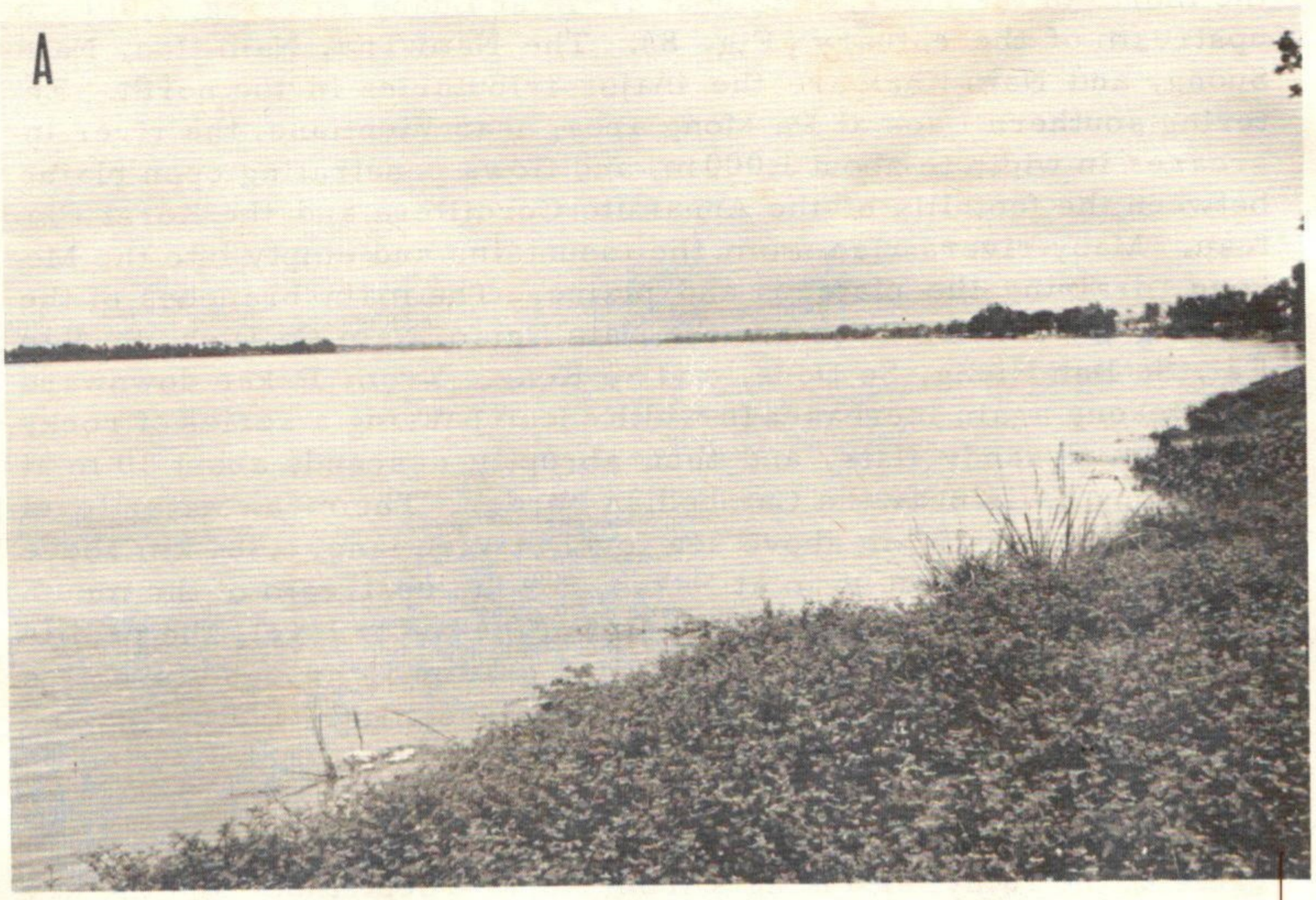
the mouth of the river, and about 275 m at Luang Prabang, 2,010 km upstream of the estuary (Fig. 8). The Nam Tha, Nam Hou, Nam Suong, and Nam Khan are the major tributaries in the north. Entering southern Laos at Pa Mong area, near Vientiane, the river increases in width to about 1,000 m, and flows penetrating open plains between the foothills of the Annamite Cordillera and the Korat Plateau. Many rivers rise from the mountains and empty into the Mekong, draining the plateaus and plains. The main branches of the Mekong in southern Laos are the Nam Ngum, Nam Ca Dinh, Se Ban Fai, Se Ban Hieng, Se Done, and Se Kong. From Pakse downward the Mekong again increases in width encompassing a series of rocky islands and sandy flats, and then abruptly descends about 30 m at the Khong Falls near the Cambodian border. The mean water level measures about 165 m above sea level at Vientiane, 1,584 km above the mouth, and about 95 m at Pakse, 869 km upstream of the mouth (Fig. 8). As shown by the elevation of the water level, the profile of the Mekong is of remarkably low gradient through its entire length in southern Laos, and the flow is comparatively sluggish particularly during dry season.

The climate of Laos is wet-dry tropical monsoon. As shown in Table 2, the rainy season lasts from April to September and the dry season occupies the other six months of the year. While uplands are more or less heavily forested, lowlands are on the whole dry and covered by forests, thickets and savannas.

Governed by the annual two-season climate, the flow of the Mekong system changes greatly by season, and in consequence the water level in the river fluctuates to a great extent (Figs. 8, 9). The total run-off of the Mekong in the month of August at Vientiane is about 10 times the volume carried in April when the river usually shows its lowest level and at Pakse the run-off in September is about 17 times the volume in April. In 1966, the year when the greatest inundation of the Mekong during the last 60 years occurred, the annual fluctuation of the water level recorded 19.21 m at Luang Prabang, 12.43 m at Vientiane, and 12.62 m at Pakse.

During the period of drought, the lowlands are completely dry. Most of the marshes and swamps are dried up, and small rivers and rivulets shrink into a series of isolated pools or otherwise dry up. With the coming of the wet season the marshes and swamps are revived and, toward the peak of the heavy rain period, connected to one another. The rivers and rivulets are also connected to the swampy areas, thus providing fish with passages to enter swampy areas from large rivers. During the highest water stage, which usually occurs in August or early September, the river water flows over levees, and the floodplains stretching along the river are partly or sometimes almost entirely submerged.

A



B



Fig. 9. Mekong River at Vientiane, looking upstream in a westerly direction: A - taken on Aug. 28, 1969 (end of the rainy season) by G. Suzuki; B - taken on Jan. 7, 1971 (middle of the dry season) by the author.

This seasonal change in the water condition influences the life of Laotian fishes. In the beginning and middle of the wet season a great number of fishes of various stages of growth move upstream and then disperse in the flooded areas. When the watery areas begin to dry, most of the fishes start on a journey down into large rivers before access to large rivers is blocked. Species that remain in confined small swampy areas during the dry season include such fishes as a few small cyprinids and the air-breathing featherbacks *(Notopterus)*, clariid catfishes *(Clarias)*, gouramies *(Trichogaster* and *Trichopsis)*, climbing perch *(Anabas)*, and snakeheads *(Channa)*. These fishes live otherwise on stagnant shores or coves of small- to large-sized rivers.

Results of the serial collection made in 1970-1971 in the Nam Ngum River and in the Nam Khon, a small river flowing into the Nam Ngum at the village of Tha Ngon (see Fig. 6), indicate that fishes occurring in these rivers may be classified into three groups according to their habitat preference and migratory behavior. The first group includes species collected mostly during the ascending and descending periods. These fishes evidently move between the Nam Ngum and flooded headwater area of the Nam Khon, passing the corridor of the Nam Khon. But it is unknown how far downstream they descend in the Nam Ngum during the dry season. These species appear to spawn on their way upstream and/or on invading flooded areas.

This group consists chiefly of cyprinids and their allies such as *Puntius, Cirrhinus, Cyclocheilichthys, Mystacoleucus, Osteochilus, Labiobarbus, Gyrinocheilus, Botia,* and *Acanthopsis*.

The second group comprises large-sized migratory fishes of the Cypriniformes and Siluriformes, such as *Probarbus, Catlocarpio,* and some species of *Pangasius*. Juveniles of these species are common in the Nam Khon, whereas adults are rare in the river having been seldom or ever caught by the author or by village fishermen as well. This fact probably indicates that these species migrate and spawn in larger rivers and only young enter small rivers and flooded areas.

The third type is represented by glassfishes *(Chanda)*, spiny eels *(Macrognathus* and *Mastacembelus)*, some catfishes *(Mystus, Kryptopterus,* etc.), and small cyprinids (*Rasbora, Esomus, Chela, Paralaubuca,* etc.). Those belonging to this group occur all year around in the Nam Khon as long as water stays in the river. Likely, they hover in rather small territories, or, at least are not long-distance travellers. It is obvious that their spawning season extends for many months, though it is unknown whether one individual spawns more than once a year.

Table 2. Mean temperature and rainfall at the seven stations in the Thai - Lao Mekong drainage; for the locations of the stations, see Fig. 1. Temperature: Luang Prabang, Vientiane, Seno and Pakse, average for 20 years (1951-1970); Chiengrai, Khonkaen and Korat, 15 years (1951-1965). Rainfall: Luang Prabang and Vientiane, average for 20 years (1951-1970); Seno, 19 years (1951 - 1956, 1958 - 1970); Pakse, 10 years (1961-1970); Chiengrai, Khonkaen and Korat, 15 years (1951-1965). Source: Bureau de la Climatologie, Laos and Meteorological Service, Thailand.

Station	MEAN TEMPERATURE (°C)												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Luang Prabang	20.8	22.8	25.8	28.4	28.8	28.4	27.8	27.5	29.5	25.9	23.4	20.7	25.8
Vientiane	22.2	23.9	26.7	28.6	25.6	28.1	27.8	27.4	27.2	26.6	24.7	21.6	25.9
Seno	21.3	23.8	27.1	28.7	28.2	27.6	27.3	27.0	25.3	25.4	23.7	21.5	25.6
Pakse	24.4	26.4	28.8	30.0	28.7	27.5	27.1	27.0	25.3	25.6	25.7	24.3	26.7
Chiengrai	19.6	21.7	24.5	27.3	27.9	27.4	26.9	26.6	26.6	25.2	23.1	20.0	24.7
Khonkaen	22.8	25.7	28.6	30.3	29.8	28.8	27.0	28.1	27.7	26.6	25.2	22.8	27.0
Korat	23.0	26.2	28.6	30.0	29.3	28.6	28.1	27.8	27.3	26.4	24.5	22.7	26.9

Station	RAINFALL (mm)												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Luang Prabang	14.3	16.5	32.4	87.0	126.0	175.1	139.9	249.2	175.6	65.8	17.1	9.6	1,155.4
Vientiane	8.6	11.1	30.2	88.2	253.7	272.7	255.4	342.4	356.9	61.5	14.7	0.7	1,697.9
Seno	3.3	12.6	26.6	90.1	210.4	290.9	258.0	335.7	306.6	59.8	3.5	1.3	1,588.4
Pakse	0.7	2.2	10.1	59.3	230.2	309.5	478.3	492.8	380.0	82.9	15.7	3.3	2,061.1
Chiengrai	20.9	10.8	26.4	71.5	206.5	232.7	292.8	418.3	248.6	144.6	28.8	13.0	1,714.9
Khonkaen	7.7	16.1	43.1	62.7	170.1	165.4	147.4	178.6	286.9	104.4	10.3	0.3	1,193.0
Korat	3.8	28.3	61.0	74.1	169.6	100.6	151.1	133.8	271.3	200.5	33.2	1.3	1,228.6

Acknowledgements

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II. ILLUSTRATED DESCRIPTION OF FAMILIES

Family Dasyatidae (Stingrays)

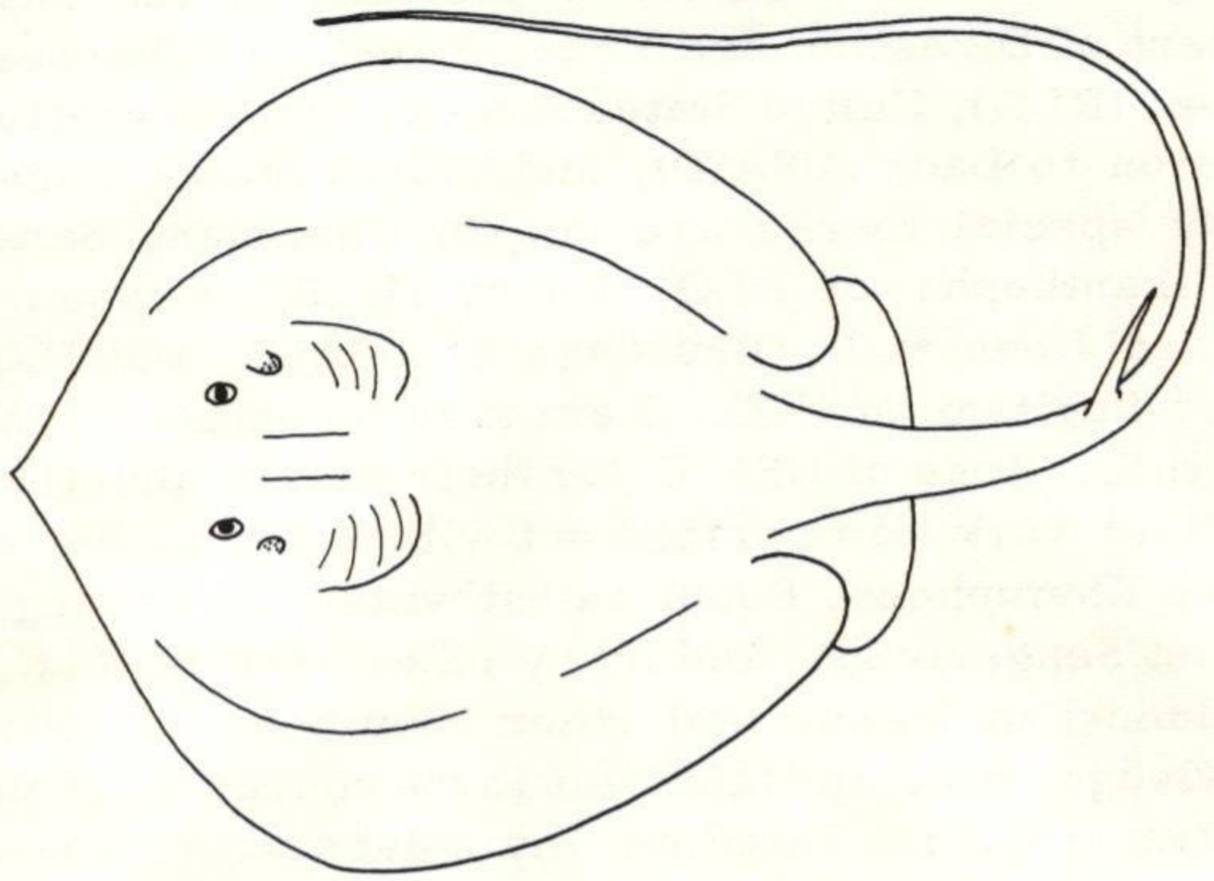


Fig. 10. *Dasyatis* sp., Dasyatidae

Body disk broad and flat, margined by long pectoral fins extending anteriorly to rostrum. Gill slits on ventral surface of body. Tail slender, tapering, usually longer than disk, with generally a single flattened venomous spine rising from its dorsal surface. Caudal fin absent.

Family Notopteridae (Featherbacks)

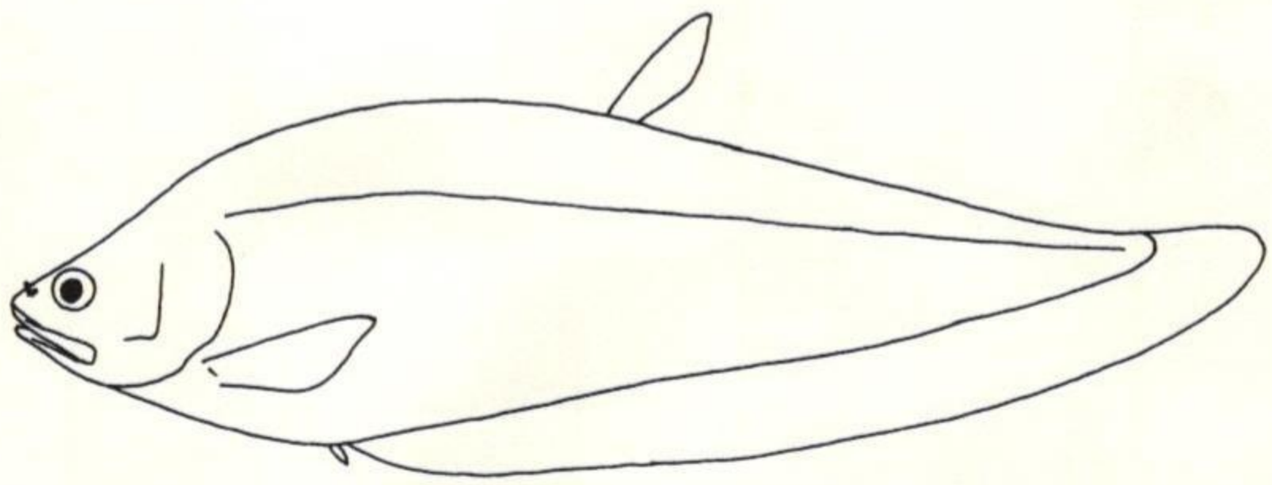


Fig. 11. *Notopterus notopterus*, Notopteridae

Body thin, knife-shaped; dorsal profile convex. Scales minute; sides of head scaled. Lateral line present. Mouth large, maxilla extending below or behind eye. Jaws, tongue and palate toothed. Dorsal fin small, or basent in the African genus. Anal fin long, confluent with caudal fin. Gas-blader transformed into an accessory breathing organ.

The air-breathing organ enables the fishes to survive for several hours when they are kept in the air.

Family Clupeidae (Herrings)

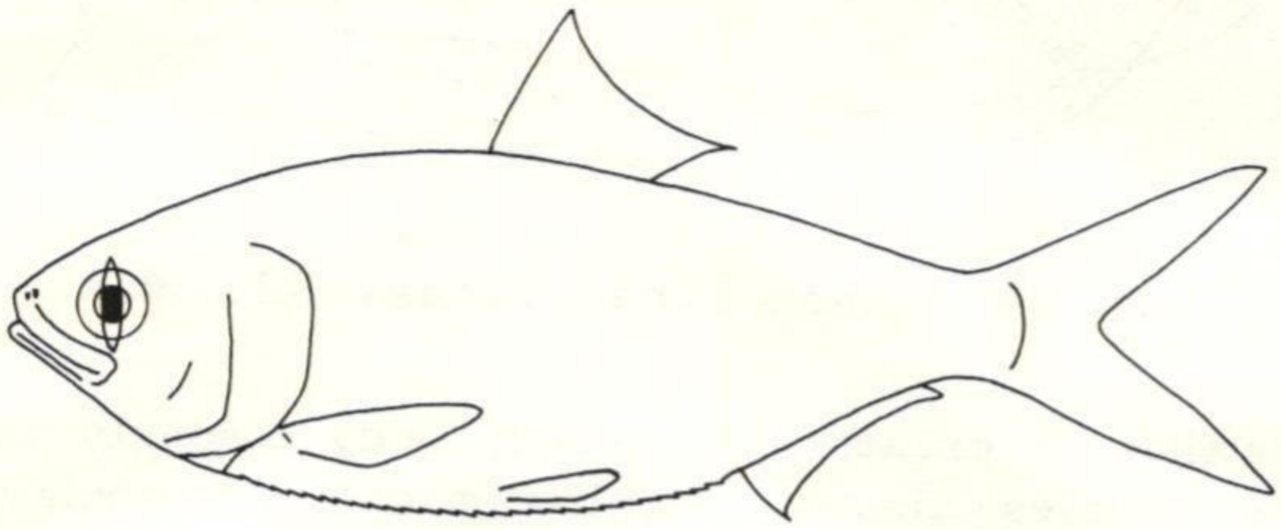


Fig. 12. *Hilsa kanagurta,* Clupeidae

Body oblong to elongate, compressed. Scales deciduous. Head scaleless. Belly arched, greatly compressed and sharply ridged with a row of scutes. Mouth large. Teeth small, often feeble or missing, variously arranged in jaws and on palate. Dorsal fin rather small, without spines, situated near middle of body. Anal fin long, with numerous soft rays. Pelvic fins small or absent. Caudal fin deeply forked.

Family Bagridae (Bagrid catfishes)



Fig. 13. *Mystus cavasius,* Bagridae

Head greatly or moderately depressed; body compressed posteriorly. Head and body naked. Four pairs of well-developed barbels (nasal, maxillary, mandibulary, and mental); maxillary barbels particularly long, in some species reaching caudal fin. Dorsal fin with a hard pungent spine followed by six or seven branched soft rays. A strong spine in pectoral fins. Adipose fin long. Caudal fin deeply forked.

Family Siluridae (Silurid catfishes)



Fig. 14. *Ompok bimaculatus*, Siluridae

Head somewhat or greatly depressed; body strongly compressed posteriorly. Scales absent. Maxillary and mandibulary barbels. Dorsal fin poorly developed or missing. Anal fin long, extending more than two thirds length of body. Pectoral fins with a spine. Adipose fin absent. Body transparent in some species.

Family Pangasiidae (Pangasiid catfishes)

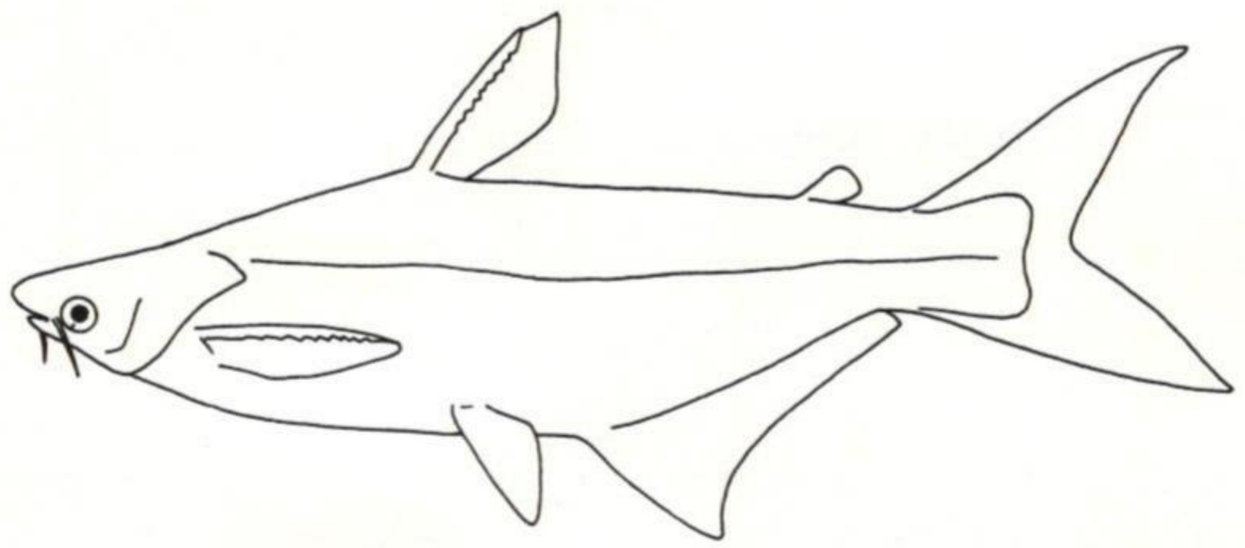


Fig. 15. *Pangasius nasutus*, Pangasiidae

Body elongate, robust in some species, not much compressed. In most of Laotian forms, snout slightly prominent with a rounded tip. Eyes situated partly or entirely below the horizontal line through angle of mouth. Head and body naked. Barbels two to four pairs, by exception one in *Pangasianodon*. Dorsal fin short, high, with a pungent spine. Anal fin long. Adipose fin small, located far behind dorsal fin. Teeth in jaws and on palate (on vomer or on both vomer and palatines), or exceptionally absent in *Pangasianodon*.

Family Akysidae (Akysid catfishes)

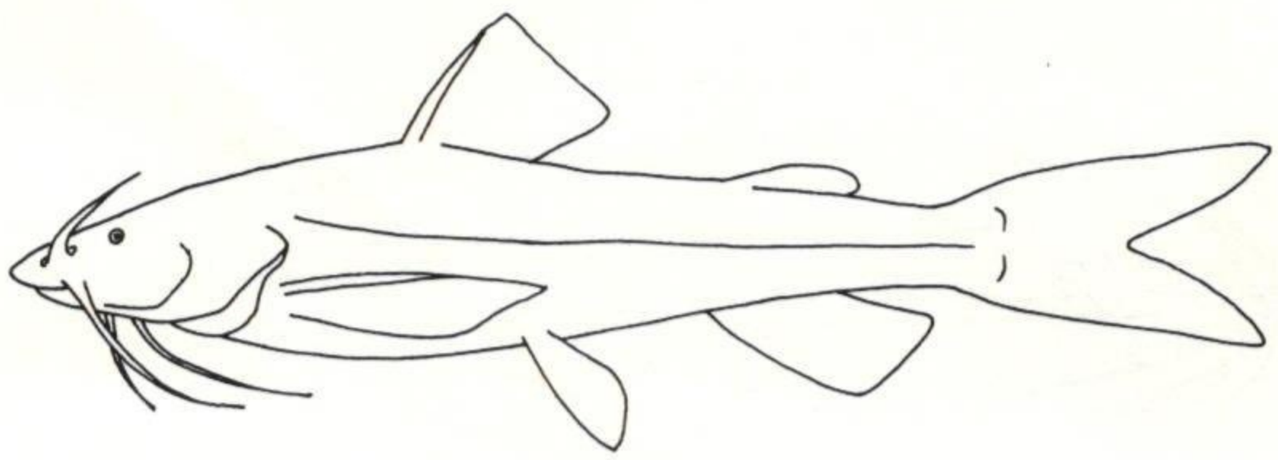


Fig. 16. *Akysis* sp., Akysidae

Head broad and depressed; posterior half of body slender; abdomen flattened. Skin covered with small granules. Four pairs of well-developed barbels (nasal, maxillary, mandibulary, and mental). Jaws with villiform teeth; palate toothless. Dorsal fin with a strong, serrated spine covered by thick skin and five branched soft rays. Pectoral fins with a hard spine covered by skin. Adipose fin rather small.

Family Sisoridae (Sisorid catfishes)

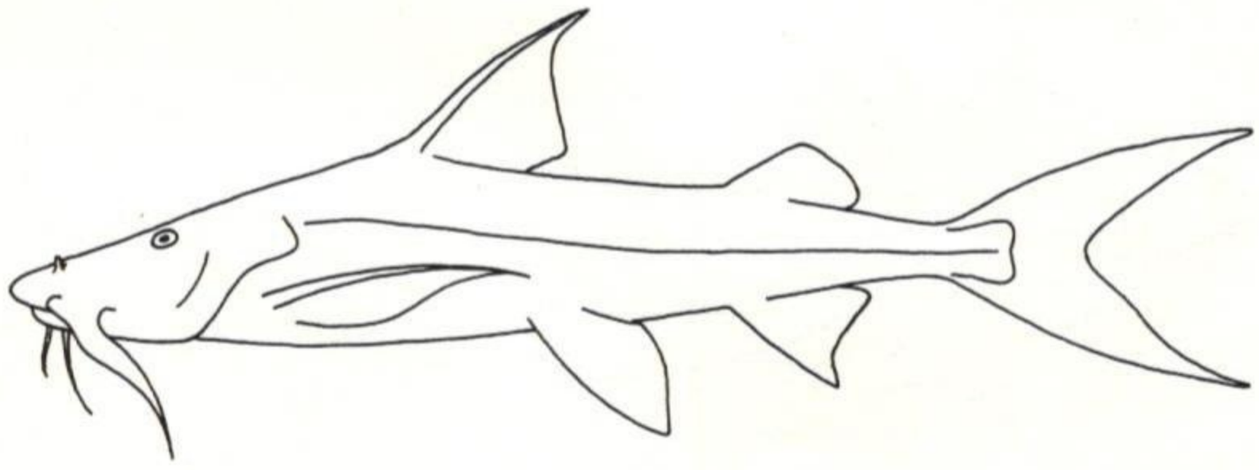


Fig. 17. *Bagarius bagarius*, Sisoridae

Head more or less greatly depressed; ventral surface of head and body flattened. No scales. Four pairs of barbels; maxillary ones broad and stiff. Dorsal fin short, with a strong spine and six or seven soft rays. A pungent spine in pectoral fins. Adipose fin comparatively small.

This family is represented in Laos by two genera. *Glyptothorax* comprises small species usually occurring in swift currents of the mountain streams and is characterized by having a thoracic adhesive apparatus composed of fine plaits of the skin. *Bagarius* is a large fish inhabiting lowland waters and has no thoracic apparatus.

Family Clariidae (Clariid catfishes)

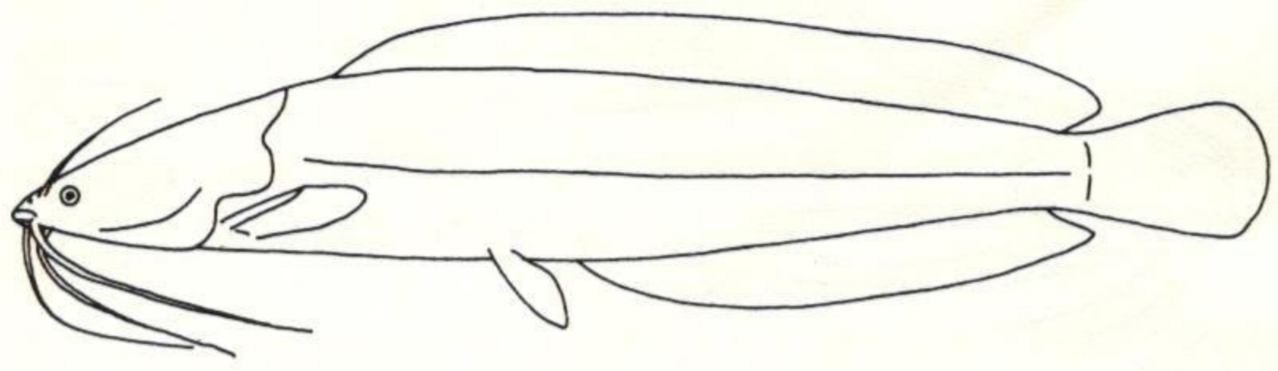


Fig. 18. *Clarias batrachus*, Clariidae

Head depressed; body elongate, compressed posteriorly. No scales. Nasal, maxillary, mandibulary and mental barbels well developed. Dorsal fin very long, spineless. Anal fin long. Pectoral fins with a hard spine. No adipose fin. Air-breathing organs of tree-like form in branchial chamber right above poorly-developed gills.

Family Heteropneustidae (Heteropneustid catfishes)

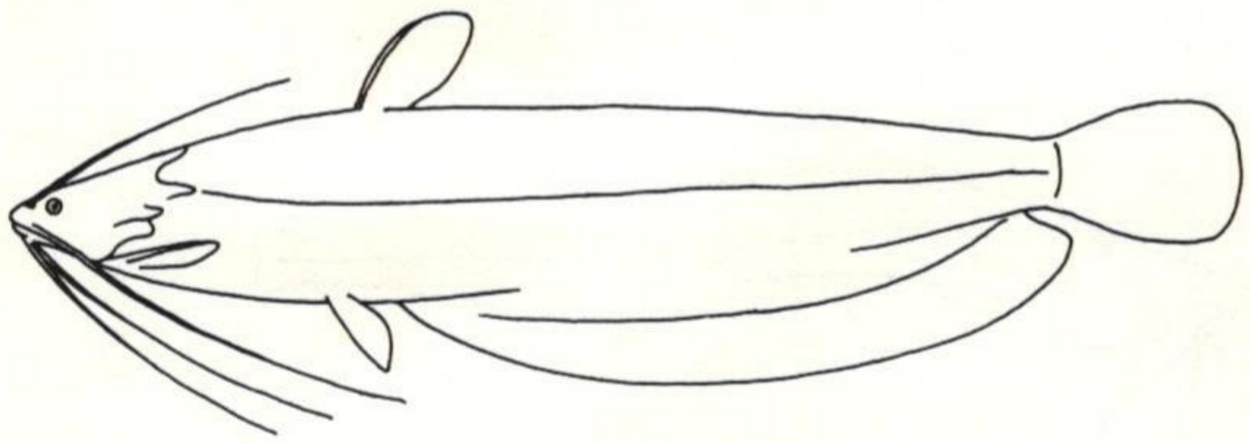


Fig. 19. *Heteropneustes fossilis*, Heteropneustidae

Body elongate, compressed posteriorly. Head small, depressed. Mouth terminal, broad. Barbels four pairs, all longer than head. Teeth minute, in jaws and on palate. A pair of long duct extending backward on each side from branchial cavity among muscles of back. Dorsal, pectoral and pelvic fins small. Anal fin very long. No adipose fin.

Family Cyprinidae (Carps and minnows)

Body generally of conventional carp or minnow shape. Head scaleless. Lateral line complete, incomplete or absent. Jaws toothless; pharyngeal teeth in throat. No true spines in fins, but unbranched soft rays in dorsal fin in a number of species and in anal fin in a few species ossified into a spine-like structure.

In cyprinids indigenous to Laos four subfamilies are recognized, i. e. Cultrinae, Acheilognathinae, Danioinae (= Rasborinae), and Barbinae.

Subfamily Cultrinae

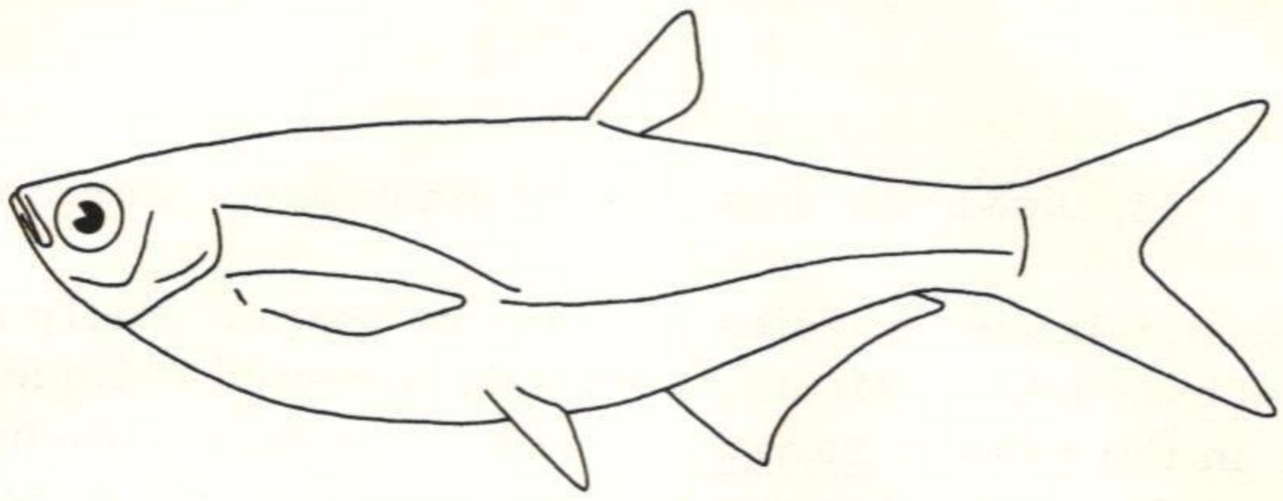


Fig. 20. *Paralaubuca stigmabrachium*, Cyprinidae, Cultrinae

Body elongate, more or less strongly compressed, with a sharply keeled abdomen. Scales small, deciduous. Mouth terminal, often directed upward. Barbels absent in Laotian forms. In some groups mesial portion of lower jaw formed into a knob (symphyseal knob) fitting into a depression on upper jaw. Unbranched dorsal and anal rays not calcified.

Subfamily Acheilognathinae

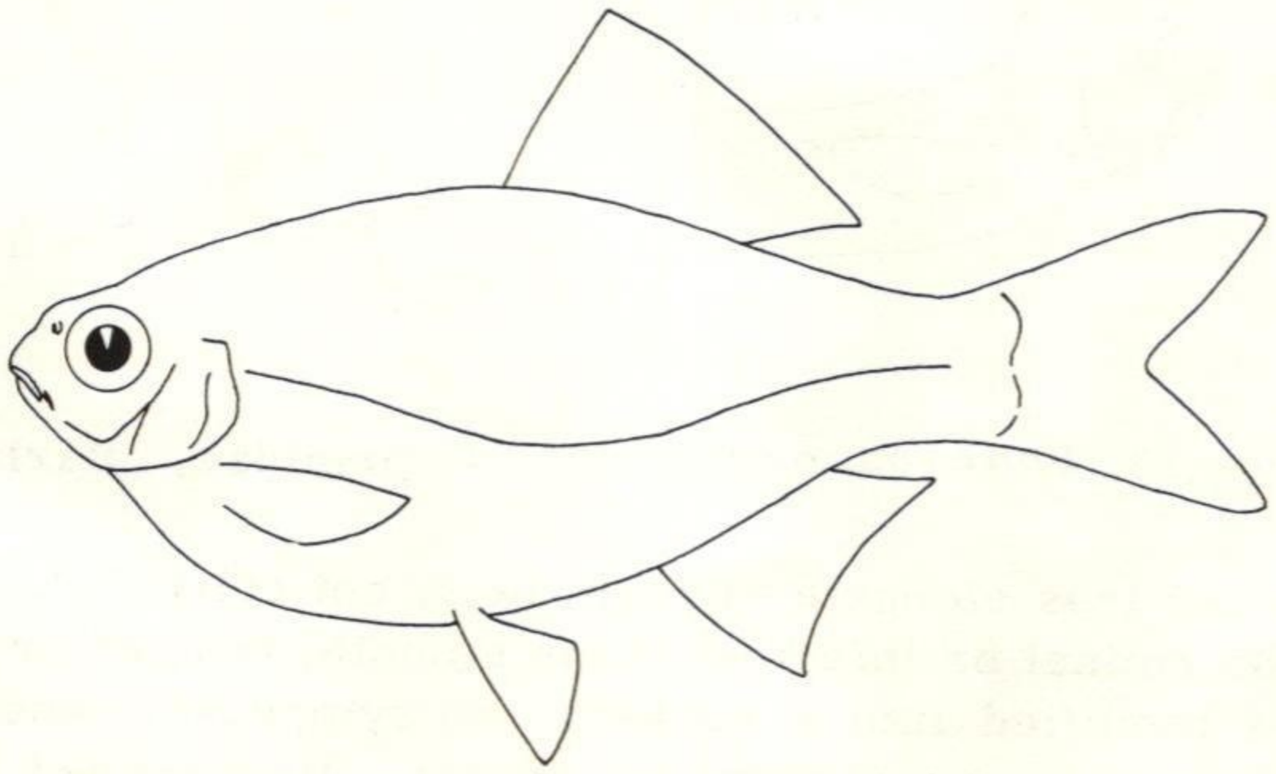


Fig. 21. *Acanthorhodeus deignani*, Cyprinidae, Acheilognathinae

Body high, compressed. Upper jaw protractile. Barbels small or missing. Pharyngeal teeth arranged in one row. Lateral line complete or incomplete. Unbranched rays in dorsal fin soft or ossified.

Subfamily Danioinae

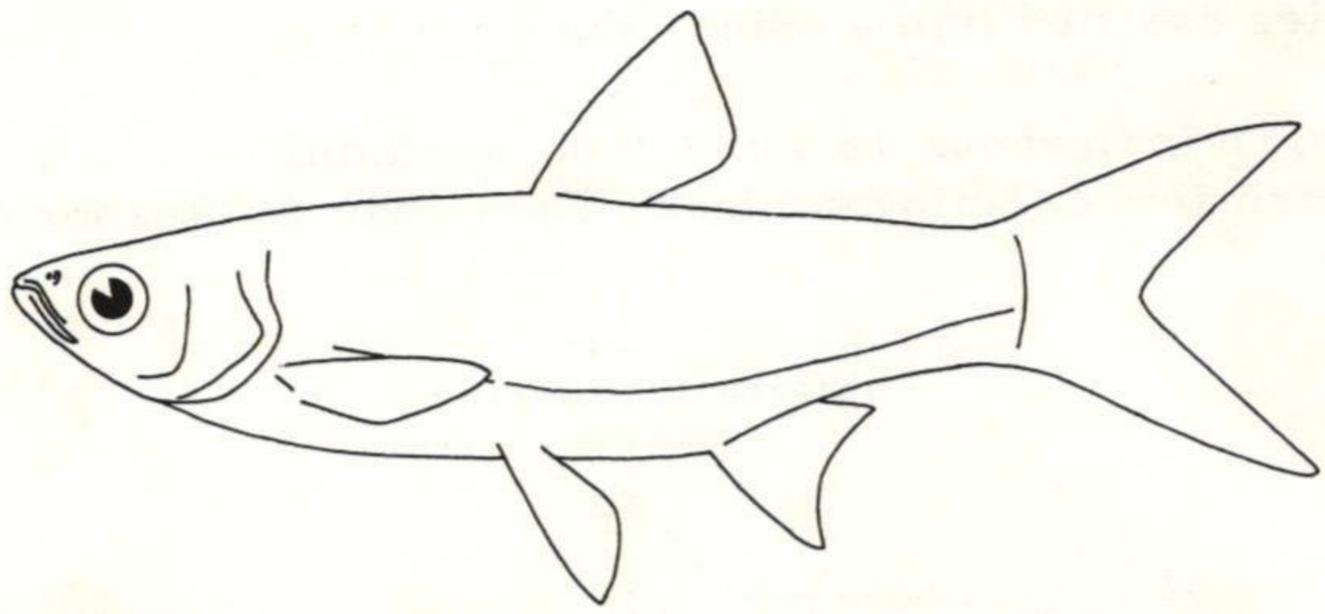


Fig. 22. *Rasbora myersi* , Cyprinidae, Danioinae

Mostly small, slender species of minnow shape. Belly not formed into a trenchant edge. Mouth terminal, directed obliquely upward. Excepting in the genus *Esomus* lower jaw with a symphyseal knob fitting into a depression on upper jaw. Barbels one or two pairs or absent. No osseous rays in dorsal and anal fins. Dorsal fin originated behind insertion of pelvic fins. Lateral line complete, incomplete or absent.

Subfamily Barbinae

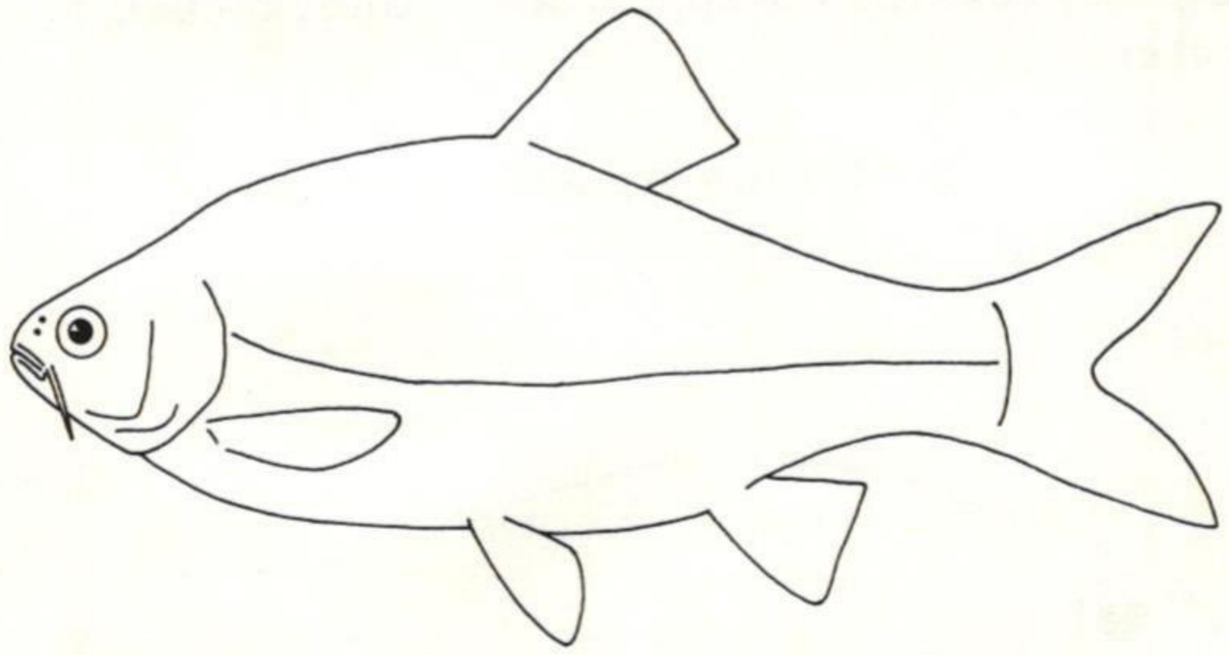


Fig. 23. *Puntius orphoides*, Cyprinidae, Barbinae

Body more or less elongate or high; belly not cultrated. Mouth terminal, subterminal or inferior. Lips smooth, fringed or papillated, sometimes modified into a sucker. No symphyseal knob on lower jaw. Barbels one or two pairs or absent. Unbranched dorsal and anal rays soft or osseous; when ossified last osseous ray smooth or serrated behind.

Family Gyrinocheilidae (Gyrinocheilids)

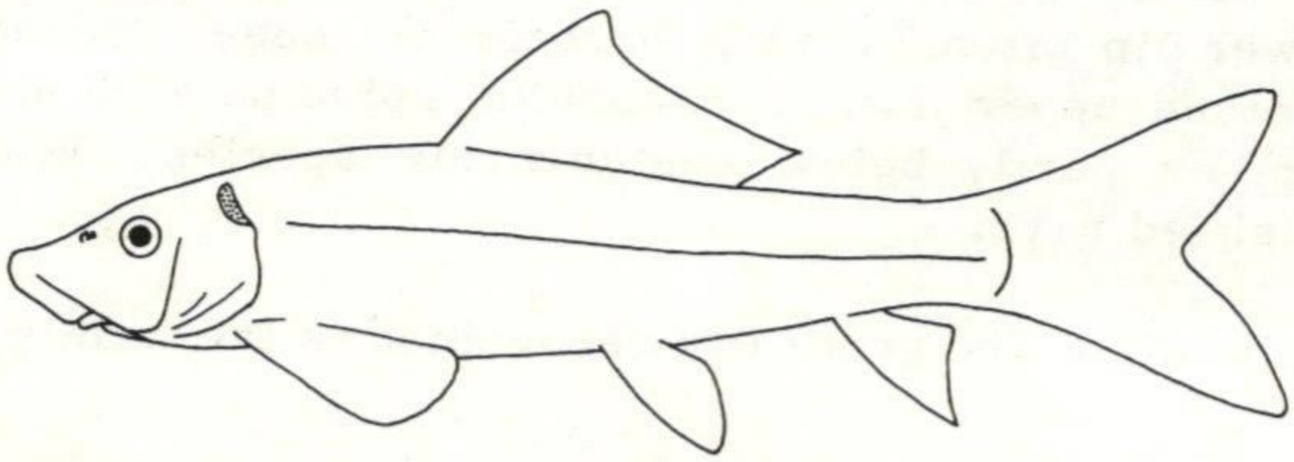


Fig. 24. *Gyrinocheilus aymonieri*, Gyrinocheilidae

Similar to cyprinids in general body shape. Body elongate, somewhat cylindrical. Mouth inferior; lips thick, fleshy, and modified into a sucking apparatus. Barbels absent. Gill openings divided into two sections, an upper inhalent opening and a lower exhalent one. No ossified rays in dorsal and anal fins.

Family Homalopteridae (Homalopterids)

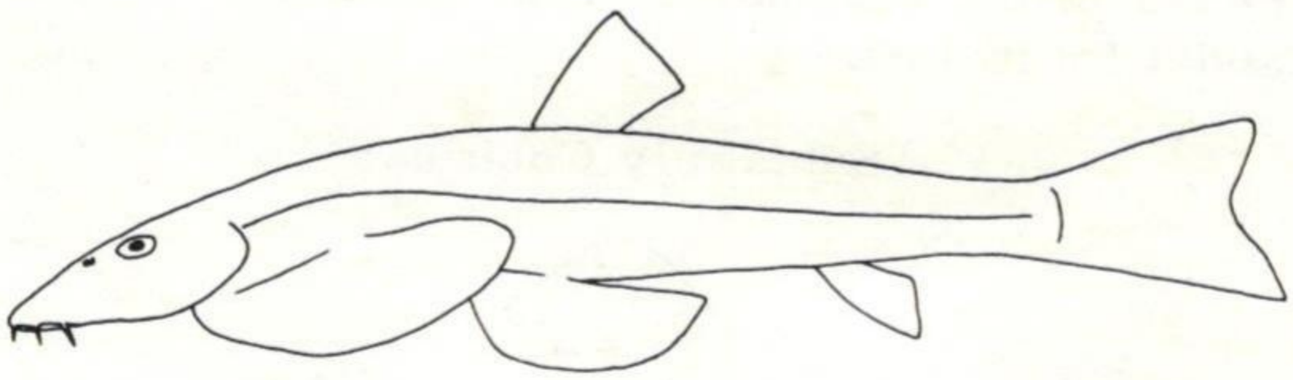


Fig. 25. *Homaloptera smithi*, Homalopteridae

Head and anterior part of body depressed, their ventral surface flat; posterior half of body slender, compressed. Pectoral and pelvic fins many-rayed, inserted horizontally. Mouth inferior, arched. Gill openings narrow. Pharyngeal teeth uniserial.

This family is divided into two subfamilies, Homalopterinae and Gastromyzoninae, or each of the groups is recognized as a family by some authors.

Family Cobitidae (Loaches)

Body oblong, elongate or anguilliform, moderately or slightly compressed. Mouth subinferior or inferior. Lips generally thick, fleshy; lower lip often forming barbels or lobes. Three pairs of barbels around upper jaw. A preorbital spine on each side of head in front of or partly below eye in many species. Vertical fins without ossified rays.

Three subfamilies are generally recognized in the family.

Subfamily Botinae

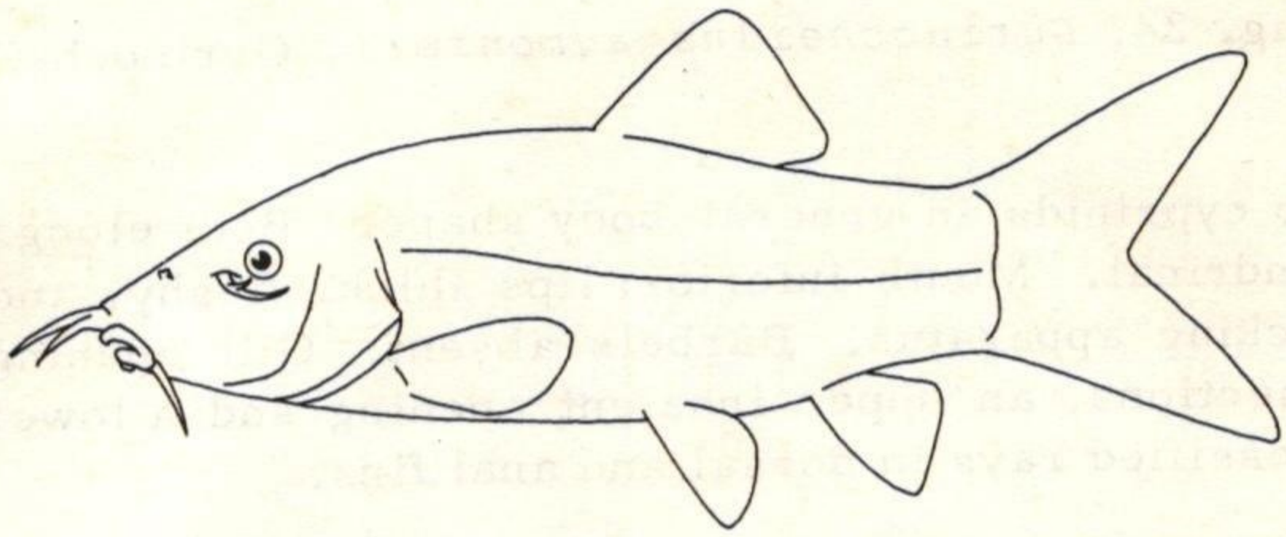


Fig. 26. *Botia modesta*, Cobitidae, Botinae

Body oblong to elongate, moderately compressed. Three pairs of barbels; two pairs of rostral barbels united together at tip of snout and a maxillary barbel on each corner of mouth. In Laotian representatives mesial portion of lower lip modified into a pair of small fleshy mental lobes or buttons. Preorbital spines erectile, bifid, their branched prong originated from basal half of main body of spine. Caudal fin forked.

Subfamily Cobitinae

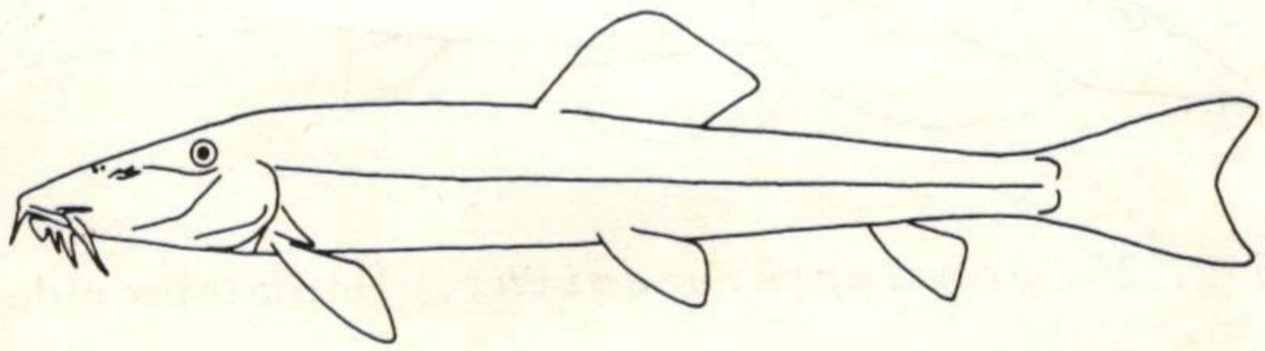


Fig. 27. *Acanthopsis choirorhynchos*, Cobitidae, Cobitinae

Body moderately or greatly elongate, slightly compressed; some species eel-like in body form. Three pairs of barbels; one pair on front of snout, one pair on posterior portion of upper jaw, and one pair at corners of mouth. Lower lip thickened, ridged or fringed, often forming a pair of barbels. Preorbital spines erectile in Laotian species, bifid; branched prong inserted near distal tip of main body of spine. Caudal fin truncate or not deeply forked.

Subfamily Noemacheilinae

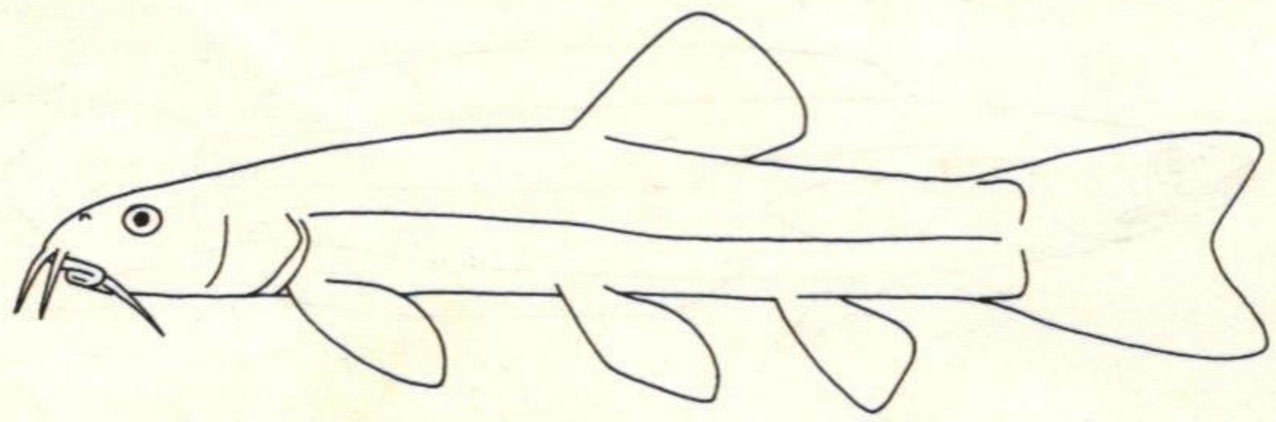


Fig. 28. *Noemacheilus* sp., Cobitidae, Noemacheilinae

Head rounded, with a short snout. Body somewhat cylindrical. Barbels three pairs; two pairs on front of upper jaw and one pair at mouth angles. Lower lip poorly or well developed, in the latter case the lip smooth or ridged. Caudal fin slightly or rather deeply forked.

Family Belonidae (Needlefishes)

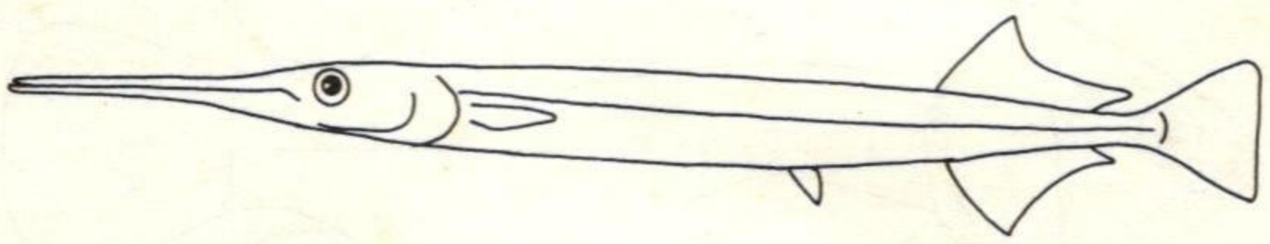


Fig. 29. *Xenentodon canciloides*, Belonidae

Body greatly elongate, cylindrical or only slightly compressed. Upper and lower jaws very long, assuming a beak-like appearance, finely toothed. Dorsal and anal fins opposite one another in far posterior part of body. Pectoral and pelvic fins small. Scales minute.

Family Channidae (Snakeheads)

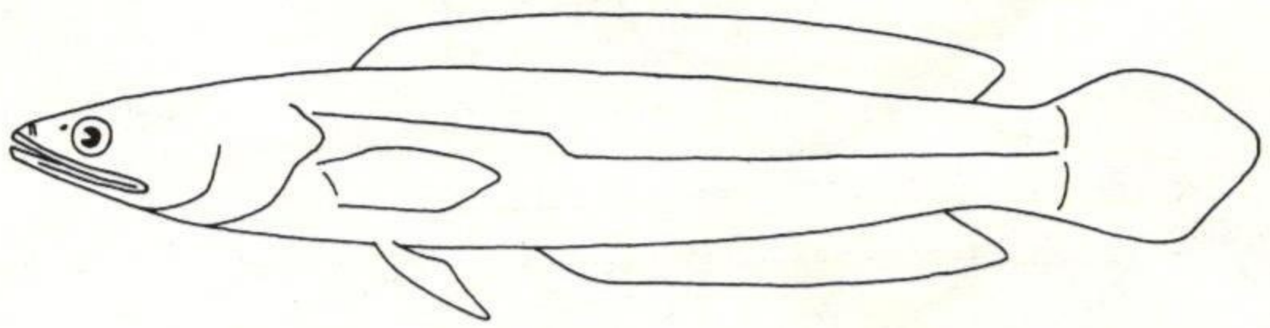


Fig. 30. *Channa striata*, Channidae

Body elongate, cylindrical. Head somewhat depressed, with a mouth deeply cleft and widely distensible. Dorsal and anal fins very long. Lateral line continuous, but dropping one to three rows of scales in anterior half of body. An accessory respiratory organ in form of a simple vascular chamber in branchial cavity.

With the accessory air-breathing organ the snakeheads can survive for many hours in the air, even for months in the mud during dry season.

Family Anabantidae (Climbing perches)

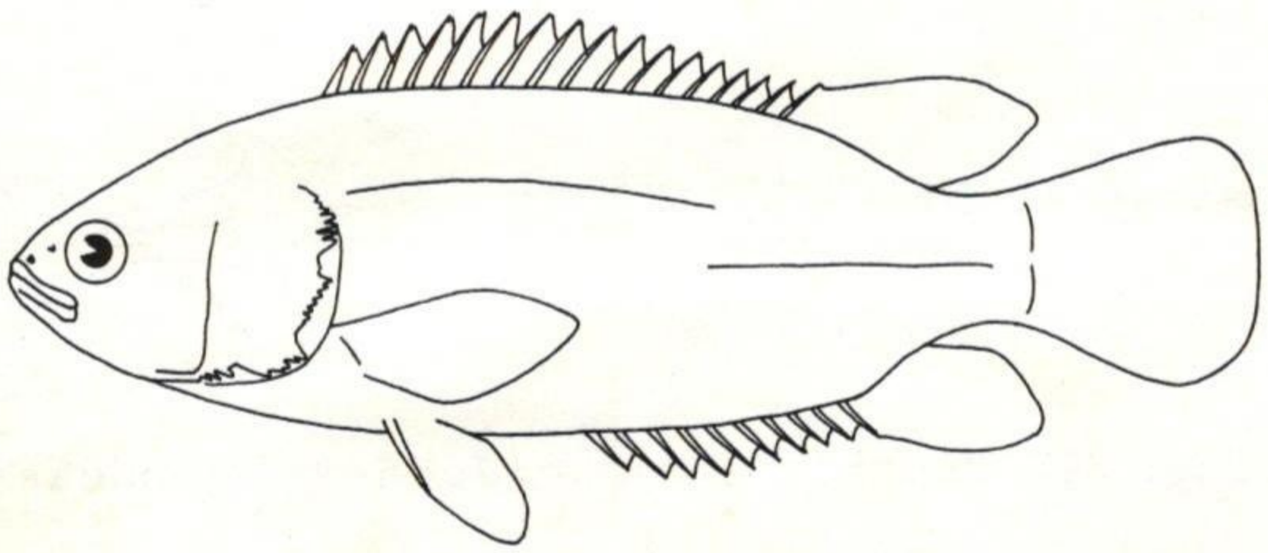


Fig. 31. *Anabas testudineus* Anabantidae

Body oblong to high, compressed. Teeth in jaws and on vomer. Operculum and preoperculum scaled, edge of the latter serrated. Lateral line in two rows. Dorsal fin long, with 14 to 20 spines and seven to 12 soft rays. Anal fin rather long, with seven to 11 spines and seven to 12 soft rays. Pelvic fins with five soft rays, first ray not produced into a filament. Caudal fin truncate or rounded. An accessory labyrinthine respiratory organ in branchial chamber.

Family Belontidae (Gouramies and their allies)

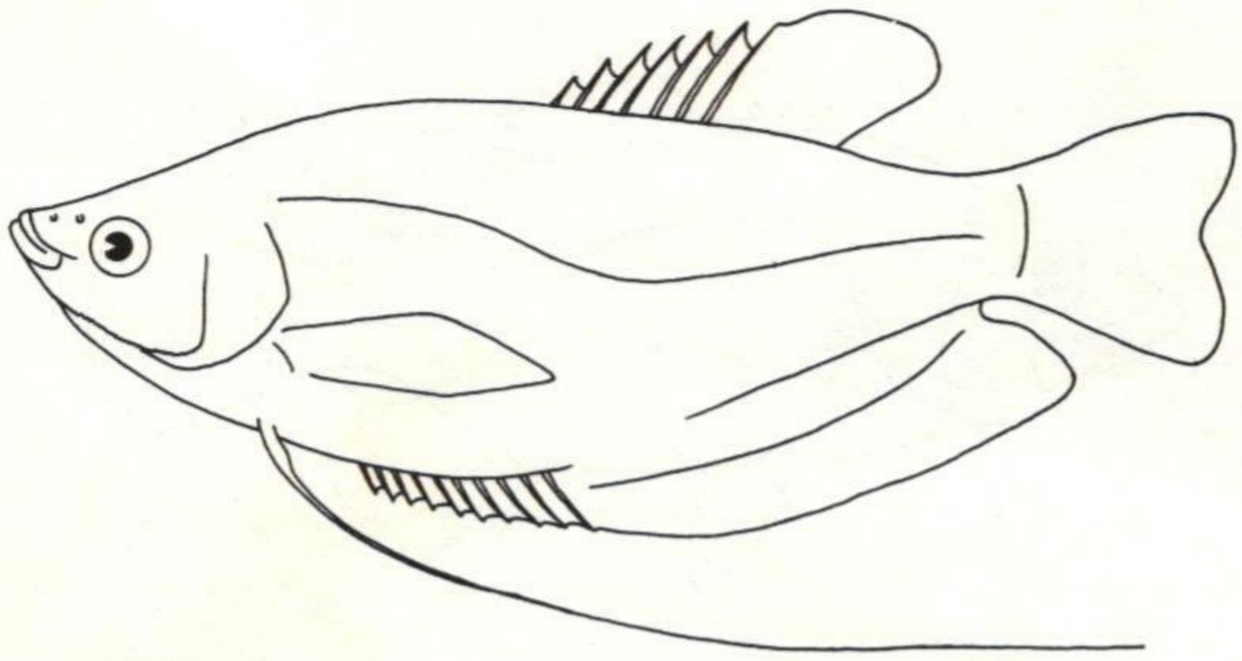


Fig. 32. *Trichogaster pectoralis*, Belontidae

Oblong to elongate, greatly compressed. Jaws toothed, vomer toothless. Sides of head scaled. Lateral line complete, vestigal or absent. Dorsal fin short and high or long and low. Anal fin long. Pelvic fins with three to five soft rays, first ray very long, thread-like. Caudal fin various in shape, pointed, rounded, truncate, or emarginated. A labyrinthine air-breathing organ.

Family Osphronemidae (Giant gouramy)



Fig. 33. *Osphronemus goramy*, Osphronemidae

Body high, strongly compressed. Head rather small, with a produced mouth. Lower jaw with a tuberous projection. Teeth in jaws: vomer toothless. Operculum and preoperculum with a serrated edge. Lateral line complete and continuous. Dorsal and anal fins long, their soft portions high. First pelvic ray produced into a long filament. Caudal fin rounded. A labyrinthine organ.

Family Nandidae (Nandids)

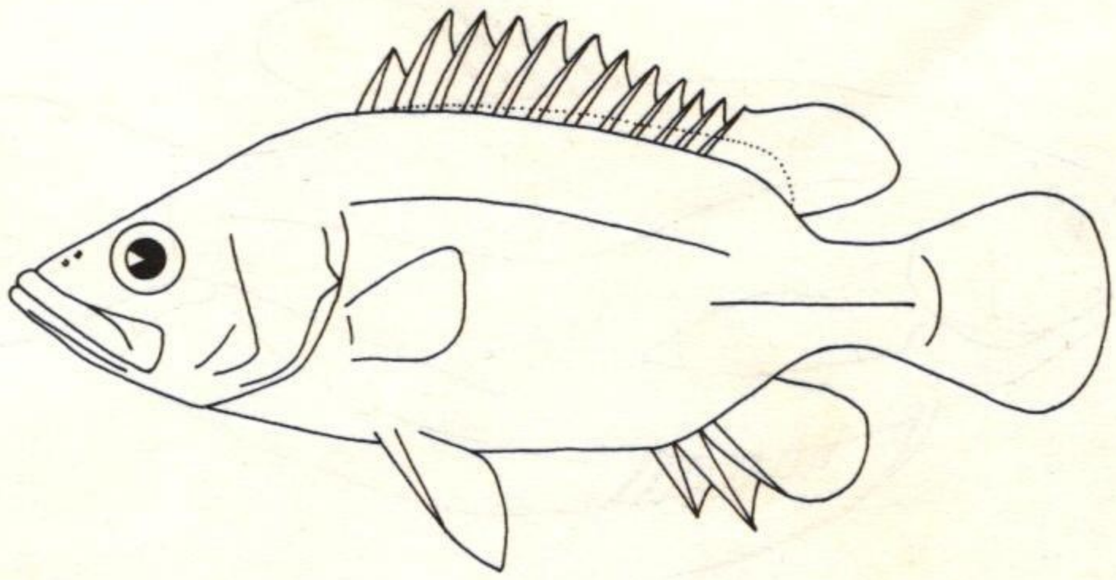


Fig. 34. *Nandus nandus* , Nandidae

Head large, its top and sides scaled. Mouth protractile, deeply cleft, its corner extending to or beyond hind margin of eye. Hind edge of operculum pointed into a single flat spine. Gill membranes on both sides entirely separated from each other. Lateral line interrupted below soft dorsal fin and displaced further ventrally. Dorsal fin long, with 13 to 16 spines and 11 to 13 soft rays. Anal fin with three spines followed by five to nine soft rays. Caudal fin rounded.

Family Pristolepidae (Pristolepids)

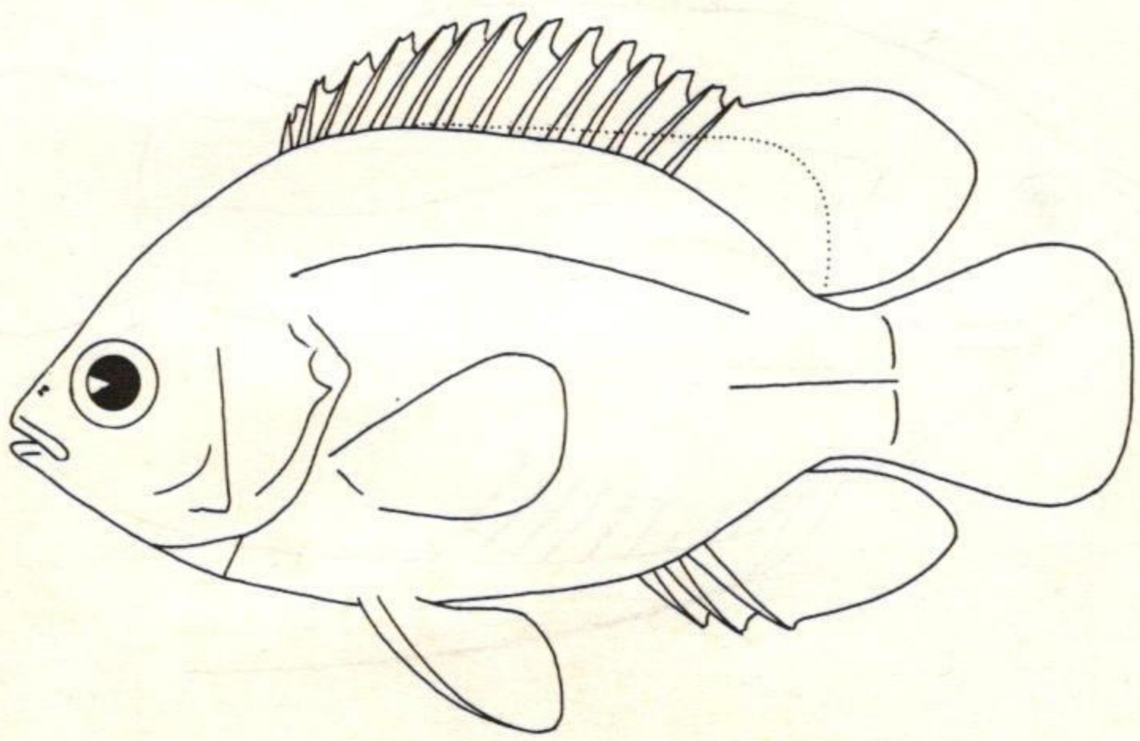


Fig. 35.*Pristolepis fasciatus* Pristolopidae

Body deep, covered with large scales. Mouth small. Hind edge of operculum pointed into two flat spines. Gill membranes on both sides broadly united together. Dorsal fin of 12 to 16 spines and 11 to 16 soft rays. Anal fin with three or four spines and eight or nine soft rays. Lateral line interrupted. Caudal fin rounded.

Family Centropomidae (Snooks and glassfishes)

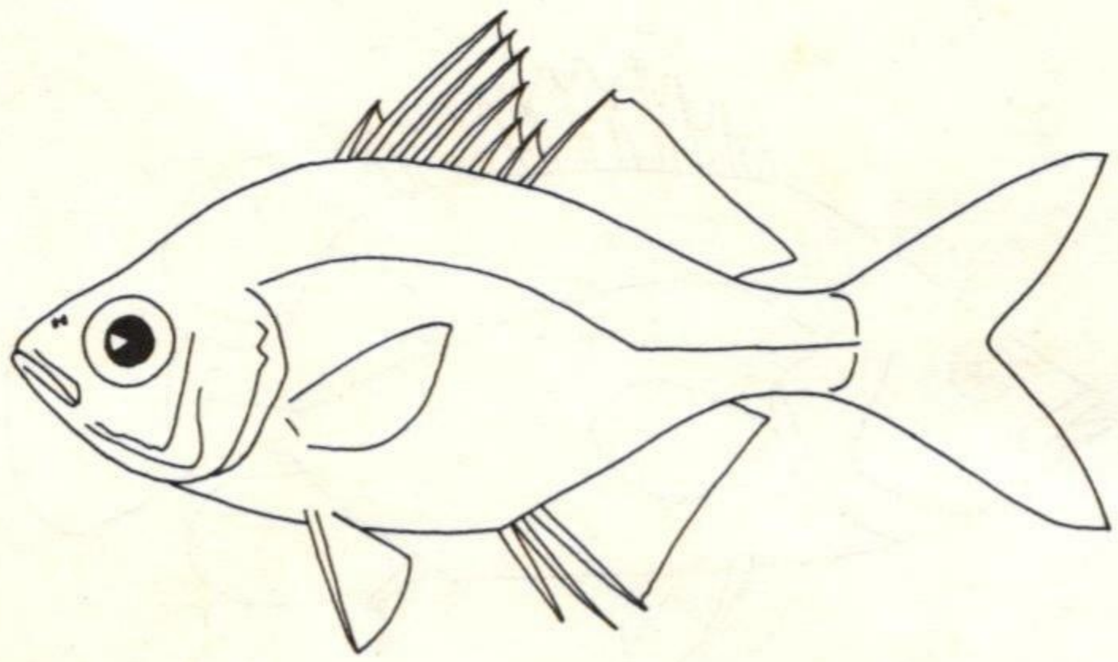


Fig. 36. *Chanda siamensis*, Centropomidae

Body elongate or deep, compressed; back usually elevated. Mouth more or less deeply cleft, directed obliquely upward or almost horizontally. Lateral line continuous or interrupted, extending to base or end of caudal fin. Dorsal fin divided into two parts; anterior spinous portion and posterior soft portion separated entirely or conneted at their base.

The Centropomidae is represented in Laotian waters solely by the genus *Chanda*, which is readily distinguished by the deep, transparent body as is indicated by the popular name glassfish.

Family Toxotidae (Archerfishes)

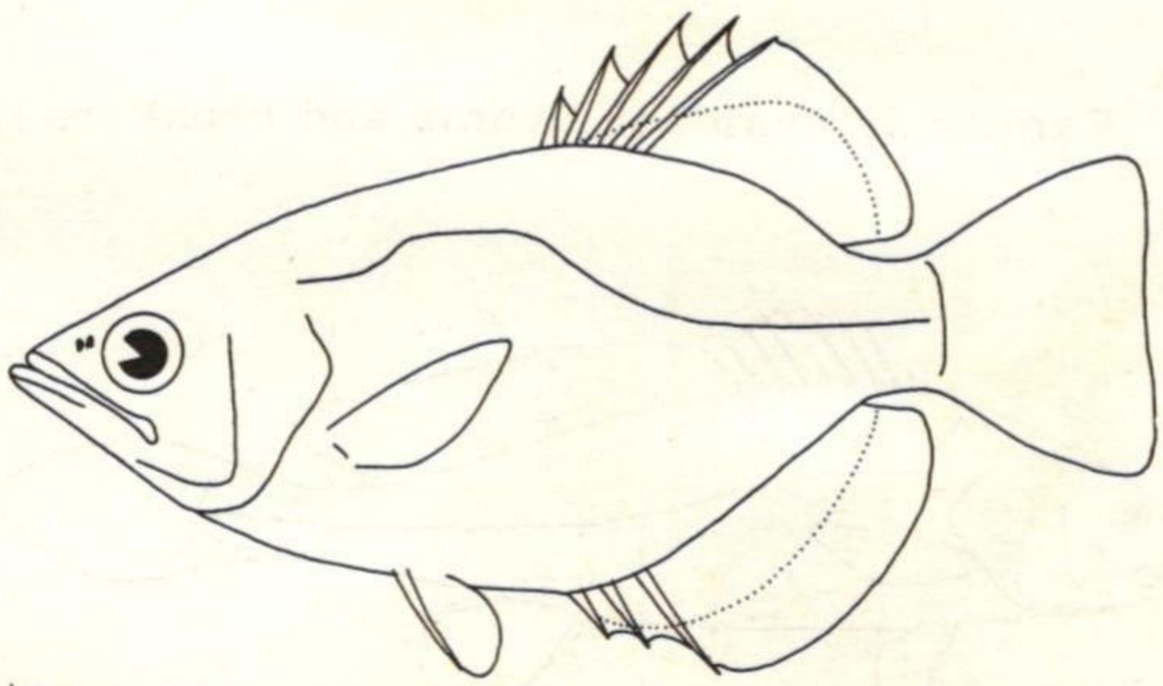


Fig. 37. *Toxotes microlepis*, Toxotidae

Dorsal profile a flat from tip of snout to spinous dorsal fin, ventral profile more or less strongly arched. Head large, with a pointed snout. Mouth deeply cleft, directed obliquely upward. Dorsal and anal fins situated well back; basal half of soft dorsal fin covered with scales. Lateral line complete.

The archerfishes are noted for their ability of spitting drops of water at insects in the air thrusting their mouth out of water.

Family Lobotidae (Tripletails)

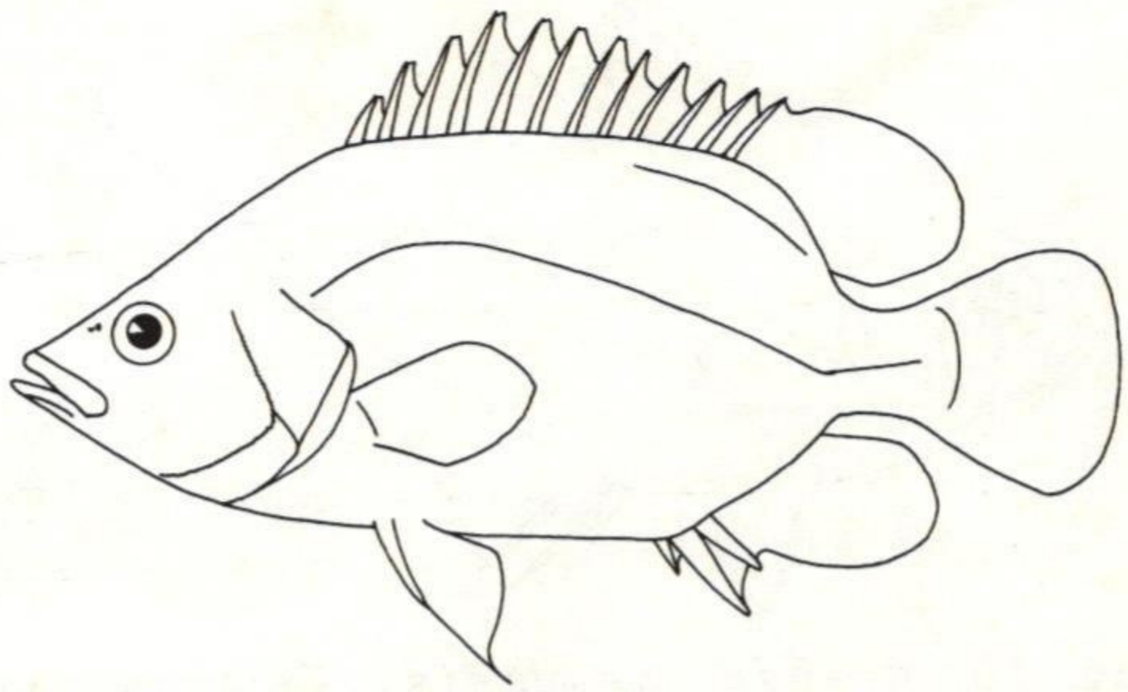


Fig. 38. *Datnioides microlepis*, Lobotidae

Body deep, compressed; dorsal profile convex at nape. Mouth large, deeply cleft, its corner extending below eye. Margin of preoperculum serrated. Dorsal fin long, undivided, usually with 12 strong spines; soft dorsal high, rounded, extending backward over caudal peduncle or caudal fin. Anal fin with three spines; soft portion also extending far backward. Jaws toothed; vomer and palatines toothless. Lateral line complete, arched.

Family Sciaenidae (Drums and croakers)

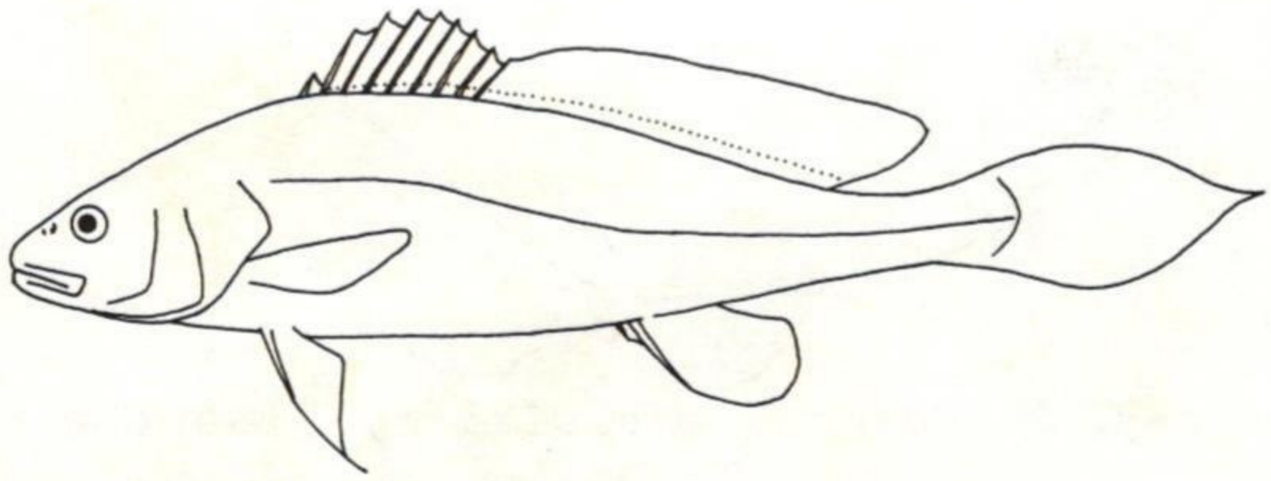


Fig. 39. *Pseudosciaena soldado*, Sciaenidae

Body somewhat elongate, compressed. Head covered with scales. Mouth large, terminal or subinferior, in the latter case snout bluntly rounded. Lateral line complete, recurved, continuous on base of caudal fin. Dorsal fin long, with many spines and soft rays, divided into two parts separated by a more or less deep notch.

Family Gobiidae (Gobies)

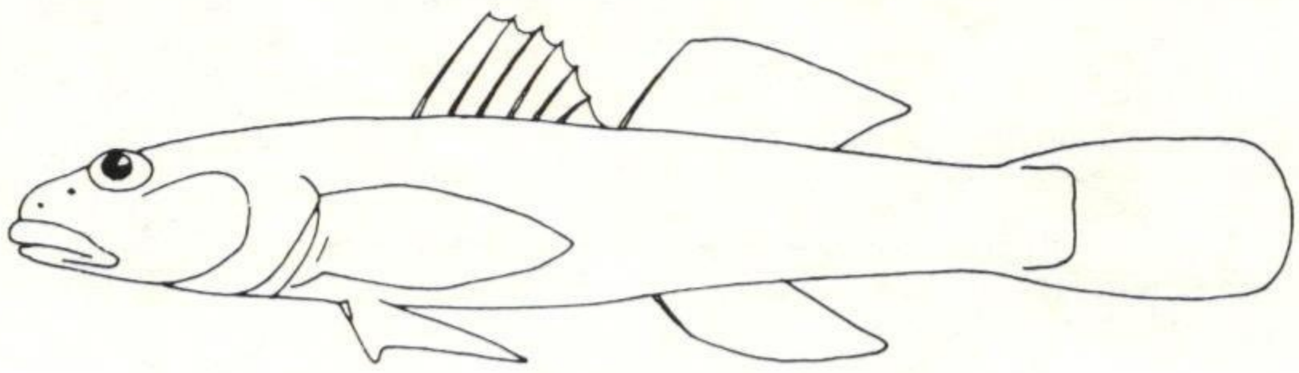


Fig. 40. *Ctenogobius ocellatus*, Gobiidae

Elongate or oblong, not much compressed. Mouth large, with small canine teeth in jaws. Two dorsal fins; first dorsal of five or six feeble spines, second dorsal opposite anal fin. Pelvic fins united together and modified into a sucking disk on lower surface of body. Lateral line absent.

Family Eleotridae (Sleepers)

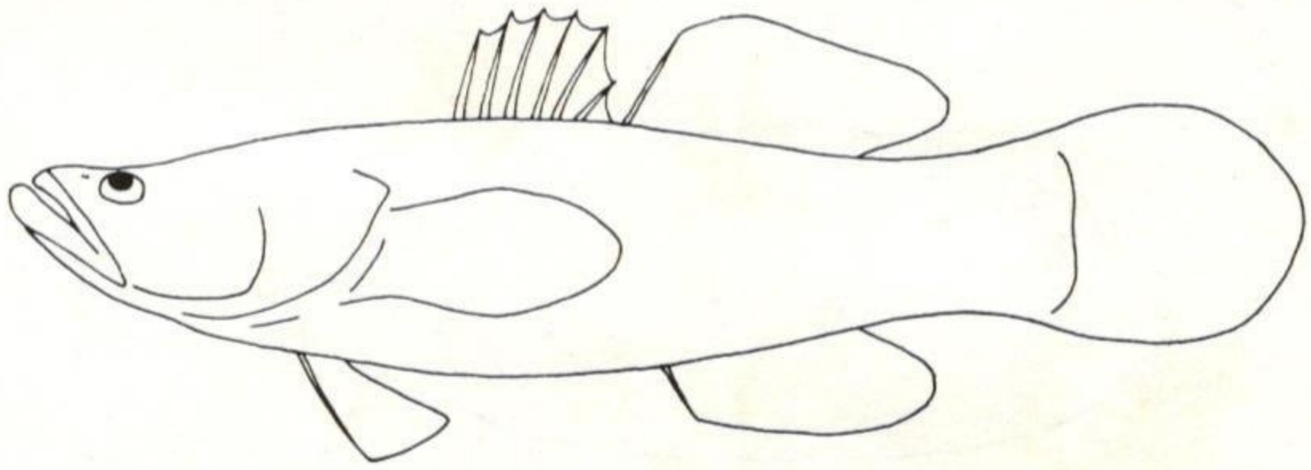


Fig. 41. *Oxyeleotris marmoratus*, Eleotridae

Similar to the preceding family in general appearance, but distinguished from it in having no sucking disk formed by pelvic fins. Body rather oblong and robust or slender, usually cylindrical anteriorly. Mouth large, wide, with feeble teeth in jaws. Dorsal fin separated into two sections; first dorsal with six weak spines, second dorsal of soft rays often preceded by a spine. Lateral line usually absent.

Family Soleidae (Soles)

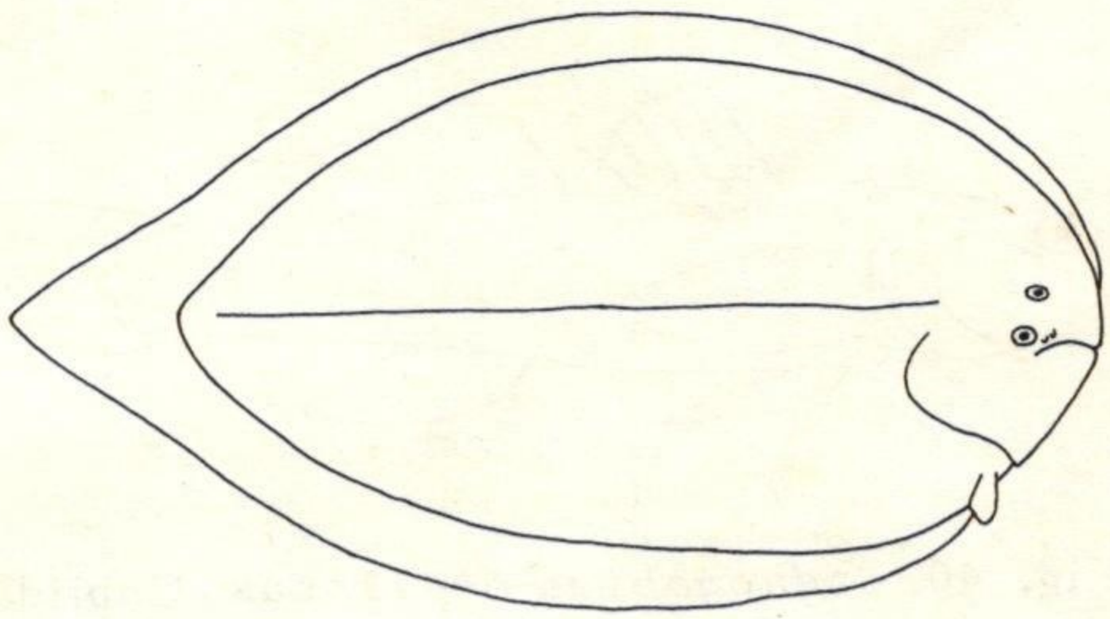


Fig. 42. *Synaptura harmandi*, Soleidae

Body flat, of typical sole shape, with a colored upper side and a blind lower side less densely pigmented. Mouth small, asynmetric; lower jaw not prominent. Both eyes situated on right side of head. Dorsal fin very long, originated on head and often united with small caudal fin. Anal fin also long, and often united with caudal fin.

Family Tetraodontidae (Puffers or globefishes)

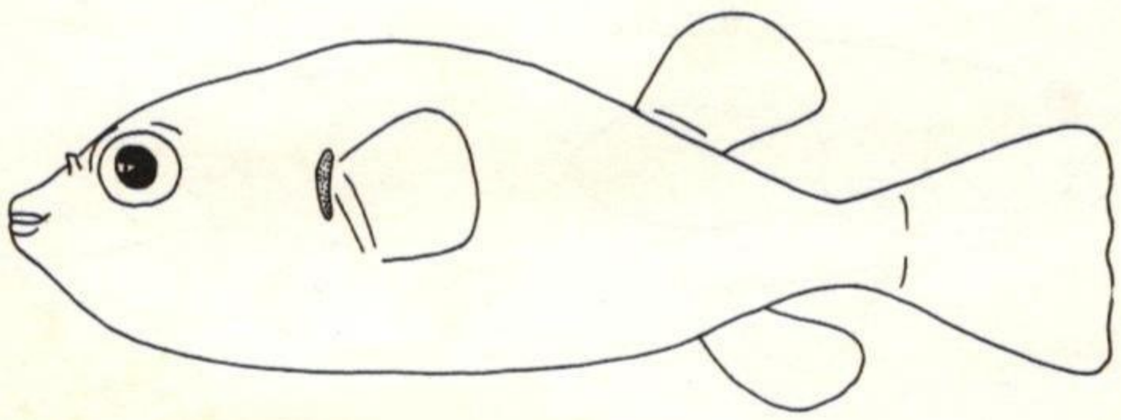


Fig. 43. *Tetraodon leiurus*, Tetraodontidae

Body robust, globular when inflated with air or water, covered by skin partly beset with spines. Head large. Teeth fused and forming together with jaw bones a sharp beak. The beak composed of right and left halves divided by a median suture. Gill openings narrow. Pelvic fins absent. Other fins spineless.

The puffers can blow themselves up by swallowing air or water into their large gullet extending under the skin of chest and abdomen. Many of them are deadly poisonous.

Family Mastacembelidae (Spiny eels)

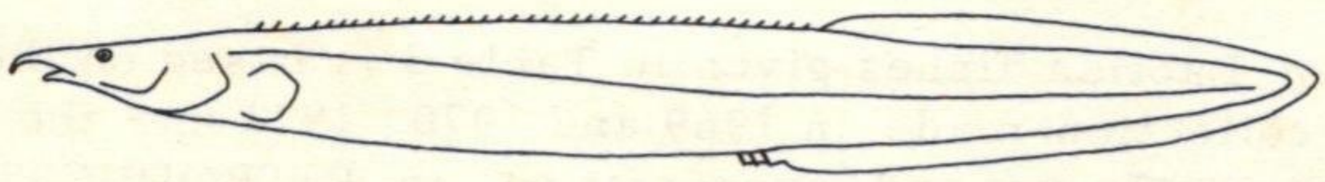


Fig. 44. *Mastacembelus armatus favus*, Mastacembelidae

Body very elongate. Snout long, produced into a trilobal mobile fleshy process with a tubular anterior nostril on either side. Mouth small. Dorsal fin composed of a number of short, detached spines followed by a long soft portion. Anal fin almost as long as soft dorsal fin. Both of the fins often continuous with caudal fin. The isolated dorsal spines erectile, but usually concealed in skin. No pelvic fins.

Family Synbranchidae (Swamp eels)

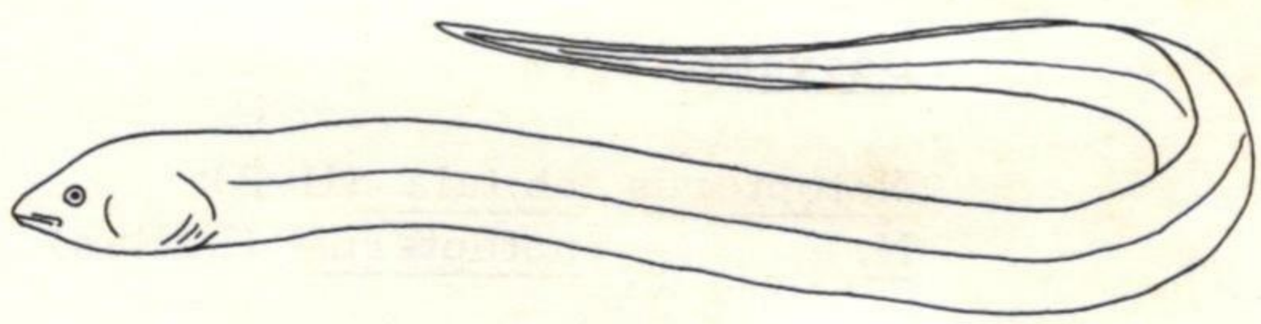


Fig. 45. *Fluta alba*, Synbranchidae

Body eel-like, compressed posteriorly, scaleless. Eyes small, covered by skin, or absent (blind) in one genus. Anus located in far posterior part of body. Dorsal and anal fins reduced into mere rayless folds of skin, and fused with small caudal fin containing a few short rays. Pectoral and pelvic fins absent. Teeth in jaws and on palate. Gills poorly developed, and arranged on three or four branchial arches. A single gill opening under throat. A pair of vascular air-breathing organs.

III. LIST OF FISHES

The list of Laotian fishes given in Table 3 is based on the author's original collection made in 1969 and 1970 - 1971 and the literature mentioned in 'Scope and presentation' in INTRODUCTION. The vernacular names of fish are those recorded by the author with the aid of local officials during his altogether 27 month's stay in the country. The transcription of Lao words into Roman characters follows standard methods employed in Laos.

Table 3. List of Laotian fishes with vernacular names

* Fish species cited from literature including Taki (1968); ** Fish species cited from literature other than Taki (1968). Abbreviation for nomenclators: C&V - Cuvier and Valenciennes; H - B - Hamilton - Buchanan; P&F - Pellegrin and Fang.

Family and subfamily	Species	Laotian name
Dasyatidae	Dasyatis sp.*	Pa fa lai
Notopteridae	Notopterus chitala (H-B)	Pa thong
	N. notopterus (Pallas)	Pa thong
Clupeidae	Hilsa kanagurta (Bleeker)	Pa mak pang
	Corica sp.	
Bagridae	Bagroides macropterus Bleeker	
	B. macracanthus Bleeker	Pa ka theung
	Leiocassis siamensis Regan	Pa ki hia
	Heterobagrus bocourti Bleeker	
	Mystus nemurus (C&V)	Pa kot
	M. cavasius (H-B)	Pa ka gnen

Table 3. - continued -

Family and subfamily	Species	Laotian name
Bagridae -continued-	Mystus rhegma Fowler	Pa ka gnen
	M. vittatus (Bloch)	
	M. wyckii (Bleeker)*	Pa kheung
	M. micracanthus (Bleeker)**	
	M. planiceps (C&V)**	
Siluridae	Wallagonia attu (Blotch)	Pa khao
	W. miostoma (Vaillant)	Pa khoun
	Wallago dinema Bleeker	Pa khop
	Ompok bimaculatus (Bloch)	Pa souam
	Kryptopterus bicirrhis (C&V)	Pa pi kai
	K. cryptopterus (Bleeker)	
	K. apogon (Bleeker)	Pa nang
	K. bleekeri Günther	Pa souam
	K. sp.	
	K. schilbeides (Bleeker)**	
	Hemisilurus heterorhynchus (Bleeker)	Pa dan deng
Pangasiidae	Helicophagus waandersii Bleeker	Pa nou
	Laides hexanema (Bleeker)	
	Pteropangasius cultratus (Smith)	
	Pangasius siamensis Steindachner	
	P. nasutus (Bleeker)	Pa ling
	P. larnaudii Bocourt	Pa hou mat
	P. sanitwongsei Smith	Pa leum
	P. pangasius (H-B)	
	P. longibarbis Fowler**	
	P. sutchi Fowler*	
	Pangasianodon gigas Chevey	Pa beuk
Akysidae	Akysis sp. (1)	
	Akysis sp. (2)	
Sisoridae	Bagarius bagarius (H-B)	Pa ke
	Glyptothorax trilineatus Blyth	
	G. sp.	

Table 3. - continued -

Family and subfamily	Species	Laotian name
Clariidae	Clarias batrachus (Linnaeus)	Pa douk
	C. macrocephalus Günther	
Heteropneustidae	Heteropneustes fossilis (Bloch)**	
Cyprinidae		
Cultrinae	Oxygaster oxygastroides	
	oxygastroides (Bleeker)	Pa thep
	O. pointoni (Fowler)	Pa thep
	Paralaubuca stigmabrachium (Fowler)	
	P. barroni (Fowler)**	
	P. riveroi (Fowler)*	
	P. typus Bleeker*	
	Macrochirichthys macrochirus (C & V)	Pa hang fa
	Chela laubuca (H-B)	
	Parachela williaminae Fowler**	
Acheilognathinae	Acanthorhodeus deignani Smith	
Danioinae	Esomus metallicus Ahl	Pa sieu
	E. goddardi Fowler	Pa sieu
	Daniops myersi Smith	
	Danio regina Fowler	
	Luciosoma bleekeri Steindachner	Pa sieu ao
	L. setigerum (C & V)	Pa sieu ao
	Filirasbora rubripinna Fowler	
	Rasbora daniconius daniconius (H-B)	
	R. sumatrana (Bleeker)	
	R. borapetensis Smith	Pa sieu
	R. trilineata Steindachner	
	R. myersi Brittan	Pa sieu
	Barilius pulchellus Smith	
	B. nanensis Smith	
	B. guttatus (Day)	Pa sa nak
	B. pellegrini Fang**	
	B. barna (H-B)**	
	Parabarilius laoensis P & F**	

Table 3. - continued -

Family and subfamily	Species	Laotian name
Barbinae	Hampala macrolepidota van Hasselt	Pa sou
	H. dispar Smith	Pa sou
	Thynnichthys thynnoides (Bleeker)	Pa keum
	Cirrhinus jullieni Sauvage	Pa soi
	C. lineatus Smith	Pa soi
	C. microlepis Sauvage	Pa phone
	Leptobarbus hoevenii (Bleeker)	
	Osteochilus hasselti (C & V)	Pa khao mong
	O. lini Fowler	
	O. tatumi Fowler	
	O. prosemion Fowler	Pa keng
	O. melanopleura (Bleeker)	Pa nok khao
	O. vittatus (C & V)	
	O. soplaoensis (Fowler)**	
	O. ochrus Fowler**	
	Labiobarbus lineatus (Sauvage)	Pa khoui lam
	Tor douronensis (C&V)	Pa hien
	T. sp.	Pa hien
	T. blanci (P & F)**	
	T. tambra (C & V)**	
	T. tambroides (Bleeker)**	
	Puntius stigmatosomus Smith	
	P. altus (Günther)	Pa leun fai
	P. schwanenfeldii (Bleeker)	Pa vien fai
	P. orphoides (C & V)	Pa pok
	P. leiacanthus (Bleeker)	
	P. gonionotus (Bleeker)	Pa pak
	P. daruphani Smith	
	P. huguenini (Bleeker)	
	P. bramoides (C & V)**	
	P. beasleyi (Fowler)**	
	P. foxi (Fowler)**	
	P. ashmeadi (Fowler)**	
	P. laoensis (Günther)**	
	P. collingwoodi (Günther)**	
	P. pierrei (Sauvage)**	
	P. binotatus (C & V)*	

Table 3. - continued -

Family and subfamily	Species	Laotian name
Barbinae -continued-	Puntioplites proctozysron (Bleeker)	Pa sa kang
	Cyclocheilichthys enoplos (Bleeker)	Pa tiok
	C. repasson (Bleeker)	Pa khao i thai
	C. mekongensis Fowler	Pa tiok
	C. armatus (C & V)**	
	C. dumerilii Sauvage**	
	C. enoploides Tirant**	
	Xenocheilichthys gudgeri Smith	Pa mang
	Amblyrhynchichthys truncatus (Bleeker)	
	Mystacoleucus marginatus (C&V)	
	M. greenwayi P&F	
	M. sp.	
	M. atridorsalis Fowler**	
	Acrossocheilus deauratus (C&V)	
	A. bantamensis (Rendahl)	
	Scaphiodonichthys acanthopterus (Fowler)	
	Scaphoganthops stejnegeri (Smith)	
	S. sp.	
	Probarbus jullieni Sauvage	Pa eun
	Cosmochilus harmandi Sauvage	Pa tiok
	Barbichthys laevis (C&V)	
	Morulius chrysophekadion (Bleeker)	Pa phia
	Labeo erythrurus Fowler	
	L. dyocheilus (McClelland)	Pa va
	L. behri Fowler	Pa va ho kham
	L. cheveyi Fowler**	
	L. stigmapleura Fowler**	

Table 3. - continued -

Family and subfamily	Species	Laotian name
Barbinae -continued-	Tylognathus delacouri P & F	
	T. brunneus Fowler**	
	T. cryptopogon Fowler**	
	T. melanotaenia Fowler **	
	T. davisi Fowler**	
	T. gracilis Fowler**	
	Epalzeorhynchos coatesi (Fowler)	Pa kiang
	E. siamensis Smith	
	E. kalliurus Smith**	
	Mekongina erythrospila Fowler	Pa sa i
	Garra fasciacauda Fowler	Pa kikko
	G. taeniata Smith**	
	Balantiocheilus melanopterus (Bleeker)*	Pa pit
	Catlocarpio siamensis Boulanger*	Pa ka ho
	Crossocheilus reticulatus Fowler*	
Gyrinocheilidae	Gyrinocheilus aymonieri (Tirant)	Pa ko
	G. pennocki (Fowler)**	
Homalopteridae	Annamia normani (Hora)	Pa tit hin
	Homaloptera smithi Hora	Pa tit hin
	H. lineata Smith**	
Cobitidae		
Botinae	Botia hymenophysa (Bleeker)	Pa kieo kai
	B. beauforti Smith	Pa kieo kai
	B. modesta Bleeker	Pa mou mang
	B. morleti Tirant	
	B. lecontei Fowler	
	B. sidthimunki Klausewitz	
	B. eos Taki	
Cotbitinae	Acanthopsis choirorhynchos (Bleeker)	Pa it
	Acanthopsoides gracilis Fowler	
	Lepidocephalus hasselti (C&V)	
	Cobtitophis anguillaris (Vaillant)	

Table 3. - continued -

Family and subfamily	Species	Laotian name
Noemacheilinae	Noemacheilus sp.	
	N. spilopterus (C&V)**	
	N. bucculentus Smith**	
Belonidae	Xenentodon canciloides (Bleeker)	Pa sa thong
Channidae	Channa striata (Bloch)	Pa kho
	C. gachua (H-B)	Pa kan
	C. micropeltes (C&V)*	Pa do
	C. melasoma (Bleeker)	
	C. lucius (C&V)*	Pa tion
Anabantidae	Anabas testudineus (Bloch)	Pa keng
Belontidae	Trichogaster trichopterus (Pallas)	Pa ka dout
	T. pectoralis (Regan)	Pa sa lit
	Trichopsis vittatus (C&V)	Pa mat
	Betta splendens Regan*	Pa kat
Osphronemidae	Osphronemus goramy Lacepde	Pa meng
Nandidae	Nandus nandus (H-B)	Pa ka
	N. nebulosus (Gray)**	
Pristolepidae	Pristolepis fasciatus (Bleeker)	
Centropomidae	Chanda siamensis Fowler	Pa khap khong
Toxotidae	Toxotes microlepis Günther	Pa meo
Lobotidae	Datnioides microlepis Bleeker	Pa soua
Scianidae	Pseudosciaena soldado(Lacepde)	Pa khouang
Gobiidae	Ctenogobius ocellatus (Fowler)	
	C. mekongianus (P&F)	
Eleotridae	Oxyeleotris marmoratus (Bleeker)	Pa bout
Soleidae	Synaptura harmandi Sauvage	Pa pe

Table 3. - continued -

Family and subfamily	Species	Laotian name
Tetraodontidae	Chonerhinus modestus (Bleeker)	Pa pao luang
	Tetraodon leiurus Bleeker	Pa pao
	T. cutcutia H-B	Pa pao
	T. fluviatilis H-B**	
Mastacembelidae	Macrognathus aculeatus (Bloch)	Pa lot
	Mastacembelus armatus favus Hora	Pa lat
	M. alboguttatus Boulenger**	
Synbranchidae	Fluta alba (zuiew)*	Yen

IV. DESCRIPTION OF SPECIES

Legend: For every species derived from the collection made in 1969 and 1970-1971, statements are made with the following sequence of data:

1) Scientific name;
2) Figure number (s);
3) Laotian name, in case of common and wide use in Laos;
4) Synonymy and references restricted to citations pertaining to Laotian waters; in case of citation of Taki (1968), collecting locality is shown by both locality name and station number;
5) Collecting locality shown by both locality name and station number;
6) Material data given in the following order: total number of specimens obtained, in parentheses number, range of standard length and catalogue number of the specimens on which counts and measurements were made;
7) Description of diagnostic characters; unless otherwise stated, the description is based on the material at hand;
8) Remarks, if any.

Family Dasyatidae (Stingrays)

Dasyatis sp.

? *Dasyatus* sp.- Serene, 1951 (Mekong R.)

Dasyatus sp.- Taki, 1968 (Luang Prabang, Vientiane, Pakse: Station Nos. 3, 20. 32)

Family Notopteridae (Featherbacks)

Notopterus chitala (Hamilton-Buchanan)

Laotian name: Pa thong

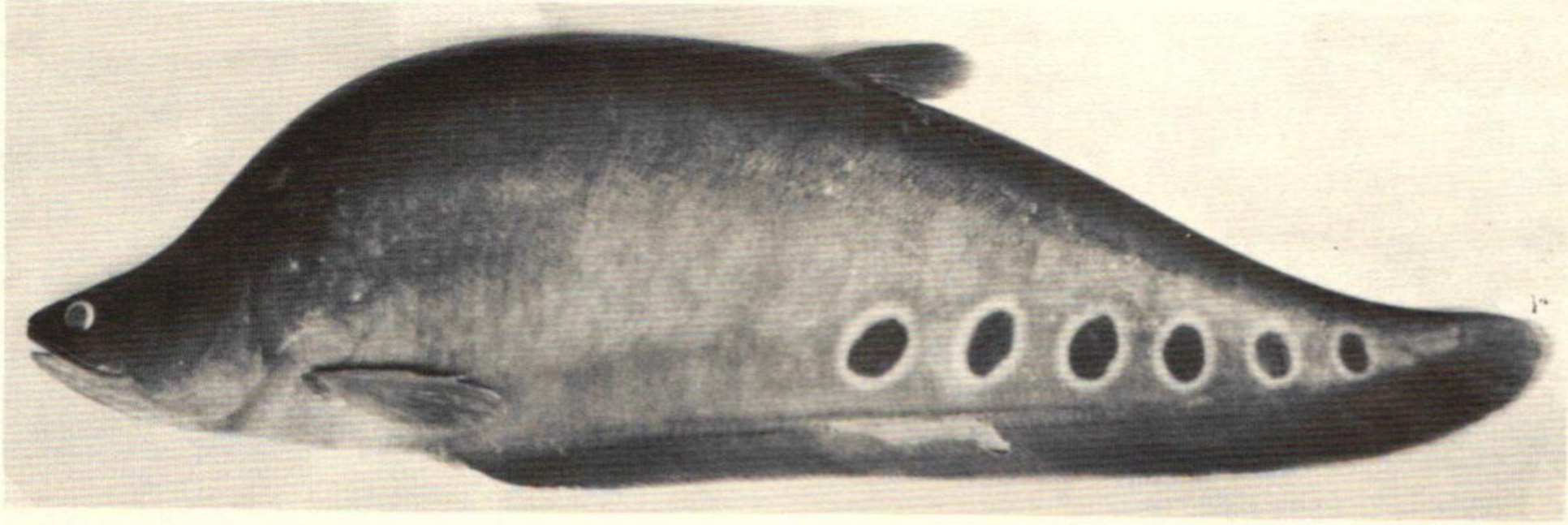


Fig. 46 *Notopterus chitala* (Hamilton-Buchanan) 345.0 mm SL

Notopterus chitala- Serene , 1951 (Mekong R. and its affluents); Taki, 1968 (Nong Teng, Vientiane, Savannakhet market, Pakse: Station Nos. 16, 20, 32)

Collecting locality - Tha Bo, Pakse, Khinak: Station Nos. 23, 33, 40

Material - 5 (5, 61.0 - 189.5 mm, IBRP 4061, 4266, 4344)

Description - D. 9; A.+C. 117 - 127 + 15 (including all rudimentary caudal rays). Body strongly compressed; dorsal profile greatly convex from nape to origin of dorsal fin; abdomen short, keeled with 41 to 45 pairs of spines. Head pointed; mouth large, its corner extending behind vertical from posterior margin of eye. Scales on head and on body of about same size. Dorsal fin short, low; anal fin long, continuous with caudal fin; pectoral fins well developed; pelvic fins small, united together at their base. Maximum length 90 cm.

Life color: Silvery gray, a longitudinal series of five to ten black eye - spots on side immediately above base of anal fin. Youngs brownish to silverly gray, with 13 to 15 dark broad oblique cross bars on side of body.

Notopterus notopterus (Pallas)

Laotian name: Pa thong

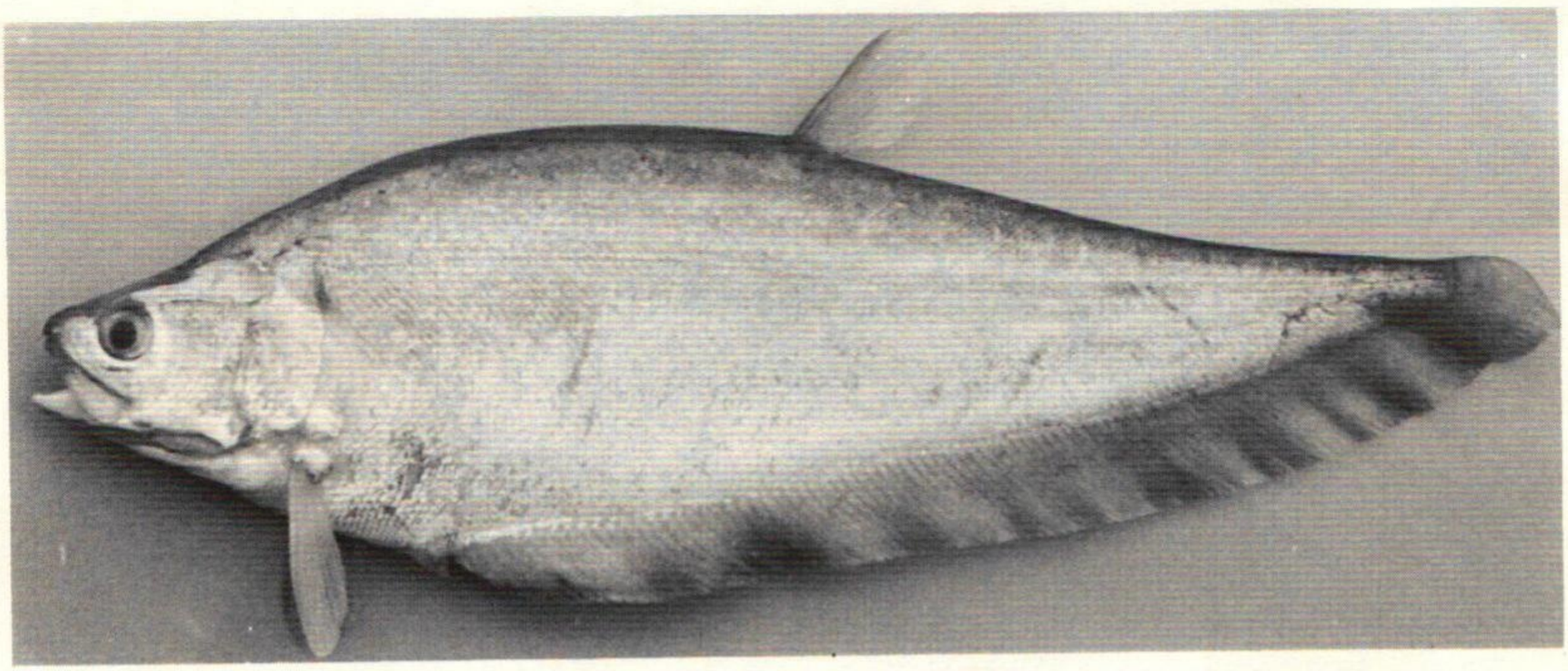


Fig. 47 *Notopterus notopterus* (Pallas) 210.0 mm SL

Notopterus notopterus- Serene, 1951 (Mekong R. and its affluents); Taki, 1968 (Nong Teng, Vientiane, Savannakhet market, Pakse: Station Nos. 12, 20, 32)

Collecting locality - Tha Ngon, Tha Bo: Station Nos. 12, 15, 23

Material - 22 (22, 71.4 - 182.5 mm, IBRP 4675, 4801, 4946, 5003, 5096, 5128, 5298, 5560, 5828)

Description - D. 8 - 9; A.+C. 97 - 106 + 15 - 17 (including all rudimentary caudal rays). Strongly compressed; dorsal profile not much arched. Abdominal spines 32 to 35 pairs. Mouth less protractile and less deeply cleft than in *N. chitala*, angle of mouth reaching vertical from middle or hind border of eye. Head scales larger than body scales. Fins similar to *N. chitala*. Attatins 38 cm in length.

Life color: Silvery gray to coper color, back darker. Juveniles ornamented with more than 30 dark oblique cross bars on side of body.

Family Clupeidae (Herrings)

Hilsa kanagurta (Bleeker)

Laotian name: Pa mak pang

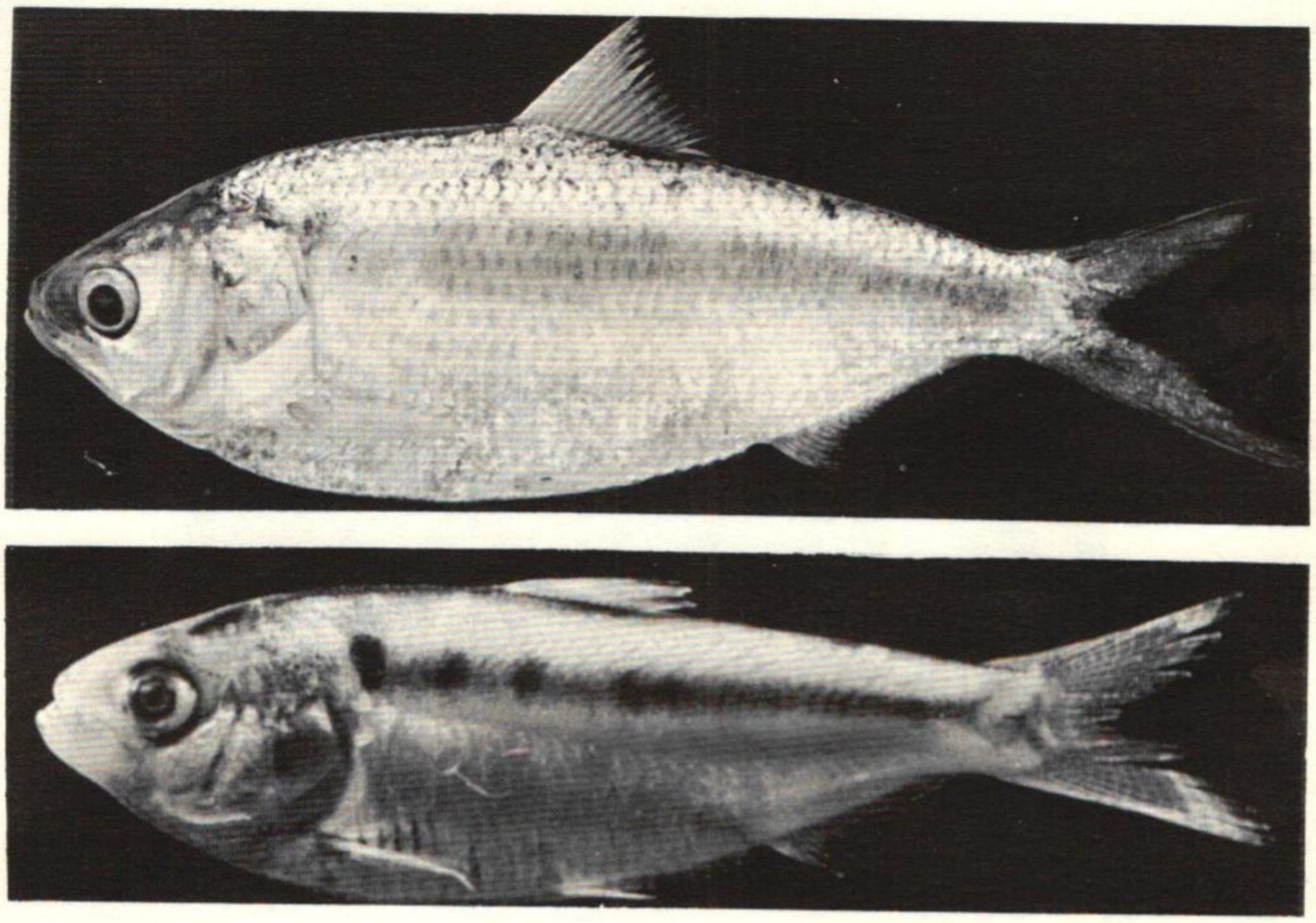


Fig. 48 *Hilsa kanagurta* (Bleeker)
A. Adult, 166.5 mm SL
B. Juvenile, 43.0 mm SL

?*Clupea (Alosa)* sp. - Serene, 1951 (Mekong R. and its affluents)
Clupea kanagurta - Taki, 1968 (Luang Prabang, Vientiane, Pakse, Hatsalao: Station Nos. 3, 20, 32, 34)

Collecting locality - Tha Ngon, Tha Bo, Hatsalao: Station Nos. 12, 23, 34

Material - 11 (11, 30.8 - 167.5 mm, IBRP 4001, 5590, 5669, 5783)

Description - D. 3-4/13-15; A. 3/18-20; Ll. 40. Body rather deep, strongly compressed, its depth 2.6 - 2.7 in standard length; ventral profile arched, abdomen sharply keeled with hard scutes. Head large, its length 3.1 - 3.2 in standard length; operculum

broad. Snout somewhat truncate, short, its length about equal to diameter of eye. Mouth deeply cleft, its corner reaching below hind margin of eye in adults and below middle of eye in juveniles. Scales deciduous. Lateral line absent. Largest specimen at hand 16.8 cm.

Life color: Body Silvery gray, darker above and lighter below. Juveniles with four or five round black blotches on side in a longitudinal row; in adults only anteriormost blotch on shoulder remaining distinct, but about 10 blotchés may be visible in preserved specimens.

Corica sp.



Fig. 49 *Corica* sp. 38.8 mm SL

Collecting locality - Tha Ngon, Tha Bo, Sai Fong, Pakse, Hatsalao: Station Nos. 12, 13, 14, 15, 23, 25, 30, 34

Material - 136 (10, 17.3 - 39.2 mm, IBRP 4065, 4168, 4721)

Description - D. 3/10-12; A. 3/13-15 (3/11-13 + 2). Body elongate, dorsal profile more or less straight, ventral profile arched; belly not much compressed, keeled with a series of abdominal scutes but its edge not very trenchant. Mouth deeply cleft, its angle extending beyond vertical from front margin of eye; median part of upper jaw depressed, bordered by an intermaxilla, sides of the jaw bordered by recurved maxillae; lower jaw prominent. Eyes large. Dorsal fin situated slightly in advance of pelvic fins; anal fin low, long, consists of two parts, second anal fin detached far from first fin, containing two deeply bifurcated rays. Scales deciduous. Largest specimen obtained 4.5 cm in length.

Life color: Uniformly silver. Dorsal, anal and caudal fins sparsely pigmented with melanophores.

Family Bagridae (Bagrid catfishes)

Bagroides macropterus Bleeker

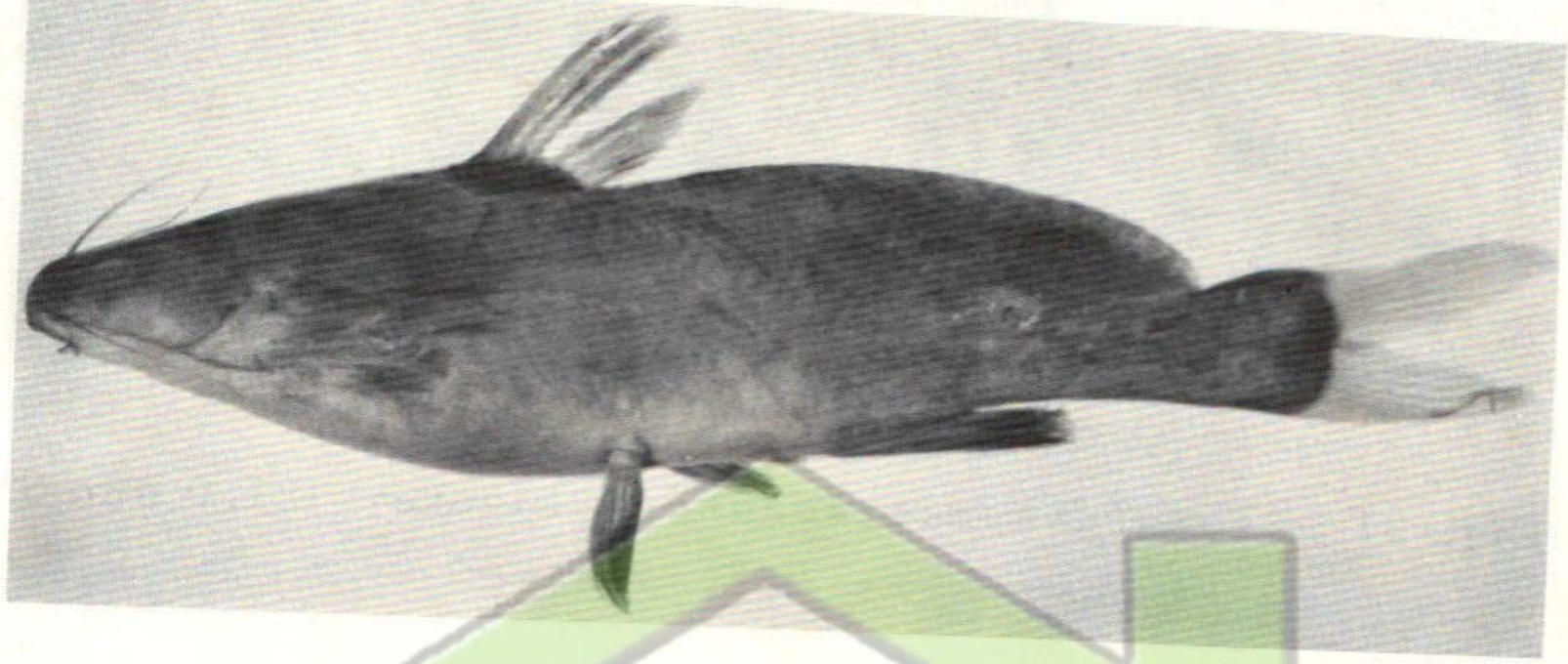


Fig. 50 *Bagroides macropterus* Bleeker 161.5 mm SL

Collecting locality - Hatsalao: Station No. 34

Material - 1 (1, 161.5 mm, IBRP 4014)

Description - D. I/7; A.14. Body elongate, its depth 4.3 in standard length, moderately compressed. Head conical, not depressed, its length 5.8 in standard length. Mouth small, inferior; lips fleshy. Eyes small, covered by skin. Gill membranes entirely united at isthmus. Barbels four pairs; maxillary barbels longest, extending beyond insertion of pectoral fins. Dorsal spine denticulated behind, as long as pectoral spines; adipose fin long, originated right behind dorsal fin, hind edge not free from body; caudal fin deeply forked, upper lobe longer than the lower. Maximum size recorded 26 cm in length.

Life color: Uniformly dark brownish gray.

Bagroides macracanthus Bleeker

Laotian name: Pa ka theung

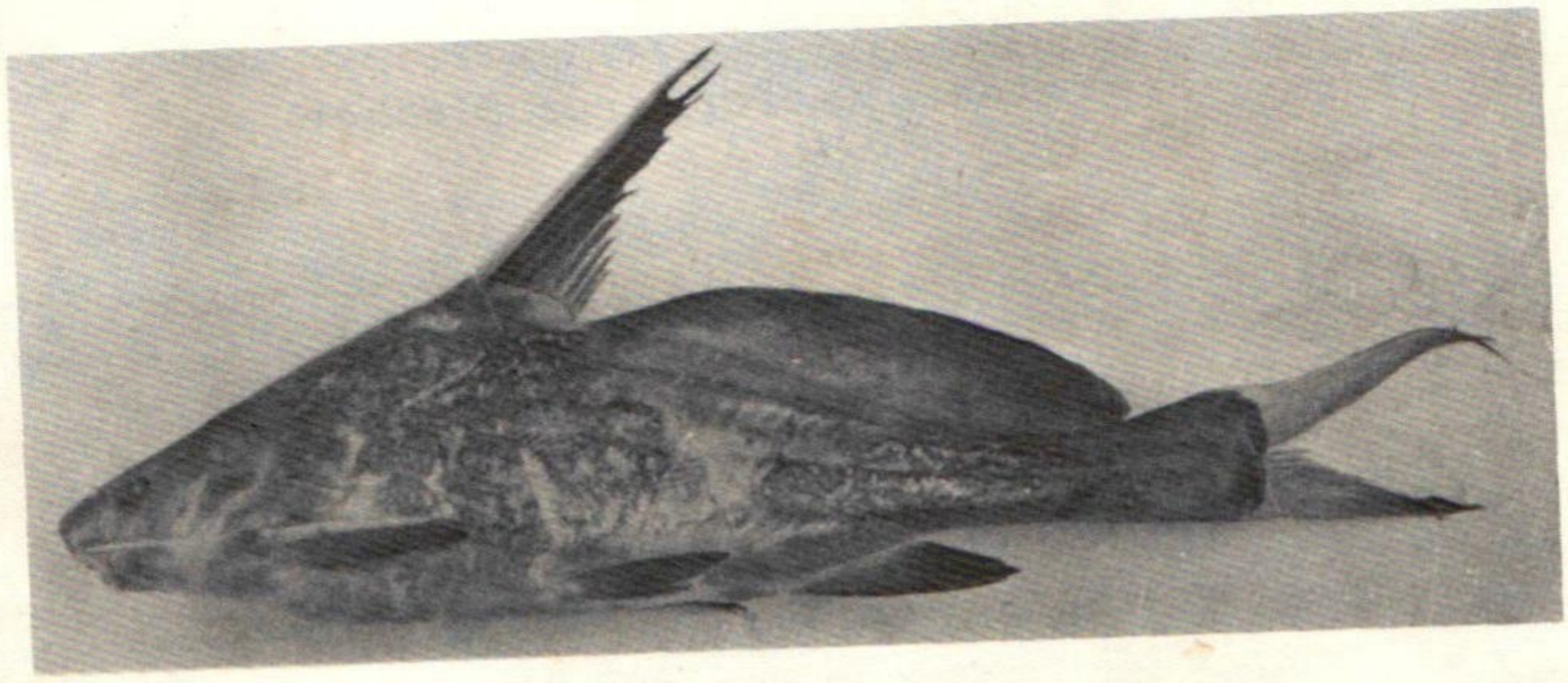


Fig. 51 *Bagroides macracanthus* Bleeker 121.0 mm SL

Bagroides macracanthus - Serene , 1951 (Mekong R. and its affluents); Taki, 1968 (Vientiane, Kouai Deng: Station Nos. 20, 28)

Collecting locality - Tha Ngon, Hatsalao: Station Nos. 14, 34

Material - 5 (5, 114.5 - 148.0 mm, IBRP 4013, 4193)

Description - D. I/7; A. 13-14. Body depth 3.7 - 3.9, head length 4.9 - 5.0 both in standard length. Body compressed; head not depressed. Snouth prominent, its tip rounded. Mouth small, inferior; lips fleshy. Eyes small, subcutaneous. Nasal barbels extending to or beyond eyes when laid back, maxillary barbels to operculum or pectoral fins, mandibulary and mental barbels shorter. Dorsal fin very high, with a serrated spine longer than body depth; adipose fin very large, long, originated immediately behind dorsal fin; caudal fin deeply forked, each lobe pointed. Maximum length 25 cm.

Life color: Dark gray to dark brownish gray, with a diffuse whitish oblique cross band on middle of side and on caudal peduncle. Caudal fin light brownish gray, distal half of each lobe blackish; other fins blackish.

Leiocassis siamensis Regan

Laotian name: Pa ki hia

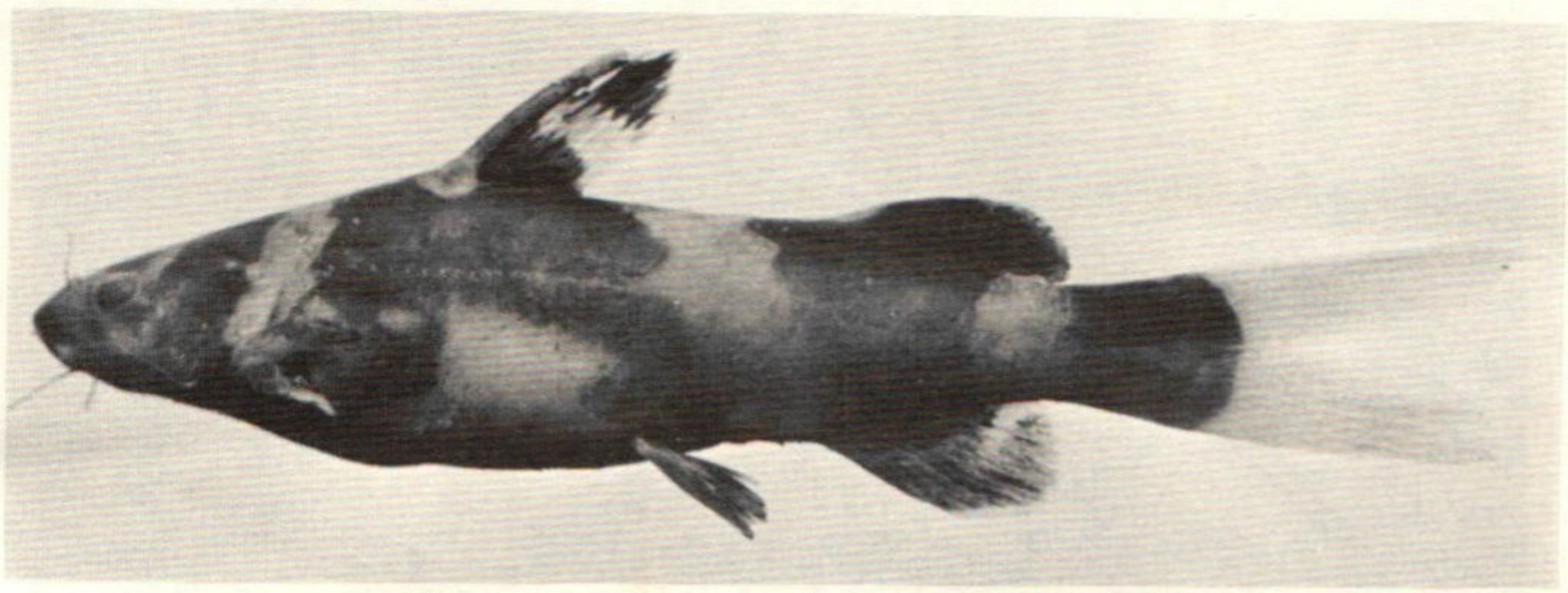


Fig. 52 *Leiocassis siamensis* Regan 95.0 mm SL

? *Leiocassis* sp. (103, Paki hia) - Serene, 1951 (Affluents of Mekong R.)

? *Leiocassis bicolor* - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Leiocassis siamensis - Taki, 1968 (Luang Prabang, Tha Ngon, Pakse: Station Nos. 3, 12, 15, 32)

Collecting locality - Tha Ngon, Tha Bo, Sithan Tay, Khinak: Station Nos. 12, 13, 14, 15, 23, 26, 40

Material - 22 (7, 33.5 - 86.8 mm, IBRP 4194, 4530, 5758)

Description - D. I/7; A. 16 - 17. Head slightly depressed; body somewhat compressed. Eyes covered by skin. Four pairs of barbels; maxillary barbels longest, reaching pectoral fins. Dorsal and anal fins with a strong spine, hind edge of dorsal spine denticulated; adipose fin longer than dorsal fin. Reaches 15 cm in length.

Life color: Head and body variegated with chocolate brown and yellow.

Heterobagrus bocourti Bleeker

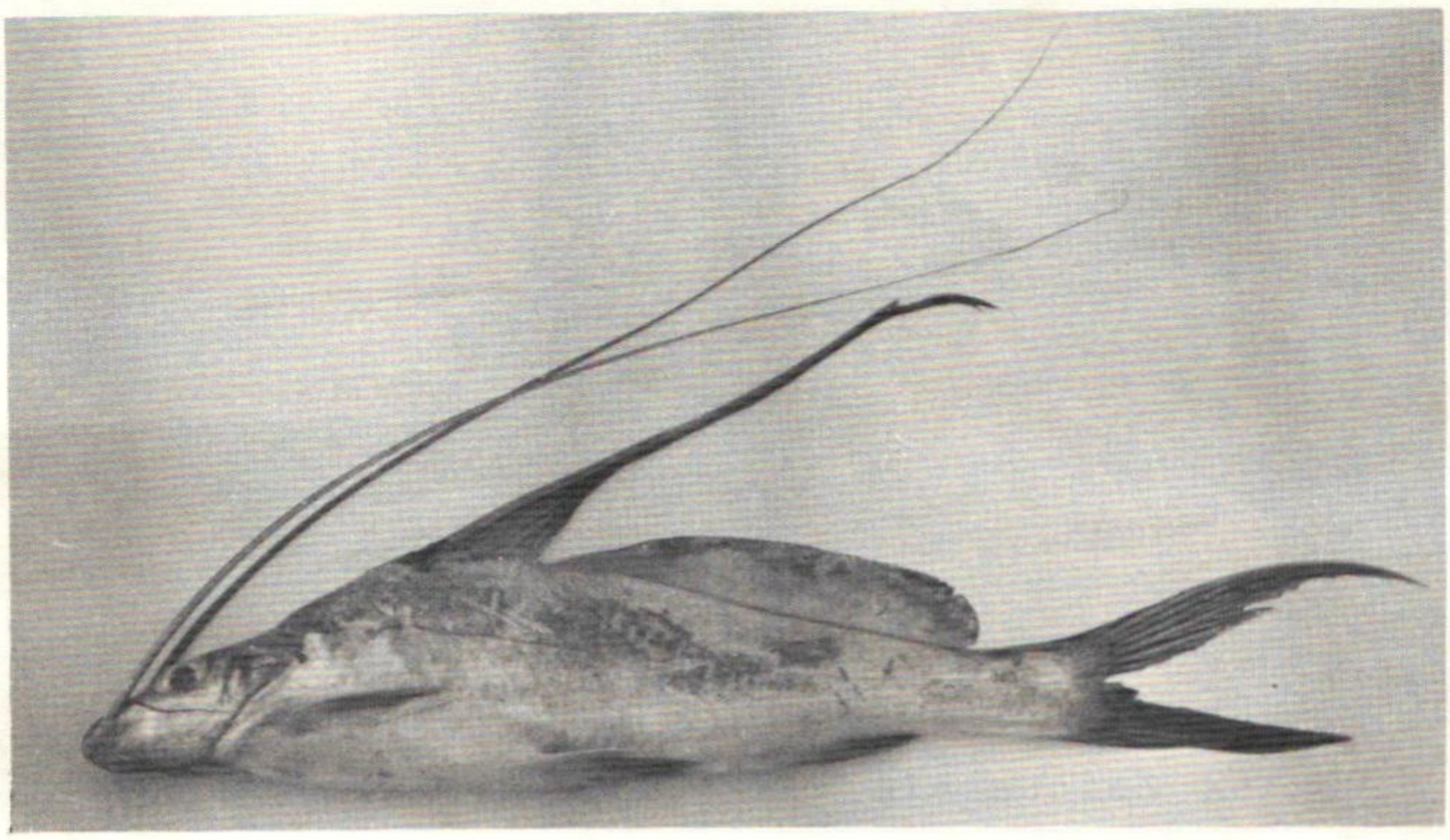


Fig. 53 *Heterobagrus bocourti* Bleeker 113.0 mm SL

Heterobagrus bocourti - Serene, 1951 (Mekong R. and its affluents); Taki, 1968 (Vientiane, Hatdokkeo, Pakse: Station Nos. 20, 22, 32)

Collecting locality - Tha Bo, Sithan Tay: Station Nos. 23, 26

Material - 5 (5, 55.5 - 11.2 mm, IBRP 4578, 4838)

Description - D. II/7 : A. 10. Head conical, longer than high and broad, its length 3.7 - 3.8 in standard length. Body slender, compressed, its depth 3.7 - 3.8 in standard length. Mouth terminal; lips fleshy. Barbels four pairs; nasal barbels extending to occiput when laid back, maxillary barbels to middle of caudal fin, mandibulary barbels beyond base of pectoral fins, mental barbels nearly to insertion of pectoral fins. Eyes not covered by skin. Dorsal fin very high, length of second spine about 2 in standard length; adipose fin long-based, originated right behind dorsal fin; pectoral spines pungent, serrated on their inner edge; caudal fin forked, each lobe pointed, upper lobe longer than the lower. Maximum length 24 cm.

Life color: Brownish gray, top of head and back of body darkest, ranging to light gray on lower surface, sides and belly usually with golden to bronze luster. Fins dark gray with greenish tint; according to Smith (1945) base of dorsal, pectoral and pelvic fins blood-red.

Mystus nemurus (Cuvier and Valenciennes)

Laotian name: Pa kot

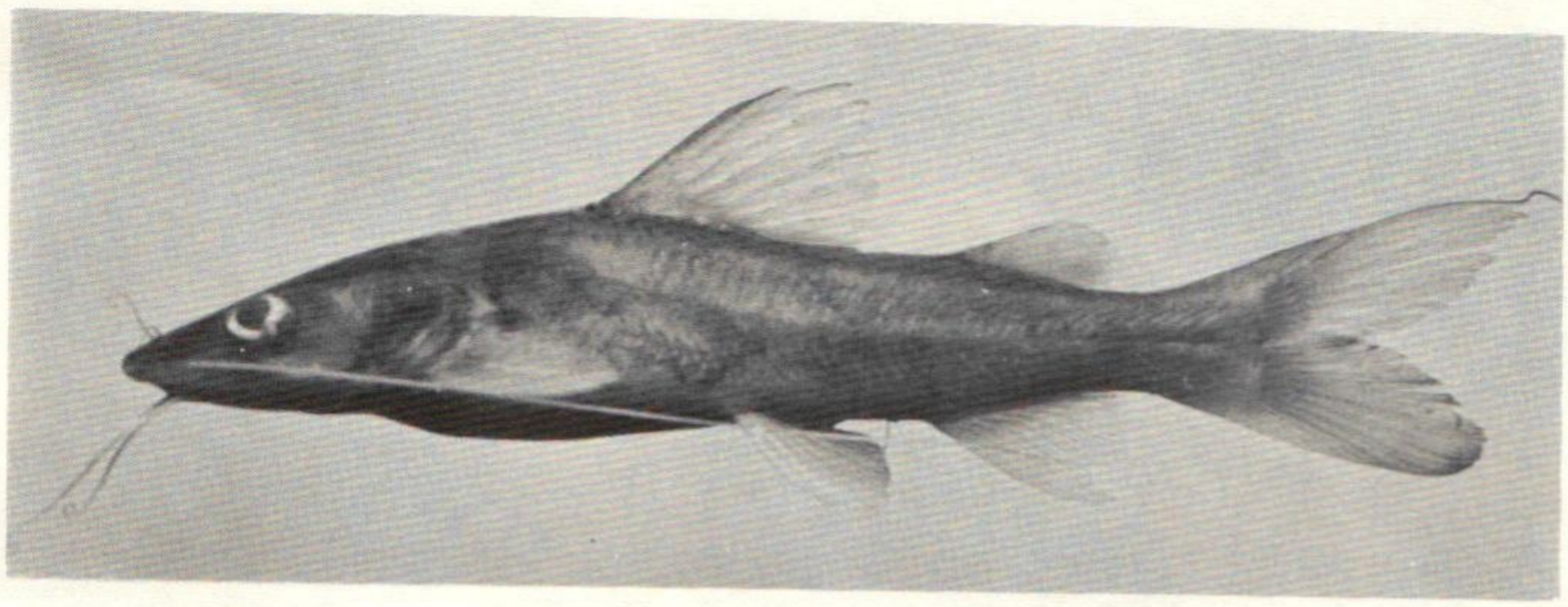


Fig. 54 *Mystus nemurus* (Cuvier and Valenciennes) 92.0 mm SL

Mystus nemurus - Fowler, 1934a (Chiengsen), 1937 (Kemarat); Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane, Pakse: Station Nos. 3, 12, 13, 14, 15, 20, 32)
Macrones nemurus - Serene, 1951 (Mekong R. and its affluents)

Collecting locality - Tha Ngon, Vientiane, Tha Bo, Sithan Tay, Pakse, Hatsalao: Station Nos. 12, 13, 14, 15, 21, 23, 26, 33, 34

Material - 673 (31, 48.6 - 149.0 mm, IBRP 4575, 4671, 5255)

Description - D. II/7 ; A. 10-13. Head broad, flattened. Dorsal profile from tip of snout to origin of dorsal fin straight, back high; posterior part of body moderately compressed. Mouth wide, subterminal. Barbels four pairs; nasal barbels extending to or beyond eyes, maxillary ones in anal fin, mandibulary ones beyond base of pectoral fins, mental ones 2/3 - 3/4 the distance between their base and insertion of pectoral fins. Pectoral spines serrated along their inner edge; adipose fin rather small, its base shorter than that of dorsal fin and about equal to that of anal fin. Attains 60 cm in length.

Life color: Ground color of body brown, darker above and lighter below, often with greenish sheen. Fins gray with violet tint; in large individuals distal margin of dorsal, adipose, pectoral and caudal fins blood-red, pelvic fins light orange.

Mystus cavasius (Hamilton-Buchanan)

Laotian name: Pa ka gnen

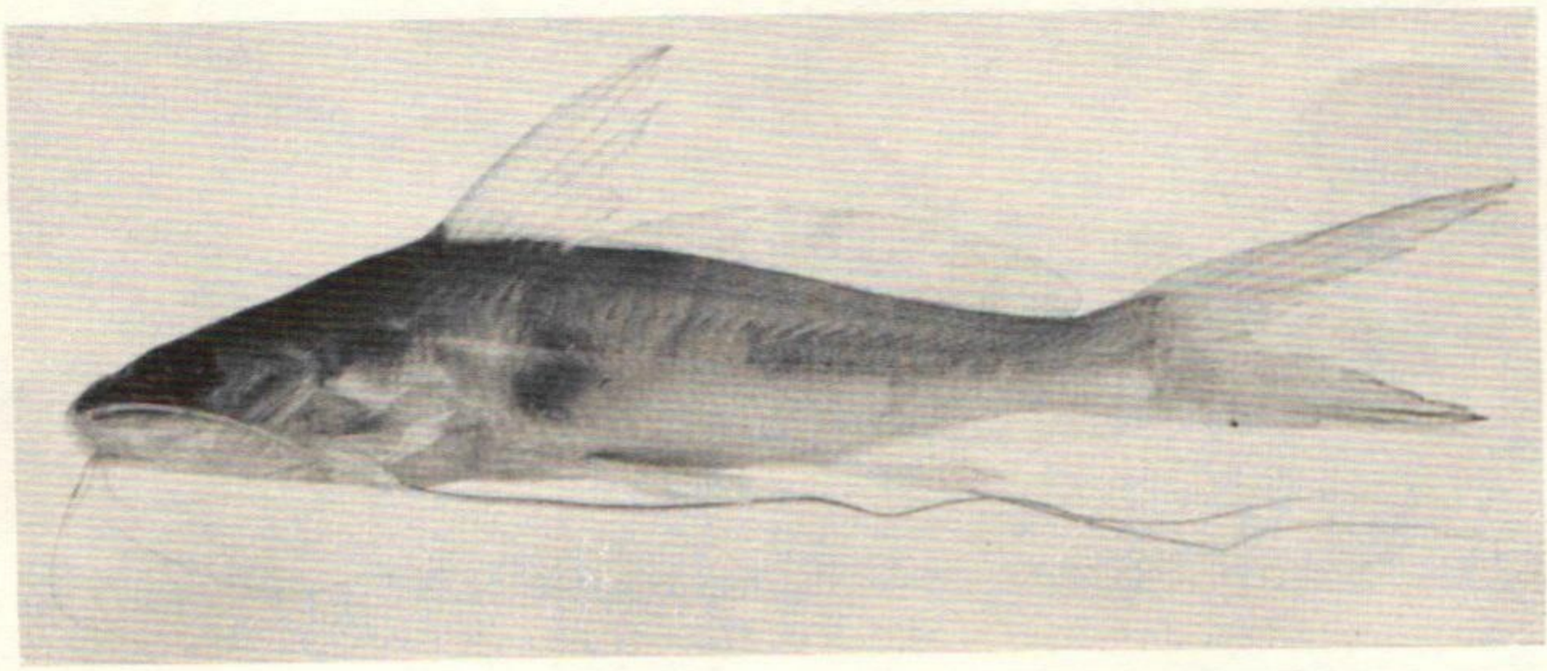


Fig. 55 *Mystus cavasius* (Hamilton-Buchanan) 68.7 mm SL

Mystus nigriceps - Fowler, 1934a (Chiengsen), 1937 (Kemarat); Taki, 1968 (in part; Luang Prabang, Tha Ngon, Hatdokkeo, Pakse: Station Nos. 3, 12, 13, 22, 32)

Collecting locality - Nam Ngum dam site, Tha Ngon, Hatdokkeo, Tha Bo, Sai Fong, Sithan Tay, Hatsalao: Station Nos. 10, 12, 13, 15, 22, 23, 25, 26, 34

Material - 794 (44, 67.5 - 131.5 mm, IBRP 4087, 4098, 5254)

Description - D.I/7; A.10-11. Head conical, snout depressed, head length 4.4 - 4.8 in standard length. Body slender, compressed, its depth 4.0 - 4.7 in standard length. Mouth wide, subterminal. Four pairs of barbels; nasal barbels extending far behind eye or nearly to insertion of pectoral fins, maxillary barbels on caudal fin or beyond posterior end of the fin, mandibulary barbels nearly or quite to base of pelvic fins, mental barbels beyond base of pectoral fins. Adipose fin high, very long, its base 2.1 - 2.3 in standard length. Caudal peduncle slender, its depth 2.3 - 2.7 in its length. Largest example from Thailand and Laos 20 cm in length.

Life color: Greenish or grayish brown, underside of body whitish. Dorsal, adipose and caudal fins brown, shaded with melanophores.

Mystus rhegma Fowler

Laotian name: Pa ka gnen

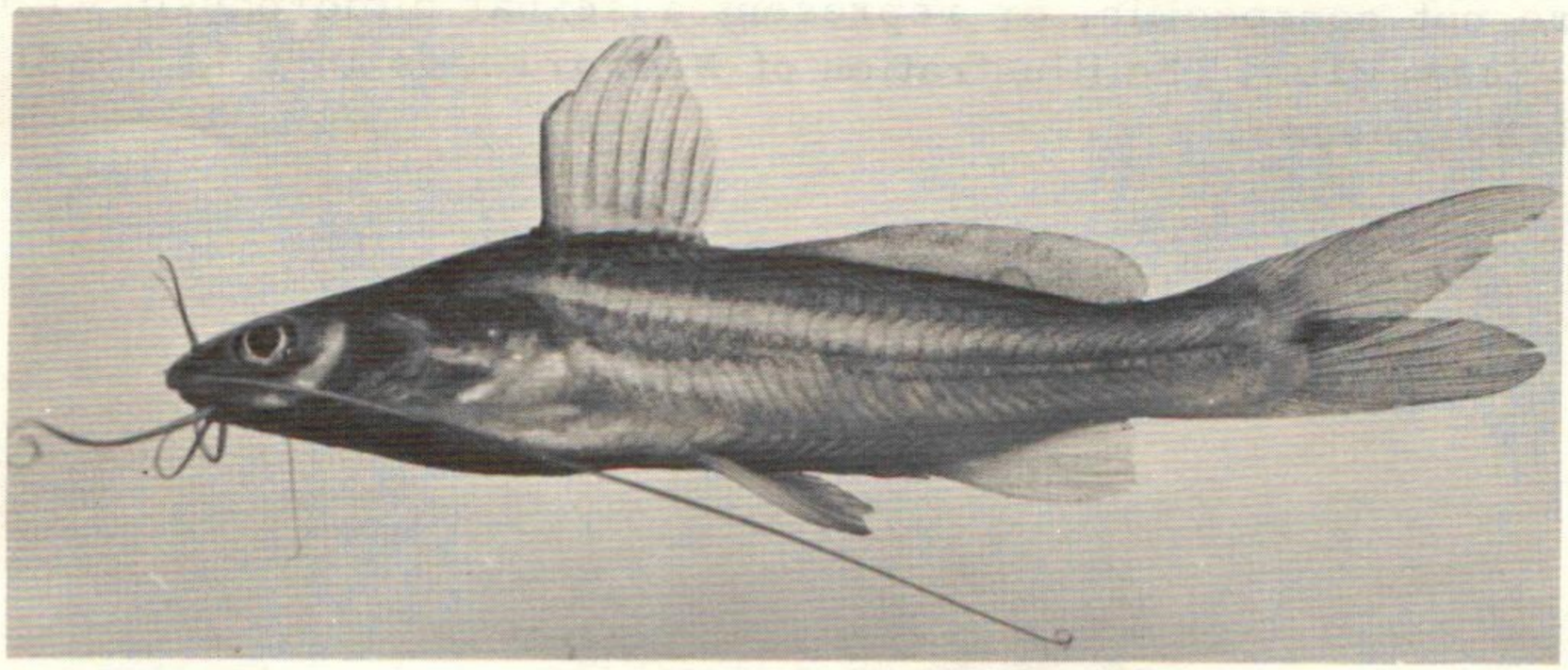


Fig. 56 *Mystus rhegma* Fowler 87.0 mm SL

Mystus nigriceps- Taki, 1968 (in part; Luang Prabang, Tha Ngon, Hatdokkeo, Pakse: Station Nos. 3, 12, 13, 22, 32)

Collecting locality - Nam Ngum Dam site, Tha Ngon, Tha Bo, Sithan Tay, Hatsalao: Station Nos. 10, 12, 13, 23, 26, 34

Material - 239 (36, 34.0 - 92.5 mm, IBRP 4338, 4350, 4577, 5194, 5256)

Description - D.I/7; A.11-14. Body shape similar to *M. cavasius*, with a somewhat more stocky appearance. Body depth 3.9 - 4.7, head length 3.8 - 4.1 both in standard length. Caudal peduncle less slender than in *M. cavasius*, its depth 1.5 - 1.8 in its length. Nasal barbels extending beyond eyes, maxillary ones nearly or quite to base of caudal fin, mandibulary ones nearly to insertion of pelvic fins, mental ones to or beyond distal tip of pectoral fins. Adipose fin low anteriorly and high posteriorly, its base 2.8 - 3.1 in standard length. Maximum length 18 cm.

Life color: Brownish gray with greenish luster, top of head and back of body dark. Side of body with two broad dark brown lateral stripes, upper one usually distinct. Dorsal fin dusky gray-green, tip blackish; adipose and caudal fins dusky greenish gray; other fins light gray or hyaline.

Remarks - *M. rhegma* had been known solely from a single specimen described by Fowler (1935a), and Smith (1945) considered it to be an individual variation of *M. cavasius*. The present collection contains numerous specimens referrable to *M. rhegma*,

which is distinguished from *M. cavasius* in the body proportion and anal fin ray count as well as in the feature of the adipose fin and the coloration as mentioned by Fowler (1935a). The rather decided morphological gap seems to indicate that the two forms are not conspecific, or represent a sexual dimorphysm within *M. casavius*. The illustration of *M.nigriceps* in Taki (1968) is of *M. rhegma*.

Mystus vittatus (Bloch)

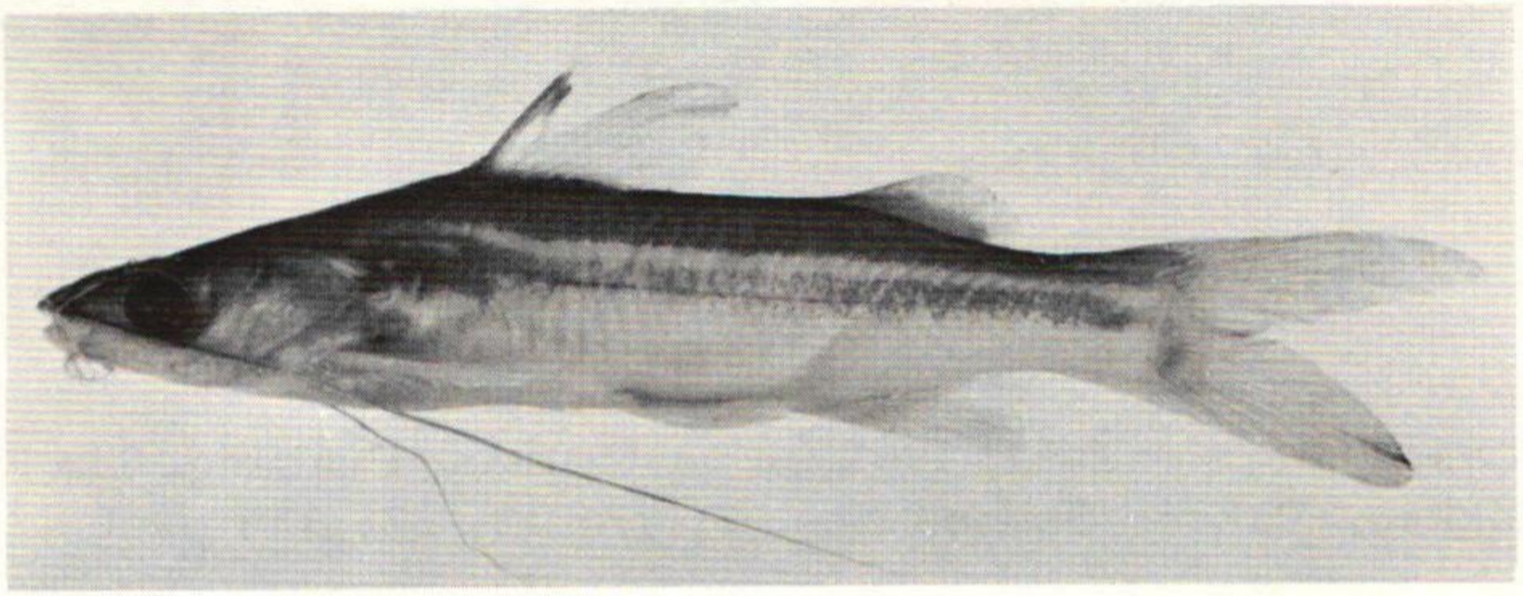


Fig. 57 *Mystus vittatus* (Bloch) 75.5 mm SL

Mystus vittatus- Taki, 1968 (Tha Ngon, Vientiane, Hatsalao: Station Nos. 12, 20, 34)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay: Station Nos. 10, 12, 13, 23, 26

Material - 163 (33, 64.0 - 106.0 mm, IBRP 4207, 5315)

Description - D. I/7 or rarely 6; A. 12 or rarely 13. Body depth 3.8 - 4.8, head length 3.4 - 3.7 both in standard length; depth of caudal peduncle 1.4 - 1.7 in its length. Nasal barbels extending far behind eyes, maxillary barbels to or beyond anal fin, mandibulary barbels to or a little beyond pectoral fins, mental barbels nearly to insertion of pectoral fins. Adipose fin rather short, its base slightly longer than that of anal fin and 5.4 - 6.3 in standard length. Attains 17 cm in length.

Life color: Top of head and back of body dark greenish or brownish gray; two broad lateral stripes of same color on side, upper stripe running along body axis and broader and more intense than the lower; interspaces and underside of body light brown; a small black spot immediately behind gill opening.

Remarks - This species resembles *M. rhegma*, from which it can be separated by its larger head, shorter adipose fin, and coloration with more distinct stripes and a small black spot behind the head.

Mystus wyckii (Bleeker)

Macrones wyckii - Serene, 1951 (Mekong R. and its affluents)
Mystus wyckii - Taki, 1968 (Luang Prabang, Vientiane, Pakse: Station Nos. 3, 20, 32)

Mystus micracanthus (Bleeker)

Mystus micracanthus - Fowler, 1937 (Kemarat)

Mystus planiceps (Cuvier and Valenciennes)

Mystus planiceps - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Family Siluridae (Silurid catfishes)

Wallagonia attu (Bloch)

Laotian name: Pa khao

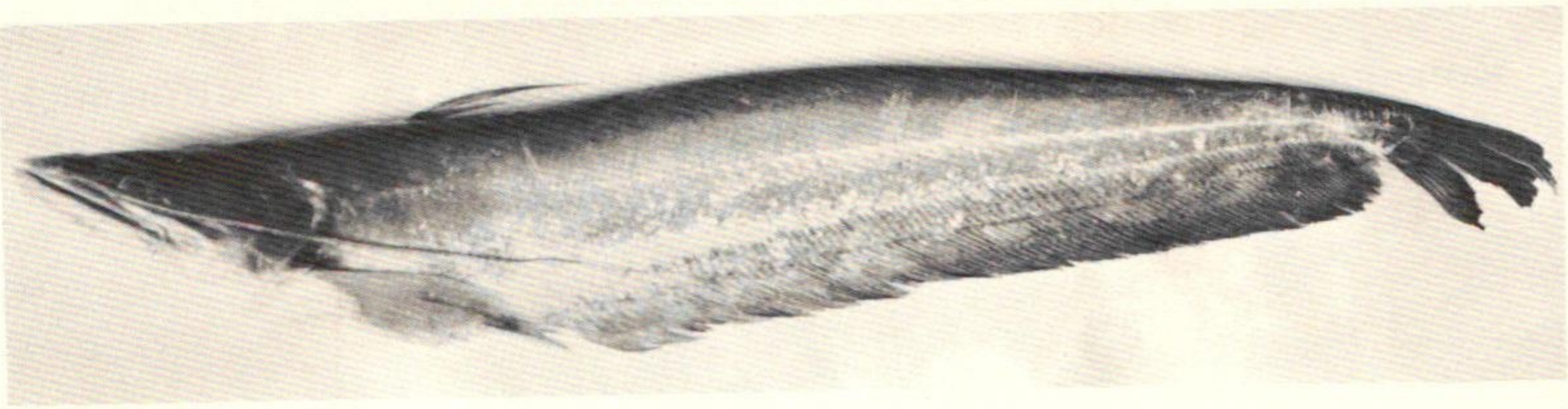


Fig. 58 *Wallagonia attu* (Bloch) 385.0 mm SL

Wallago attu - Fowler, 1934a (Chiengsen); Serene , 1951 (Mekong R. and its affluents); Taki, 1968 (Luang Prabang, Vientiane, Savannakhet market, Pakse: Station Nos. 3, 20, 32)

Collecting locality - Tha Ngon, Tha Bo, Sithan Tay: Station Nos. 12, 15, 23, 26

Material - 8 (1, 385.0 mm, IBRP 4708)

Description - D.1/4; A. 97. Head broad, snout depressed. Body elongate, strongly compressed. Mouth very deeply cleft, its corner reaching far behind eyes. Teeth in jaws set in wide bands; vomerine teeth in two small patches. Barbels two pairs; maxillary barbels extending to anterior portion of anal fin, mandibulary barbels to angle of mouth. Eyes small, with a free orbital margin. Dorsal fin small; anal fin very long. Attains nearly 200 cm in length.

Life color: Uniformly silvery gray, back darker, lower side whitish.

Wallagonia miostoma (Vaillant)

Laotian name: Pa khoun

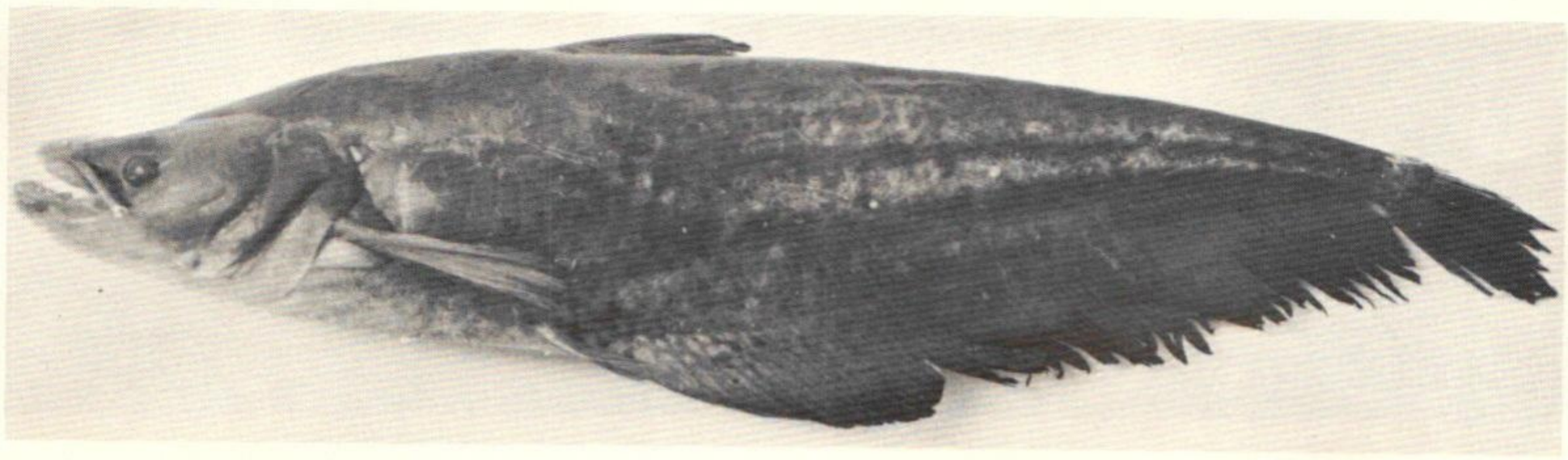


Fig. 59 *Wallagonia miostoma* (Vaillant) 220.0 mm SL
Barbels are damaged

Wallago miostoma - Serene, 1951 (Mekong R. and its affluents); Taki, 1968 (Luang Prabang, Vientiane, Pakse: Station Nos. 3, 20, 32)

Collecting locality - Tha Ngon: Station No. 12

Material - 1 (1, 220.0 mm, IBRP 5120)

Description - D.1/4; A. 3/69. Head moderately depressed; body robust; tail compressed. Mouth wide, its corner extending nearly to vertical from front margin of eye; lower jaw prominent. Jaw teeth villiform, set in wide bands; vomerine teeth in two small patches. Eyes small, with a free orbital margin. Two pairs of barbels; maxillary barbels extending to anterior 1/3 of anal fin or further, mandibulary barbels about as long as diameter of eye (after Weber and de Beaufort, 1913; all barbels damaged in the specimen examined). Dorsal fin small; anal fin very long; caudal fin small, free from anal fin. Maximum length 100 cm.

Life color: Dark brown, with obscure marmorations, underside of head and body light-colored.

Wallago dinema Bleeker

Laotian name: Pa khop

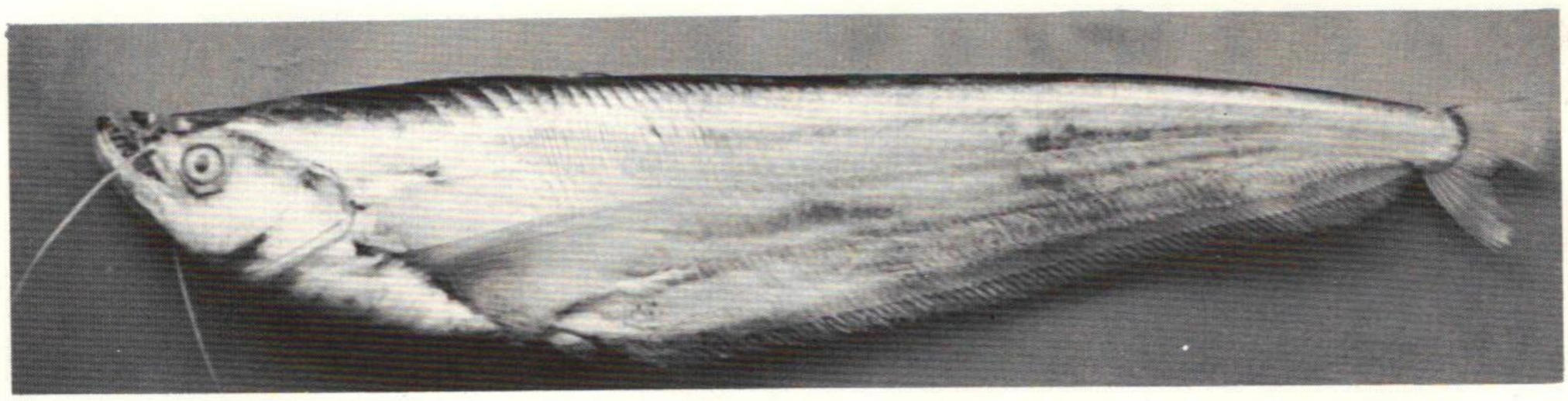


Fig. 60 *Wallago dinema* Bleeker 387.0 mm SL

Belodontichthys dinema - Serene, 1951 (Mekong R. and its affluents)

Wallago dinema - Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane, Hatdokkeo, Isl. Hin Soune: Station Nos. 3, 12, 20, 22, 37)

Collecting locality - Tha Bo, Pakse, Hatsalao: Station Nos. 23, 33, 34

Material - 62 (5, 63.4 - 214.0 mm, IBRP 4709, 4830)

Description - D.1/3; A. 89-91. Body elongate, strongly compressed. Upper part of head compressed, with a concave profile, lower surface broadly flattened, with a convex profile; cross section view of head thus presenting a triangular shape. Mouth directed upward, deeply cleft; lower jaw prominent. Teeth in jaws sharp, long. Two pairs of barbels; maxillary barbels extending on pectoral fins, mandibulary barbels short, thread-like. Eyes covered by skin. Dorsal fin poorly developed, rays weak; anal fin long, united to caudal fin at their base; pectoral fins large. Maximum length 70 cm.

Life color: Uniformly silvery white. Juveniles with a dark axial stripe on sides of body.

Ompok bimaculatus (Bloch)

Laotian name: Pa souam

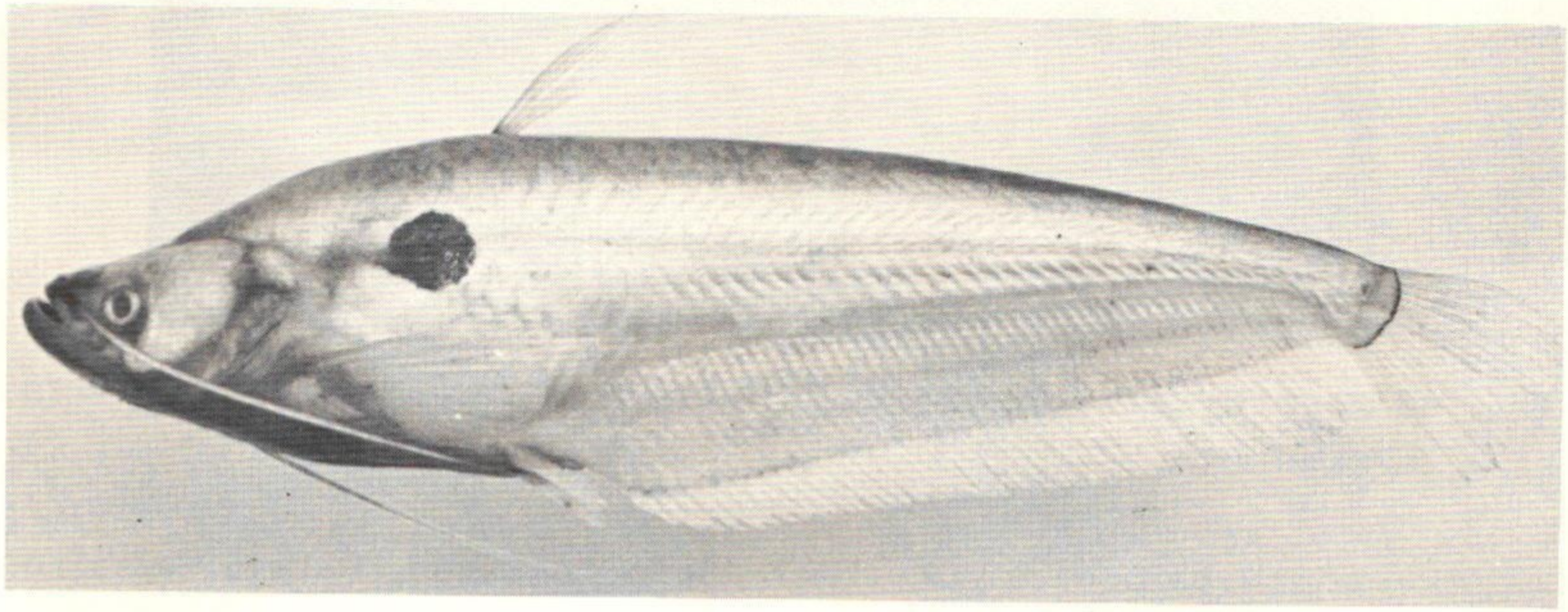


Fig. 61 *Ompok bimaculatus* (Bloch) 165.5 mm SL

Ompok bimaculatus - Fowler, 1937 (Kemarat); Taki, 1968 (Luang Prabang, Tha Ngon, Hatsalao: Station Nos. 3, 12, 34)

Collecting locality - Tha Ngon, Tha Bo, Sithan Tay, Hatsalao: Station Nos. 12, 13, 15, 23, 26, 34

Material - 23 (6, 69.5 - 147.2 mm, IBRP 4330, 4515, 4662, 4791, 5119

Description - D. 1/3; A. 54-59. Body elongate, compressed posteriorly. Head broad; snout depressed. Mouth wide; lower jaw prominent, blunt. Two pairs of barbels; maxillary barbels reaching pelvic fins or anal fin; mandibulary barbels minute, about as long as diameter of eye. Eyes small, covered by skin. Dorsal and pelvic fins small; anal fin long; pectoral fins well developed. Reaches nearly 50 cm in length.

Life color: Light brown to pale with iridescent luster, sparsely or more or less densely covered with dark melanophores. A round spot on side above pectoral fin.

Kryptopterus bicirrhis (Cuvier and Valenciennes)

Laotian name: Pa pi kai

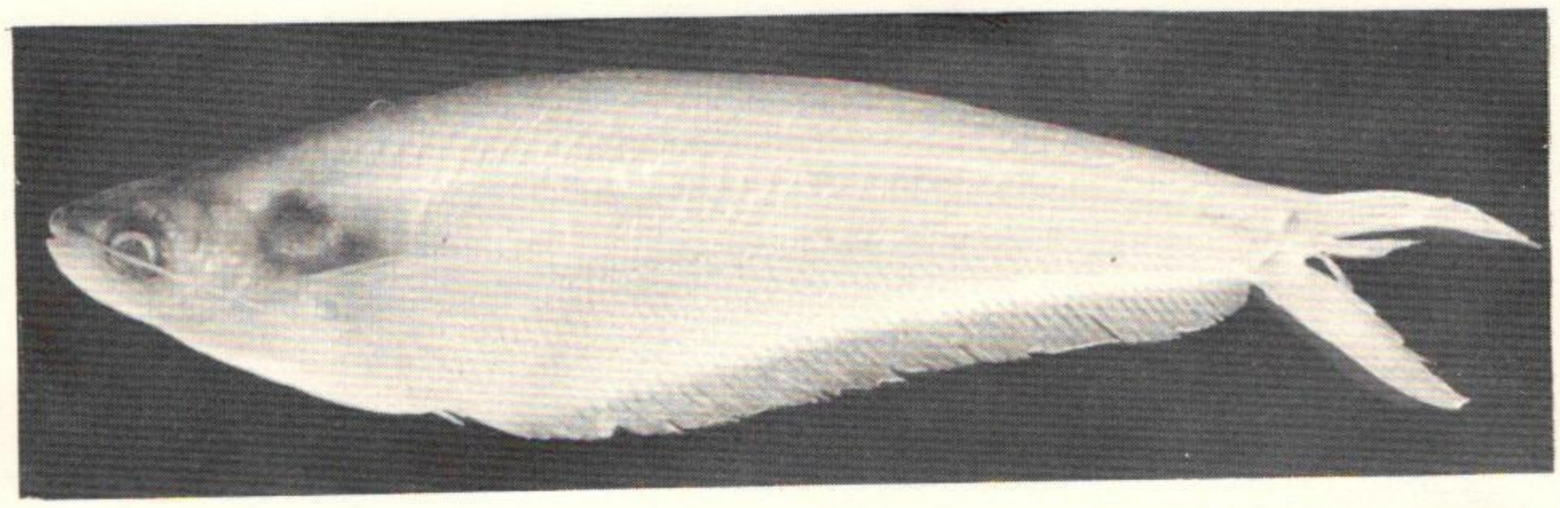


Fig. 62 *Kryptopterus bicirrhis* (Cuvier and Valenciennes) 86.5 mm SL

Kryptopterus bicirrhis - Taki, 1968 (Tha Ngon, Pakse, Hatsalao: Station Nos. 12, 14, 32, 34)

Collecting locality - Tha Ngon, Tha Bo, Sai Fong, Sithan Tay, Hatsalao: Station Nos. 12, 13, 14, 15, 23, 25, 26, 34

Material - 561 (19, 90.2 - 130.0 mm, IBRP 4083, 4191)

Description - Body elongate, strongly compressed; back not much elevated. Head short; snout somewhat depressed. Mouth small, gape short. One or two pairs of barbels; maxillary barbels extending to pelvic of anal fin, mandibulary barbels in many examples vestigal or absent. Eyes covered by skin, situated almost entirely in lower half of head. Branchiostegal rays 8 - 9. Dorsal fin rudimentary, rays weak, 1 - 2; pectoral fins longer than head, extending far behind origin of anal fin, with a spine much shorter than head; pelvic fin small, rays 6 - 7; anal fin long, rays 60 - 67, modally 63; caudal fin more or less deeply forked. Maximum size about 15 cm in length.

Life color: White to pinkish white, semi-transparent. Membranes of pectoral, anal and caudal (usually upper lobe) fins pigmented with melanophores.

Kryptopterus cryptopterus (Bleeker)

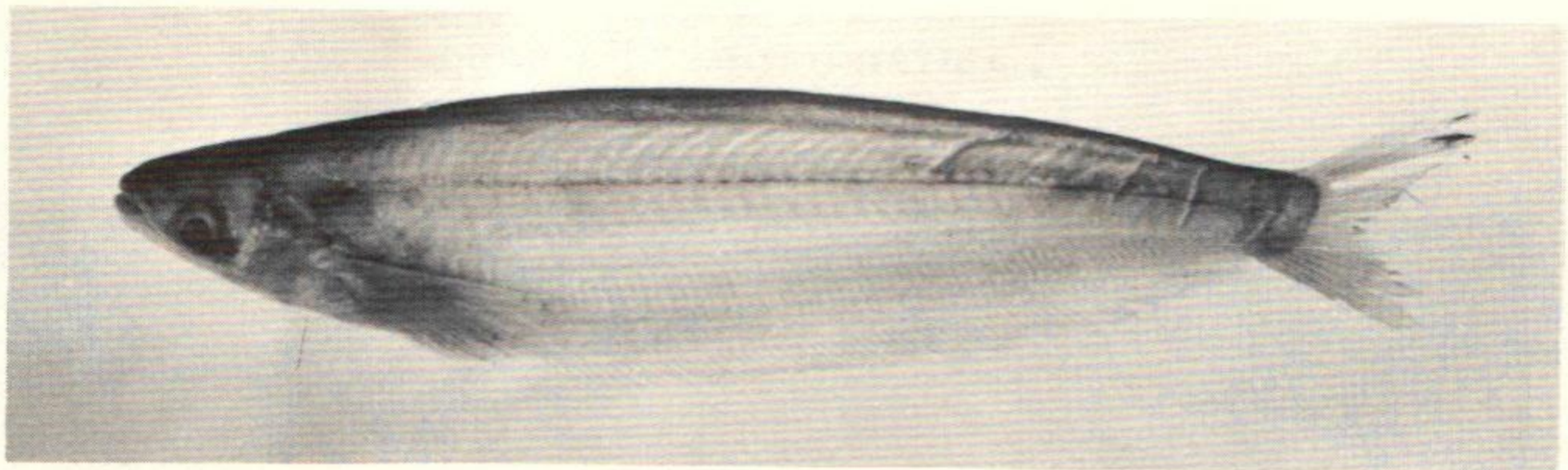


Fig. 63 *Kryptopterus cryptopterus* (Bleeker) 134.0 mm SL

Kryptopterus cryptopterus - Taki, 1968 (Tha Ngon, Pakse: Station Nos. 15, 32)

Collecting locality - Tha Ngon, Tha Bo, Sai Fong, Sithan Tay: Station Nos. 12, 13, 14, 15, 23, 25, 26

Material - 276 (28, 27.5 - 132.5 mm, IBRP 4082, 4192, 4705)

Description - Elongate, strongly compressed. Dorsal profile a flat or slightly arched, without nuchal concavity. Head moderately depressed. Barbels two pairs; maxillary barbels extending to insertion of pectoral fins, mandibulary barbels minute. Eyes covered by skin, positioned in lower half of head. Branchiostegal rays 10 - 11. Dorsal fin rudimentary, rays 1 - 2; pectoral fins much longer than head and reaching beyond origin of anal fin, with a weakly serrated spine longer than head; pelvic fins poorly developed, rays 6 - 7; anal fin long, connected with caudal fin at their base, rays 64 - 71. Maximum length 20 cm.

Life color: White with iridescent sheen over back and sides; youngs translucent. Pectoral fins and hind margin of caudal fin blackish.

Kryptopterus apogon (Bleeker)

Laotian name: Pa nang

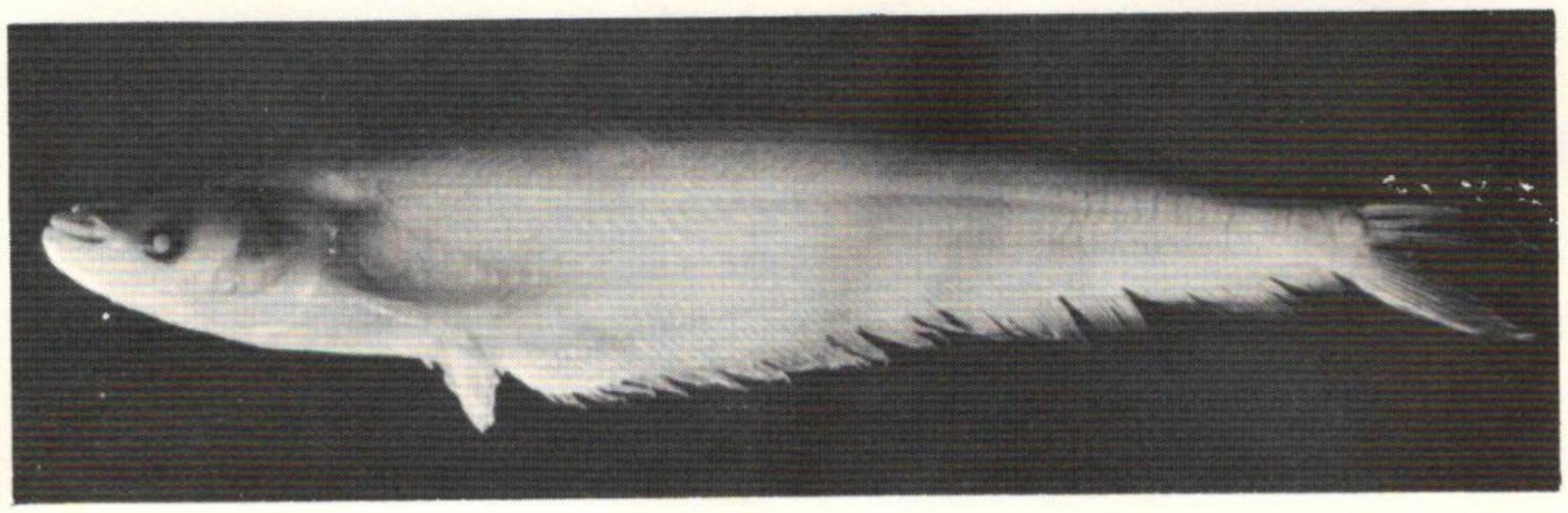


Fig. 64 *Kryptopterus apogon* (Bleeker) 140.5 mm SL

Cryptopterus apogon - Serene, 1951 (Mekong R. and its affluents)
Kryptopterus apogon - Taki, 1968 (Luang Prabang, Hatdokkeo, Hatsalao: Station Nos. 3, 4, 22, 34)

Collecting locality - Tha Ngon, Tha Bo, Hatsalao: Station Nos. 13, 23, 34

Material - 9 (5, 107.8 - 232.0 mm, IBRP 4008, 4332)

Description - Body greatly elongate, compressed, its depth 5.3 - 6.2 in standard length. Head broad, snout strongly flattened, head length 5.0 - 5.3 in standard length. Dorsal profile concave at nape, back elevated. Mouth wide, gape long; lower jaw prominent. Eyes subcutaneous, their lower half below level of cleft of mouth. Vomerine teeth in a long, angular patch. Maxillary barbels reaching in eyes, mandibulary barbels minute. Dorsal fin absent; pectoral fins shorter than head; pelvic fins very small, rays 9 - 10; anal fin long, its base 3.3 - 3.7 times head length, continuous with caudal fin at their base. Maximum length 77 cm.

Life color: Pink-white, back more or less dark-colored. Distal tip and posterior margin of caudal fin blackish.

Kryptopterus bleekeri Günther

Laotian name: Pa souam

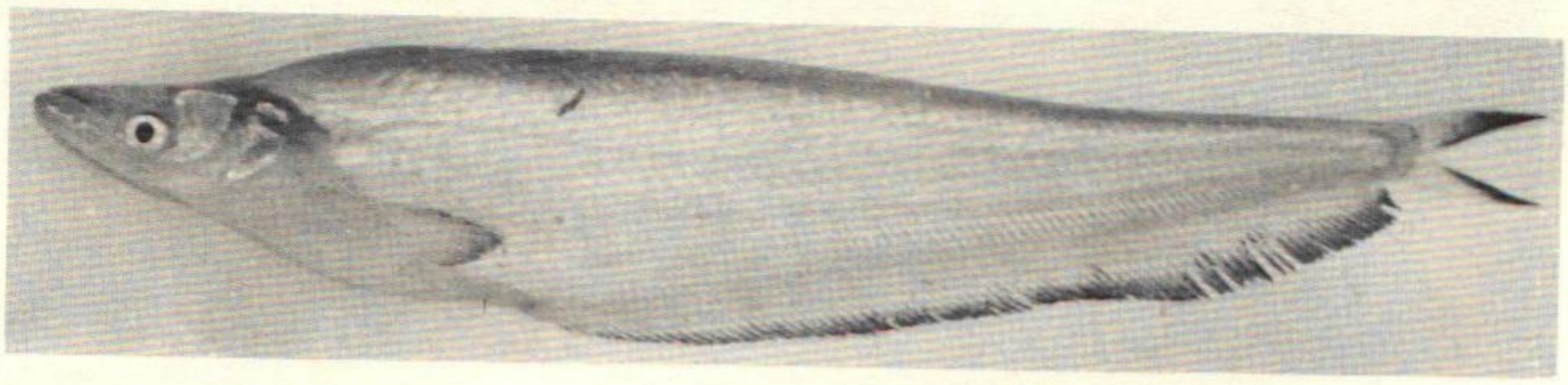


Fig. 65 *Kryptopterus bleekeri* Günther 156.5 mm SL

Kryptopterus bleekeri - Taki,1968 (Luang Prabang, Vientiane, Isl. Hin Soune: Station Nos. 3, 20, 37)

Collecting locality - Tha Ngon, Tha Bo, Sithan Tay, Hatsalao: Station Nos. 12, 13, 15, 23, 26, 34

Material - 87 (17, 87.5 - 254.5 mm, IBRP 4495, 4834, 5454)

Description - Elongate, compressed, body depth 5.0 - 5.6 in standard length. Head broad, depressed, its length 4.5 - 4.7 in standard length. Back of body more or less greatly elevated behind nape. Mouth large; lower jaw prominent. Maxillary barbels extending to eyes, mandibulary ones minute. Eyes covered by skin, their lower half below level of mouth angle. Dorsal fin absent; pectoral fins much shorter than head, with a denticulated spine; pelvic fins small; anal fin long, its base 2.8 - 3.0 times head length. Attains 60 cm in length.

Life color: White to light brown, back and side duskily shaded with melanophores. Distal margin of anal and caudal fins black.

Kryptopterus sp.

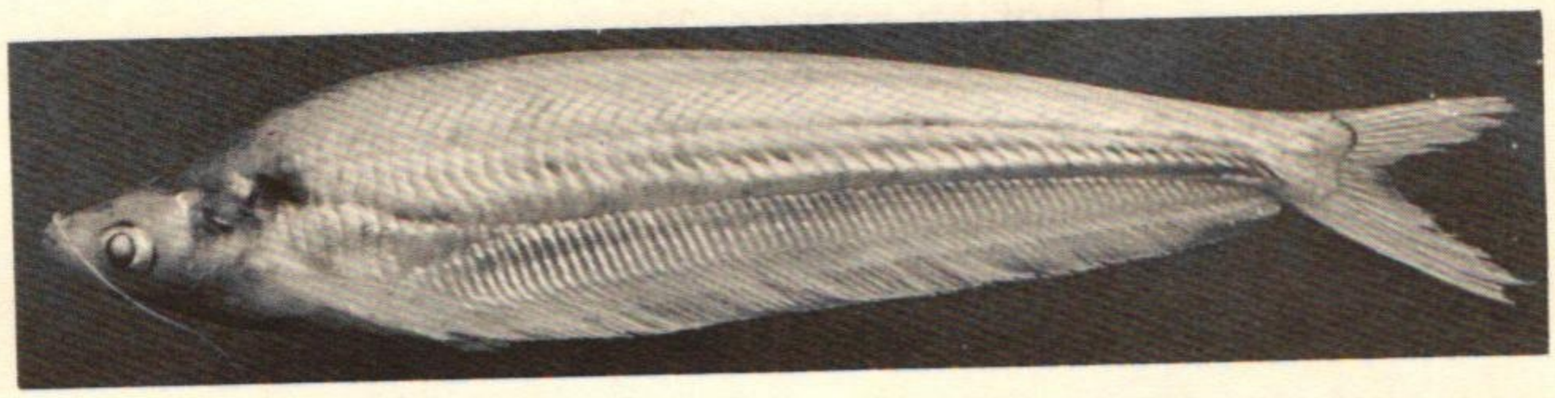


Fig. 66 *Kryptopterus* sp. 124.0 mm SL

Kryptopterus schilbeides - Taki, 1968 (Tha Ngon, Hatsalao: Station Nos. 12, 34)

Collecting locality - Tha Bo, Sithan Tay, Pakse, Hatsalao: Station Nos. 23, 26, 31, 33, 34

Material - 76 (7, 80.5 - 191.0 mm, IBRP 4833, 5249)

Description - Body depth 4.3 - 4.9, head length 5.6 - 5.8 both in standard length. Mouth wide; lower jaw slightly prominent. Maxillary barbels extending to middle of pectoral fins or nearly to insertion of pelvic fins, mandibulary barbels to insertion of pectoral fin. Vomerine teeth in a straight, narrow patch. Dorsal fin absent; pectoral fins as long as head, rays I/16, spine short, weakly serrated behind; pelvic fins small; anal fin long, its base 3.5 - 4.0 times head length, rays 67 - 71.

Life color: White to pink-white, semi-transparent. Fins hyaline.

Remarks - The specimens examined show intermediate characters between *K. hexapterus* as described by Weber and de Beaufort (1913) and *K. moorei* as defined by Smith (1945). This species is erroneously identified as *K. schilbeides* in Taki (1968).

Kryptopterus schilbeides (Bleeker)

Cryptopterus schilbeides - Serene, 1951 (Mekong R. and its affluents)

Hemisilurus heterorhynchus (Bleeker)

Laotian name: Pa dan deng

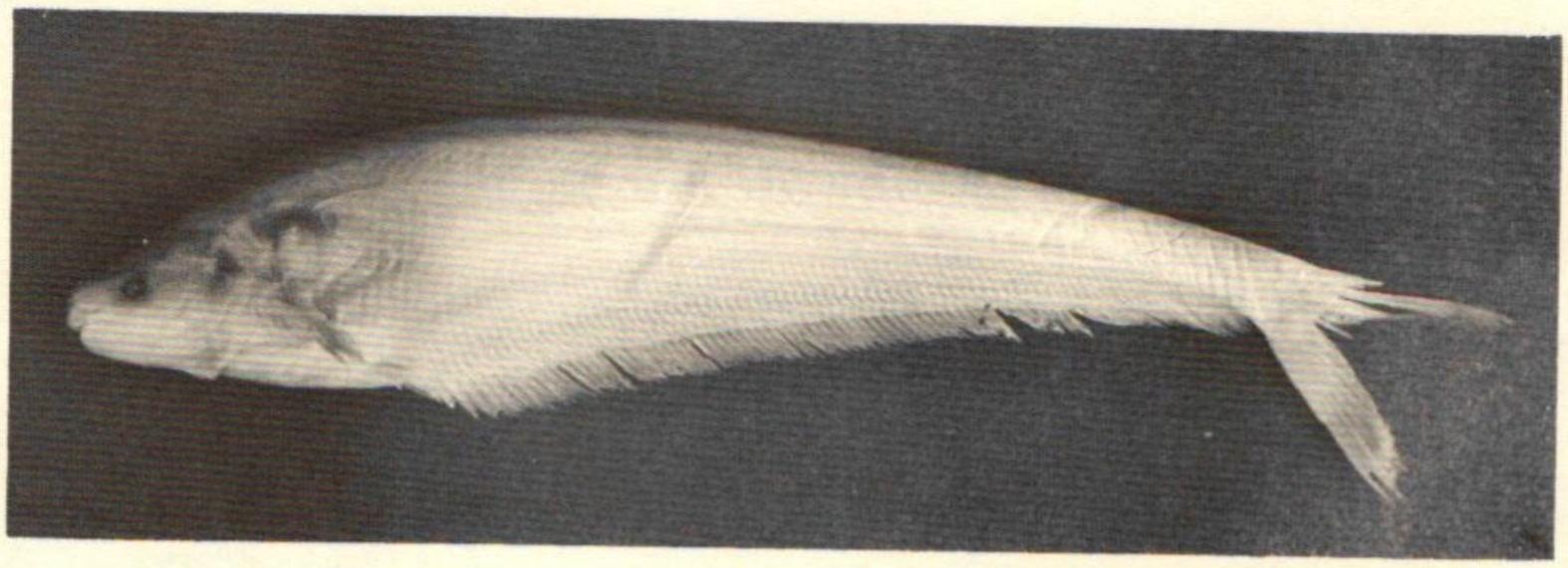


Fig. 67 *Hemisilurus heterorhynchus* (Bleeker) 156.5 mm SL

Collecting locality - Hatsalao: Station No. 34

Material - 1 (1, 156.5 mm, IBRP 4009)

Description - Body elongate, strongly compressed posteriorly, its depth 4.9 in standard length. Head short, length 6.0 in standard length; snout prominent, tip rounded, its length 2.9 in head length. Anterior nostrils situated on front of snout, posterior ones far behind eyes. Barbels two pairs; maxillary barbels extending to hind border of eyes, mandibulary ones minute. Eyes very small, covered by skin. Dorsal fin missing; pectoral fins a little shorter than head, rays I/19; pelvic fins small, rays 9; anal fin long, its base 3.9 times head length, rays 85; caudal fin deeply forked. Maximum length 38 cm.

Life color: Pink-white, tip of snout reddish. Caudal fin somewhat duskily shaded with melanophores, other fins hyaline.

Family Pangasiidae (Pangasiid catfishes)

Helicophagus waandersii Bleeker

Laotian name: Pa nou

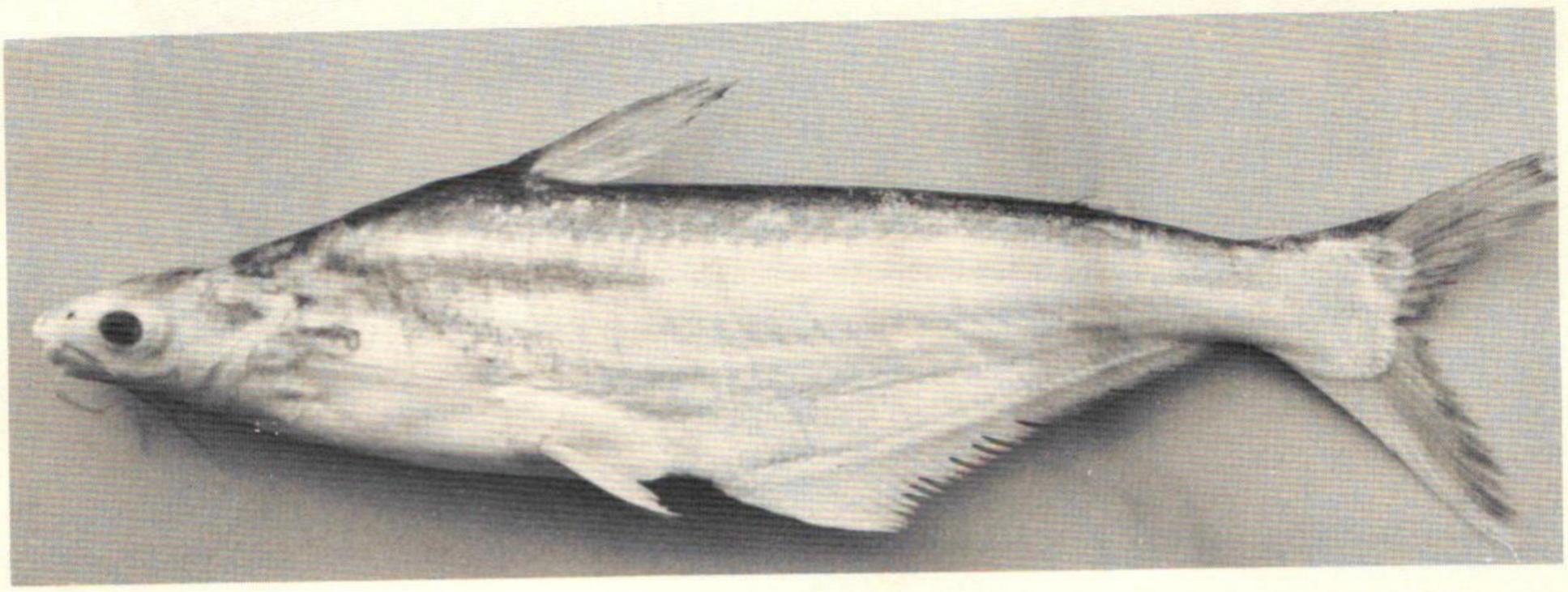


Fig. 68 *Helicophagus waandersii* Bleeker 298.0 mm SL

Helicophagus waandersii - Serene, 1951 (Mekong R. and its affluents); Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane, Pakse, Isl. Hin Soune: Station Nos. 2, 12, 20, 32, 37)

Collecting locality - Tha Ngon, Tha Bo, Hatsalao; Station Nos. 13, 14, 15, 23, 34

Material - 22 (22, 52.0 - 179.0 mm, IBRP 4196, 4296, 4416, 4523, 4666, 5250, 5608)

Description - D. II/7; A. 37 - 40. Body slender, compressed, its depth 4.0 - 4.8 in standard length. Head conical, short, its length 4.4 - 4.8 in standard length; snout prominent. Mouth small, subterminal. Teeth in either jaw set in two patches. Vomerine teeth in two small distant patches; palatine teeth absent. Nostrils wide, posterior ones situated about midway between anterior nostrils and eyes. Two pairs of barbels; maxillary barbels extending on pectoral fins, mandibulary barbels to insertion

of the fins. Dorsal spine serrated behind, as long as pectoral spines and 1.5 - 1.8 in head length; pelvic fins small; adipose fin low, very short; caudal fin deeply forked. Reaches a little more than 30 cm in length.

Life color: Silvery gray, underside whitish. Fins whitish or slightly yellowish; tip of dorsal fin black.

Laides hexanema (Bleeker)

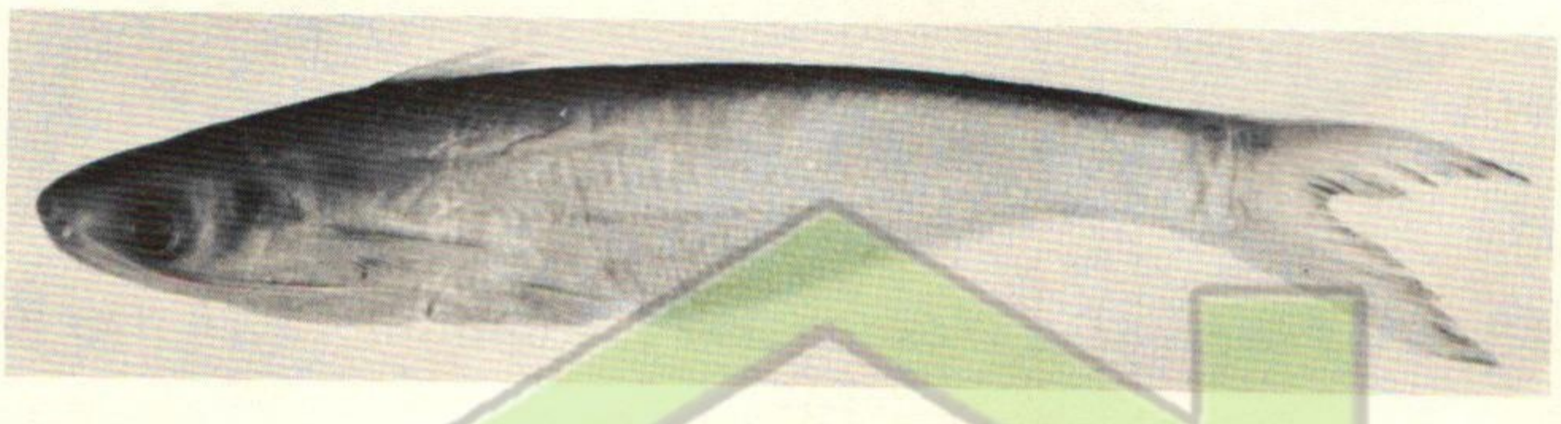


Fig. 69 *Laides hexanema* (Bleeker) 123.5 mm SL

Collecting locality - Pak Suong, Luang Prabang, Tha Ngon, Tha Bo, Sai Fong, Sithan Tay, Hatsalao, Khong Falls: Station Nos. 1, 4, 12, 13, 14, 15, 23, 25, 26, 34, 41

Material - 161 (49, 45.0 - 144.5 mm, IBRP 4045, 4198)

Description - D. I/7; A. 40-47 (including anteriormost rudimentary rays). Elongate, compressed, body depth 3.6 - 5.0 in standard length. Head small, its length 4.6 - 5.2 in standard length. Mouth arched, subterminal; snout prominent. Anterior nostrils situated at anterior tip of snout and looking forward, posterior nostrils wide transverse slits, close together on upperside of snout and looking upward. Barbels three pairs, ribbon-shaped; maxillary barbels extending on pelvic fins, other two pairs on mandible (mandibulary and mental) close together, extending to or beyond lowerside corner of posterior margin of gill membranes. Eyes large, with a circular adipose eyelid. Dorsal and anal spines denticulated behind, the latter much longer than the former and a little shorter than head length; pelvic fins small; anal fin low, long; caudal fin deeply forked. Maximum length 16.5 cm.

Life color: Uniformly silvery with faint irridescent luster, back darker. Distal margin of dorsal and caudal fins blackish.

Pteropangasius cultratus (Smith)

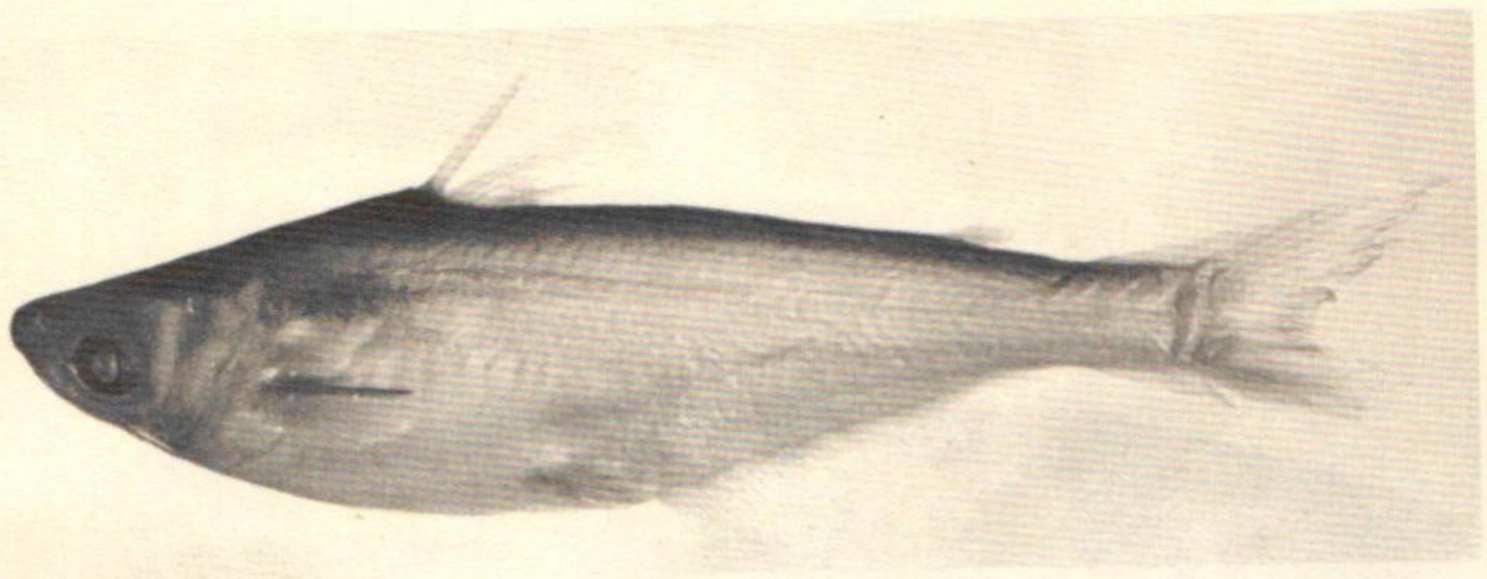


Fig. 70 *Pteropangasius cultratus* (Smith) 75.0 mm SL

Pteropangasius cultratus - Serene, 1951 (Mekong R. and its affluents)

Collecting locality - Tha Ngon, Isl. Don Tiane, Tha Bo, Hatsalao: Station Nos. 13, 14, 21, 23, 34

Material - 42 (14, 54.0 - 112.2 mm, IBRP 4197)

Description - D. I/7; A. 41 - 44 (3/38 - 4/40). Oblong to elongate, compressed, body depth 3.4 - 4.2 in standard length. Head small, its length 4.4 - 5.1 in standard length; snout obtuse. Eyes large. Maxillary and mandibulary barbels; the former extending to or beyond hind border of eyes, the latter much shorter. Teeth in jaws, on vomer and on palatines. Abdomen with a well-developed median keel extending from throat to origin or anal fin. Dorsal fin advanced in position, with a strongly serrated spine; pectoral spines as long as or slightly longer than dorsal spine, strong, denticulated along their inner edge; pelvic fins small; anal fin low, long; adipose fin very small. Largest record 26 cm in length.

Life color: Ground color of body silvery gray, back darker; two parallel dark longitudinal stripes on anterior half of body.

Pangasius siamensis Steindachner

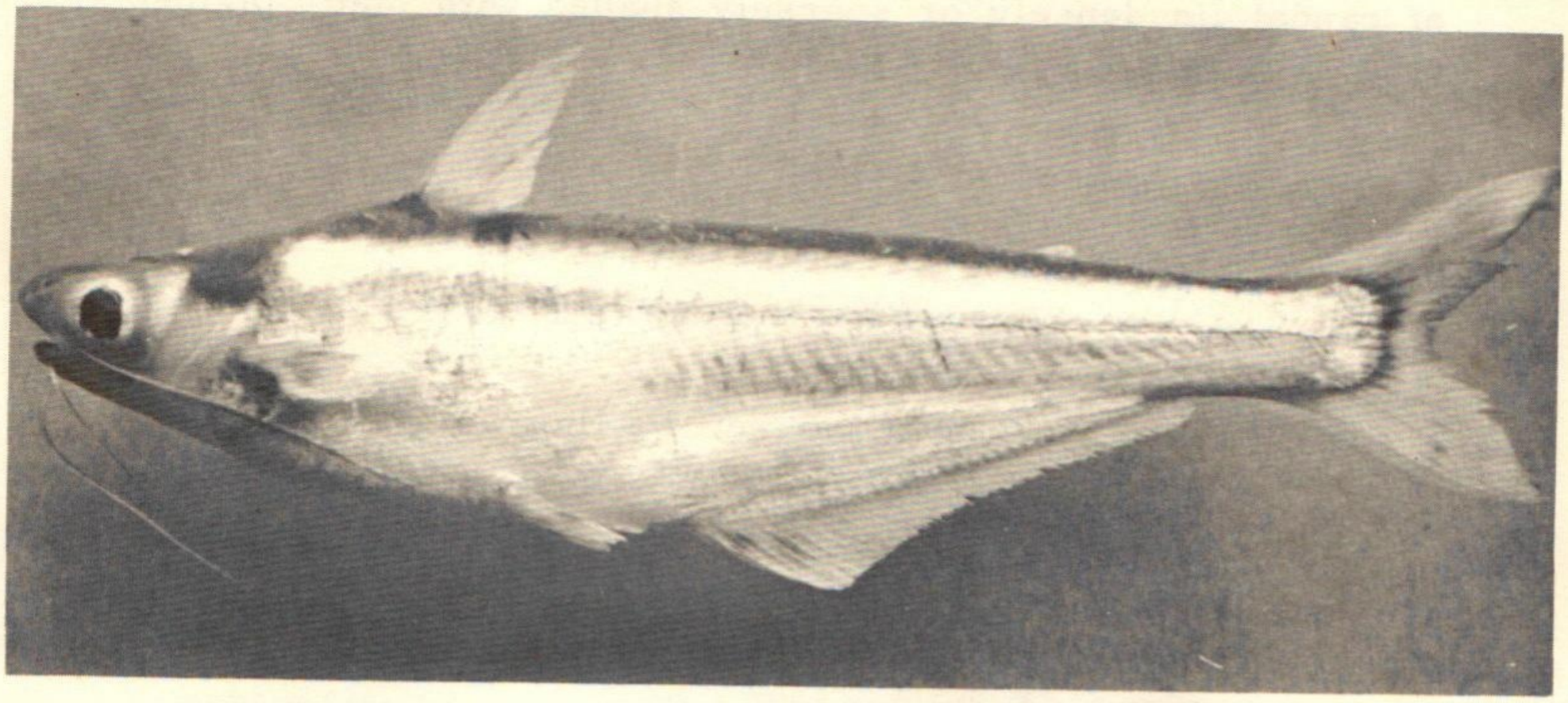


Fig. 71 *Pangasius siamensis* Steindachner 175.0 mm SL

Pangasius siamensis - Taki, 1968 (Luang Prabang, Vientiane, Kouai Deng, Hatsalao: Station Nos. 3, 4, 20, 28, 34)

Collecting locality - Hatdokkeo, Tha Bo, Sai Fong, Sithan Tay, Hatsalao, Pathoun Phon: Station Nos. 22, 23, 25, 26, 34, 39

Material - 7 (7, 56.5 - 180.0 mm, IBRP 4085, 4099, 4243, 4571, 5456)

Description - D. I/7; A. 33-38 (3/30 - 4/34). Elongate, moderately compressed, body depth 3.6 - 4.6 in standard length. Head short, its length 4.8 - 5.1 in standard length. Snout short; upper jaw slightly prominent. Teeth on palate in two vomerine and two palatine patches; these patches set close but not united together. Barbels maxillary and mandibulary; maxillary ones extending to insertion of pelvic fins, mandibulary ones to distal half of pectoral fins. Eyes small. Dorsal spine pungent, serrated behind, as long as or slightly shorter than pectoral spines which recurved and serated; adipose fin very small. Maximum length about 30 cm.

Life color: Top of head and back of body dark gray with bluish sheen, other part of head and body silvery, with a dark stripe extending along lateral line from gill opening to base of caudal fin and a less intense dark stripe running from gill opening to a

point above pectoral fin, the two stripes united together at their anterior origin. Membranes of pectoral fins and distal margin of caudal fin densely or sparsely shaded with black pigments; other fins pale.

Pangasius nasutus (Bleeker)

Laotian name: Pa ling

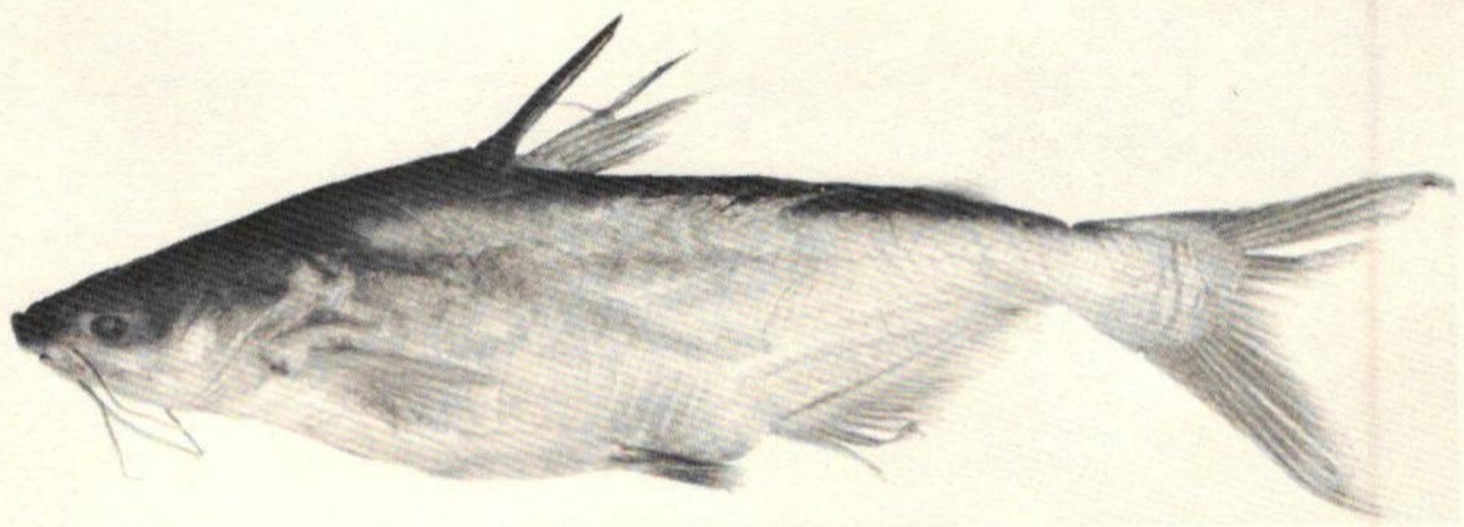


Fig. 72 *Pangasius nasutus* (Bleeker) 125.0 mm SL

Pangasius nasutus - Serene 1951 (Mekong R. and its affluents); Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane: Station Nos. 3, 12, 20)

Collecting locality - Tha Bo, Hatsalao: Station Nos. 23, 34

Material - 11 (11, 95.5 - 196.0 mm, IBRP 4011, 4521)

Description - D. II/7; A. 26 - 30 (4/22 - 3/27). Elongate, compressed posteriorly, body depth 3.7 - 4.4 in standard length. Head rather broad, not much depressed, its length 3.8 - 4.2 in standard length; upper jaw prominent. Mouth inferior. Vomerine teeth united into a large quadrate patch; a small patch of palatine teeth on each side of the vomerine patch. A pair of maxillary barbels extending to insertion of pectoral fins, and a pair of mandibulary barbels a little shorter than the maxillary ones. Eyes comparatively small, situated partly or entirely in lower half of head and entirely above mouth angle. Dorsal and pectoral spines strong, broad, denticulated; adipose fin high, short. Attains 90 cm in length.

Life color: Silver, darker above, lighter below. Dorsal fin blackish; other fins yellow or white.

Pangasius larnaudii Bocourt

Laotian name: Pa hou mat

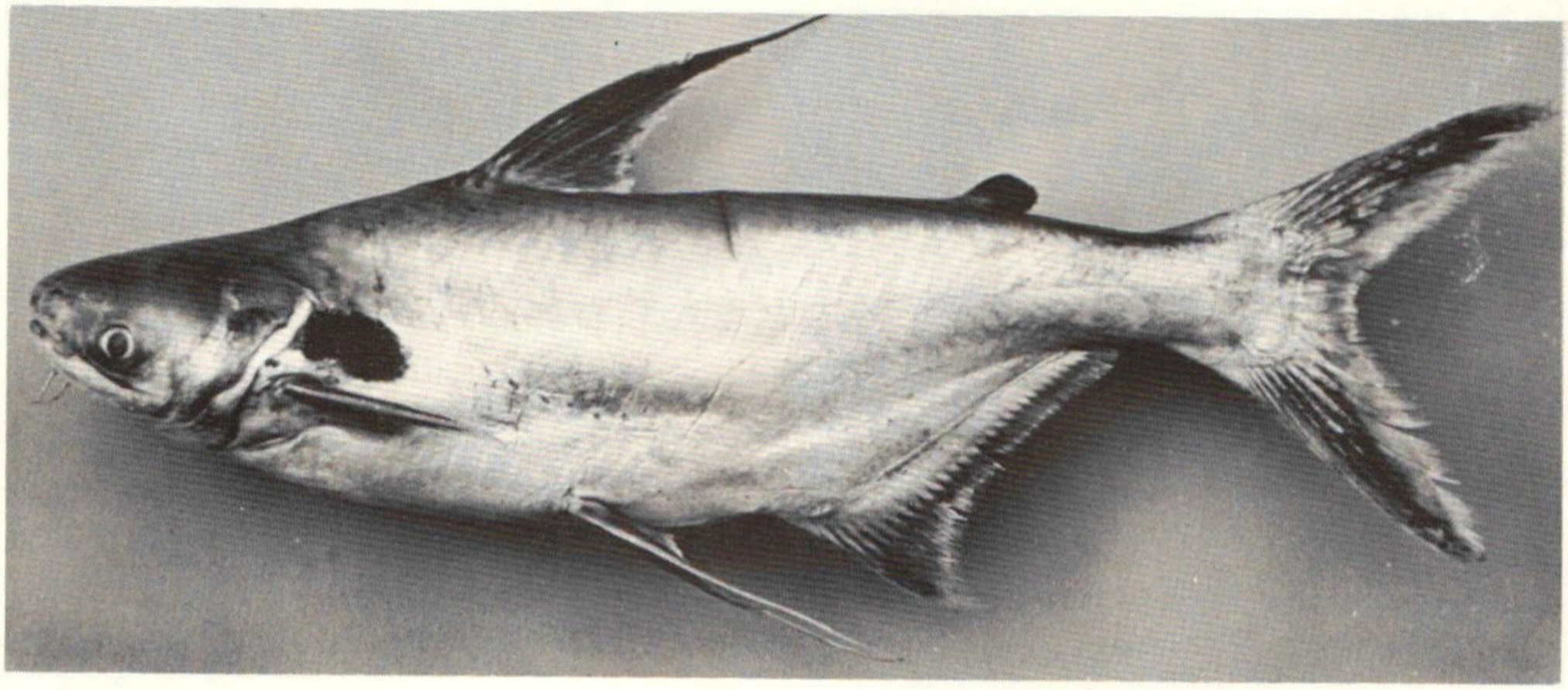


Fig. 73 *Pangasius larnaudii* Bocourt 340.0 mm SL

Pangasius burgini - Serene, 1951 (Mekong R. and its affluents)

Pangasius larnaudii - Taki, 1968 (Tha Ngon, Vientiane: Station Nos. 12, 20)

Collecting locality - Tha Ngon: Station No. 12

Material - 1 (1, 304.0 mm, deposited at the Laboratory, Direction des Eaux, Forêt et Chasses, Vientiane)

Description - Body oblong, robust, compressed posteriorly. Head short; snout obtuse; jaws equal. Patches of vomerine teeth separated from each other and united with a palatine patch on each side. Maxillary and mandibulary barbels. Dorsal and pectoral fins with a strong spine and a long, filamentous ray. Maximum length 130 cm.

Life color: Light silvery gray, darker above, whitish below. A large blue-black roundish humeral blotch on side right behind gill opening. Fins grayish, distal margin pale.

Pangasius sanitwongsei Smith

Laotian name: Pa leum

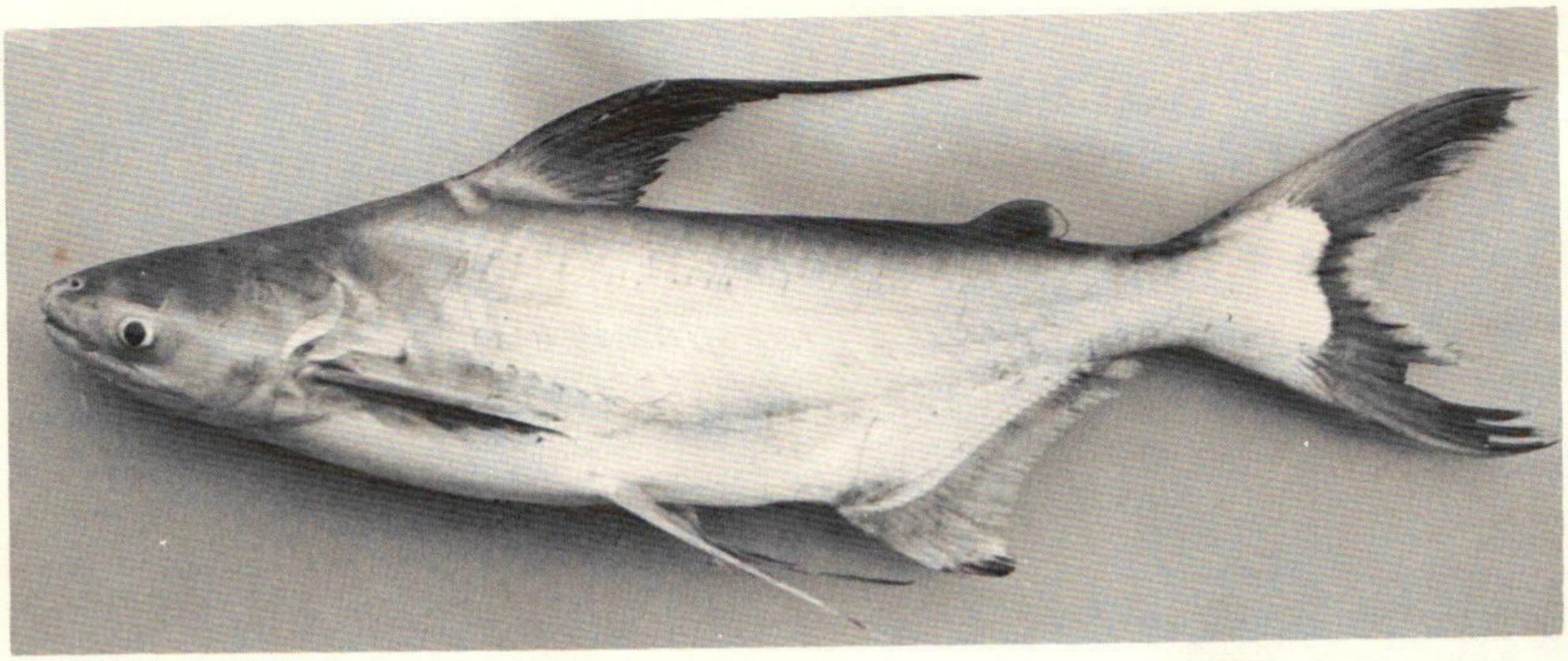


Fig. 74 *Pangasius sanitwongsei* Smith 345.0 mm SL

Pangasius sanitwongsei- Serene, 1951 (Mekong R.); Taki, 1968 (Luang Prabang, Vientiane, Pakse: Station Nos. 3, 20, 32)

Collecting locality - Tha Ngon: Station No. 12

Material - 1 (1, 345.0 mm, deposited at the Laboratory, Direction des Eaux, Forêts et Chasses, Vientiane)

Description - Elongate, moderately compressed. Head rather broad; snout somewhat prominent. Eyes small. Vomerine and palatine teeth united into a single strongly arched band. Barbels maxillary and mandibulary. Anteriormost soft ray in dorsal, pectoral and pelvic fins prolonged into a filament. Attains 250 cm or more in length.

Life color: Silvery gray. Fins pigmented with dusky melanophores.

Pangasius pangasius (Hamilton-Buchanan)

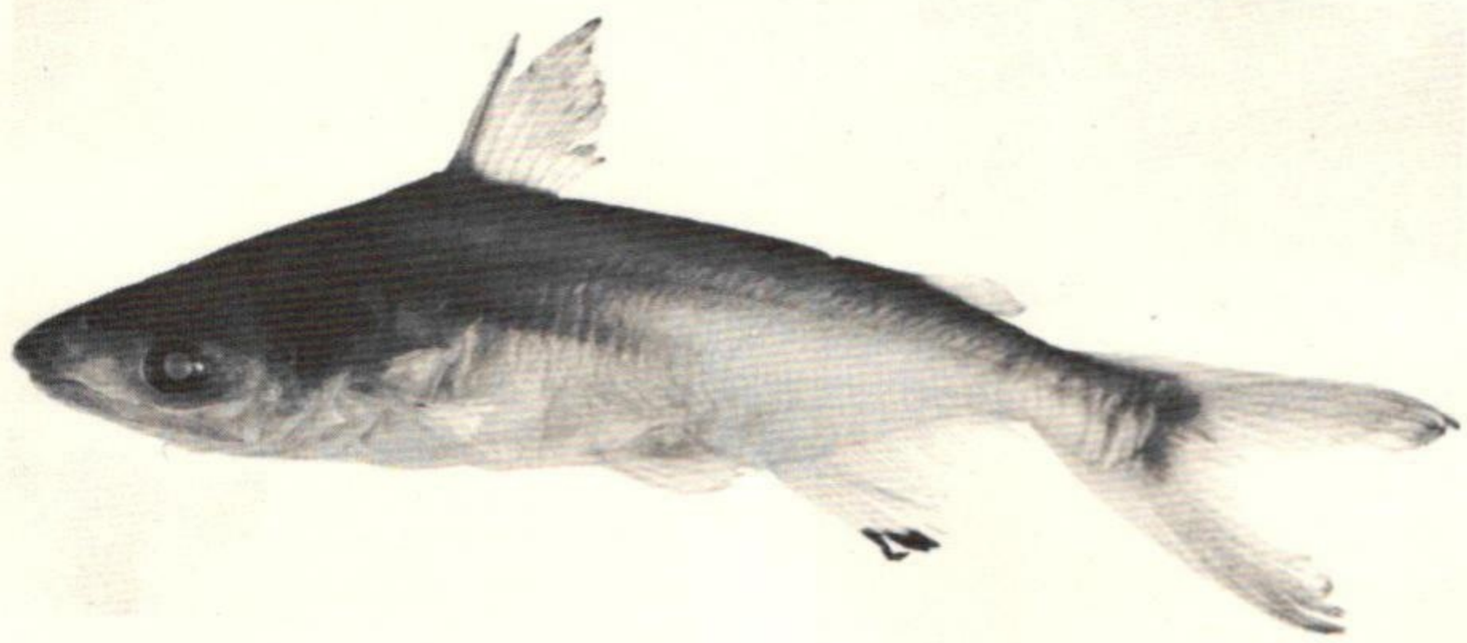


Fig. 75 *Pangasius pangasius* (Hamilton-Buchanan) 76.5 mm SL

Pangasius pangasius - Taki, 1968 (Luang Prabang, Tha Ngon, Pakse: Station Nos. 3, 12, 32)

Collecting locality - Hatdokkeo, Tha Bo, Sai Fong, Sithan Tay: Station Nos. 22, 23, 25, 26

Material - 49 (49, 33.0 - 86.6 mm, IBRP 4084, 4100, 4333, 4522, 4572, 4710)

Description - D. II/7; A. 29 - 32 (3/26 - 4/28). Head very broad; snout strongly depressed, long, prominent, its length 2.4 - 2.7 in head length. Vomerine teeth in a single patch with a shallow median notch; palatine patch on either side of the vomerine patch large, close to the vomerine patch or almost entirely united with it. Maxillary barbels extending to base of pectoral fins, mandibulary ones to or beyond lower margin of gill membranes.

Life color: Grayish, underside white. Dorsal and pectoral fins gray; anal fin hyaline, with a jet black marginal blotch at its anterior tip; tip of pelvic and adipose fins blackish; caudal fin with a diffuse broad black stripe on each lobe.

Remarks - In the feature of the vomero-palatine teeth some of the specimens examined approach *P. sanitwongsei*.

Pangasius longibarbis Fowler

Pangasius longibarbis - Fowler, 1934a (Chiengsen)

Pangasius sutchi Fowler

Pangasius sutchi - Taki, 1968 (Vientiane, Pakse: Station Nos. 20, 32)

Pangasianodon gigas Chevey

Laotian name: Pa beuk

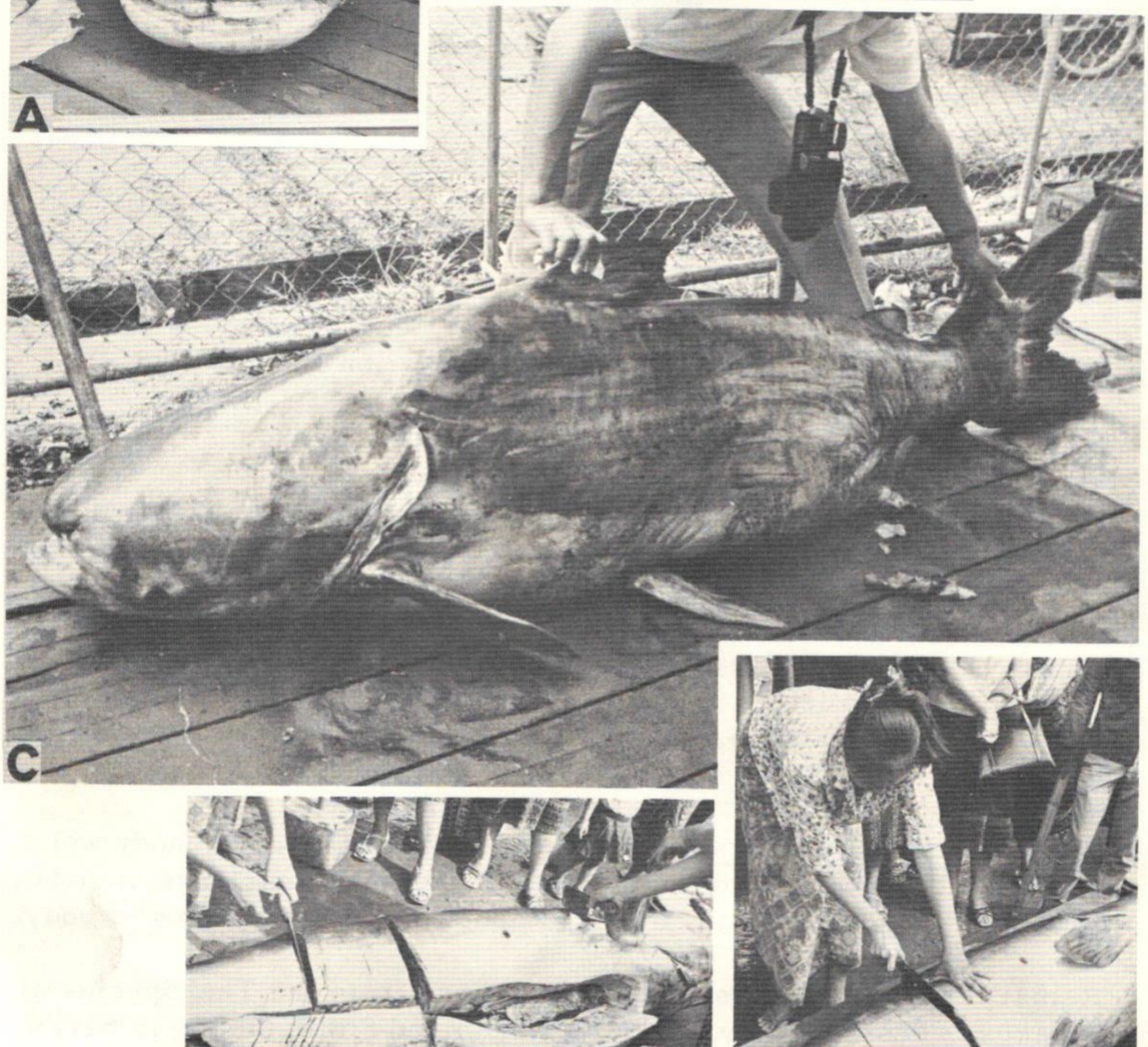
Pangasianodon gigas - Taki, 1968 (Observation at the morning market of Vientiane)

Collecting locality and material - A fish 220 cm in total length was caught on March 30, 1971, in the Mekong River at Ban Na Long by local fishermen, and brought to the morning market of Vientiane. The specimen was measured and examined by G. Suzuki, USC Fisheries Team, USAID, and its head was cut off and preserved, and later on examined by the author.

Description - Mouth wide; lower jaw a little prominent. A pair of small maxillary barbels, mandibulary barbels absent. No teeth in jaws and on palate. Eyes small, situated below level of mouth angle.


A

B


C

D

E

Fig. 76. *Pangasianodon gigas,* ca. 220 cm in total length. A, front view of head; B, latero-ventral view of head; C, side view; D and E, butchering 'pa beuk'. Photos by Gonjiro Suzuki.

Family Akysidae (Akysid catfishes)

Akysis sp. (1)

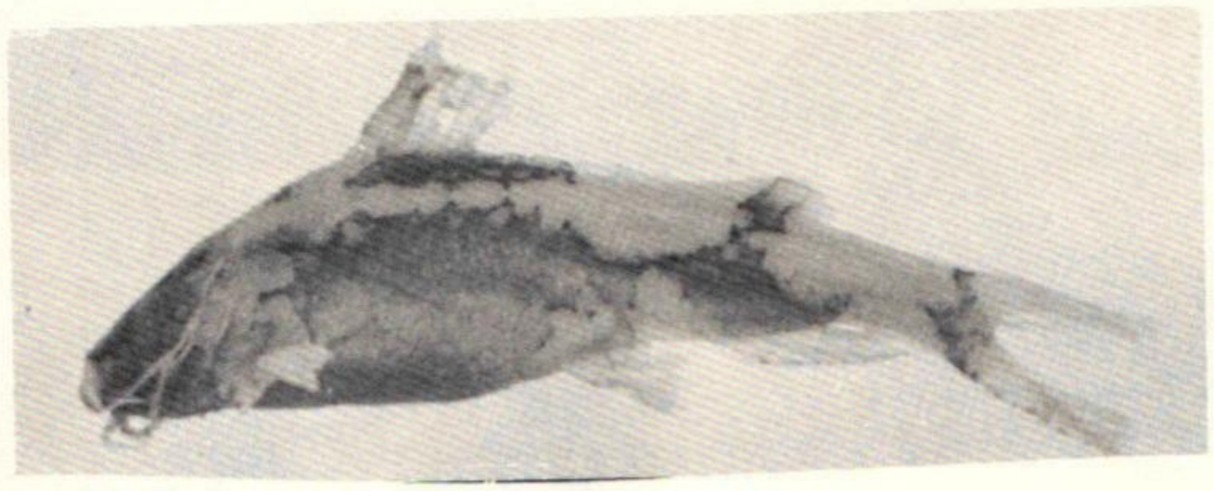


Fig. 77 *Akysis* sp (1) 32.0 mm SL

Collecting locality - Tha Ngon, Tha Bo: Station Nos. 13, 23

Material - 3 (3, 20.0 - 32.0 mm, IBRP 4395, 4538)

Description - D. I/5; A. 2-3/5-6. Head broad, depressed. Mouth wide. Four pairs of long barbels; nasal and mental barbels extending nearly to insertion of pectoral fins, maxillary and mandibulary barbels beyond pectoral fin base. Pectoral spines with one or two short, weak denticles on inner edge; the denticle may be difficult to detect without the aid of radiographs. Skin covered with small granules. A small species not exceeding 4 cm in length.

Coloration of preserved specimens: Ground color of body white or light brown, with large, dark brownish markings on head, on back around drosal fin and adipose fin, and on sides of body.

Remarks - This species apparently differs from the Thai Species of *Akysis* described by Fowler (1934a) and Smith (1945) in having almost smooth pectoral spines with only one or two small, weak denticles. In this feature it rather approaches the Indonesian *A. variegatus* as described by Weber and de Beaufort (1913).

Akysis sp. (2)

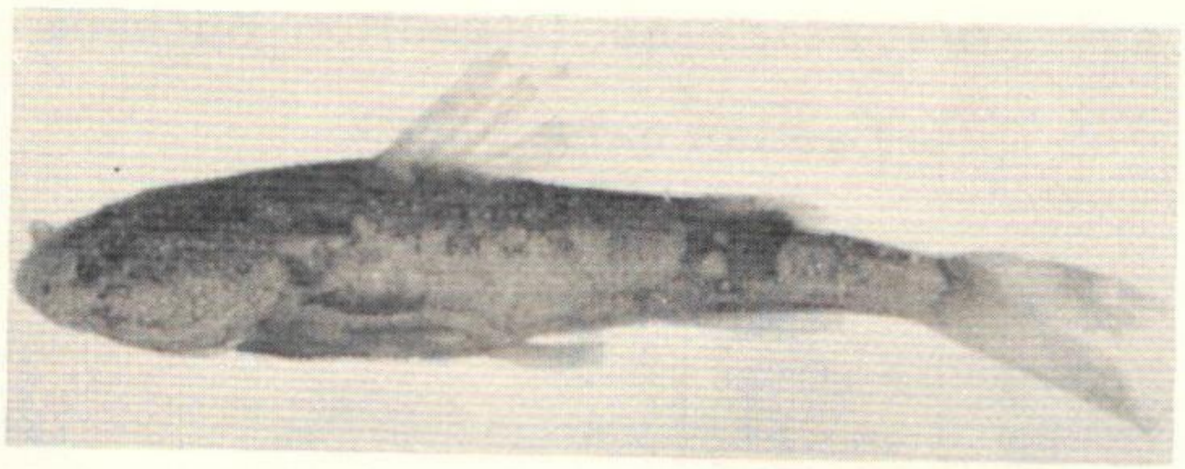


Fig. 78 *Akysis* sp (2) 40.5 mm SL

Collecting locality - Luang Prabang, Tha Bo: Station Nos. 4, 23

Material - 33 (33, 27.5 - 40.5 mm, IBRP 4126, 4531)

Description - D. I/5; A. 2-3/7. Head and trunk more or less strongly flattened, tail part cylindrical. Mouth wide. Nasal barbels extending to or slightly beyond eyes, maxillary ones to gill opening, mandibulary ones to insertion of pectoral fins, mental ones to isthmus. Pectoral spines strong, broad, with five long antrorse denticles on inner edge. Skin covered with small granules.

Coloration of preserved specimens: Light brown, variegated with irregular-shpaed brownish markings.

สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย

Family Sisoridae (Sisorid catfishes)

Bagarius bagarius (Hamilton-Buchanan)

Laotian name: Pa ke

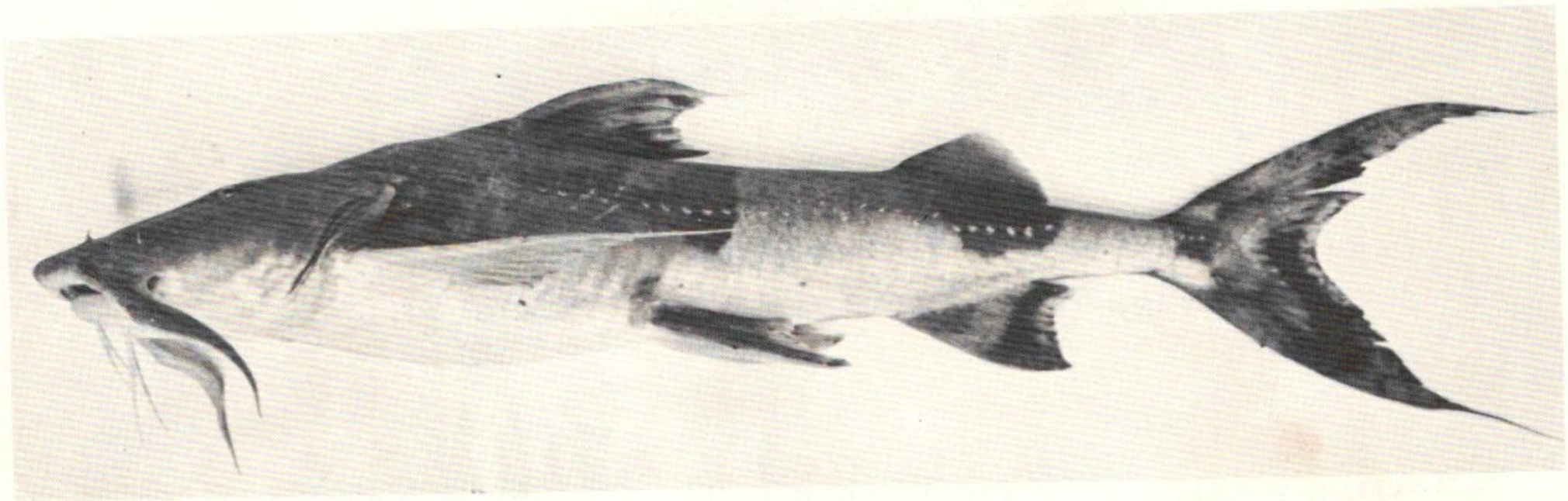


Fig. 79 *Bagarius bagarius* (Hamilton-Buchanan) ca. 445.0 mm SL

Bagarius bagarius - Fowler, 1937 (Kemarat): Pellegrin and Fang, 1940 (Ban Nam Khueng); Serene, 1951 (Mekong R. and its affluents, swamps, ponds, streams); Taki, 1968 (Luang Prabang, Vientiane, Kouai Deng, Pakse: Station Nos. 3, 20, 28, 32)

Collecting locality - Isl. Don Tio, Tha Ngon, Tha Bo, Sithan Tay, Hatsalao: Station Nos. 2, 12, 15, 23, 26, 34

Material - 30 (16, 56.0 - 181.5 mm, IBRP 4525, 5257, 5298, 5532, 5662)

Description - D. I/6; A. 13-14. Head very broad, greatly depressed; body somewhat cylindrical; lower surface of head and belly flat. Mouth wide, crescentic; upper jaw prominent. No thoracic adhesive apparatus composed of plaits of skin. Nasal barbels short, membraneous, separating nostrils; maxillary barbels very broad, stout, tapering behind, its tip reaching insertion of pectoral fins; a pair of mandibulary and a pair of mental barbels on lower jaw. Eyes small, situated on top of head. Dorsal spine smooth; pectoral spines rather weakly denticulated. Attains a length of 200 cm.

Life color: Brown to purplish brown, ventral surface white; back and sides of body and fins variously marked with broad dark brown bands and small spots.

Glyptothorax trilineatus Blyth

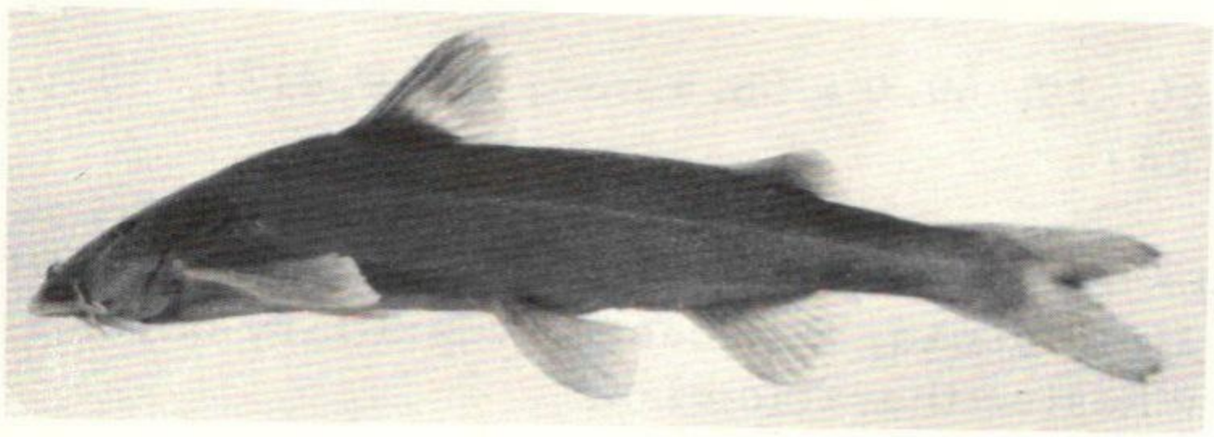


Fig. 80 *Glyptothorax trilineatus* Blyth 74.0 mm SL

Collecting locality - Houei Nhang R., near Pakse: Station No. 29

Material - 1 (1, 74.0 mm, IBRP 3247)

Description - D. I/6; A.13. Body elongate, its depth 5.3 in standard length; abdomen flattened; tail part compressed. Head broad, flattened, its length 4.4 in standard length and slightly greater than its width. Mouth wide, inferior. A corrugated sucking disk composed of fine plaits of skin. Nasal barbels short, about 2 times diameter of eyes, maxillary barbels very broad basally, extending to pectoral spines when laid back, mandibulary and mental barbels short. Eyes small, looking upward. Pectoral fins large, with a strong, broad, serrated spine; adipose fin small, triangular. Largest Thai example 18.3 cm in length.

Life color: Dark brick-brown, ventral surface whitish. A white mid-dorsal stripe extending from occiput to base of caudal fin, a narrow whitish axial line on sides from shoulder to base of caudal peduncle. Fins brownish, their margin pale.

Glyptothorax sp.

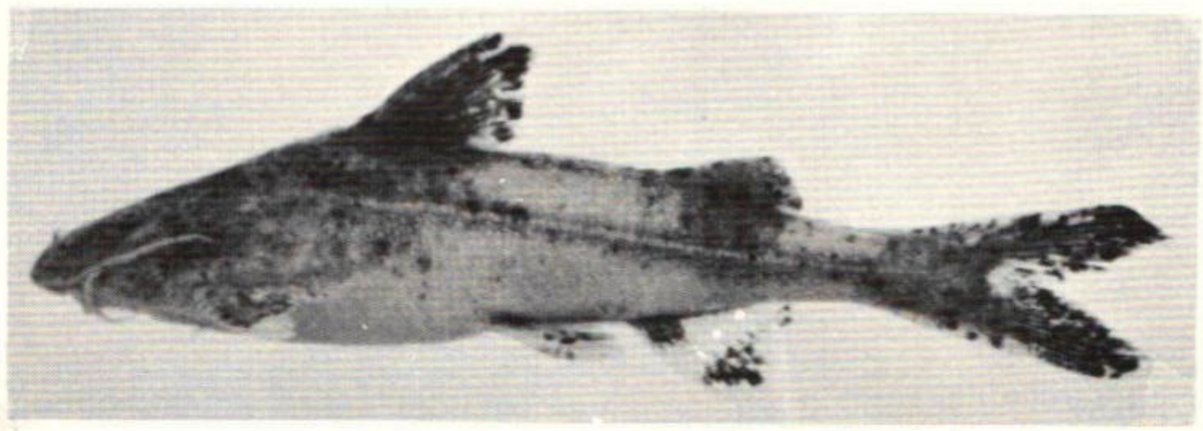


Fig. 81 *Glyptothorax* sp. 66.2 mm SL

Collecting locality - Isl. Don Tio, Luang Prabang, Tha Bo, Sithan Tay: Station Nos. 2, 4, 23, 26

Material - 66 (10, 60.0 - 68.5 mm, IBRP 4121, 5340, 5438, 5533, 5586, 5763)

Description - D.I/6; A. 12-14. Body elongate, compressed posteriorly. Head broad, depressed. Maxillary barbels broad basally. An adhesive thoracic disk.

Coloration of preserved specimens: Ground color of body brown, lower part of head and thoracic apparatus white. Head and body ornamented with irregular - shaped dark bands, large blotches and small spots; fins pigmented with blackish brown markings.

Remarks - This species closely agrees with *G. lampris* which was originally described by Fowler (1934a) from a single specimen taken at Chiengmai, Thailand; the most significant difference between the two is the coloration.

Family Clariidae (Clariid catfishes)

Clarias batrachus (Linnaeus)

Laotian name: Pa douk

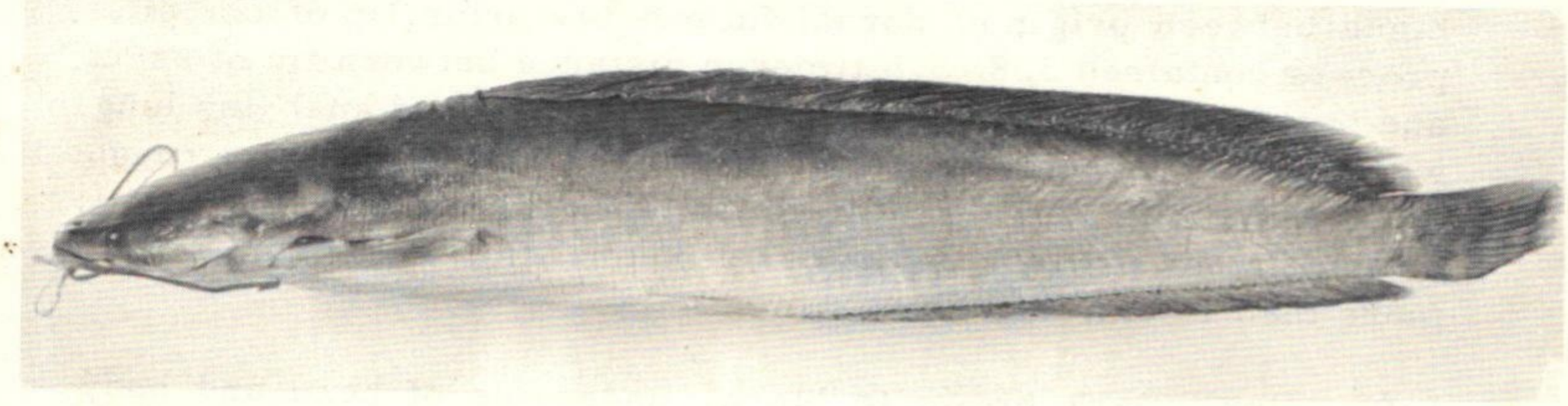
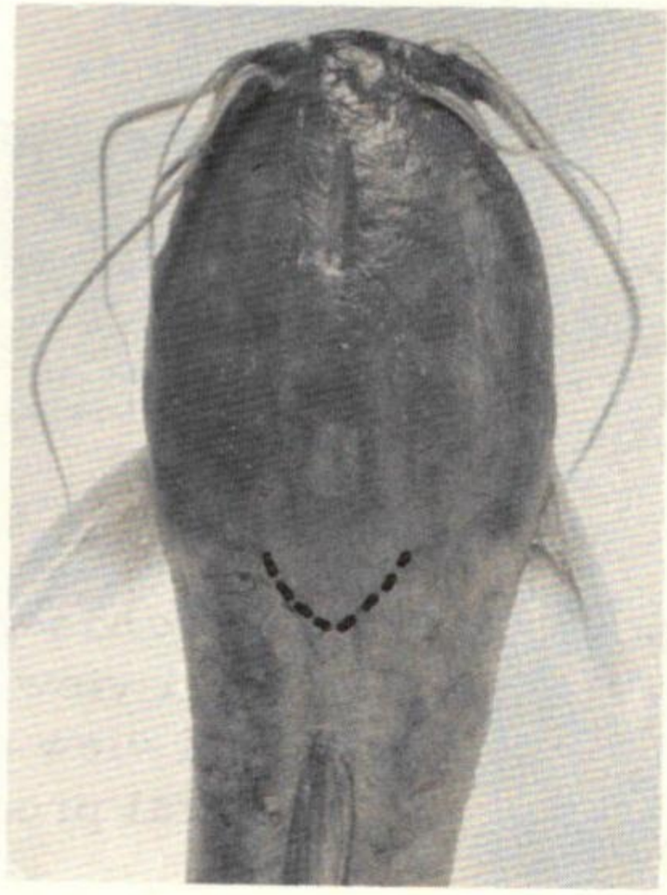


Fig. 82 *Clarias batrachus* (Linnaeus) 265.0 mm SL
A. Lateral view
B. Dorsal view of head; dotted line indicates the occipital process

Clarias batruchus- Pellegrin and Fang, 1940 (Ban Nam Khueng); Serene , 1951 (Swamps and ponds); Taki, 1968 (Paddies, Swamps and canals at Vientiane, Savannakhet and Pakse).

Collecting locality - Tha Ngon, Tha Bo, Hatsalao: Station Nos. 12, 23, 34.



Material - 6 (4, 63.5 - 155.5 mm, IBRP 4520, 4793, 5121, 5169)

Description - D. 67 - 74; A. 53 - 54. Body elongate, compressed posteriorly. Head broadly depressed; occipital process (Fig. 82B) triangular, its height contained about 2 times in its base; length of head measured along upper median line from tip of snout to hinder end of occipital process 3.6 - 3.7 in standard length. Mouth wide; upper jaw a little projecting. Four pairs of well-developed barbels. Eyes small; eye-distance greater than mouth opening. Distance between origin of dorsal fin and posterior tip of occipital process contained 3.8 - 5.5 times in distance between tip of snout and posterior tip of occipital process. Dorsal and anal fins long, without spines; pectoral fins with a pungent spine, the spine rough on its outer edge and serrated on its inner edge; pelvic fins small; caudal fin not confluent with dorsal or anal fin. Maximum length more than 40 cm.

Life color: Dark brown to black, underside of head and body light brown

Clarias macrocephalus Günther

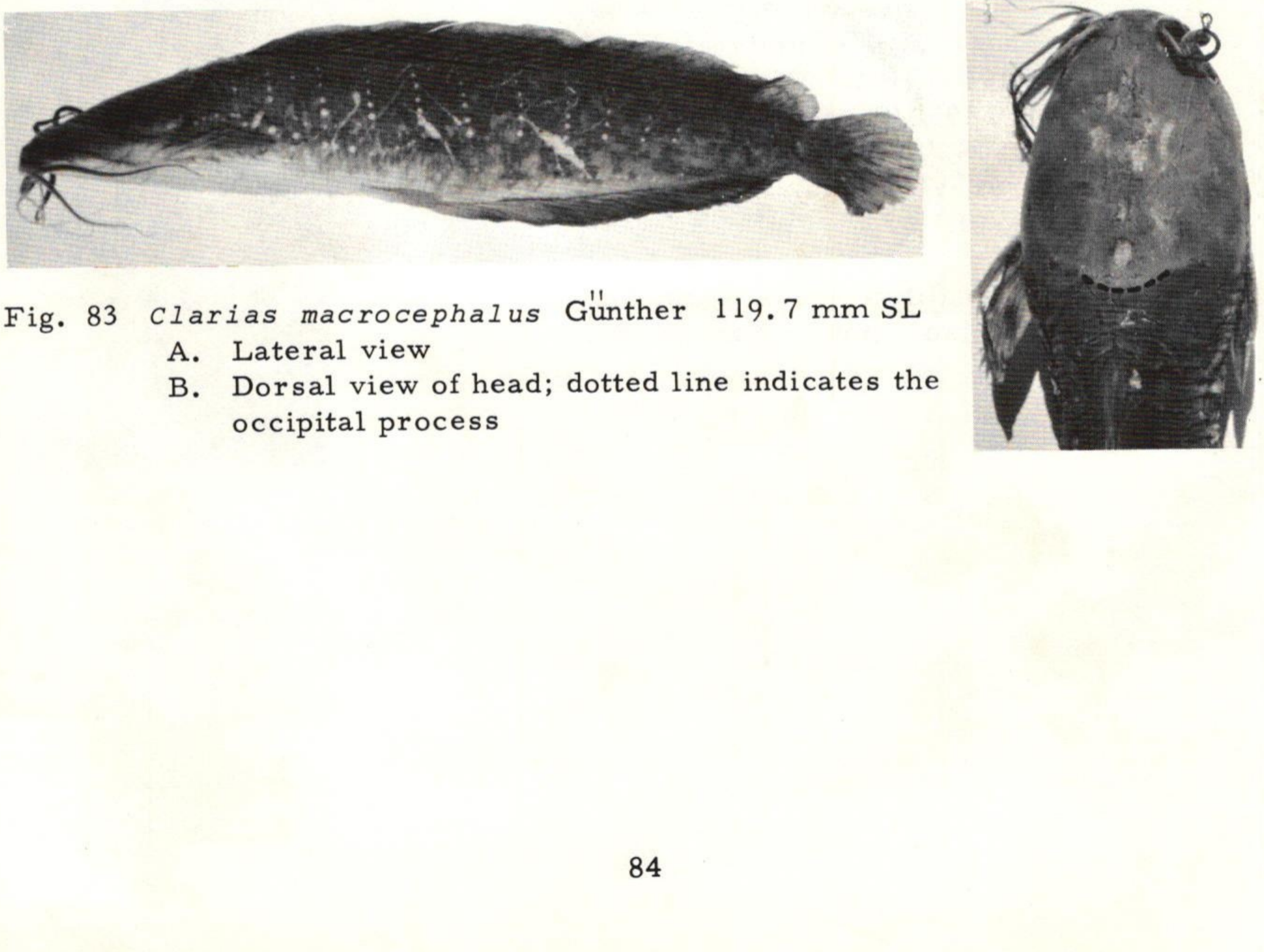


Fig. 83 *Clarias macrocephalus* Günther 119.7 mm SL
A. Lateral view
B. Dorsal view of head; dotted line indicates the occipital process

Collecting locality - Tha Bo: Station No. 23

Material - 1 (1, 119.7 mm, IBRP 4712)

Description - D. 69; A. 51. Elongate, compressed posteriorly, body depth 5.5 in standard length. Head wide, depressed, length of head measured by the method employed for the preceding species 3.7 in standard length; occipital process wide, low, width of its base about 5 times its height. Other feature of head and body almost similar to *C. batrachus* above. Attains a little more than 30 cm.

Life color: Dark brown with purplish tint, ventral surface light. The specimen examined ornamented with about 10 transverse rows of small white spots on side.

Remarks - This species is closely related to *C. batrachus*, from which it can be distinguished by the wide, low occipital process.

Family Heteropneustidae (Heteropneustid catfishes)

Heteropneustes fossilis (Bloch)

Clarisilurus kemratensis - Fowler, 1937 (Kemarat)

Family Cyprinidae (Carps and minnows)

Subfamily Cultrinae

Oxygaster oxygastroides oxygastroides (Bleeker)

Laotian name: Pa thep

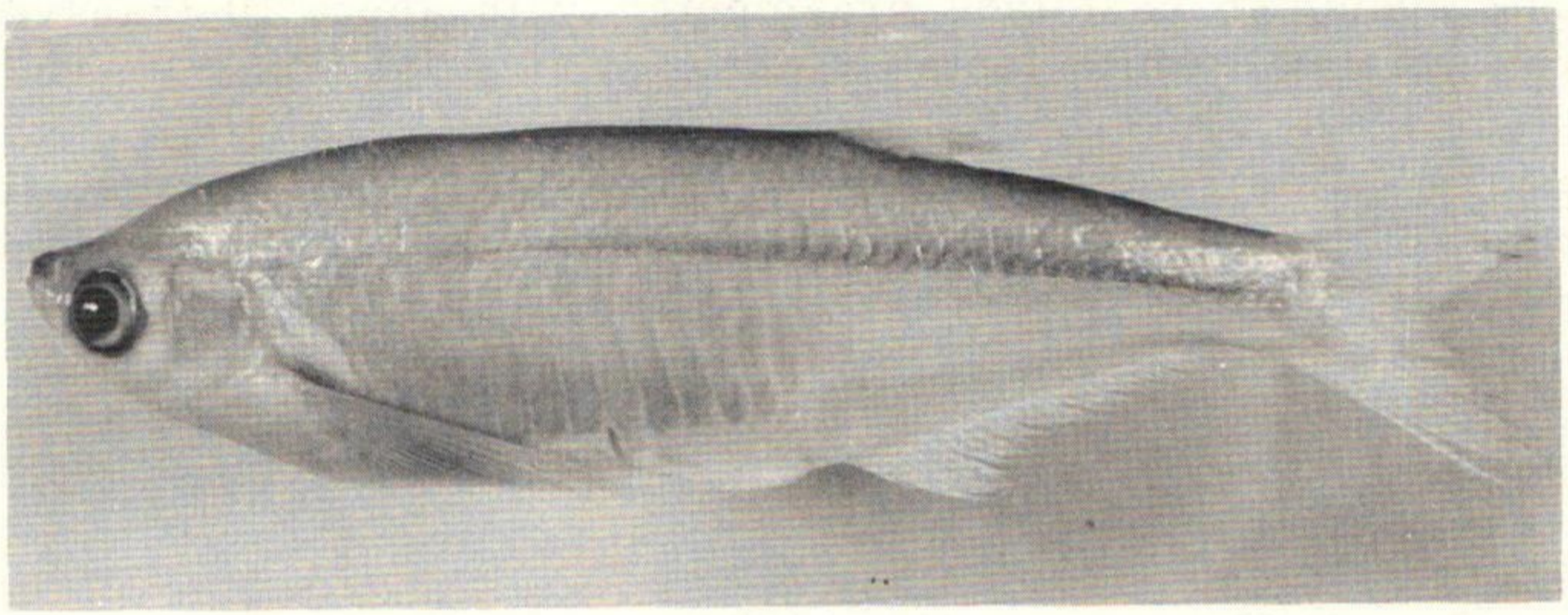


Fig. 84 Oxygaster oxygasteroides oxygasteroides (Bleeker)
101.8 mm SL

Oxygaster oxygasteroides + *O. siamensis* Taki, 1968(Luang Prabang, Tha Ngon, Hatdokkeo, Kouai Deng, Hatsalao: Satation Nos. 3, 12, 22, 28, 43).

Collecting locality - Tha Ngon, Tha Bo: Station Nos. 12, 13, 14, 15, 23

Material - 347 (65, 38.5 - 70.0 mm, IBRP 4756, 5038, 5147)

Description - Oblong to elongate, strongly compressed; dorsal profile somewhat concave behind trenchant mouth and moderately convex from nape to origin of caudal fin. Abdomen more or less greatly arched, with a sharp keel. Mouth protractile, directed upward; lower jaw with a symphyseal knob fitting into an emargination of symphysis of upper jaw. No barbels. Scales deciduous; predorsal scales extending forward nearly or quite to a line connecting anterior margins of eyes. Lateral line greatly recurved. Dorsal fin small; anal fin long; pectoral fins well developed, long; pelvic fins small; caudal fin rather small, deeply forked. Maximum length 20 cm.

Life color: Body uniformly silvery, back with brownish or greenish tint. Dorsal, anal and pelvic fins generally hyaline; pectoral fins shaded with dark melanophores; caudal fin light yellow, with a diffuse, blackish distal margin.

Remarks - Taki (1968) reported from Laos two species of *Oxygaster*, i.e. *O. oxygasteroides* and *O. siamensis*; both are herewith assigned to *O. oxygastroides oxygastroides*, following Bănărescu's (1969) treatment. As he has pointed out, the number of branched anal rays is very variable and, in the Laotian examples, there seem to exist two distinct forms distinguishable by the body shape as well as the number of anal rays: In IBRP 5038 and 5174, the number of the branched anal rays is 23 - 28, body depth is contained 3.5 - 3.8 in standard length, and the nuchal concavity is not deep, while in IBRP 4756 the anal fin contains 34 - 38 branched rays, body depth is contained 2.9 - 3.4 in standard length, and the nuchal concavity is conspicuous.

Oxygaster pointoni (Fowler)

Laotian name: Pa thep

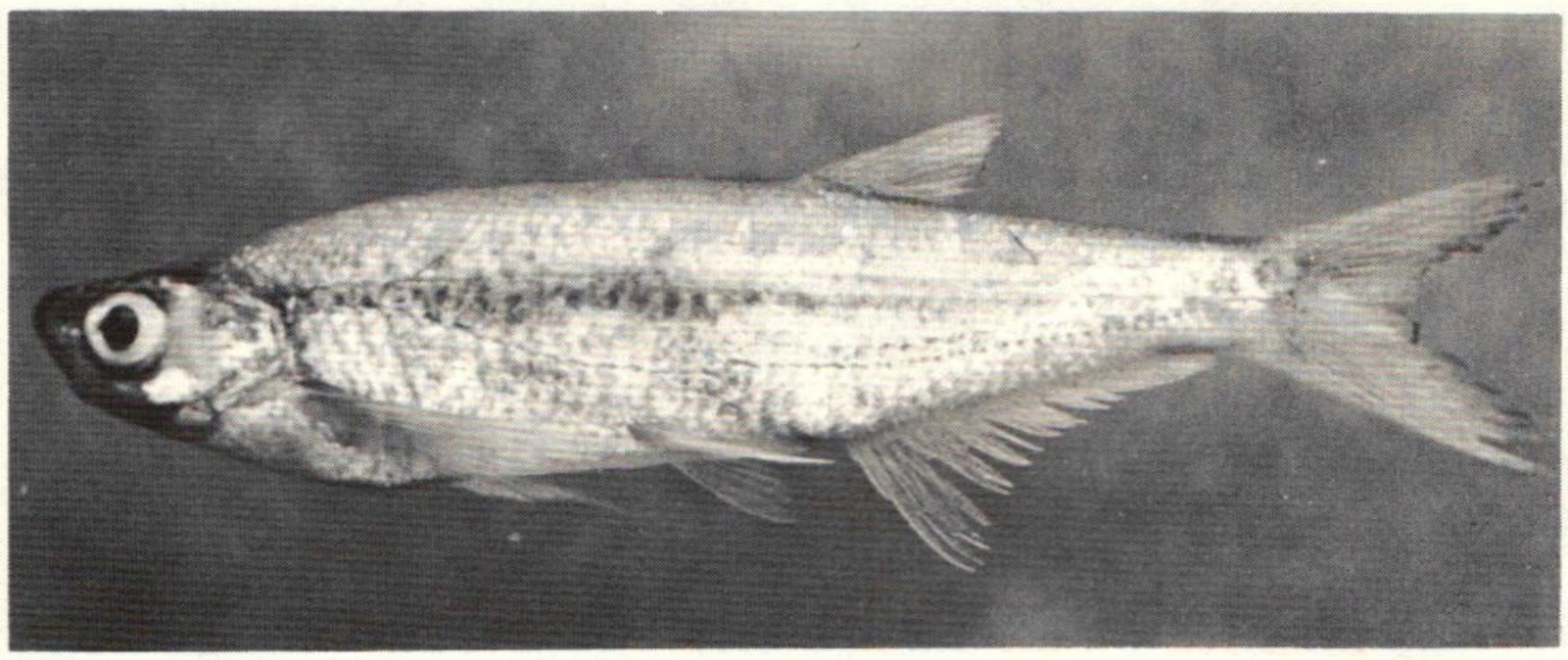


Fig. 85 *Oxygaster pointoni* (Fowler) 91.0 mm SL

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay: Station Nos. 10, 12, 13, 14, 15, 23, 26

Material - 311 (17, 67.2 - 127.0 mm, IBRP 4170, 4466, 4723, 5300)

Description - D. 2/7; A. 3/24 - 28; Ll. 43 - 46. Body elongate, its depth 3.6 - 4.3 in standard length, strongly compressed; dorsal profile straight behind elevated snout and more or less greatly arched at nape; abdomen convex, with a sharp keel and a narrow membraneous flap. Head rather small, its length 4.2 - 4.8 in standard length. Mouth directed upward; lower jaw slightly produced. Scales deciduous; predorsal scales extending forward to or a little beyond a line connecting posterior margins of eyes. Lateral line continuous. Largest specimen examined 12.7 cm in standard length.

Life color: Body silvery white, back dark. A dark axial lateral stripe running from gill opening to base of caudal fin, increasing its breadth and intensity backward, and often continued into a stripe on caudal fin.

Paralaubuca stigmabrachium (Fowler)

Laotian name: Pa thep

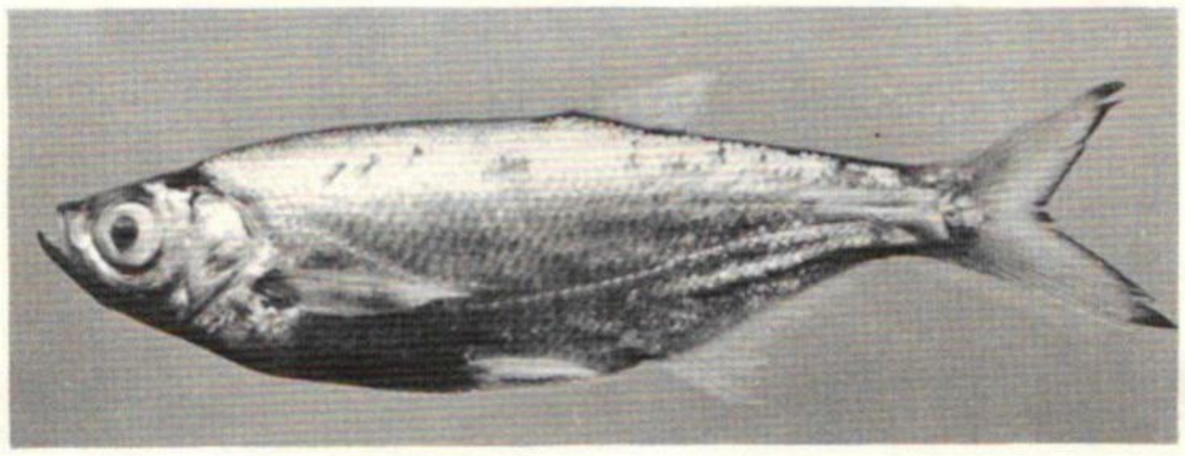


Fig. 86 *Paralaubuca stigmabrachium* (Fowler) 84.0 mm SL

Culter stigmabrachium - Fowler, 1934a (original description; Chiengsen); 1937 (Kemarat)

Collecting locality - Pak Suong, Isl. Don Tio, Nam Ngum dam site, Tha Ngon, Isl. Don Tiane, Tha Bo, Sithan Tay, Sai Fong, Hatsalao, Pathoum Phon, Khinak; Station Nos. 1, 2, 4, 10, 12, 13, 14, 15, 23, 25, 26, 32, 34, 39, 40

Material - 1,437 (the counts and measurements given below are cited from Fowler, 1934a; other descriptions are based on the original material)

Description - D. 2/7; A. 3/25-27. Body elongate, its depth 3.0-3 3/4 in standard length, strongly compressed. Head length 4 1/8-4 1/5 in standard length. Barbels absent. Scales small, deciduous. Presorsal scales not extending between eyes. Lateral line interrupted; front section extending to or behind tip of pectoral fins and overlapping anterior 9 - 10 scales in hind section which runs one row below front section; Ll. 17 - 18 in front section, 43 - 45 in hind section. Maximum length 16 cm.

Life color: Body silver, often with bluish luster, back somewhat brownish. Fins light yellow or colorless, pectoral fins weakly or strongly shaded with black pigments.

Remarks - The specimens at hand are highly variable in the body proportion, in the feature of the lateral line, and in the pigmentation on the pectoral fins, and await further morphological examination and taxonomic discussion.

Paralaubuca barroni (Fowler)

Chela barroni - Fowler, 1934a (original description; Chiengsen)
Culter barroni - Fowler, 1937 (Kemarat)

Paralaubuca riveroi (Fowler)

Paralaubuca reveroi - Taki, 1968 (Tha Ngon: Station No. 12)

Paralaubuca typus Bleeker

Paralaubuca typus - Taki, 1968 (Tha Ngon, Hatsalao: Station Nos. 12, 34)

Macrochirichthys macrochirus (Cuvier and Valenciennes)

Laotian name: Pa hang fa

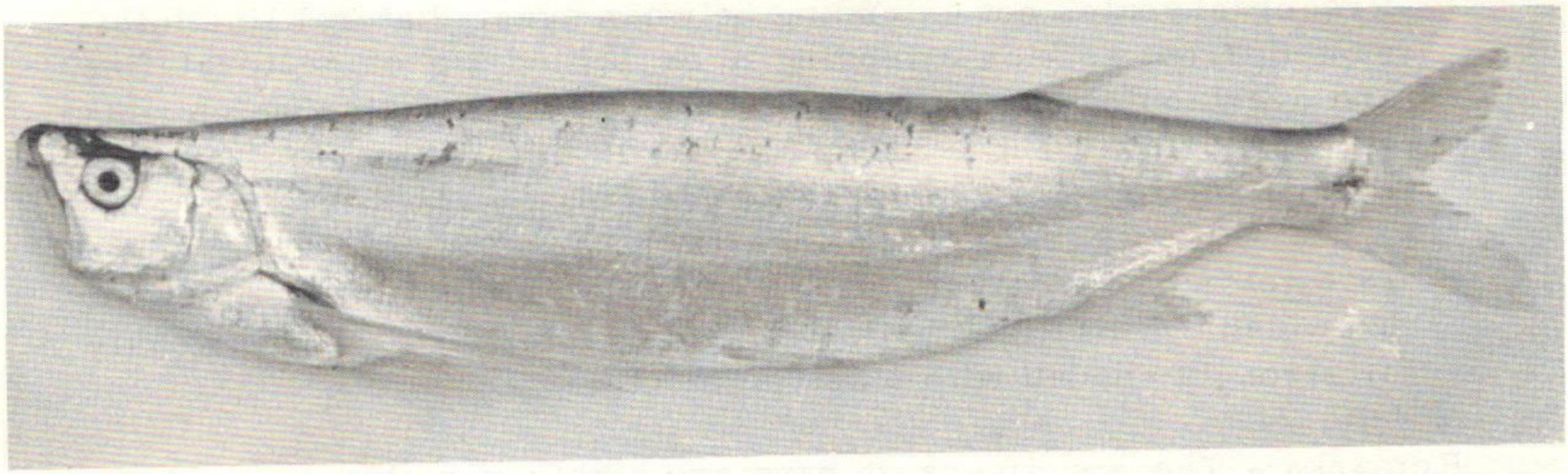


Fig. 87 *Macrochirichthys macrochirus* (Cuvier and Valenciennes)
195.0 mm SL

Macrocheirichthys laonensis - Fowler, 1934a (Chiengsen)
Macrochirichthys laoensis- Fowler, 1935b (Chiengsen Kao);
Serene , 1951 (Mekong R. and its affluents).
Macrochirichthys macrochirus-Fowler, 1937 (Kemarat); Serrene,
1951 (Mekong R. and its affluents); Taki, 1968 (Vientiane, Pakse:
Station Nos. 20, 32)

Collecting locality - Tha Ngon: Station Nos. 12, 13, 14, 15

Material - 12 (4, 140.0 - 243.0 mm, IBRP 4637, 4858, 5200)

Description - D. 3/7; A.3/22-24; Ll. 115-118. Body very elongate, strongly compressed; dorsal profile a flat except concave nape; belly arched, strongly cultrated. Head comparatively small. Mouth large, directed upward. No barbels. Dorsal and anal fins situated far back, the former low and short, the latter long; pectoral fins elongate; pelvic fins small. Attains more than 50 cm in length.

Life color: Back brazen, other part of body silver. A black blotch on base of caudal fin.

Chela laubuca (Hamilton-Buchanan)

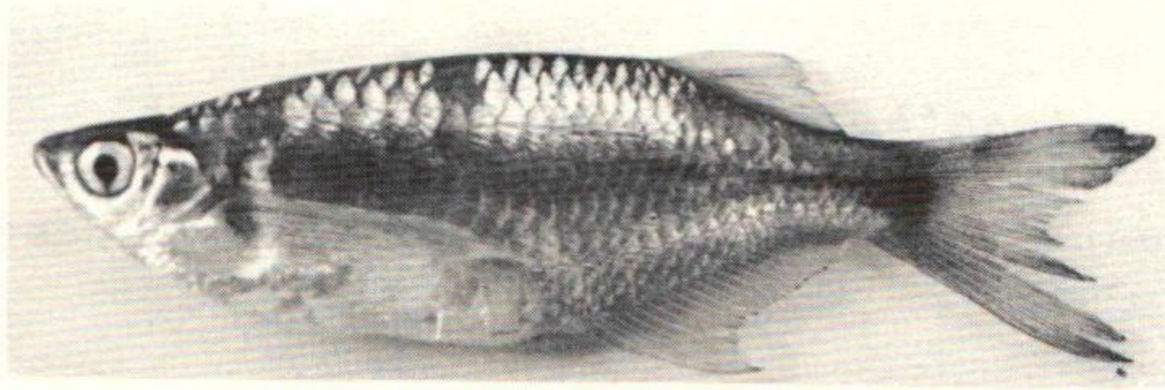


Fig. 88 *Chela laubuca* (Hamilton-Buchanan) 48.5 mm SL

Chela laubuca - Taki, 1968 (Tha Ngon: Station No. 12)

Collecting locality - Tha Ngon: Station Nos. 12, 13, 15

Material - 7 (7, 33.9 - 57.2 mm, IBRP 4367, 4468, 4859, 4932, 4975, 5466)

Description - D. 2-3/8; A. 2-3/18-19; Ll. 31-35. Body deep, compressed; abdomen arched, not keeled. Head small, its length 4.1 - 4.4 in standard length; snout pointed. Mouth small, oblique or almost vertical; lower jaw prominent. Dorsal fin short, its origin behind that of long anal fin; pectoral fins well developed, its tip extending beyond midway between insertion of pelvic fins and origin of anal fin. Largest specimen at hand 5.7 cm in length.

Life color: Body light brown with silvery sheen. A small black spot above insertion of pectoral fins; a dark axial stripe on side ending in a blotch on base of caudal fin, the stripe may be distinct only in posterior half of body. Dorsal and caudal fins with a diffuse, dark margin.

Parachela williaminae Fowler

Parachela williaminae - Fowler, 1934a (original description; Chiengsen)

Subfamily Acheilognathinae

Acanthorhodeus deignani Smith

Acanthorhodeus deignani- Smith, 1945 (original description; Ban Nam Puat)

Subfamily Danioinae

Esomus metallicus Ahl

Laotian name: Pa sieu

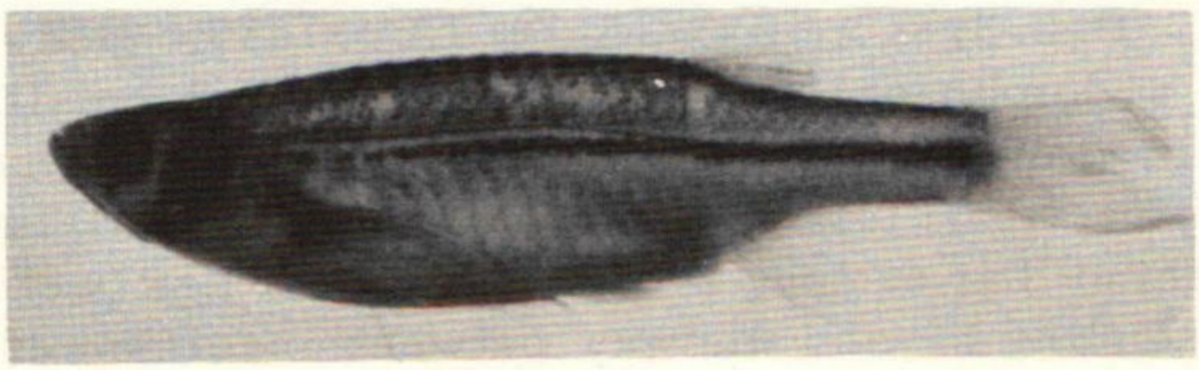


Fig. 89 *Esomus metallicus* Ahl 30.3 mm SL

Esomus metalicus - Taki, 1968 (Vientiane, Nong Teng: Station No. 16)

Collecting locality - Tha Ngon, Tha Bo, Hatsalao: Station Nos. 12, 14, 15, 23, 24

Material - 14 (6, 27.3 - 45.4 mm, IBRP 4508, 4682)

Description - D. 2/6; A. 3/5. Mouth small, oblique. Two pairs of well-developed barbels; anterior ones on middle of maxillae, extending to posterior border of eyes when laid back, posterior ones at corners of mouth, extending beyond insertion of pelvic fins. Scales of moderate size. Lateral line incomplete, extending backward to pelvic or anal fin, with 10 - 14 perforated scales. To a little more than 7 cm in length.

Life color: Light brown with silvery metalic sheen. A dark lateral stripe extending from eye to base of caudal fin.

Esomus goddardi Fowler

Laotian name: Pa sieu

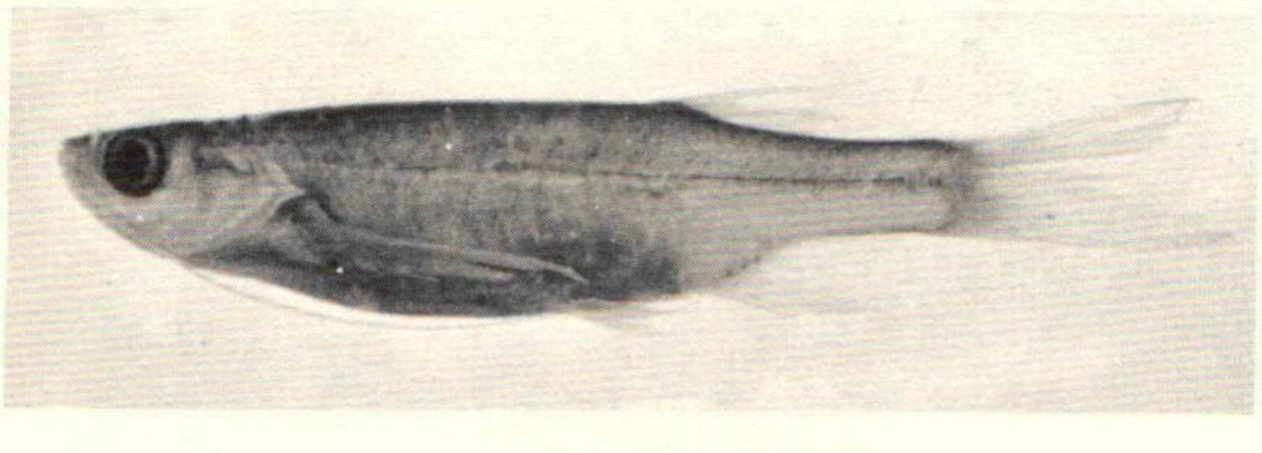


Fig. 90 *Esomus goddardi* Fowler 39.5 mm SL

Esomus goddardi - Fowler, 1937 (original description; Kemarat)

Collecting locality - Tha Ngon, Tha Bo, Sithan Tay: Station Nos. 15, 23, 26

Material - 5 (5, 38.5 - 42.3 mm, IBRP 4809, 4976, 5133)

Description - D. 2/6; A. 3/5. Body shape similar to that of *E. metallicus*. Lateral line piercing 11 to 12 scales and extending backward to or behind insertion of pelvic fins. Maximum length 8.5 cm.

Life color: Body brownish to light grayish brown. A narrow dark line running on side from head to base of caudal fin; the line may be distinct only posteriorly.

Remarks - This species is closely related to *E. metallicus*. Fowler (1937) considered *E. goddardi* to be distinguished from *E. metallicus* 'in the longer rostral barbel, which always extends well behind the eye, and the narrow dark axial line, not band-like.' The Laotian specimens referred to this species have the rostral barbels not extending well behind the eye, but only to or slightly behind the posterior margin of eye. Smith (1945), too, mentioned the same observation on the specimens in Deignan's collection.

Daniops myersi Smith

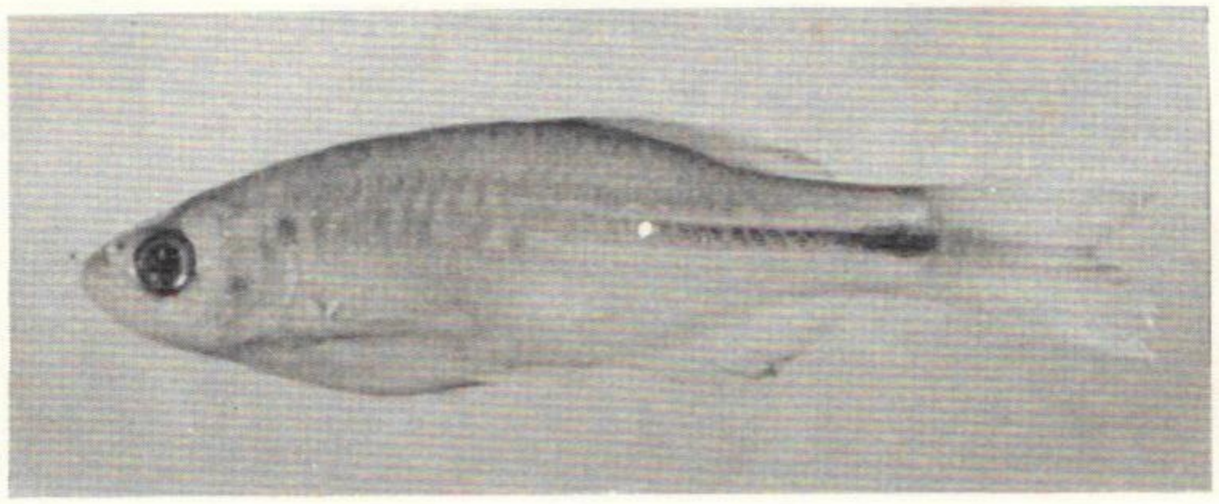


Fig. 91 *Daniops myersi* Smith 41.0 mm SL

Daniops myersi - Smith, 1945 (original description; Ban Nam Puat)

Collecting locality - Nam Pat R., Nam Done R., near Luang Prabang: Station Nos. 8, 9

Material - 19 (10, 39.6 - 51.2 mm, IBRP 4149)

Description - D. 2-3/8; A. 2-3/12-13; Ll. 30-32, Tr. 6.5/1/1.5-2 to pelvic fin base, predorsal scales 16-17, circumpeduncular scales 12 or 14. Body moderately elongate, compressed. Head small, its length 4.1-4.3 in standard length. Mouth oblique. Two pairs of poorly developed barbels. A small bony flange on anterior margin of orbit. Pharyngeal teeth biserial, 5,4 - 4,5. Attains about 9 cm in length.

Life color: Ground color of body light brown, with blue-silver metalic sheen. A vague dark area in anterior part of body, the area usually interrupted with several whitish vertical bars; a narrow blackish axial stripe on posterior half of body, the stripe usually intense posteriorly.

Danio regina Fowler

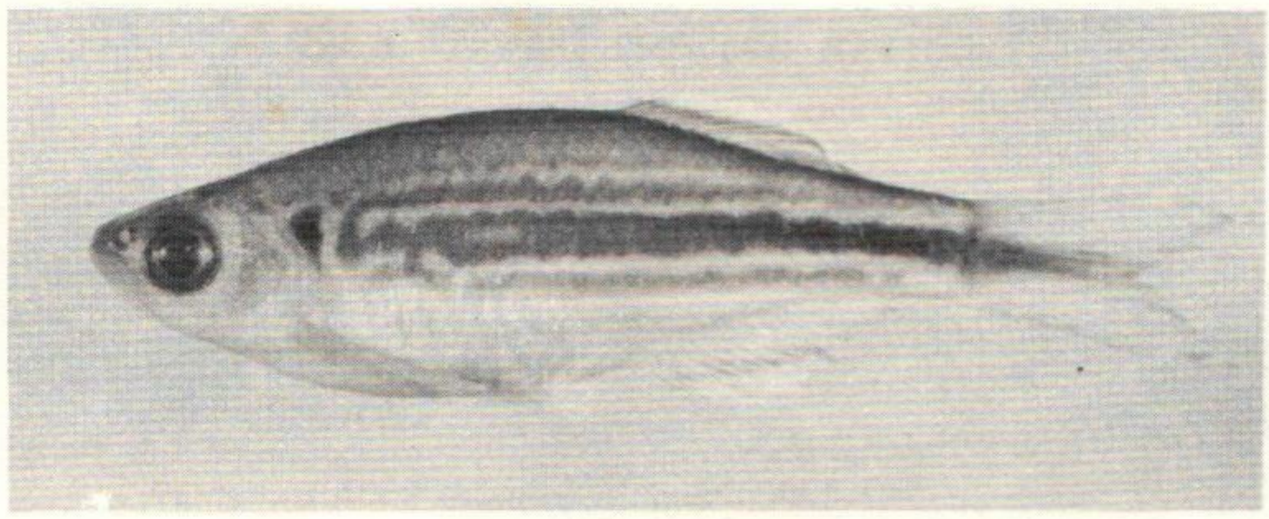


Fig. 92 *Danio regina* Fowler 41.1 mm SL

Collecting locality - Houei Nhang R., near Pakse: Station No. 29

Material - 3 (3, 41.0 - 45.2 mm, IBRP 3240)

Description - D. 3/10; A. 3/13-14; Ll. 31-32, Tr. 7.5/1/2 to pelvic fin base, predorsal scales 15 - 17, circumpeduncular scales 16. Body depth 3.0 -3. 2, head length 3.8 - 4.0 both in standard length. Two pairs of barbels. A small bony flange on anterior margin of orbit. Pharyngeal teeth triserial, 5,4,2 - 2,4,5. Attains 8 cm in length.

Life color: Body brownish, overlaid with bluish luster, darker dorsally and lighter ventrally. A small dark spot behind gill opening; a broad dark bluish stripe running from the spot to base of caudal fin and then extending on caudal fin; the stripe may be separated from the spot by a narrow light - colored interspace; above and below the broad stripe two narrow stripes running in parallel, lower one may be indistinct; dorsum dark, separated from the uppermost stripe by a narrow pale interspace.

Remarks - In the body proportion the specimens examined do not agree with the original description of *D. regina* by Fowler (1934b) but approach the foregoing *Daniops myersi*. The specimens, however, otherwise fully agree with *D. regina*. This species is closely related to *D. malabarica* of India and Ceylon.

Luciosoma bleekeri Steindachner

Laotian name: Pa sieu ao

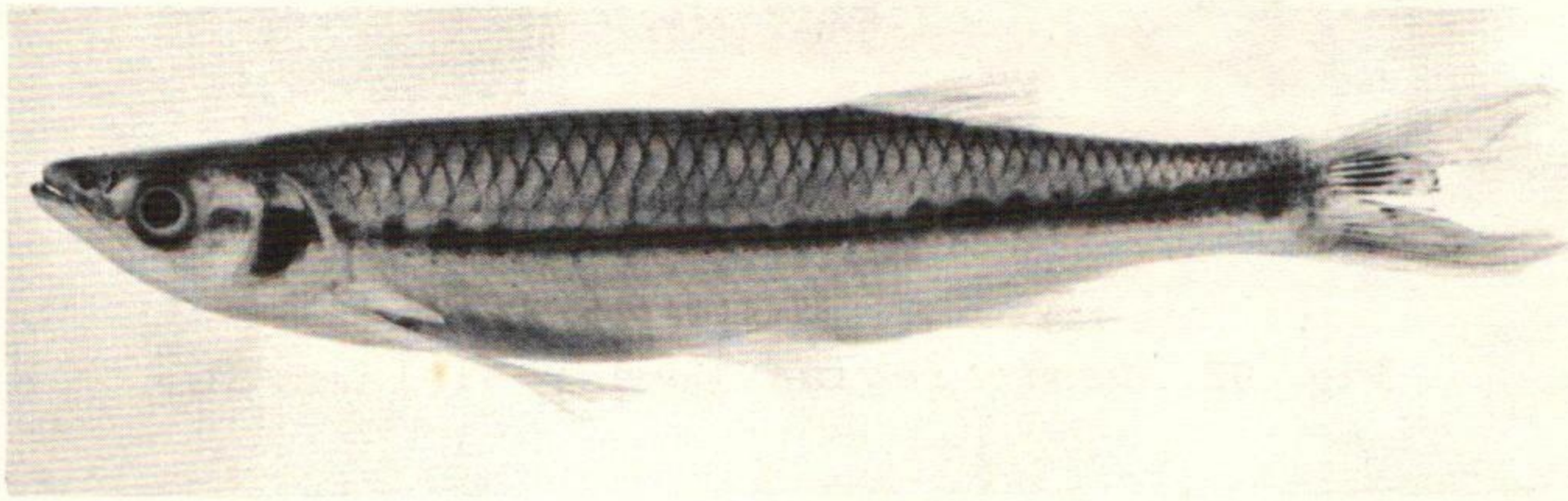


Fig. 93 *Luciosoma bleekeri* Steindachner 119.0 mm SL

Luciosoma harmandi - Fowler, 1937 (Kemarat); Pellegrin and Fang, 1940 (Ban Nam Khueng)

Luciosoma bleekeri- Taki, 1968 (Luang Prabang, Tha Ngon, Salakham, Pakse: Station Nos. 3, 12, 24, 32)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sai Fong, Sithan Tay, Pakse, Hatsalao: Station Nos. 10, 12, 13, 15, 23, 25, 26, 32, 34

Material - 129 (9, 83.0 - 161.5 mm, IBRP 4067, 4639, 5228)

Description - D. 2/7; A. 2/6; Ll. 40-43. Body elongate, moderately compressed. Mouth large, its angle extending nearly below middle of eye; lower jaw a little prominent, with a symphyseal knob or hook. Well-developed rostral and maxillary barbels. Origin of dorsal fin well behind insertion of pelvic fins, base of last ray opposite to origin of anal fin; pectoral fins elongate, their tip reaching insertion of pelvic fins. Attains more than 25 cm in length.

Life color: Body brownish gray with greenish sheen, underside whitish. A dark longitudinal stripe or row of spots running from head to hind margin of caudal fin. Dorsal fin bright orange; caudal fin dusky orange, with a diffuse inframarginal stripe on upper and lower lobe; other fins slightly yellowish or hyaline.

Luciosoma setigerum (Cuvier and Valenciennes)

Laotian name: Pa sieu ao

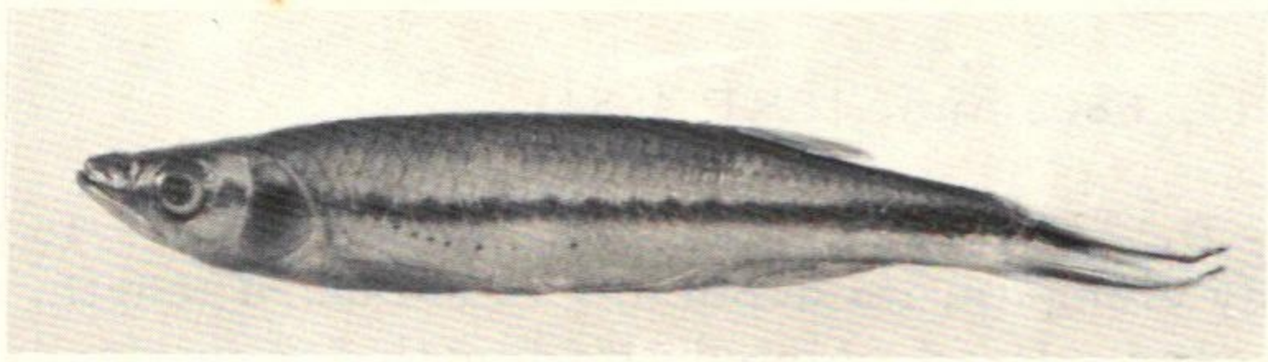


Fig. 94 *Luciosoma setigerum* (Cuvier and Valenciennes)

83.0 mm SL

Collecting locality - Nam Ngum dam site, Tha Ngon: Station Nos. 10, 12

Material - 12 (4, 82.6 - 118.0 mm, IBRP 5823, 5615)

Description - D. 2/7; A. 2/6; Ll. 41-42. Similar to *L. bleekeri* in general body shape.

Life color: Light brown, with silvery or bluish silvery sheen. A longitudinal row of dark spots running from snout or eye to upper lobe of caudal fin.

Remarks - The only significant character separating this species from *L. bleekeri* is the lateral stripe which is made up of spots and continuous on the inframarginal stripe on the upper lobe of the caudal fin. Further studies are required to make clear identification of the present specimens.

Filirasbora rubripinna Fowler

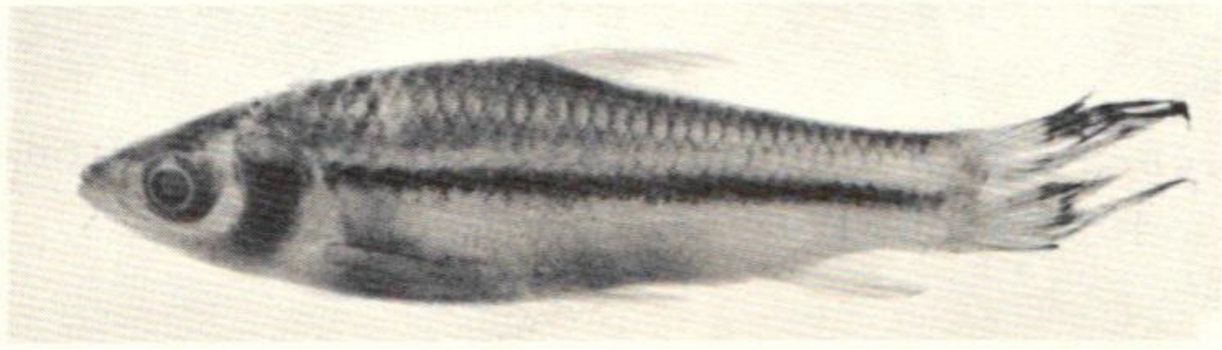


Fig. 95 *Filirasbora rubripinna* Fowler 68.2 mm SL

Filirasbora rubripinna - Fowler, 1937 (original description; Kemarat)

Collecting locality - Tha Bo: Station No. 23

Material - 1 (1, 68.2 mm, IBRP 4684)

Description - D. 2/7; A. 3/5; Ll. 32, Tr. 4.5/1/2.5 to pelvic fin base. Body elongate, its depth 3.9 in standard length, moderately compressed. Head pointed, its length 3.3 in standard length. Mouth directed obliquely upward; lower jaw slightly prominent, without a symphyseal knob. Two pairs of barbels; rostral barbels longer than maxillary ones and equal to eye diameter. Maximum size recorded 8.5 cm.

Life color: Upperside of body greenish brown, ranging to light silvery brown on underside. A broad black longitudinal stripe on side from anterior end of snout to posterior margin of caudal fin. Dorsal fin yellowish brown; anal fin brown; caudal fin orange-brown with a diffuse blackish margin; pectoral and pelvic fins pale.

Remarks - The specimen examined differs from Fowler's description in the number of branched dorsal fin rays and lateral line scales, but otherwise agrees with the description.

Rasbora daniconius daniconius (Hamilton-Buchanan)

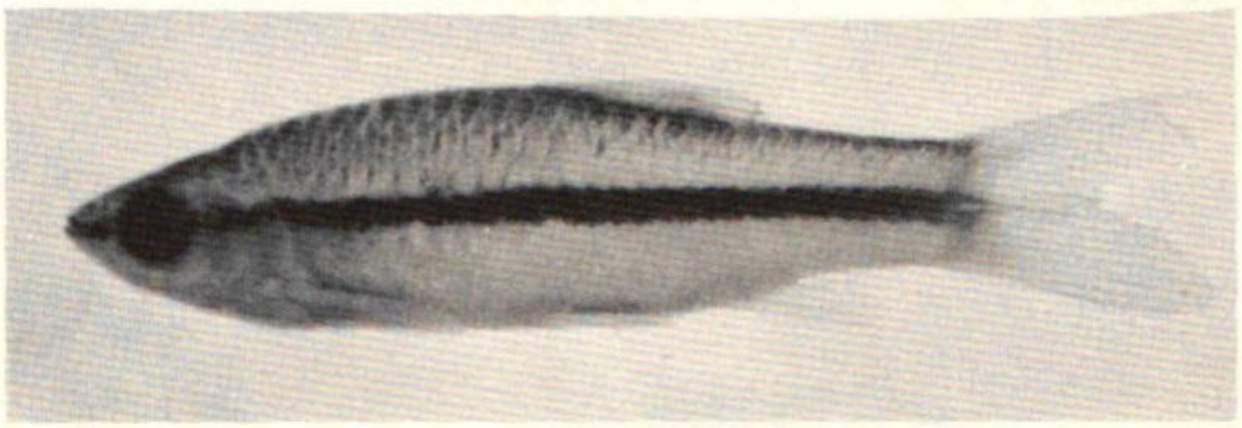


Fig. 96 *Rasbora daniconius danisonius* (Hamilton-Buchanan) 40.8 mm SL

Collecting locality - Tha Ngon: Station No. 13

Material 2 (2, 39.5 and 40.8 mm, IBRP 4917)

Description - D. 2/7; A. 2/5; Ll. 28-29, Tr. 4.5/1/1 to pelvic fin base, predorsal scales 13, circumpeduncular scales 14. Snout pointed. Mouth directed obliquely upward; lower jaw with a symphyseal knob fitting into a depression on upper jaw. No barbels. Maximum length about 8 cm.

Life color: Ground color of body brown, underside silvery. A sharply defined black stripe extending from tip of snout, crossing eye, to base of caudal fin and continued on a vague dark line on middle of caudal fin. Dorsal fin brick-red; anal and caudal fins yellow; pectoral and pelvic fins pale.

Remarks - The Laotian specimens at hand are identical with *R. einthovenii* as described by Weber and de Beaufort (1916) and Smith (1945). These authors considered *R. daniconius* to be an Indian species, and differentiated *R. einthovenii* from it. In the present report Brittan's (1954) classification is adopted, and the specimens are identified as *R. daniconius daniconius*.

Rasbora sumatrana (Bleeker)



Fig. 97 *Rasbora sumatrana* (Bleeker) 46.8 mm SL

Rasbora lateristriata - Fowler, 1934a (Chiengsen)

Collecting locality - Tha Ngon, Sithan Tay: Station Nos. 15, 26

Material - 2 (2, 41.5 and 46.8 mm, IBRP 4543, 4979)

Description - D. 2/7; A. 3/5; Ll. 27, predorsal scales 13, circumpeduncular scales 12. Lower jaw with a symphyseal knob. Barbels absent. Lateral line complete. Maximum length 12 cm.

Coloration of preserved specimens: Brown above, light brown below. A dark lateral stripe beginning from gill opening and ending in an oval or somewhat diamond-shaped spot at base of caudal fin; the stripe narrow and faint anteriorly and gradually increasing its width and intensity posteriorly. Distal margin of caudal fin dark.

Remarks - The specimens examined are identical with *R. lateristriata lateristriata* as described and figured by Smith (1945). In this report these specimens are identified as *R. sumatrana* based on Brittan (1954).

Rasbora borapetensis Smith

Laotian name: Pa sieu

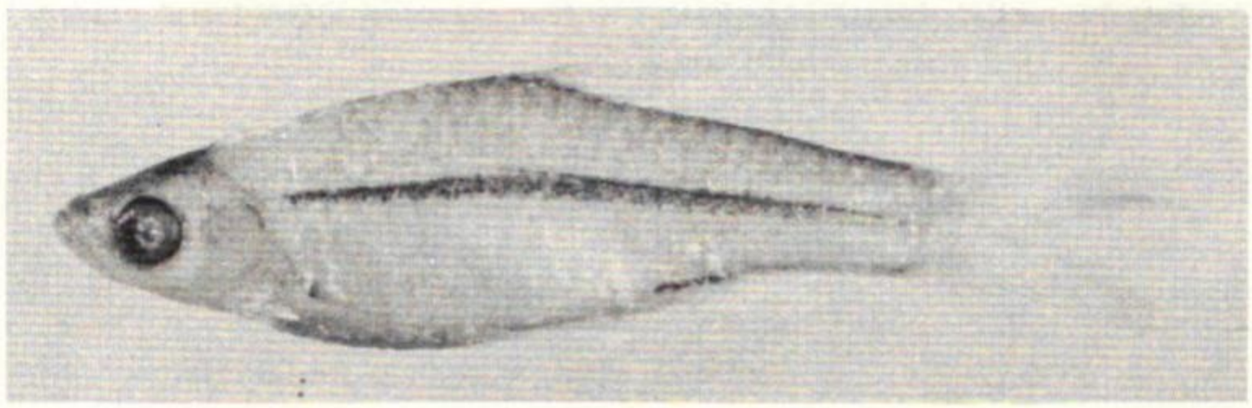


Fig. 98 *Rasbora borapetensis* Smith 30.2 mm SL

Rasbora borapetensis - Taki, 1968 (Nong Teng: Station No. 16)

Collecting locality - Tha Ngon, Tha Bo, Sithan Tay, Paksc, Hatsalao, Pathoum Phon: Station Nos. 12, 13, 23, 26, 31, 33, 34, 39

Material - 39 (7, 30.0 - 36.4 mm, IBRP 4509)

Description - D. 2/7; A. 3/5. Mouth small; lower jaw with a symphyseal knob. Barbels absent. Lateral line incomplete, with 10 to 16 perforated scales, extending to pelvic fins or beyond anal fin. Attains 5 cm in length.

Life color: Back of body brownish with yellow-green metalic sheen, ventral side silvery white. A black longitudinal stripe extending on side from gill opening to base of caudal fin; a narrow glistering golden stripe running immediately above the black stripe; a short stripe or cluster of melanophores on side at base of caudal fin.

Rasbora trilineata Steindachner

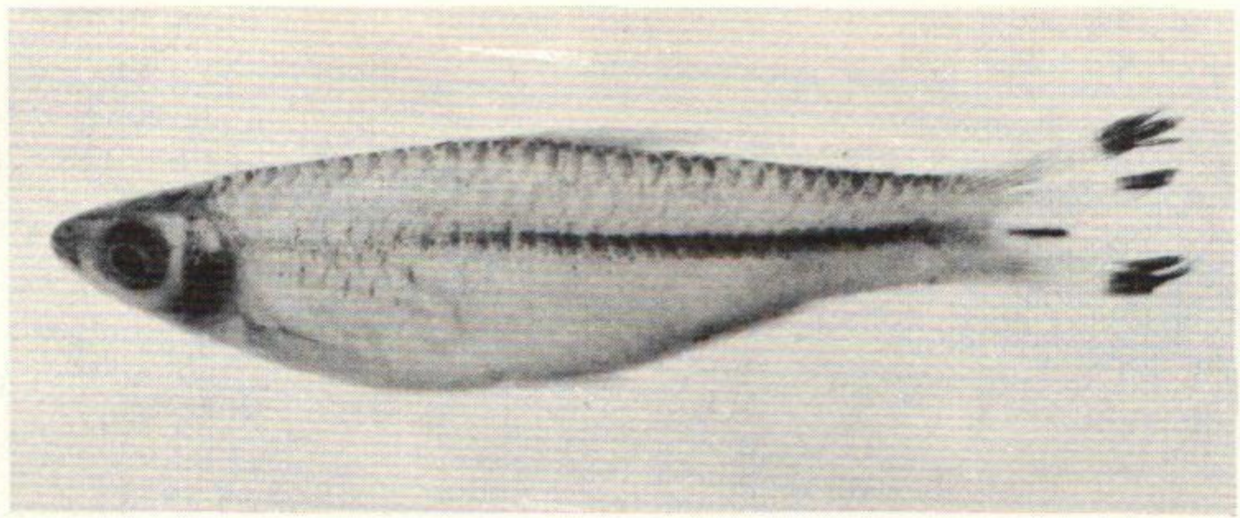


Fig. 99 *Rasbora trilineata* Steindachner 50.3 mm SL

Rasbora trilineata - Taki, 1968 (Salakham: Station No. 24)

Collecting locality - Tha Ngon, Tha Bo, Sai Fong: Station Nos. 12, 13, 15, 23, 25

Material - 33 (5, 22.8 - 50.3 mm, IBRP 4069, 4401, 5203)

Description - D. 2/7; A. 3/5; Ll. 29-32. Body elongate, compressed. Head small. Mouth small, lower jaw with a symphyseal knob fitting into a depression on upper jaw. No barbels. Maximum length 13 cm.

Life color: Body silvery white, back with olive tint. A dark, narrow, lateral stripe running from anterior portion of body to hind edge of caudal fin; a short blackish line on each side along base of anal fin, the lines on both sides joining behind anal fin and extending to base of caudal fin along lower edge of caudal peduncle. Fins pale yellow or hyaline; caudal fin with a broad black subterminal stripe or blotch on each lobe.

Rasbora myersi Brittan

Laotian name: Pa sieu



Fig. 100 *Rasbora myersi* Brittan 82.0 mm SL

Rasbora argyrotaenia - Fowler, 1934a (Chiengsen), 1937 (Kemarat) Serene, 1951 (Mekong R. and its affluents); Taki, 1968 (Tha Ngon, Salakham, Pakse: Station Nos. 15, 24, 29)

Collecting locality - Luang Prabang, Nam Ngum dam site, Tha Ngon, Hatdokkeo, Tha Bo, Sai Fong, Sithan Tay, Pakse, Pathoum Phon: Station Nos. 4, 12, 13, 14, 15, 22, 23, 25, 26, 33, 39

Material - 2,156 (28, 46.2 - 88.5 mm, IBRP 4175, 4640, 5229)

Description - D. 2/7; A. 3/5; Ll. 29 - 30. Body elongate, not much compressed. A symphyseal knob on lower jaw. No barbels. Lateral line complete. Maximum length 17 cm.

Life color: Body silver, upperside usually darkened with brownish tint. A yellowish to bluish silver lateral stripe extending from gill opening to base of caudal fin; a black stripe running immediately below the silver stripe. Posterior margin of caudal fin black; other fins yellow or pale.

Remarks - Brittan (1954) stated that this species is most easily confused with *R. argyrotaenia* and *R. dusonensis*, but in fact *R. argyrotaenia* is found in Java, Sumatra, Borneo and Philippine Islands, and is apparently replaced by the closely related *R. myersi* in continental Southeast Asia.

Barilius pulchellus Smith

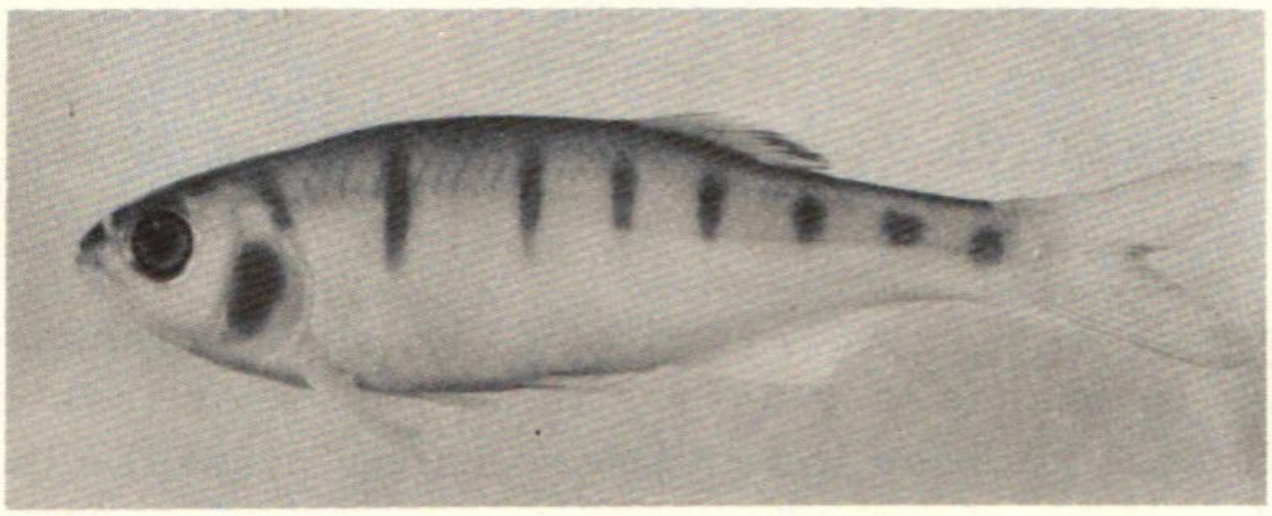


Fig. 101 *Barilius pulchellus* Smith 55.2 mm SL

Collecting locality - Luang Prabang, Sithan Tay, Bang Lieng: Station Nos. 3, 4, 5, 8, 9, 26, 38

Material - 140 (27, 24.0 - 64.7 mm, IBRP 4024, 4114, 4142, 5067, 5353, 5515)

Description - D.2-3/8; A.2-3/12-13; Ll.36-38. Body moderately elongate, compressed. Mouth rather deeply cleft, its corner extending beyond vertical from anterior margin of eye; lower jaw with a symphyseal knob, upper jaw with a corresponding emargination. Two pairs of short barbels; rostral barbels a little longer than maxillary ones. Maximum length i0.5 cm.

Life color: Silvery blue above, whitish below. Side of body with 6-11 black cross bars, the bars rod-shaped in anterior portion and becoming roundish posteriorly. Membranes of dorsal fin densely pigmented with melanophores.

Barilius nanensis Smith

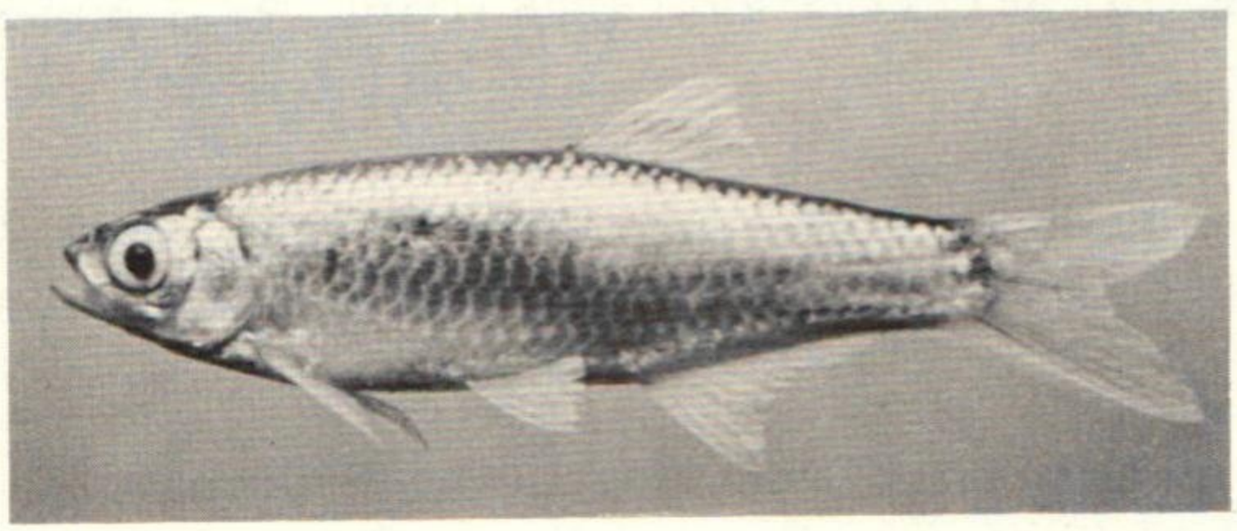


Fig. 102 *Barilius nanensis* Smith 53.0 mm SL

Collecting locality - Isl. Don Tio, Luang Prabang, Tha Ngon, Tha Bo, Sai Fong, Pakse, Hatsalao, Khinak: Station Nos. 2, 4, 12, 13, 14, 15, 23, 31, 34, 40

Material - 257 (22, 22.9 - 58.5 mm, IBRP 4113, 4181, 4281, 5347, 5786)

Description - D. 2-3/7; A. 3/10; Ll. 32-34. Body elongate, its depth 3.2 - 4.0 in standard length. Mouth more or less deeply cleft. A symphyseal knob on lower jaw. A pair of well-developed rostral and a pair of minute maxillary barbels. Maximum size about 9 cm in length.

Life color: Silvery, dorsal side darker with bluish tint. In live specimens one or two narrow cross bars on side above pectoral fin; in preserved material another bars, up to 10 in number, may be visible on each side.

Barilius guttatus (Day)

Laotian name: Pa sa nak

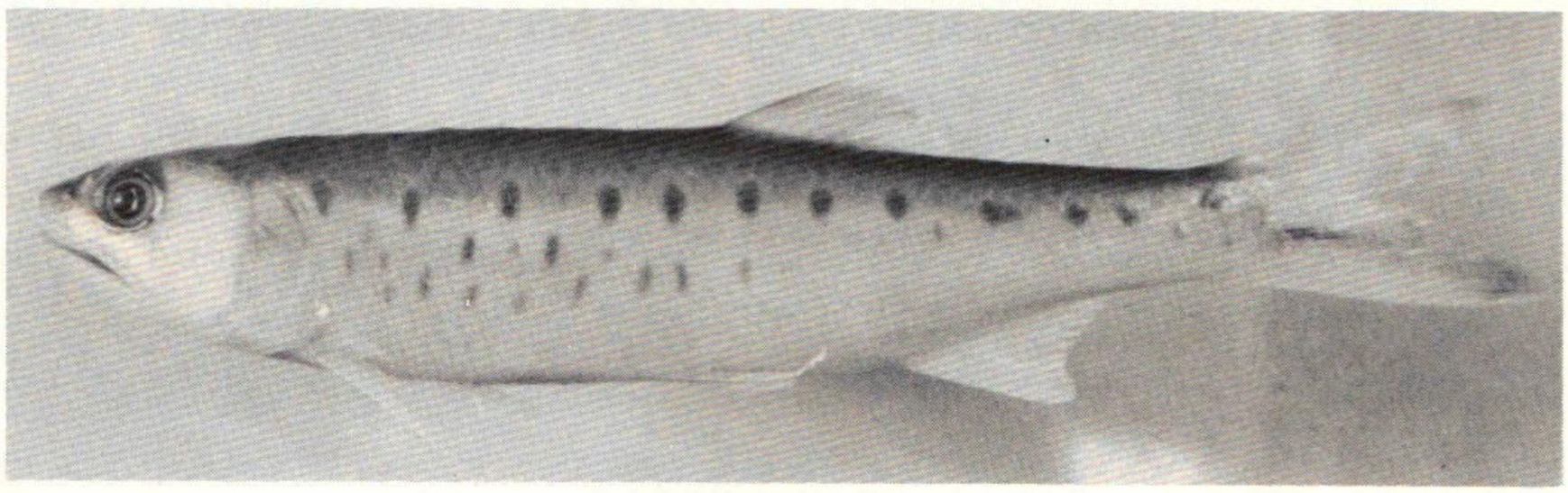


Fig. 103 *Barilius guttatus* (Day) 97.7 mm SL

Barilius guttatus - Serene, 1951 (Mekong R. and its affluents); Taki, 1968 (Luang Prabang, Vientiane, Pakse: Station Nos. 3, 20, 32)

Collecting locality - Isl. Don Tio, Luang Prabang, Tha Ngon, Vientiane, Hatdokkeo, Tha Bo, Sai Fong, Sithan Tay, Hatsalao, Bang Lieng, Pathoum Phon: Station Nos. 2, 3, 4, 8, 12, 14, 21, 22, 23, 25, 26, 34, 38, 39

Material - 152 (27, 27.0 - 112.5 mm, IBRP 4023, 4112, 4280, 5513)

Description - D. 2-3/7; A. 2-3/10; Ll. 44-47. Body depth 4.2 - 4.8 in standard length. Snout length more than 3.5 in head length. Preoperculum broad. Mouth deeply cleft, its corner extending below or beyond hind margin of eye. A symphyseal knob on lower jaw and a depression on upper jaw. In Laotian examples four barbels present; maxillary barbels small, rostral ones often reduced into minute fleshy buttons. Attains nearly 30 cm in length.

Life color: Ground color of body light brown to brownish orange with silvery metalic sheen. A longitudinal row of small dark spots above lateral line, another one or two irregular rows of spots on and/or below lateral line. Dorsal fin dusky orange; pectoral, pelvic and anal fins light orange; caudal fin dusky orange, a black inframarginal stripe on lower lobe.

Barilius pellegrini Fang

Barilius pellegrini- Pellegrin and Fang, 1940 (Ban Nam Khueng)

Barilius barna (Hamilton-Buchanan)

Barilius barna- Serene, 1951 (Affluents of Mekong R.)

Parabarilius laoensis Pellegrin and Fang

Parabarilius laoensis - Pellegrin and Fang, 1940 (original description; Ban Nam Khueng)

Life color: Grayish brown to yellowish brown, with silvery luster. A roundish black blotch on side immediately above 9th or 10th scale of lateral line; caudal peduncle sometimes with an ill-defined dark blotch. Dorsal fin yellow to brick-red, its front margin with or without a dark hem; caudal fin dusky orange, with an indistinctly outlined blackish upper and lower margin of each lobe; other fins light brown to pale.

Thynnichthys thynnoides (Bleeker)

Laotian name: Pa keum

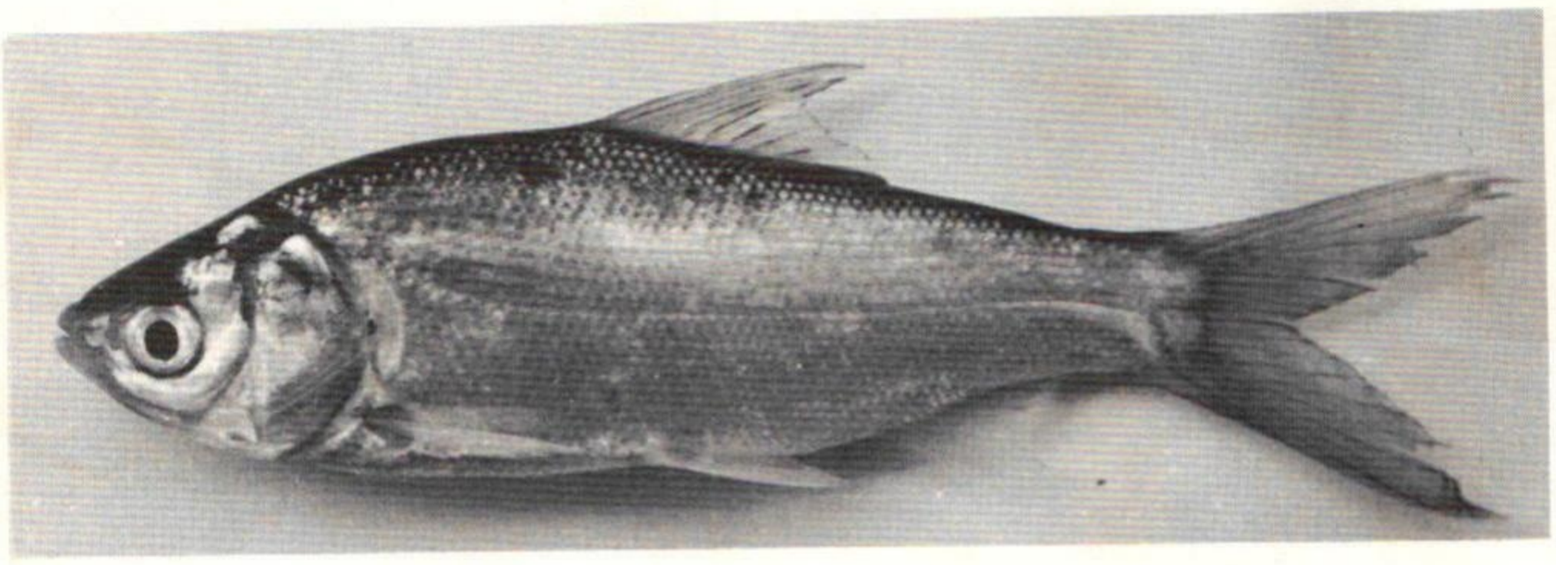


Fig. 106 *Thynnichthys thynnoides* (Bleeker) 86.0 mm SL

Thynnichthys thynnoides- Serene, 1951 (Mekong R. and its affluents, streams); Taki, 1968 (Tha Ngon, Vientiane, Pakse: Station Nos. 12, 20, 32)

Collecting locality - Tha Ngon, Vientiane, Tha Bo, Khouai Deng: Station Nos. 12, 15, 20, 23, 28

Material - 18 (7, 68.2 - 102.7 mm, IBRP 4788, 5806)

Description - D. 3/8; A. 3/5; Ll. 56-57, predorsal scales in an irregular row, about 22 - 24. Body moderately elongate, its depth 3.2 - 3.5 in standard length, not much compressed, greatest depth at a point between insertion of pectoral fins and origin of dorsal fin. Head rather small, opercular flap broad, length of head with flap 2.9 - 3.1, without flap 3.3 - 3.5, both in standard length. Snout short, pointed. Mouth terminal, oblique, arched; lower jaw sometimes slightly projected. No barbels. Eyes situated in about middle of depth of head, looking somewhat down-

ward. Scales small. Dorsal fin without osseous rays. Maximum length 25 cm.

Life color: Silvery, back darker. A small but well-defined black spot near posterior tip of opercular flap. Dorsal and caudal fins duskily shaded with melanophores, their apex and free margins darkest; other fins sparsely pigmented with melanophores.

Cirrhinus jullieni Sauvage

Laotian name: Pa soi

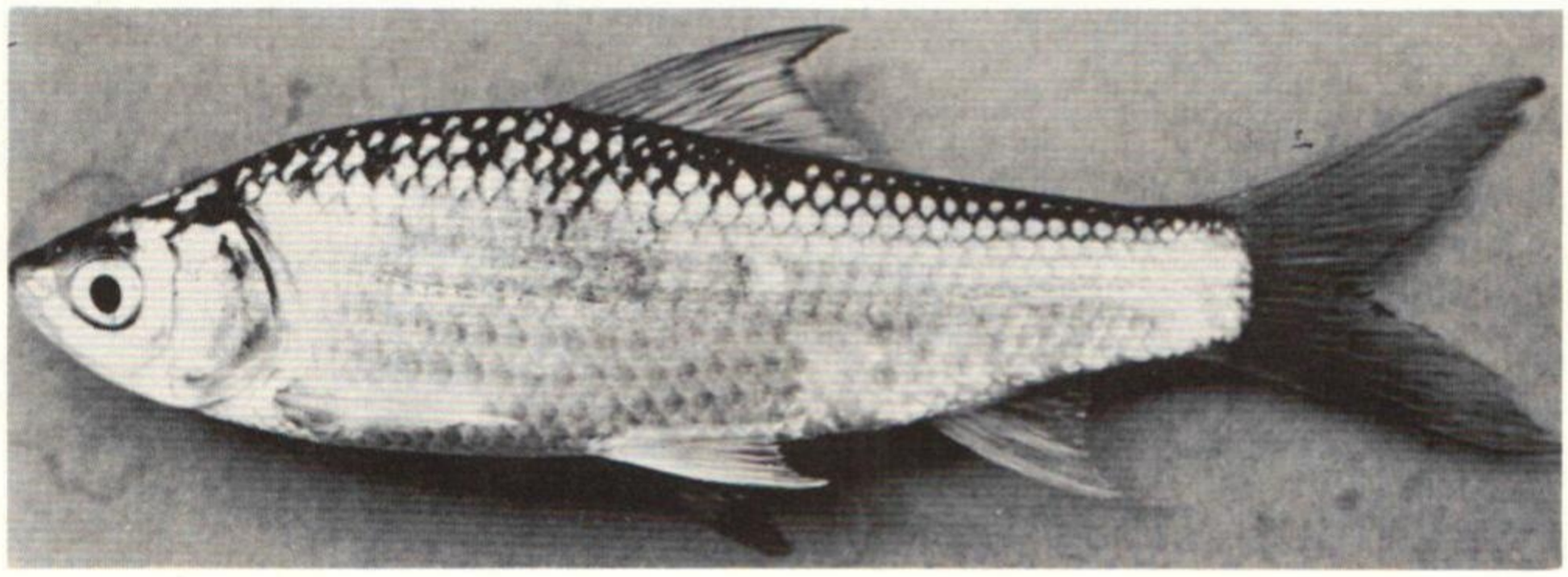


Fig. 107 *Cirrhinus jullieni* Sauvage 125.0 mm SL

Cirrhinus jullieni-Fowler, 1934a (Chiengsen), 1935b (Chiengsen Kao), 1937 (Kemarat); Serene, 1951 (Mekong R. and its affluents, swamps, ponds; Taki, 1968 (Luang Prabang, Vientiane market, Pakse: Station Nos. 4, 32)

Collecting locality - Pak Suong, Luang Prabang, Nam Ngum dam site, Tha Ngon, Vientiane, Tha Bo, Sithan Tay, Khouai Deng, Pakse, Hatsalao, Bang Lieng, Khinak, Khong Falls: Station Nos. 1, 4, 10, 12, 13, 15, 20, 23, 26, 28, 33, 38, 40, 41

Material - 2,946 (16, 69.0 - 114.5 mm, IBRP 3207, 3215, 4115, 4282, 5676)

Description - D. 2-3/8; A. 2-3/5; Ll. 33 - 34, Tr. 5.5/1/3.5 - 4.5 to pelvic fin insertion, predorsal scales 10 - 11, circumpeduncular scales 20. Body elongate, its depth 3.1 - 3.6 in standard length. Head small, its length 3.6 - 4.3 in standard length. Snout some-

what pointed, prominent, overhanging lower jaw; rostral fold with a shallow median notch, involving upper jaw. Mouth subinferior, rather wide. Lips thin, lower one finely papillate or entire. Maxillary barbels small, rudimentary or absent; no rostral barbels. Dorsal fin without osseous rays. To 20 cm in length.

Life color: Body silvery white to light brownish silver. Dorsal fin grayish, sometimes with orange tint; caudal fin dusky; other fins hyaline.

Cirrhinus lineatus Smith

Laotian name: Pa soi

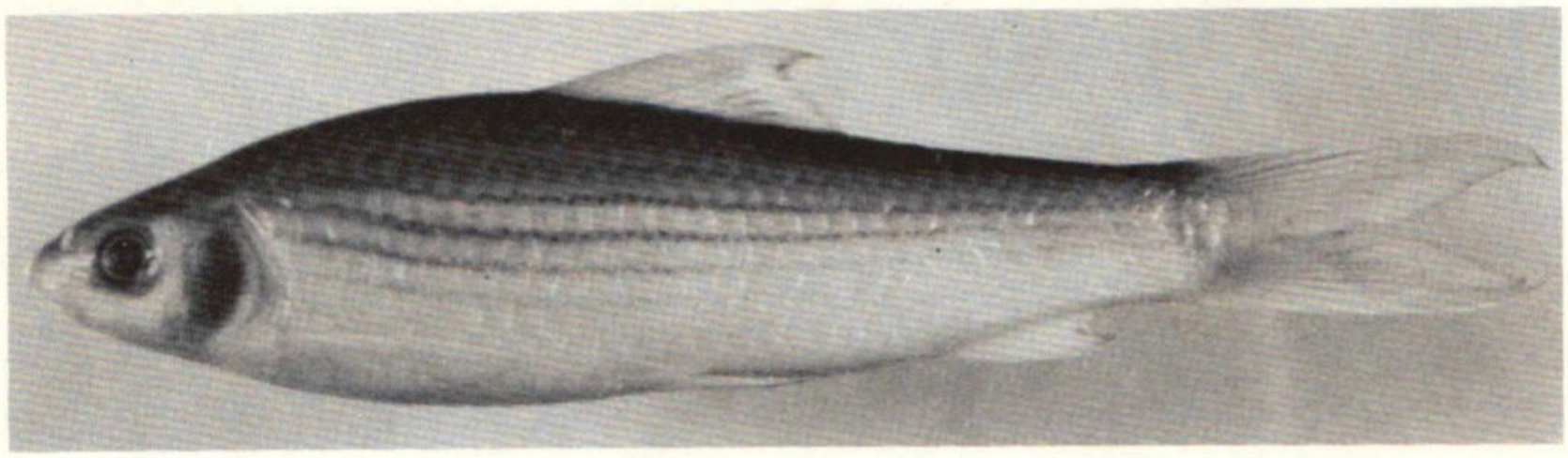


Fig. 108 *Cirrhinus lineatus* Smith 60.0 mm SL

Collecting locality - Luang Prabang, Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay, Hatsalao: Station Nos. 2, 3, 10, 12, 13, 15, 23, 26, 34

Material - 1,290 (9, 57.8 - 87.5 mm, IBRP 4134, 4819, 5336)

Description - D.2-3/8; A.2-3/5; Ll.32-33, Tr.5.5/1/4 or rarely 3.5 or 4.5 to pelvic fin insertion, predorsal scales 10 - 11, circumpeduncular scales 20. Body elongate, not much compressed, its depth 3.5 - 4.0 in standard length. Head small, its length 3.6 - 4.0 in standard length. Lower lip entirely or only partly ornamented with minute papillae. A pair of maxillary barbels minute or missing. To 15 cm in length.

Life color: Silver to brownish silver, back darker. Back and side with six to eight narrow dark lateral stripes following rows of scales. A diffuse dark spot on caudal peduncle. Dorsal and caudal fins dusky; other fins pale.

Remarks - The Laotian specimens are in almost perfect agreement with the preceding species, *C. jullieni*, in the meristic counts and the feature of the mouth region. The only characters separating these two forms, according to the Laotian samples, are the coloration and the body height(*C. lineatus* has a slightly low body than *C. jullieni*). In the original description of *C. lineatus* Smith (1945) stated that 'the species may fall within the limits of variation of the imperfectly described *C. jullieni* Sauvage'.

Cirrhinus microlepis Sauvage

Laotian name: Pa phone



Fig. 109 *Cirrhinus microlepis* Sauvage 375.0 mm SL

ห้ามจำหน่าย

Cirrhinus auratus- Serene, 1951 (Mekong R. and its affluents)
Cirrhinus microlepis - Taki, 1968 (Luang Prabang, Vientiane, Pakse, Isl. Hin Soune: Station Nos. 3, 20, 32, 37)

Collecting locality - Hatsalao: Station No. 34

Material - 1 (1, 375.0 mm, deposited at the Laboratory, Direction des Eaux, Forets et Chasses, Vientiane)

Description - D. 3/12; A. 3/5; Ll. 54. Body elongate, not much compressed, body depth 3.6 in standard length. Head rather broad, short, its length 4.3 in standard length. Lips entire. No barbels.

Dorsal fin without osseous rays. Maximum example observed about 65 cm in length.

Life color: Body grayish orange to silvery brown, underside light-colored. Each scale on back and sides with a dark base. Dorsal and caudal fins grayish brown, their distal margins pink to red; other fins light brown to gray, apex pinkish.

Leptobarbus hoevenii (Bleeker)

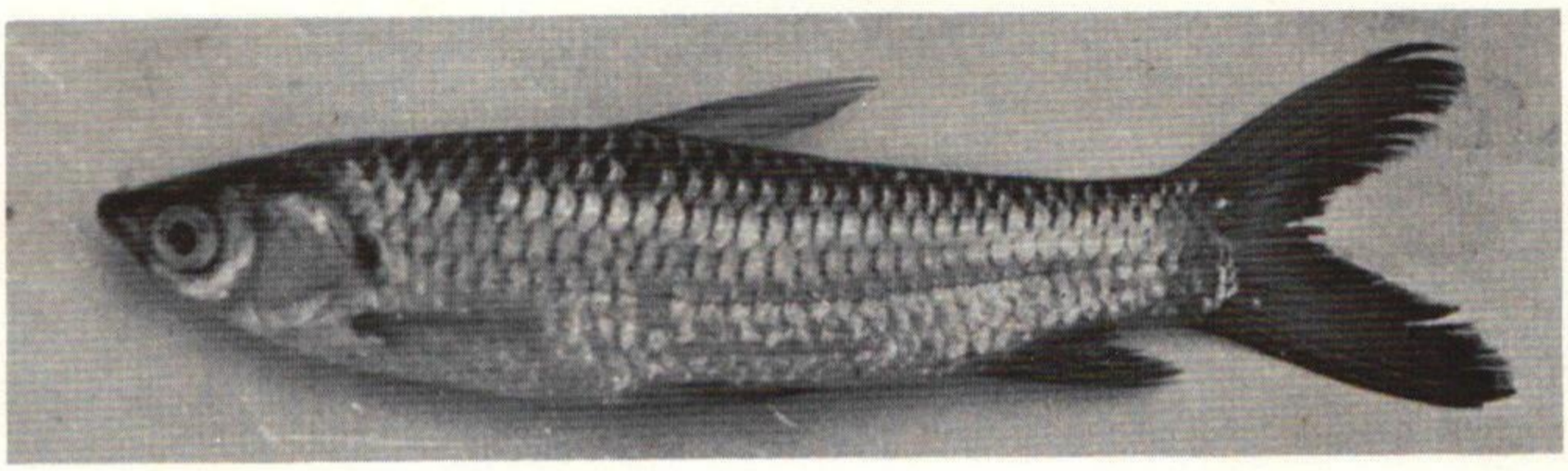


Fig. 110 *Leptobarbus hoevenii* (Bleeker) 88.0 mm SL

Leptobarbus hoevenii - Serene, 1951 (Mekong R. and its affluents); Taki, 1968 (Tha Ngon, Vientiane market, Pakse: Station Nos. 12, 32)

Collecting locality - Tha Ngon: Station No. 12

Material - 1 (1, 118.0 mm, IBRP 5822)

Description - D. 3/7; A. 3/5; Ll. 32, Tr. 4.5/1/2.5 to pelvic fin origin, predorsal scales 12, circumpeduncular scales 14. Body elongate, its depth 3.6 in standard length. Head broad, short, its length 3.5 in standard length; operculum large. Mouth terminal, oblique, rather deeply cleft but not extending posteriorly to front margin of eye. Barbels two pairs, well developed. Dorsal fin short, low, last unbranched ray not osseous, entire. Lateral line recurved downward, running along lower half of caudal peduncle. Attains 50 cm in length.

Life color: Ground color of body rich yellowish green, back darker. Operculum brilliant gold, with a distinct or diffuse black blotch immediately behind. A black longitudinal stripe on side

extending from head to base of caudal fin, which becomes obsure in larger fish. Dorsal fin dusky yellow; anal, pelvic and caudal fins blood-red; pectoral fins hyaline.

Osteochilus hasselti (Cuvier and Valenciennes)

Laotian name: Pa khao mong

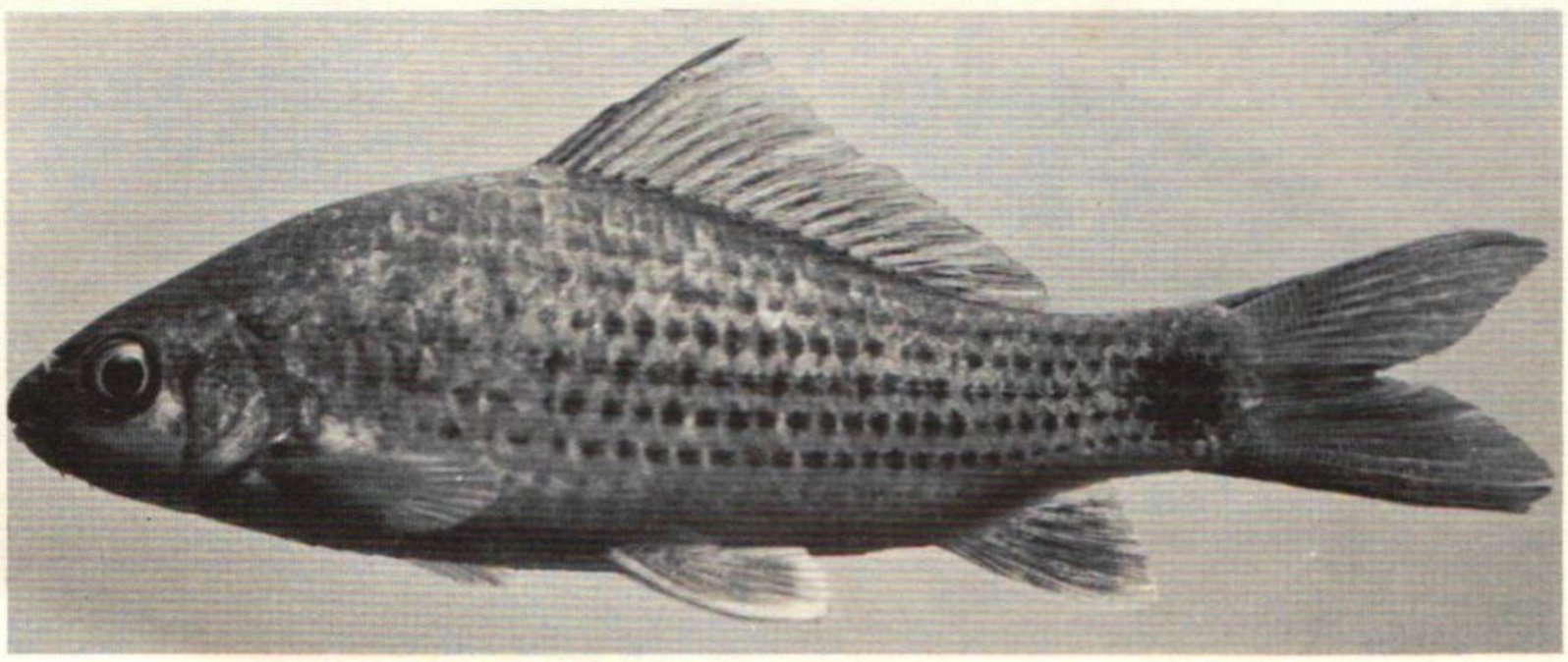


Fig. 111 *Osteochilus hasselti* (Cuvier and Valenciennes)

92.0 mm SL

Osteochilus duostigma- Fowler, 1937 (Kemarat); Taki, 1968 (Tha Ngon, Station No. 12)

Osteochilus hasselti- Pellegrin and Fang, 1940 (Ban Nam Khueng); Serene , 1951 (Mekong R. and its affluents, streams); Taki, 1968 (Tha Ngon, Pakse: Station Nos. 12, 13, 32).

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo: Station Nos. 10, 12, 13, 15, 23

Material - 114 (14, 56.0 - 145.6 mm, IBRP 4960, 5159, 5625, 5696, 5719)

Description - D.3/14 - 16; A.3/5; Ll.31 - 32, Tr.5.5/1/4 to pelvic fin origin. Body depth 2.8 - 3.2, head length 3.4 - 4.5 both in standard length. Dorsal profile arched, ventral profile arched or more less traight. Snout somewhat bluntly rounded, prominent, without pores. Lips thick, finely papillate; upper lip covered by a fold of skin; lower jaw forming a sharp edge projecting over. Maxillary barbels equal to or slightly shorter than eye diameter, rostral ones much shorter. Dorsal fin long, unbranched rays not osseous, smooth. Reaches 30 cm in length.

Life color: Body brownish to greenish gray, with golden gleam. Sides of body with bright pink or orange spots. Pectoral fins plain or greenish; other fins orange to blood-red.

Osteochilus lini Fowler

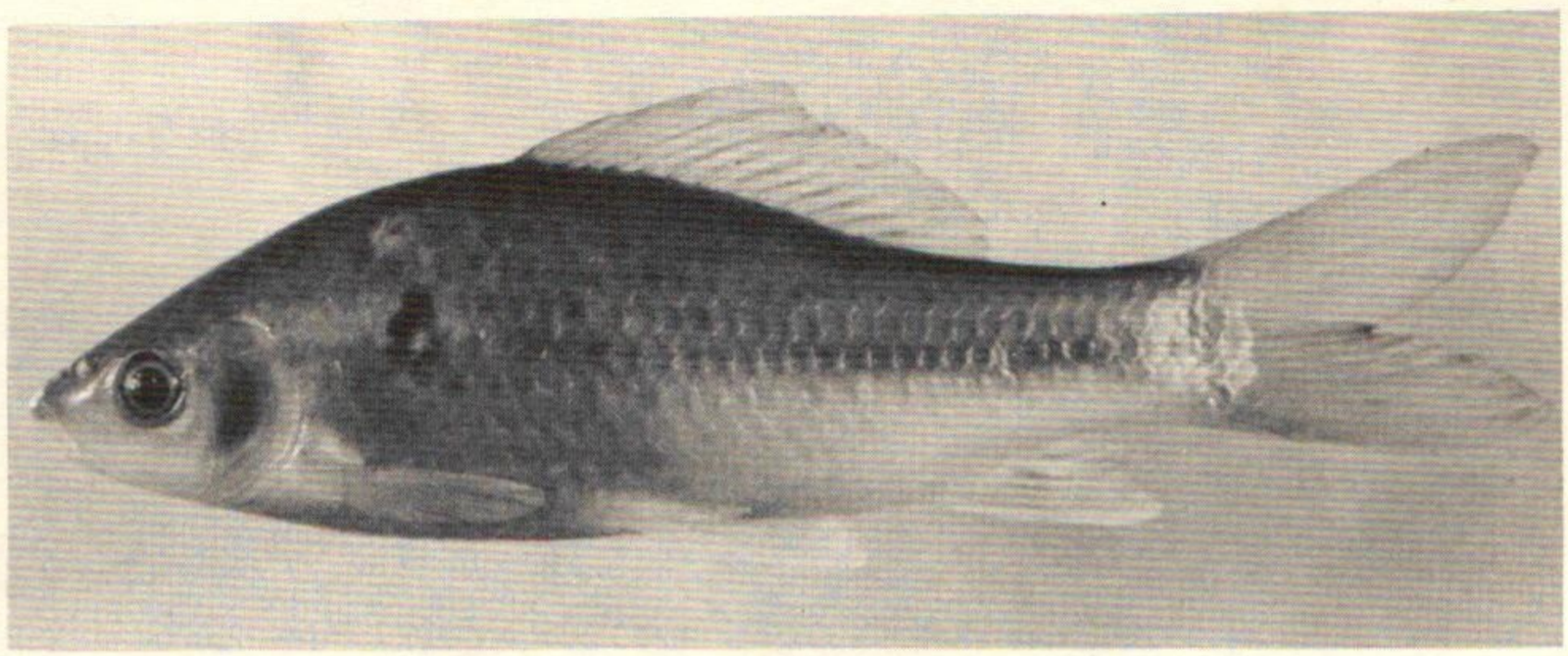


Fig. 112 *Osteochilus lini* Fowler 79.0 mm SL

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay: Station Nos. 10, 12, 13, 15, 23, 26

Material - 312 (17, 55.3 - 115.5 mm, IBRP 3227, 3236, 5697)

Description - D. 3/12-13; A. 3/5; Ll. 31-32, Tr. 5.5 (rarely 6.5)/1/4 to pelvic fin origin. Body oblong, both dorsal and ventral profiles arched, body depth 2.8 - 3.0 in standard length. Head small, its length 3.9 - 4.2 in standard length. Snout slightly prominent, with pores. Lips well fringed. Two pairs of barbels; maxillary barbels longer than rostral ones. Unbranched dorsal rays not osseous. Maximum length about 15 cm.

Life color: Greenish brown, back darker. A black, irregular-shaped (often crescent or diamond - shaped) marking on side involving 5th scale of lateral line. Anal and pelvic fins yellow-orange, other fins blackish.

Osteochilus tatumi Fowler

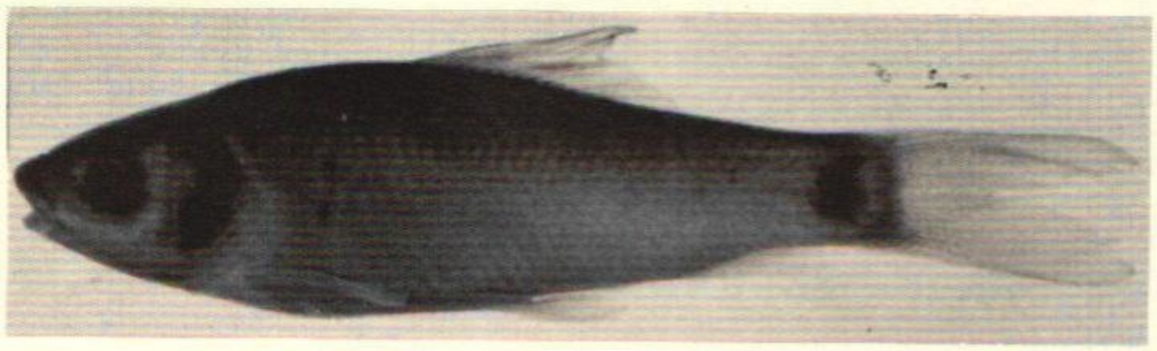


Fig. 113 *Osteochilus tatumi* Fowler 62.7 mm SL

Collecting locality - Tha Bo: Station No. 23

Material - 7 (7, 57.5 - 64.5 mm, IBRP 4846

Description - D. 3/12; A. 2/5; Ll. 34-36. Body elongate, not much compressed, its depth 3.2 - 3.7 in standard length. Head length 3.1 - 3.3 in standard length. Snout bluntly rounded, somewhat prominent, with several irregular rows of pores on front. Mouth wide, lips entire. A pair of maxillary barbels, their length about 0.4 eye diameter (in one specimen a rudimentary rostral barbel was observed). Unbranched dorsal rays not ossified. Largest example recorded 11.7 cm in length.

Coloration of preserved specimens: Body brown, underside whitish. A small dark spot on the scale immediately above 5th scale of lateral line and another one spot of almost similar color and shape below 5th scale. A large dark roundish blotch on caudal peduncle. Dorsal and caudal fins light grayish brown; other fins pale.

Osteochilus prosemion Fowler

Laotian name: Pa keng

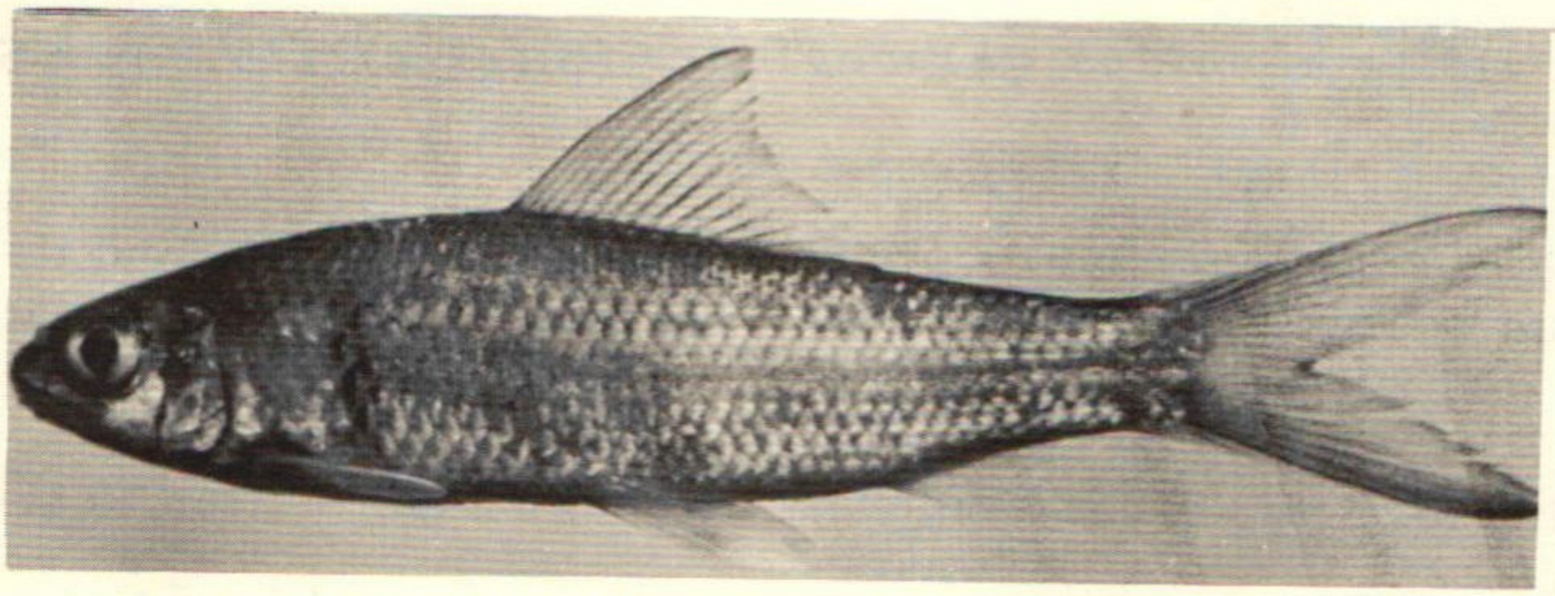


Fig. 114 *Osteochilus prosemion* Fowler 73.0 mm SL

Osteochilus prosemion - Fowler, 1937 (Kemarat); Taki, 1968 (Luang Prabang, Vientiane, Pakse: Station Nos. 3, 20, 32)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay: Station Nos. 10, 12, 23, 26

Material - 30 (8, 46.0 - 62.0 mm, IBRP 5246, 5628, 5721)

Description - D. 3/11-12; A. 3/5; Ll. 35-37, predorsal scales 13-14. Body slender, its depth 3.7 -4.1 in standard length. Head small, its length 4.0 - 4.3 in standard length. Snout rather broad, slightly prominent, with pores on front. Mouth subinferior, both lips finely papillate. Only rostral barbels present. Dorsal fin without osseous rays.

Life color: Ground color of body silver - gray, base of scales dark; the dark base emphasized on side above pectoral fin, forming a cross bar across 5th and 6th scales of lateral line.

Osteochilus melanopleura (Bleeker)

Laotian name: Pa nok khao

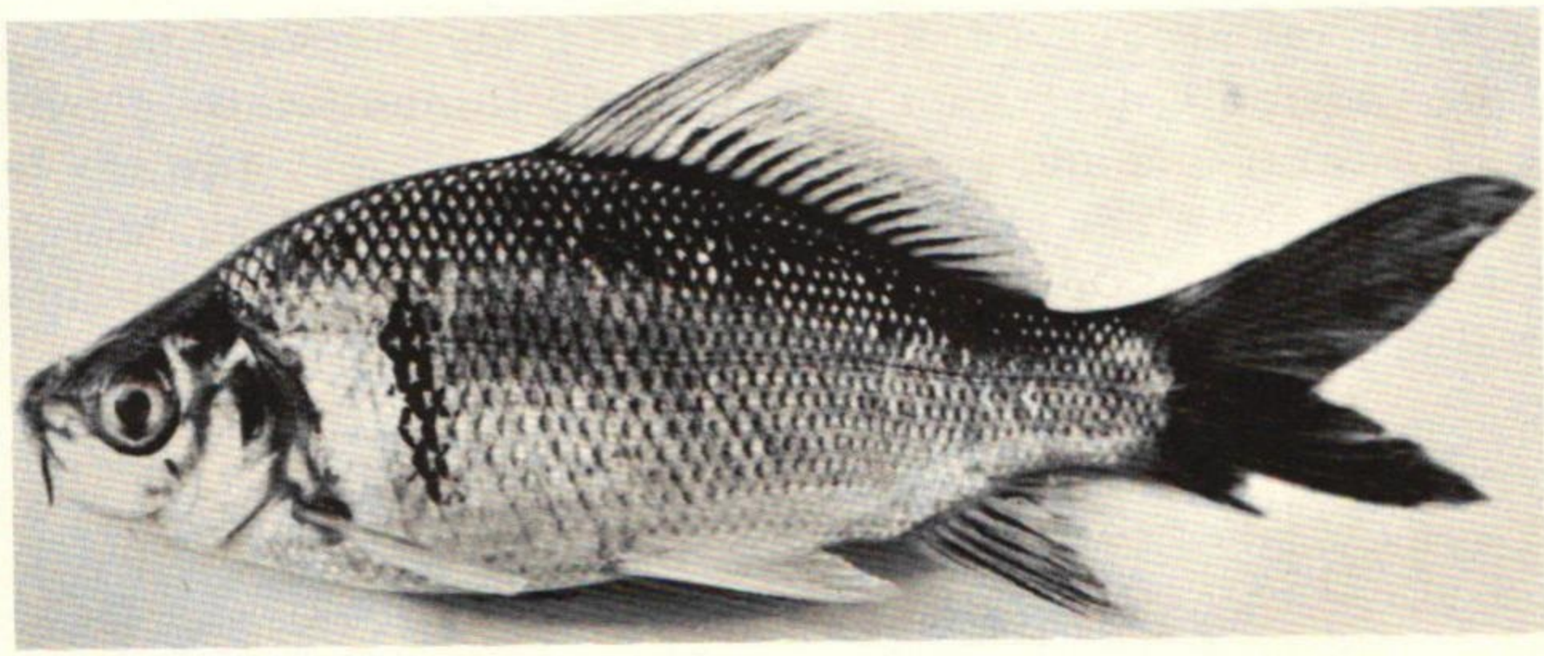


Fig. 115 *Osteochilus melanopleura* (Bleeker) 235.0 mm SL

Osteochilus melanopleura- Serene , 1951 (Mekong R. and its affluents); Taki, 1968 (Tha Ngon, Hatdokkeo, Hatsalao: Station Nos. 12, 22, 34)

Collecting locality - Tha Ngon, Tha Bo, Sai Fong: Station Nos. 12, 13, 23, 25

Material - 17 (6, 67.5 - 158.5 mm, IBRP 4077, 4872)

Description - D. 3/16-18; A. 3/5; Ll. 46-50. Body oblong, its depth 2.4 - 3.0 in standard length. Head rather short, its length 3.4 - 4.7 in standard length. Snout blunt or truncate, without pores; upper jaw prominent. Mouth strongly ascending from chin; upper lip finely fimbriate, lower one papillate. Maxillary and rostral barbels well developed, the former longer. Dorsal fin long, anterior rays elongate, unbranched rays not ossified, smooth. Scales small. Attains 40 cm in length.

Life color: Body dark brownish to bluish gray. A broad black transverse band on side above pectoral fin, occupying usually 6th and 7th scales of lateral line. Young with a broad black blotch at base of caudal fin. Dorsal and caudal fins dark gray; anal fin dark, often with brilliant yellowish tint; pectoral and pelvic fins pale or light gray.

Osteochilus vittatus (Cuvier and Valenciennes)

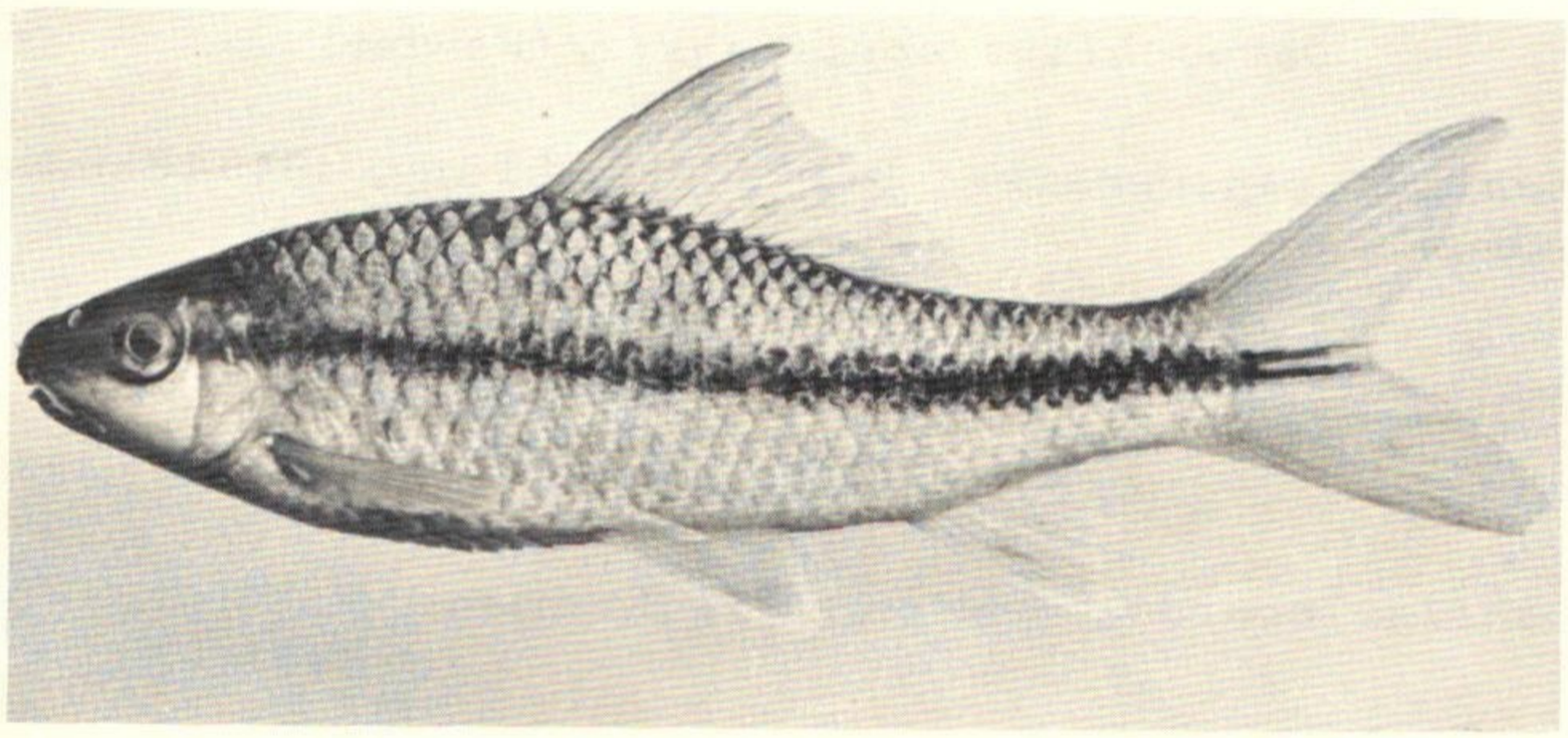


Fig. 116 *Osteochilus vittatus* (Cuvier and Valenciennes)
89.0 mm SL

Osteochilus vittatus - Fowler, 1934a (Chiengsen), 1935b (Chiengsen Kao), 1937 (Kemarat): Serene , 1951 (Mekong R. and its affluents, streams); Taki, 1968 (Luang Prabang, Vientiane, Isl. Hin Soune: Station Nos. 3, 20, 37)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay, Hatsalao: Station Nos. 10, 12, 13, 14, 15, 23, 26, 34

Material - 277 (20, 58.5 - 108.0 mm, IBRP 4777. 5520, 5698. 5749)

Description - D. 3/11-12; A. 3/5; Ll. 30-31, Tr. 5.5/1/4.5 to pelvic fin origin. Body depth 3.3 - 3.6, head length 3.9 - 4.5 both in standard length. Snout bluntly rounded, prominent, its front with a large median pore and a small pore on either side. Mouth subinferior, arched; lips finely papillate. Maxillary barbels as long as or a little longer than eye diameter, rostral barbels shorter. Dorsal fin with elongate, non-ossified anterior rays. Maximum length 26 cm.

Life color: Ground color of body bluish to brownish gray with golden gloss, back violet or blue. A broad, black, longitudinal stripe running along lateral line. The stripe may be distinctly outlined or diffuse; in the former case the stripe extends from eye to tip of middle caudal rays, and in the latter case it terminates at base of caudal fin. Pectoral fins hyaline; other fins red or orange.

Osteochilus soplaoensis (Fowler)

Osteochilus saploensis- Pellegrin and Fang, 1940 (Ban Nam Khueng)

Osteochilus ochrus Fowler

Osteochilus ochrus- Fowler, 1937 (Kemarat)

Labiobarbus lineatus (Sauvage)

Laotian name: Pa khoui lam

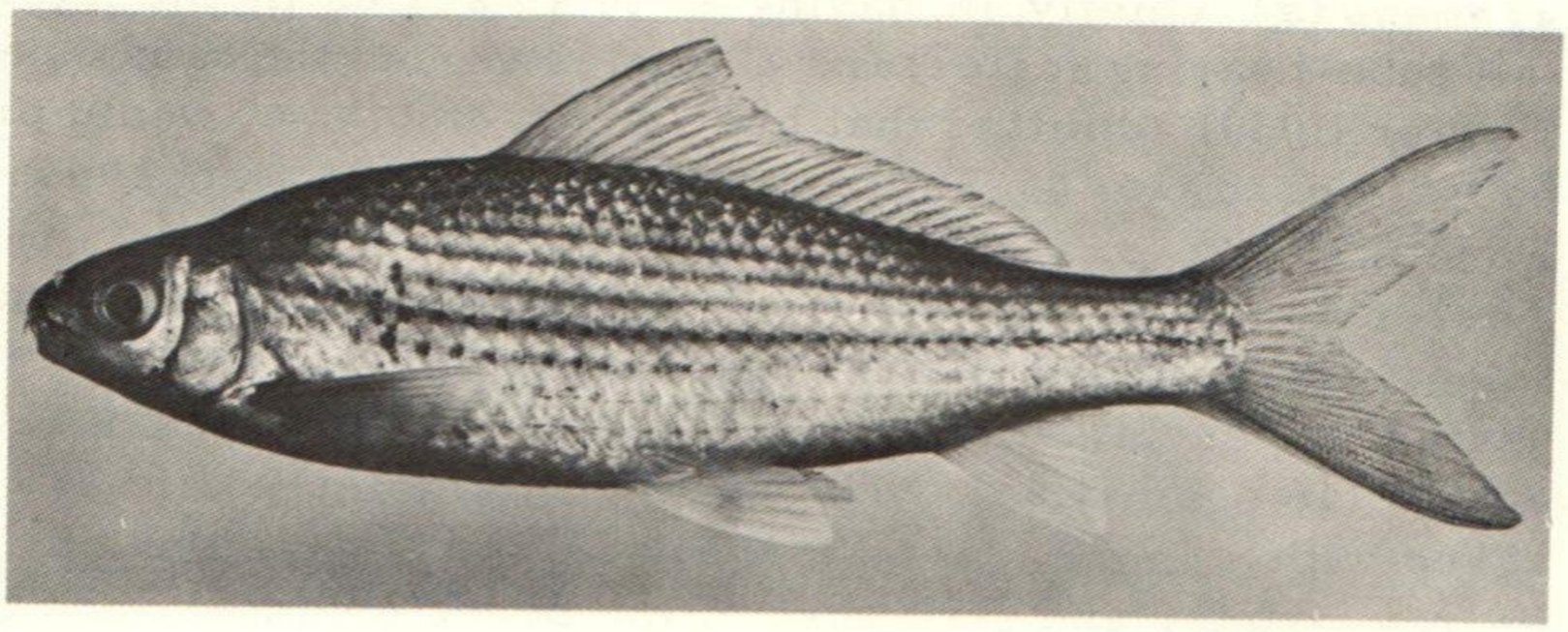


Fig. 117 *Labiobarbus lineatus* (Sauvage) 95.0 mm SL

Dangila siamensis - Fowler, 1934a (Chiengsen), 1935b (Chiengsen Kao), 1937 (Kemarat); Serene, 1951 (Mekong R. and its affluents, streams); Taki, 1968 (Luang Prabang, Vientiane, Salakham, Hatdokkeo, Pakse: Station Nos. 4, 20, 22, 24, 32)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay, Pakse, Hatsalao, Bang Lieng, Khinak, Khong Falls: Station Nos. 10, 12, 13, 15, 23, 26, 33, 34, 38, 40, 41

Material - 1,584 (24, 78.6 = 180.0 mm, IBRP 4030, 4379, 5656, 5684)

Description - D. 3/22-24; A. 3/5; Ll. 34-35, Tr. 6.5/1/5 or rarely 4.5 to pelvic fin origin, predorsal scales 10 or rarely 11, circumpeduncular scales 16. Body depth 3.2 - 3.7, head length 4.3 - 4.8 both in standard length. Snout slightly prominent, with two rows of several large pores on front. Upper lip with seven to nine small papillae; lower lip with numerous minute papillae. Barbels rostral and maxillary, the latter equal to or longer than eye diameter, the former much shorter. Dorsal fin very long, without osseous rays. Maximum length 18 cm.

Life color: Bluish or greenish brown, belly whitish. A small dark spot on each scale on back and side forming eight to nine longitudinal stripes; the spots often enlarged and intensified at a few scales on and immediately above and below lateral line above pectoral fin, presenting a crescent or diamond-shaped marking. A more or less distinct black blotch at base of caudal fin. Fins brownish.

Remarks - The specimens at hand are in perfect agreement with Fowler's (1934a, 1935b, 1937) description of *Dangila (= Labiobarbus) siamensis*. According to Smith (1945), however, the type specimens of *D. siamensis* differ from Fowler's *'D. siamensis'* chiefly in having 43 to 45 scales in the lateral line (all tube-bearing scales) and 20 scales around the caudal peduncle. Fowler (1939) admitted that his *'D. siamensis'* would probably be *L. spilopleura* Smith, and Smith (1945) also synonymized Fowler's *'D. siamensis'* with *L. spilopleura*. However, Fowler's *'D. siamensis'*, as well as the present Laotian specimens, is apparently distinguished from *L. spilopleura* in having fewer lateral line scales and fewer circumpeduncular scales (16 against 20). The Laotian examples dealt with closely agree with *Dangila (=Labiobarbus) liniata* in the squamation, fin ray counts, and structure of the pores on snout, and the only difference therefrom is the possession of the small marking on side above pectoral fin. In view of the fact that in my specimens the intensity of the marking is subject to a remarkable variation, there being some individuals without any visible marking, I tentatively identify these Laotian specimens as *Labiobarbus lineatus* (Sauvage). Detailed revisions are required to clarify the status of each species of the genus *Labiobarbus*.

Tor douronensis (Cuvier and Valenciennes)

Laotian name: Pa hien

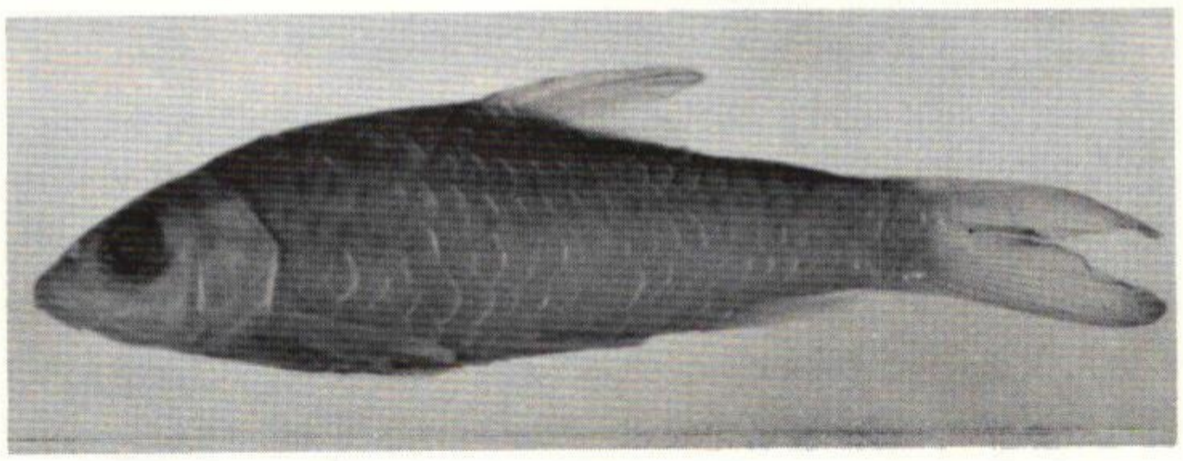


Fig. 118 *Tor douronensis* (Cuvier and Valenciennes) 63.3 mm SL

Tor tambroides - Taki, 1968 (Luang Prabang, Vientiane: Station Nos. 3, 20)

Collecting locality - Luang Prabang, Sithan Tay: Station Nos. 3, 26

Material - 6 (6, 51.0 - 74.0 mm, IBRP 4132, 4133, 5577)

escription - D. 3/8-9; A. 3/5; Ll. 22-23, Tr. 3.5/1/2-2.5 to pelvic fin origin, predorsal scales 8 - 9, circumpeduncular scales 12. Body depth 3.0 - 3.3, head length 3.1 - 3.5 both in standard length. Lower lip with a median mental lobe; the lobe well or rather poorly developed, in either cases its hind border not reaching a line connecting corners of mouth; upper lip without lobe. Dorsal fin high; last unbranched ray osseous basally, entire, its length equal to or slightly shorter than head length, length of stiff portion equal to or slightly shorter than head length without snout. Largest example recorded 31.5 cm in length.

Coloration of preserved specimens: Brownish, back darker. Each scale on back and sides with a dark base.

Tor sp.

Laotian name: Pa hien

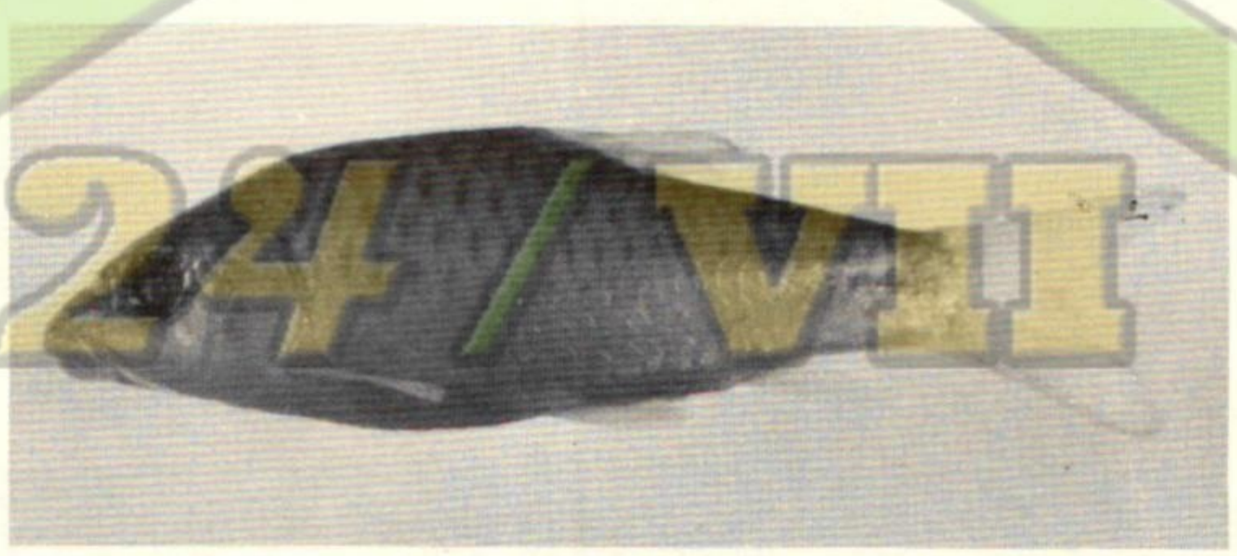


Fig. 119 *Tor* sp. 60.0 mm SL

ข้ามจำหน่าย

Collecting locality - Sithan Tay: Station No. 26

Material - 2 (2, 57.5 and 60.0 mm, IBRP 5146, 5831)

Description - D. 3/8; A. 3/5; Ll. 22, 24, Tr. 3.5/1/2.5 to pelvic fin origin, predorsal scales 8, circumpeduncular scales 12. Body depth 3.2 - 3.3, head length 3.3 both in standard length. Lower lip with a well - developed median mental lobe, its hind border extending nearly or quite to a line connecting corners of mouth; upper lip without median lobe. Dorsal fin rather low; last unbranched ray rather weakly ossified, non-denticulated, its length about 2/3 head length, length of stiff portion about 1/3 head length.

Coloration of preserved specimens: Light brown, back dar
each scale on dorsal half of body with a dark base.

Remarks - This species closely agrees with *T. tambra*

Tor blanci (Pellegrin and Fang)

Barbus (Labeobarbus) blanci - Pellegrin and Fang, 1940 (original description; Ban Nam Khueng)

Tor tambra (Cuvier and Valenciennes)

Labeobarbus tambra - Serene, 1951 (Mekong R. and its affluents, streams)

Tor tambroides (Bleeker)

Labeobarbus tambroides - Serene, 1951 (Mekong R. and its affluents)

Puntius stigmatosomus Smith

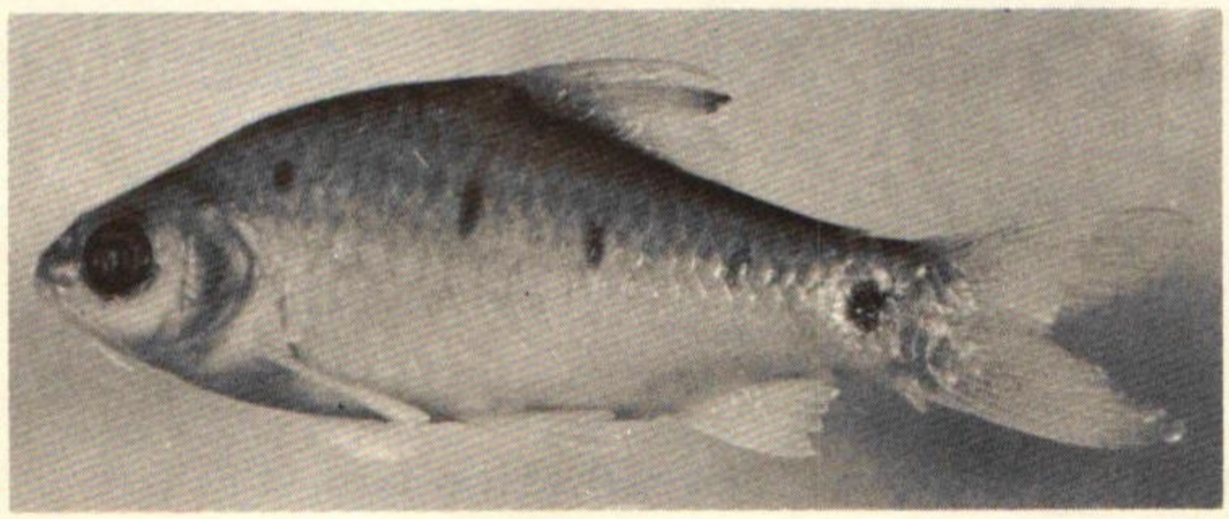


Fig. 120 *Puntius stigmatosomus* Smith 46.5 mm SL

Barbus pessuliferus- Fowler, 1937 (Kemarat)

Puntius pessuliferus- Taki, 1968 (Nong Teng: Station No. 16)

Collecting locality - Tha Ngon, Sithan Tay: Station Nos. 12, 15, 26

Material - 12 (12, 25.0 - 46.5 mm, IBRP 4437, 4937, 4987, 5158, 5424)

Description - D. 2-3/8; A. 3/5. Body depth 2.6 - 3.0, head length 3.4 - 3.7 both in standard length. A pair of long maxillary barbels. Eyes large. Last unbranched dorsal ray osseous, denticulated behind; unbranched anal rays weak and unossified. Largest size recorded 5.5 cm in length.

Life color: Brown to olive-brown, lower side of body light. A row of four or five black spots on side; the first near head, the second below origin of dorsal fin, elliptical to rod - shaped, the third below end of dorsal fin base, shape similar to the second but somewhat smaller, the fourth above anal fin base, sometimes indistinct or missing, the fifth on caudal peduncle usually occupying 27th scale of lateral line; a small blackish marking immediately under origin of dorsal fin, and a small distinct or more or less indistinct blackish spot at origin of anal fin.

Remarks - In the original description of *Barbus pessuliferus* Fowler (1937) made no comparison of the fish with *P. stigmatosomus*, nor Smith (1945) made comparison between the two forms. The number and intensity of the black spots on sides are variable in the Laotian examples; there is in some specimens a difference of one spot on the two sides of a given specimen. *P. pessuliferus* should probably be identical with *P. stigmatosomus*.

Puntius altus (Günther)

Laotian name: Pa leun fai

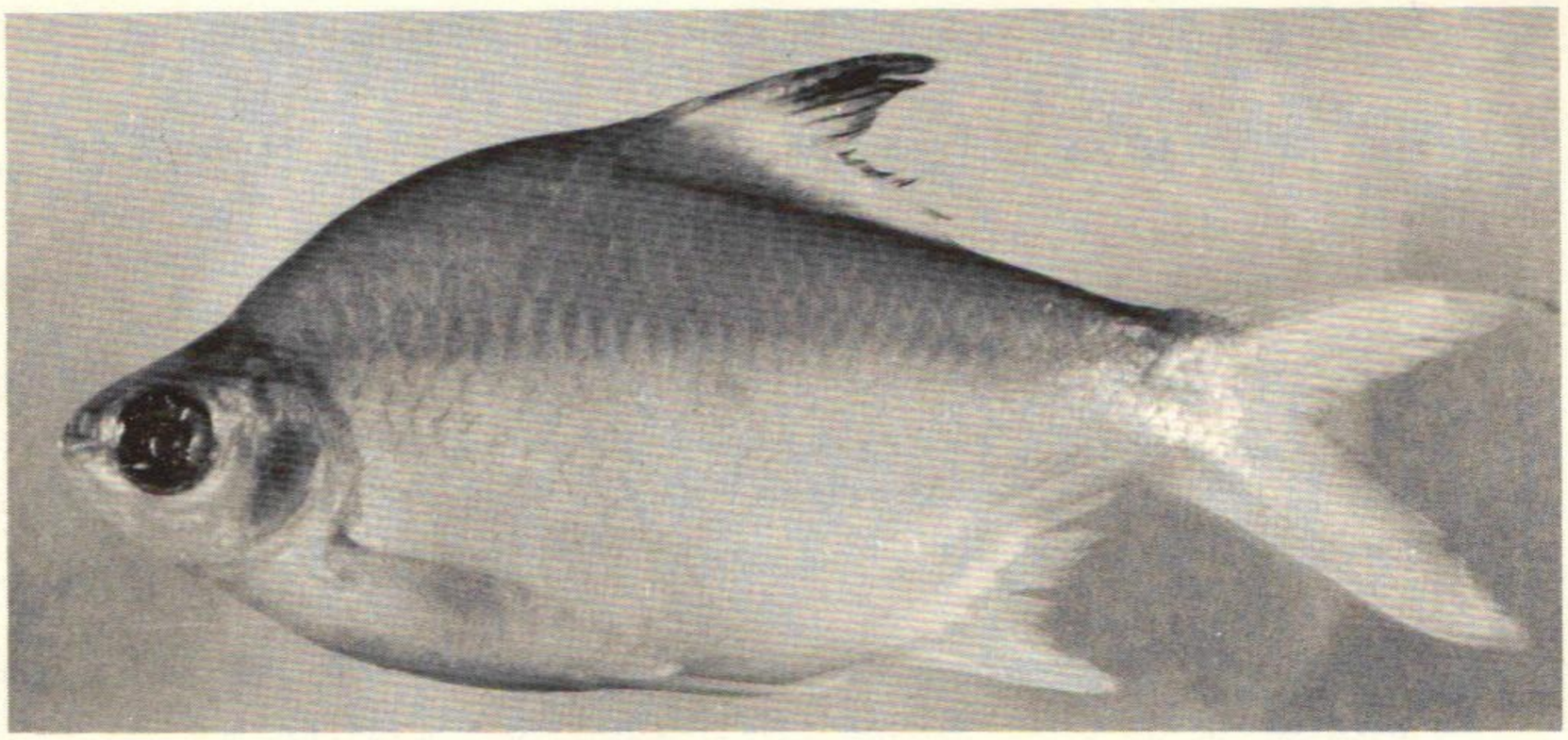


Fig. 121 *Puntius altus* (Günther) 72.7 mm SL

Barbus altus - Fowler, 1937 (Kemarat)

Puntius altus - Serene, 1951 (Mekong R. and its affluents, swamps, ponds, streams); Taki, 1968 (Tha Ngon, Vientiane, Savannakhet market, Pakse: Station Nos. 12, 13, 20, 32)

Collecting locality - Tha Ngon, Tha Bo, Pakse, Hatsalao: Station Nos. 12, 15, 23, 31, 34

Material - 49 (26, 53.0 - 109.5 mm, IBRP 4650, 4734, 4770)

Description - D.3/8; A.3/5; Ll.31-32, Tr.8/1/4.5-5 to pelvic fin origin, predorsal scales 13 - 14. Body very deep, its depth 1.8 - 2.0 in standard length. Head small, its length 3.3 - 3.6 in standard length. Barbels maxillary and rostral, well developed. Unbranched dorsal rays well ossified, last (=principal) one pungent, serrated behind; unbranched anal rays robust, entire. Dorsal and anal fins with a scally sheath. Attains 15 cm in length.

Life color: Body uniformly silvery white. Dorsal fin black, pectoral fins yellow, other fins vermilion.

Remarks - The specimens examined do not agree with the description of *P. altus* made by Fowler (1937) and Smith (1945) in having 13 - 14 predorsal scales against 9 as in their descriptions.

Puntius schwanefeldii (Bleeker)

Laotian name: Pa vien fai

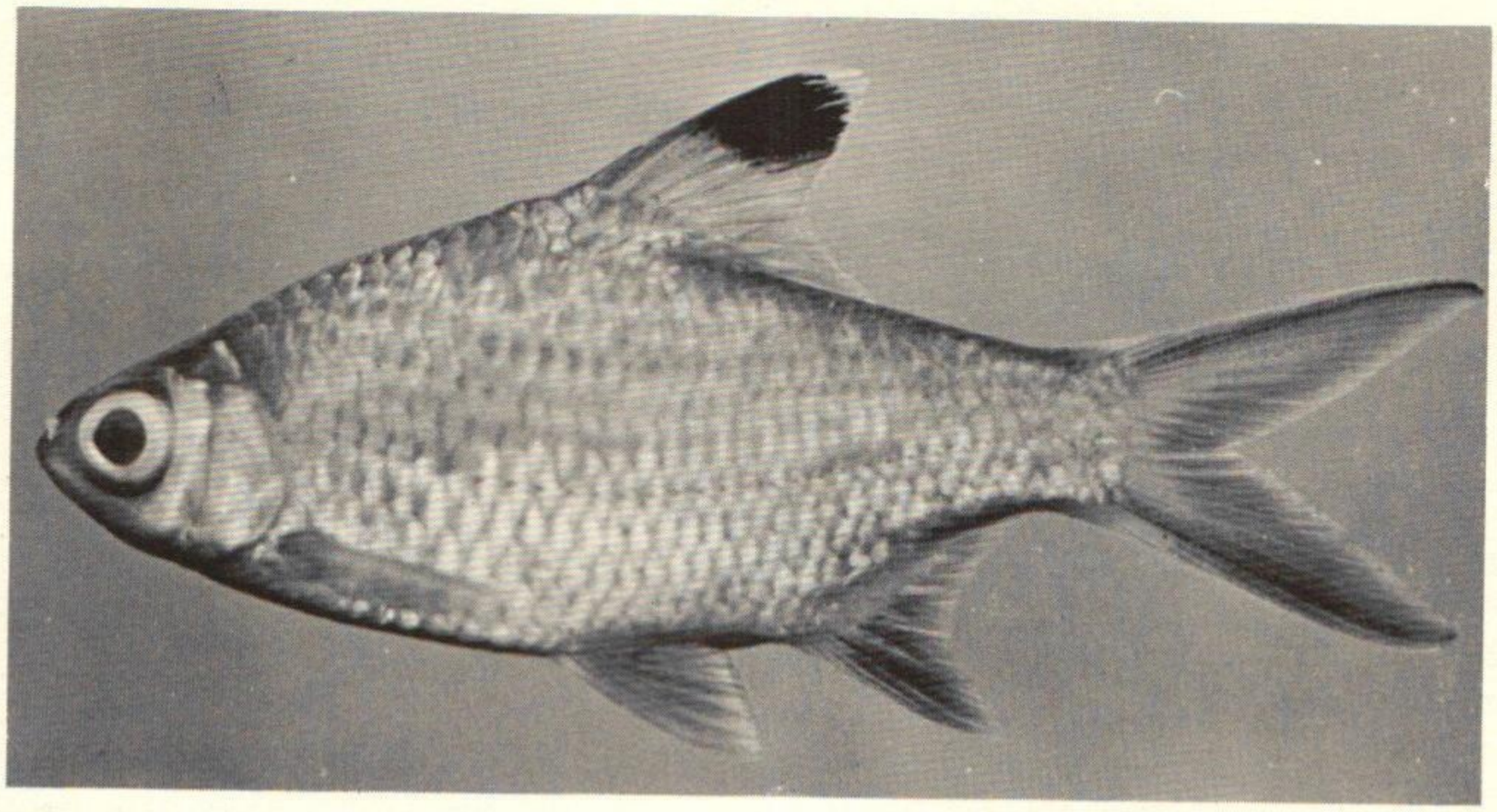


Fig. 122 *Puntius schwanenfeldii* (Bleeker) 62.5 mm SL

Puntius schwaenferdii- Taki, 1968 (Vientiane, Pakse market; Station No. 20)

Collecting locality - Tha Ngon, Hatdokkeo, Tha Bo, Sithan Tay, Pakse, Hatsalao, Khinak: Station Nos. 12, 22, 23, 26, 33, 34, 40

Material - 33 (6, 28.2 - 99.5 mm, IBRP 4053, 4097, 4557, 5475, 5494, 5549)

Description - D. 3/8; A. 3/5; Ll. 31 - 33, Tr. 8/1/4.5, predorsal scales 13 - 14. Body high, its depth 2.2 - 2.6 in standard length. Head length 3.3 - 3.4 in standard length. Maxillary and rostral barbels well developed. Last unbranched dorsal ray ossified, denticulated behind; last unbranched anal ray hard, smooth. Attains nearly 30 cm in length.

Life color: Body silvery, operculum golden. Dorsal fin brilliant carmine with a black blotch at its anterior tip; anal and pelvic fins blood - red; pectoral fins yellow; caudal fin red, with a black submarginal band on each lobe.

Puntius orphoides (Cuvier and Valenciennes)

Laotian name: Pa pok

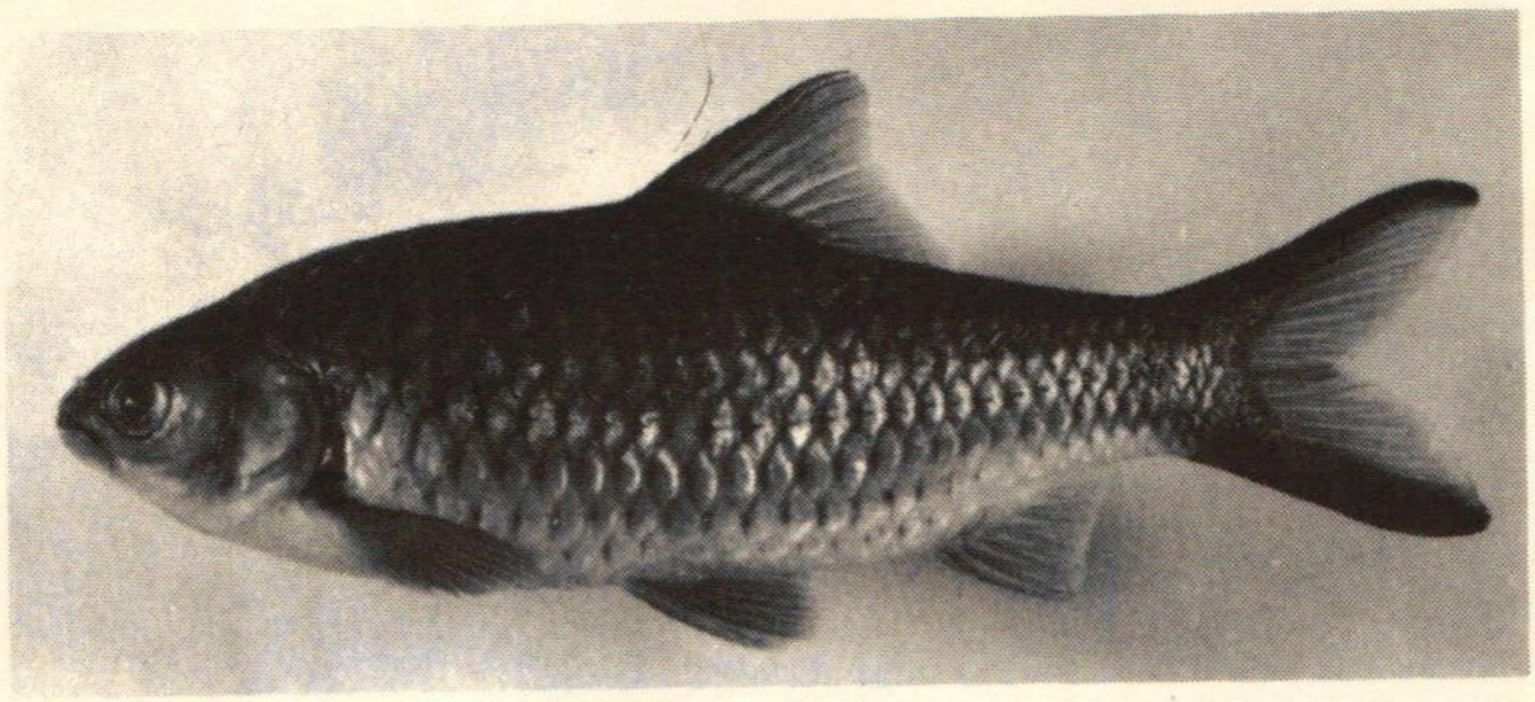


Fig. 123 *Puntius orphoides* (Cuvier and Valenciennes)
136.0 mm

Barbus orphoides - Pellegrin and Fang, 1940 (Ban Nam Khueng)
Puntius orphoides - Taki, 1968 (Tha Ngon, Pakse: Station Nos. 12, 15, 32)

Collecting locality - Nam Ngum dam site, Tha Ngon, Vientiane, Tha Bo, Khinak: Station Nos. 10, 12, 13, 15, 20, 23, 40

Material - 149 (7, 92.0 - 123.0 mm, IBRP 3210)

Description - D. 3/8; A. 3/5; Ll. 29-30. Body oblong, its depth 2.5-2.8 in standard length, not much compressed. Barbels well developed; rostral barbels about equal to eye diameter in length, maxillary ones 1.5 - 2 times eye diameter. Last unbranched dorsal ray osseous, serrated behind; last unbranched anal ray moderately flexible. Reaches 25 cm in length.

Life color: Body silver, opercular flaps blackish. A large black blotch on caudal peduncle. Dorsal fin orange with greenish tint; anal and pelvic fins orange, their tips blood-red; pectoral fins yellowish orange to orange; caudal fin orange - red, with a black longitudinal band on upper and lower margin.

Puntius leiacanthus (Bleeker)

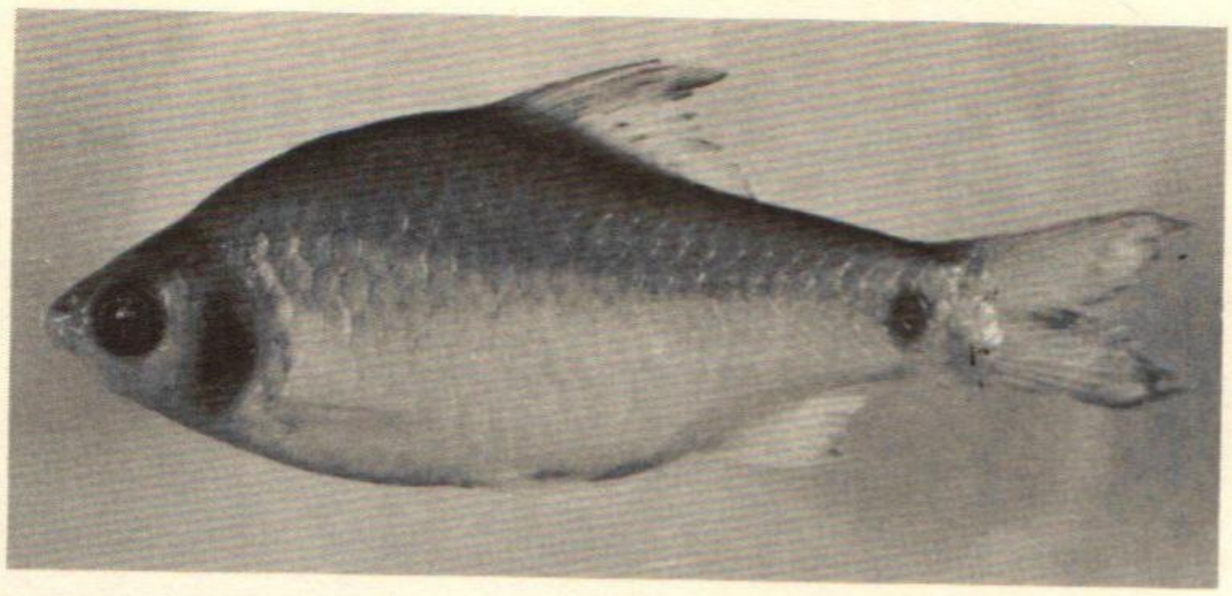


Fig. 124 *Puntius leiacanthus* (Bleeker) 66.7 mm SL

Barbus (Capoeta) brevis - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Puntius leiacanthus- Taki, 1968 (Tha Ngon, Vientiane, Pakse market: Station Nos. 12, 20)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay: Station Nos. 10, 12, 13, 14, 23, 26

Material - 205 (15, 59.3 - 83.0 mm, IBRP 4651, 4772, 4935)

Description - D. 3/8; A.3/5; Ll.24-25, Tr.5.5/1/3.5 to pelvic fin origin, predorsal scales 9 - 10. Body deep, compressed, its depth 2.3 - 2.5 in standard length; back more or less greatly elevated. Head length 3.4 - 3.7 in standard length. A pair of maxillary barbels, their length 1/2 - 2/3 eye diameter. Last unbranched dorsal ray osseous, non-denticulated; last unbranched anal ray broad, moderately flexible. Maximum length 12 cm.

Life color: Body silver to light brownish silver, back darker with bluish shade. A small, black, round spot on caudal peduncle. Dorsal fin somewhat yellowish, duskily shaded with melanophores, a transverse series of small black spots in middle of the fin; anal fin dusky yellow; pectoral fins hyaline to slightly grayish; pelvic fins orange-yellow; caudal fin gray.

Puntius gonionotus (Bleeker)

Laotian name: Pa pak

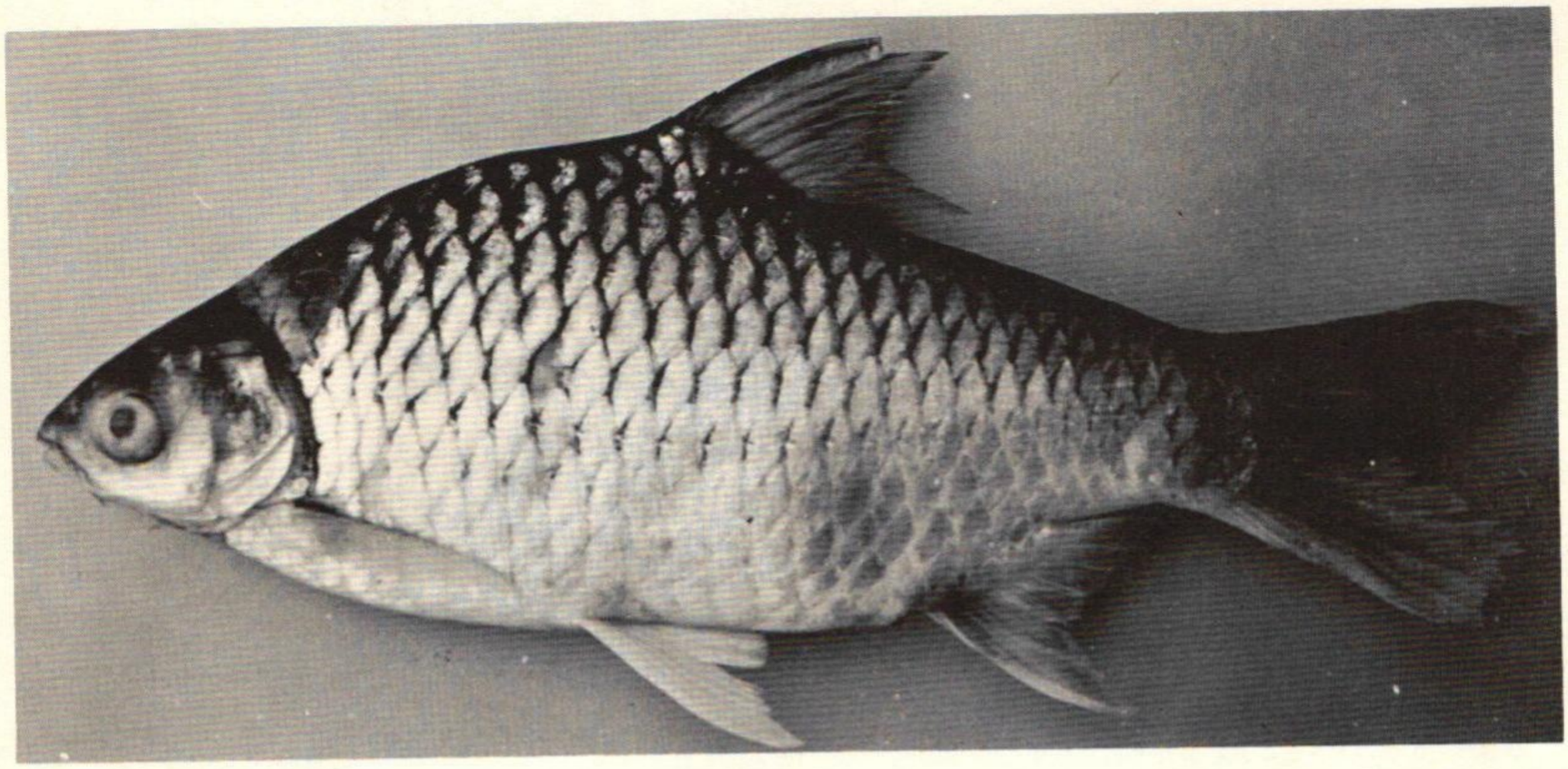


Fig. 125 *Puntius gonionotus* (Bleeker) 264.0 mm SL

Barbus javanicus - Fowler, 1937 (Kemarat)
Puntius javanicus - Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane, Pakse: Station Nos. 3, 12, 20, 32)

Collecting locality - Tha Ngon, Vientiane, Hatdokkeo, Tha Bo, Sai Fong, Pakse, Hatsalao: Station Nos. 12, 21, 22, 23, 25, 34

Material - 63 (26, 91.8 - 163.5 mm, IBRP 3195, 3234, 4075, 4693, 4773, 4820, 4957)

Description - D.3/8; A.3/6; Ll.26-28, Tr.5.5/1/3.5-4 to pelvic fin origin and 5.5/1/5.5 to mid-ventral line. Body high, back elevated, its depth 2.2 - 2.6 in standard length. Head length 3.9 - 4.2 in standard length; snout rounded. Two pairs of barbels; rostral barbels 1/3 - 1/2, maxillary barbels 2/3 - 1/1 eye diameter. Last unbranched dorsal ray ossified, serrated behind; last unbranched anal ray moderately flexible. Maximum size 33 cm in length.

Life color: Body silvery white, sometimes with golden tint. Dorsal and caudal fins gray to gray - yellow; anal and pelvic fins light orange, tip reddish; pectoral fins pale to light yellow.

Puntius daruphani Smith

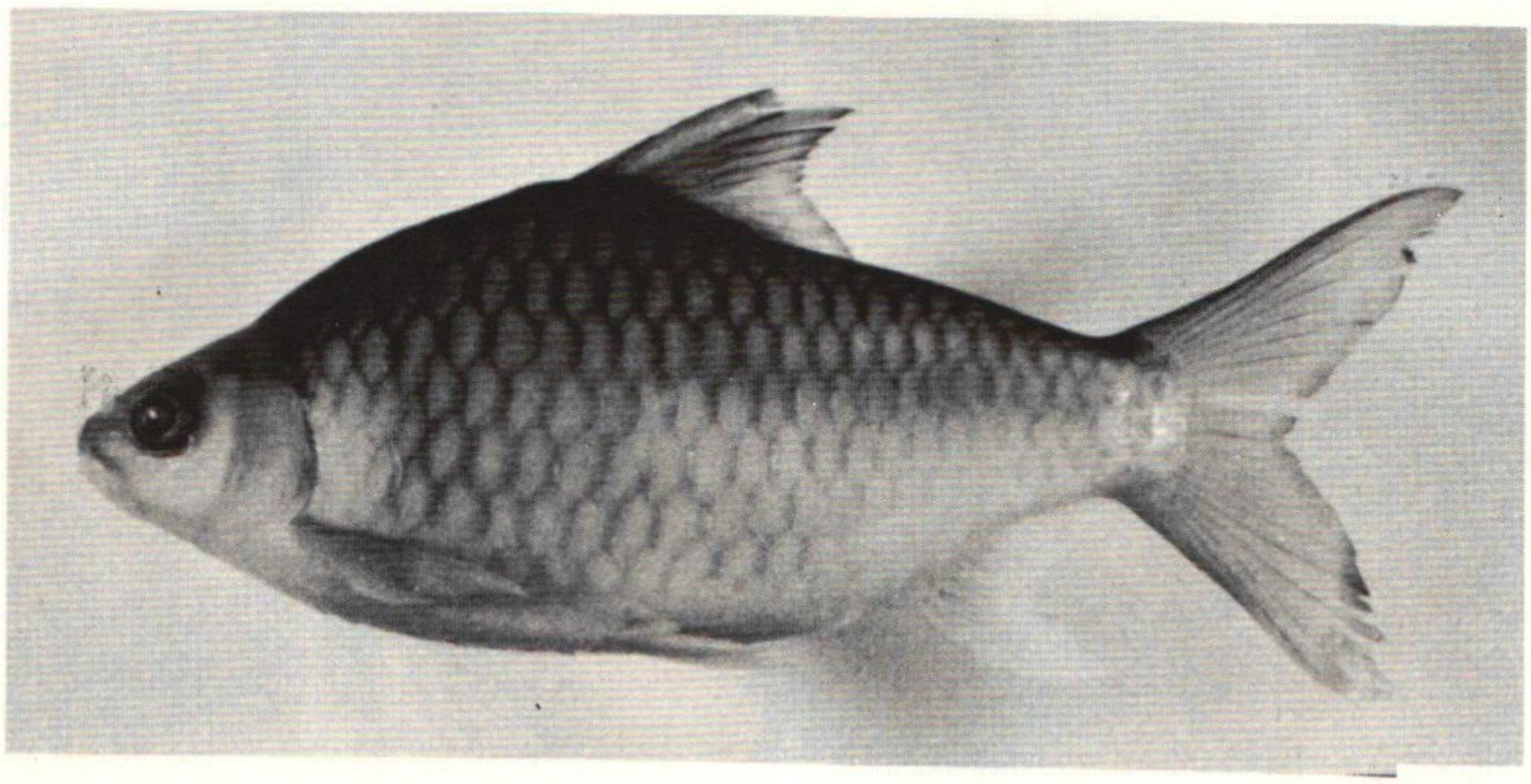


Fig. 126 *Puntius daruphani* Smith 121.5 mm SL

Barbus daruphani - Fowler, 1937 (Kemarat)

Puntius daruphani - Taki, 1968 (Luang Prabang, Vientiane: Station Nos. 3, 20)

Collecting locality - Vientiane, Tha Bo, Sithan Tay, Pakse, Hatsalao: Station Nos. 20, 23, 26, 33, 34

Material - 6 (6, 71.0 - 123.2 mm, IBRP 3200, 4006, 4692, 5324)

Description - D. 3/8; A. 3/5; Ll. 23-26, Tr. 4.5/1/2.5-3 to pelvic fin origin, predorsal scales 8 - 10, circumpeduncular scales 14. Body deep, compressed, body depth 2.2 - 2.5, head length 3.6 - 4.0 both in standard length. Rostral barbels about equal to eye diameter, maxillary ones somewhat longer. Last unbranched dorsal ray osseous, denticulated; last unbranched anal ray not ossified, smooth. Reaches more than 20 cm in length.

Life color: Golden to brown with silver reflections, each scale on back and sides with a dark base. Dorsal fin dusky yellow; pectoral fins yellow; basal half of pelvic and anal fins yellow, their tips orange; caudal fin gray.

Puntius huguenini (Bleeker)

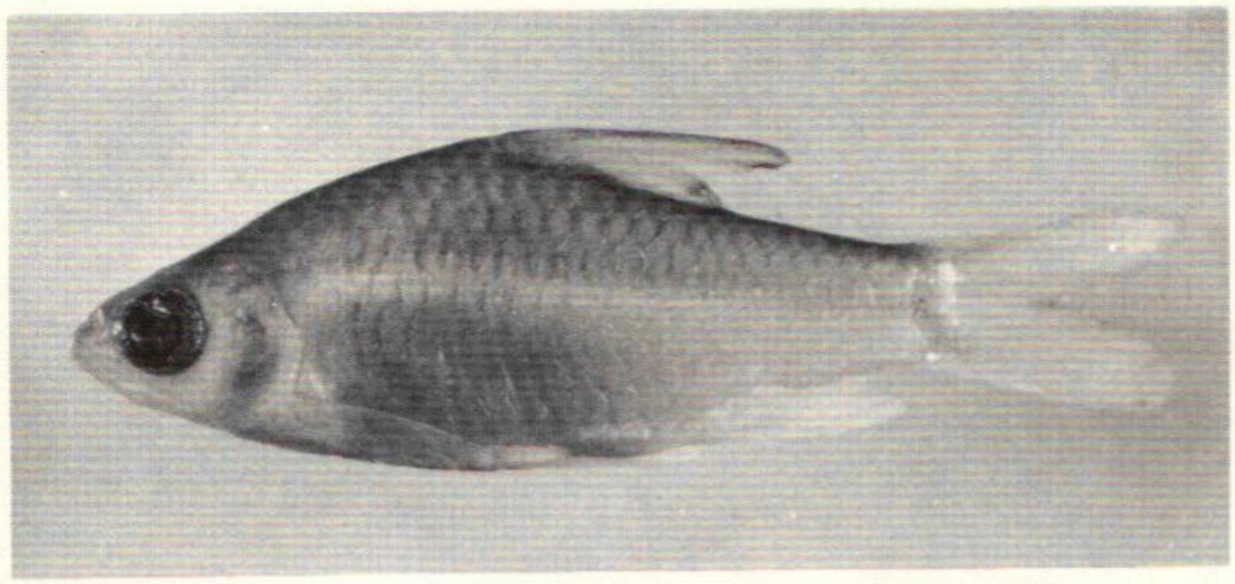


Fig. 127 *Puntius huguenini* (Bleeker) 49.5 mm SL

Puntius huguenini- Smith, 1945 (Chiengsen Kao); Serene , 1951 (Affluents of Mekong R. and streams); Taki, 1968 (Vientiane, Pakse: Station Nos. 20, 32)

Collecting locality - Tha Bo, Sithan Tay: Station Nos. 23, 26

Material - 2 (2, 49.3 and 49.5 mm, IBRP 4552, 5771)

Description - D.3/8; A. 3/5; Ll.25 or 27, Tr. 5.5/1/2.5 or 3 to pelvic fin origin, predorsal scales 10, circumpeduncular scales 14. Body depth 2.4 - 2.7, head length 3.5 - 3.7 both in standard length. Rostral barbels about equal to eye diameter, maxillary ones longer. Last unbranched dorsal ray osseous, denticulated. Maximum record 46 cm in length.

Coloration of preserved specimens: Light brownish gray, each scale on upper side of body with a dark base. Dorsal and anal fins grayish; other fins hyaline.

Remarks - The specimens examined have longer head compared with the description of *P. hugenini* by Weber and de Beaufort (1916) (3.5 and 3.7 against 4.3 - 4.7), probably due to the small size of the specimens.

Puntius bramoides (Cuvier and Valenciennes)

Barbus bramoides - Fowler, 1934a (Chiengsen), 1935b (Chiengsen Kao)

Puntius beasleyi (Fowler)

Barbus beasleyi - Fowler, 1937 (original description; Kemarat)

Puntius foxi (Fowler)

Barbus foxi - Fowler, 1937 (original description; Kemarat)

Puntius ashmeadi (Fowler)

Barbus ashmeadi - Fowler, 1937 (original description; Kemarat)

Puntius laoensis (Günther)

Barbus laoensis - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Puntius collingwoodi (Günther)

Barbus collingwoodi - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Puntius pierrei (Sauvage)

Barbus pierrei - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Puntius binotatus (Cuvier and Valenciennes)

? *Barbus binotatus* - Fowler, 1934a (Chiengsen)
Puntius binotatus - Taki, 1968 (Houei Nhang Stream: Station No. 29)

24/VII
ยังไม่จำหน่าย

Puntioplites proctozysron (Bleeker)

Laotian name: Pa sa kang

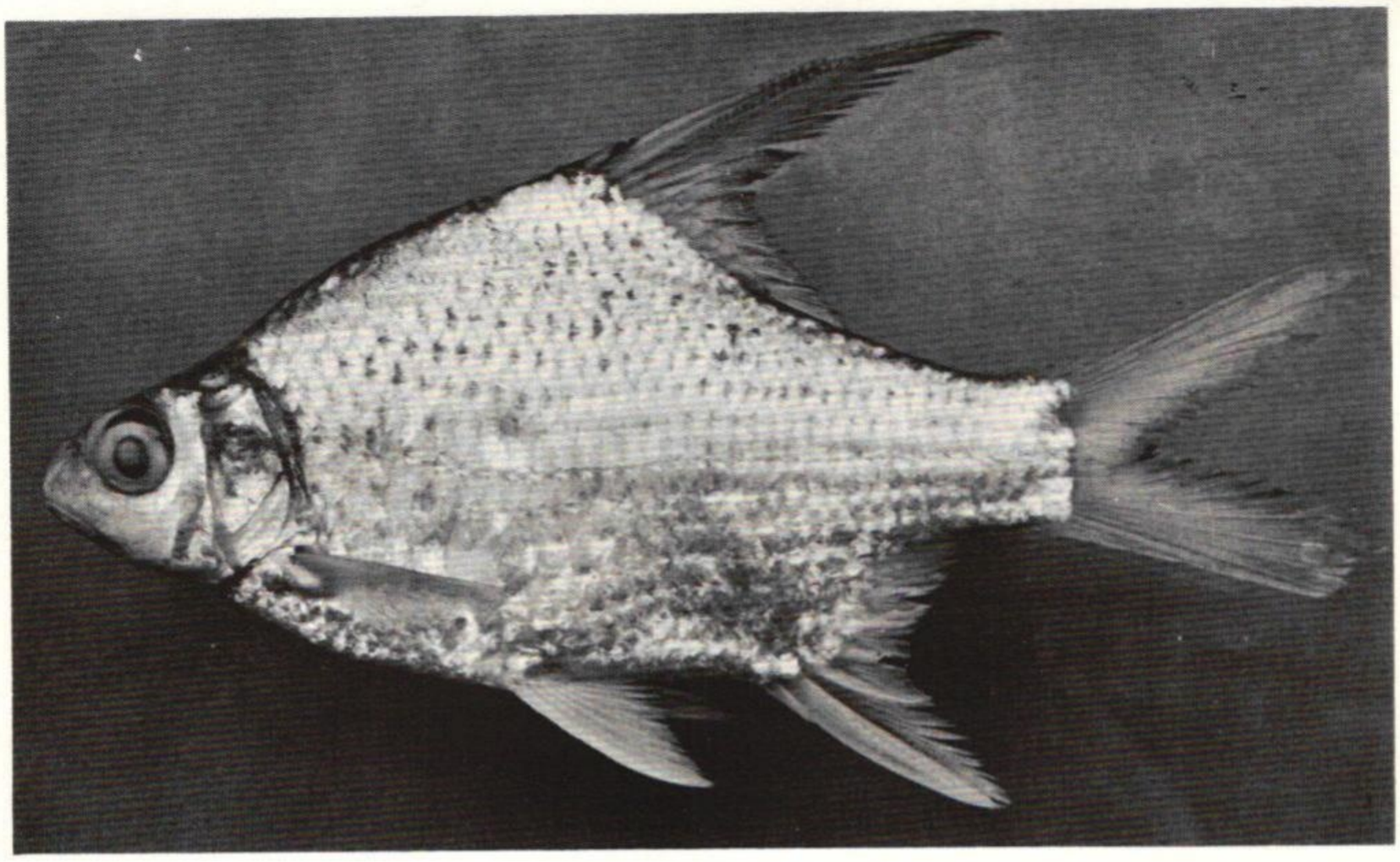


Fig. 128 *Puntioplites proctozysron* (Bleeker) 151.0 mm SL

Barbus (Adamacypris) proctozysron- Fowler, 1934a (Chiengsen)
Puntioplites proctozysron- Fowler, 1937 (Kemarat).
Puntius waandersi - Serene , 1951 (Mekong R. and its affluents, swamps, ponds, streams)
Puntioplites proctozysron+ *Puntius waandersi* - Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane, Hatdokkeo, Salakham, Kouai Deng, Pakse, Hatsalao: Station Nos. 3, 12, 15, 20, 22, 24, 28, 32, 34)

Collecting locality - Luang Prabang, Nam Ngum dam site, Tha Ngon, Vientiane, Tha Bo, Sai Fong, Sithan Tay, Pakse, Hatsalao, Bang Lieng: Station Nos. 4, 10, 12, 13, 14, 15, 20, 23, 25, 26, 33, 34, 38

Material - 280 (24, 59.5 - 166.5 mm, IBRP 3196, 4027, 4377, 4652, 4959, 5599)

Description - D. 3/8; A. 3/5; Ll. 32-33, rarely 31 or 34, Tr. 8.5 (rarely 7.5 or 9.5)/1/5-5.5 to pelvic fin origin, predorsal scales 14 - 16, circumpeduncular scales 16, 18, 20. Body very deep, its depth 1.8 - 2.1 in standard length, greatly compressed. Head

length 3.0 - 3.5 in standard length. Snout blunt; mouth small, subinferior. No barbels. Dorsal fin high, longest ray 1.3 - 1.8 times head length, last unbranched ray broad, osseous, denticulated behind; longest anal ray equal to or somewhat longer than head length, last unbranched ray stout, ossified, serrated behind or entire. Attains more than 30 cm in length.

Life color: Body uniformly silver. Dorsal fin and distal margin of caudal fin blackish.

Remarks - Weber and de Beaufort (1916) stated that *Barbus proctozysron (= Puntioplites protozysron)* is very easy to recognize by its strongly dentated anal spine. On account of such a decided gap between this species and other puntiid fishes Smith (1929) established the genus *Puntioplites* for this fish. Fowler (1934a) proposed for the same fish the subgenus *Adamacypris*, but he later suppressed it as a synonym of *Puntioplites*. He also mentioned that the fish is "distinguished chiefly by its osseous anterior ray in the dorsal and anal serrated antrorsely along hind edge with age."

In the Laotian specimens at hand, there are two distinct forms which can be separated by the combination of the feature of the last osseous anal ray and the number of circumpeduncular scales. The one has a strongly serrated osseous anal ray and 16 scales around the caudal peduncle, while the other is characterized by a smooth osseous anal ray, even in large samples, and usually 20 and rarely 18 scales around the caudal peduncle. These two forms otherwise show no morphological separation, and therefore seem to represent a dimorphysm in a species which may or may not be associated with sex.

Cyclocheilichthys enoplos (Bleeker)

Laotian name: Pa tiok

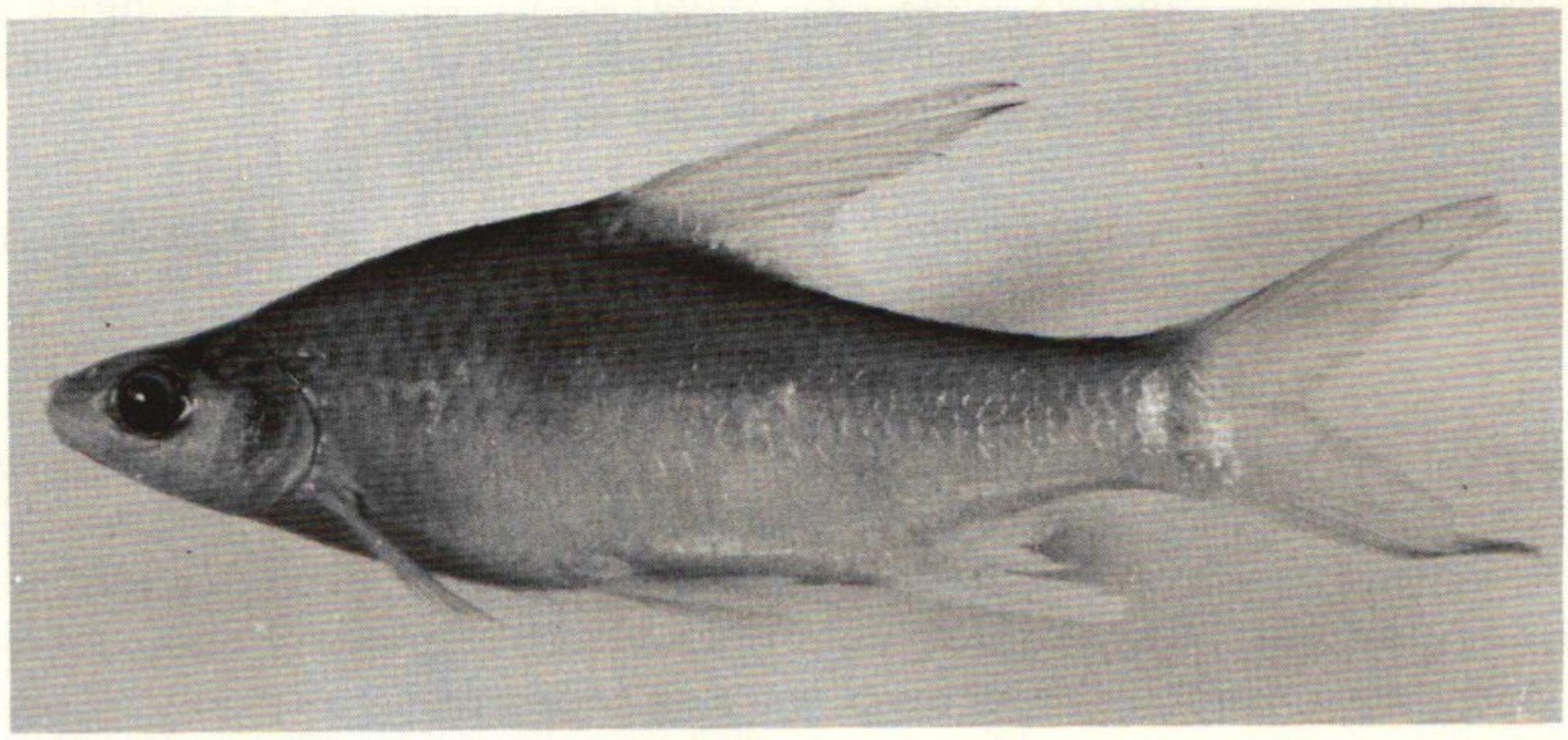


Fig. 129 *Cyclocheilichthys enoplos* (Bleeker) 140.0 mm SL

Cyclocheilichthys enoplos-Taki, 1968 (Luang Prabang, Vientiane, Pakse, Isl. Hin Soune: Station Nos. 3, 20, 32, 37)

Collecting locality - Khouai Deng, Hatsalao, Bang Lieng: Station Nos. 28, 34, 38

Material - 9 (9, 77.5 - 174/5 mm, IBRP 3213, 4004, 4022, 5593)

Description - D. 4/8; A. 3/5; Ll. 33-36, Tr. 6/1/4 to pelvic fin origin, predorsal scales 11 - 12, circumpeduncular scales 16. Body elongate, its depth 3.0 - 3.5 in standard length; nape slightly concave. Head small, low, its length 3.7 - 4.0 in standard length. Snout somewhat pointed. Post-orbital region long. Mouth subterminal; a continuous (not interrupted medianly) postlabial groove along lower lip. Short maxillary and rostral barbels. Eyes small, with a gelatinous annular membrane. All or some anterior scales of lateral line with bifid tubes. Dorsal fin high, last unbranched ray strong, osseous, denticulated behind, its length equal to or longer than body depth. Maximum length nearly 60 cm.

Life color: Bluish silver, underside whitish. Dorsal and caudal fins sparsely or densely pigmented with dark melanophores; other fins plain.

Cyclocheilichthys repasson (Bleeker)

Laotian name: Pa khao i thai

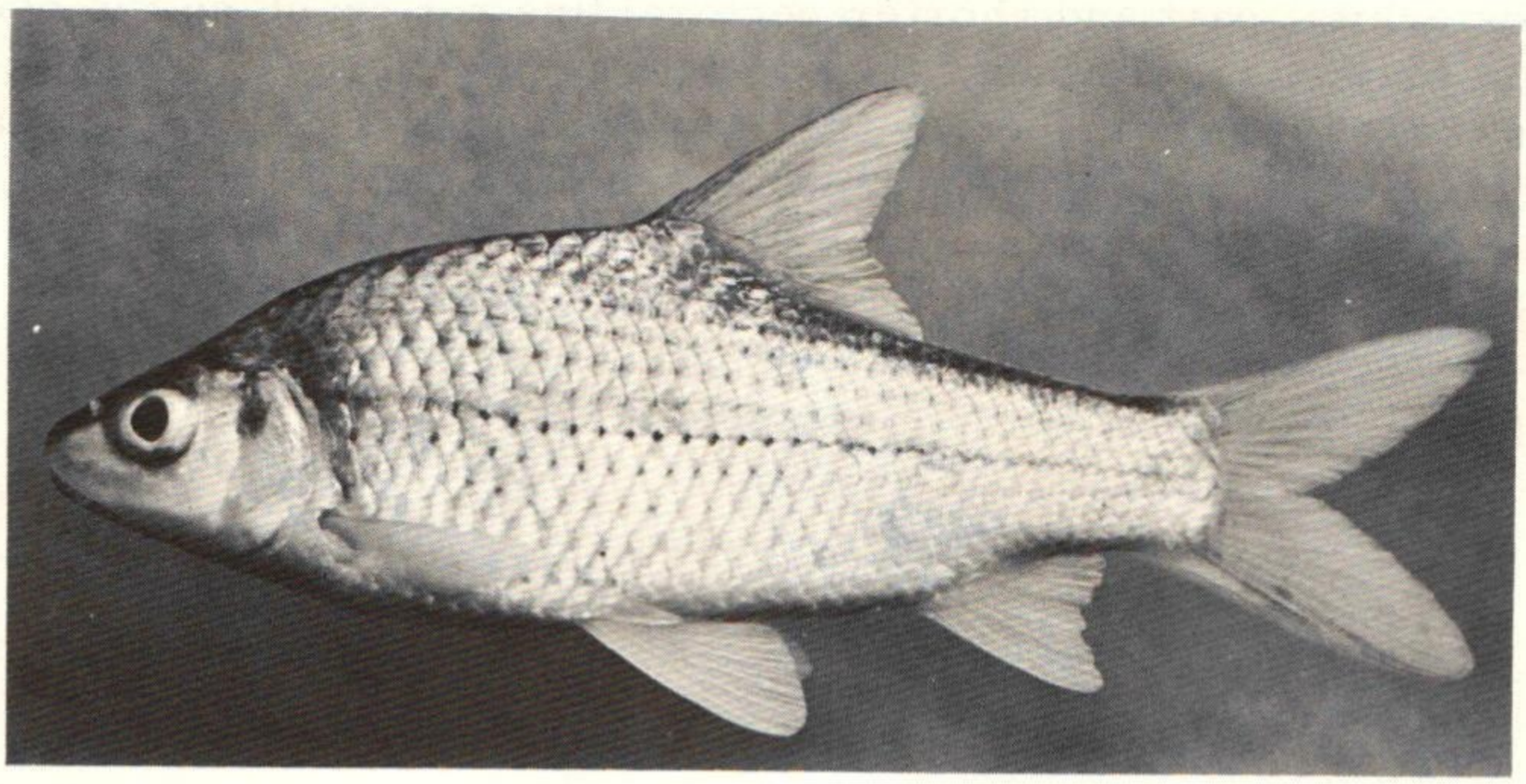


Fig. 130 *Cyclocheilichthys repasson* (Bleeker) 92.0 mm SL

Cyclocheilichthys repasson-Fowler, 1934a (Chiengsen); Serene, 1951 (Mekong R. and its affluents)
Cyclocheilichthys apogon-Taki, 1968 (Tha Ngon, Pakse: Station Nos. 12, 32)

Collecting locality - Pak Suong, Luang Prabang, Nam Ngum dam site, Tha Ngon, Hatdokkeo, Tha Bo, Sai Fong, Sithan Tay, Pakse, Hatsalao, Bang Lieng, Khinak: Station Nos. 1, 4, 10, 12, 13, 14, 15, 22, 23, 25, 26, 31, 34, 38, 40

Material - 576 (11, 51.0 - 121.5 mm, IBRP 4021, 4048, 4689, 5649, 5712)

Description - D.4/8; A.3/5; L.33-34, Tr.6.5-7/1/5 to pelvic fin origin, predorsal scales 12 - 13, circumpeduncular scales 20. Body rather deep, back elevated, body depth 2.7 - 2.9 in standard length. Head small, its length 3.7 - 3.9 in standard length. Snout long, blunt, slightly prominent. Mouth subinferior, arched; lips thick, a continuous postlabial groove along lower lip. Barbels rostral and maxillary, the former very small. Operculum large. Dorsal fin with a strong, serrated unbranched ray. To 20 cm in length.

Life color: Brownish with silvery sheen, dorsal part darker. Each scale on back and sides with a dark brown spot, which forms longitudinal interrupted stripes. A large black spot at base of caudal fin. Dorsal and caudal fin olive-red to dusky yellow; other fins light brownish yellow.

Remarks - The Laotian specimens do not agree with Weber and de Beaufort's (1916) description of *C. repasson* in having shorter postorbital part and shorter pectoral fins not reaching the pelvic fin insertion. Rather, they approach in these characters *C. dezwaani* as described by the same authors. On the other hand, the Laotian form is in perfect agreement with *C. repasson* in the number of scales in the transverse series and around the caudal peduncle. The height of body is intermediate between the two species. Further studies are necessary to elucidate the specificity of this Laotian species.

Cyclocheilichthys mekongensis Fowler

Laotian name: Pa tiok

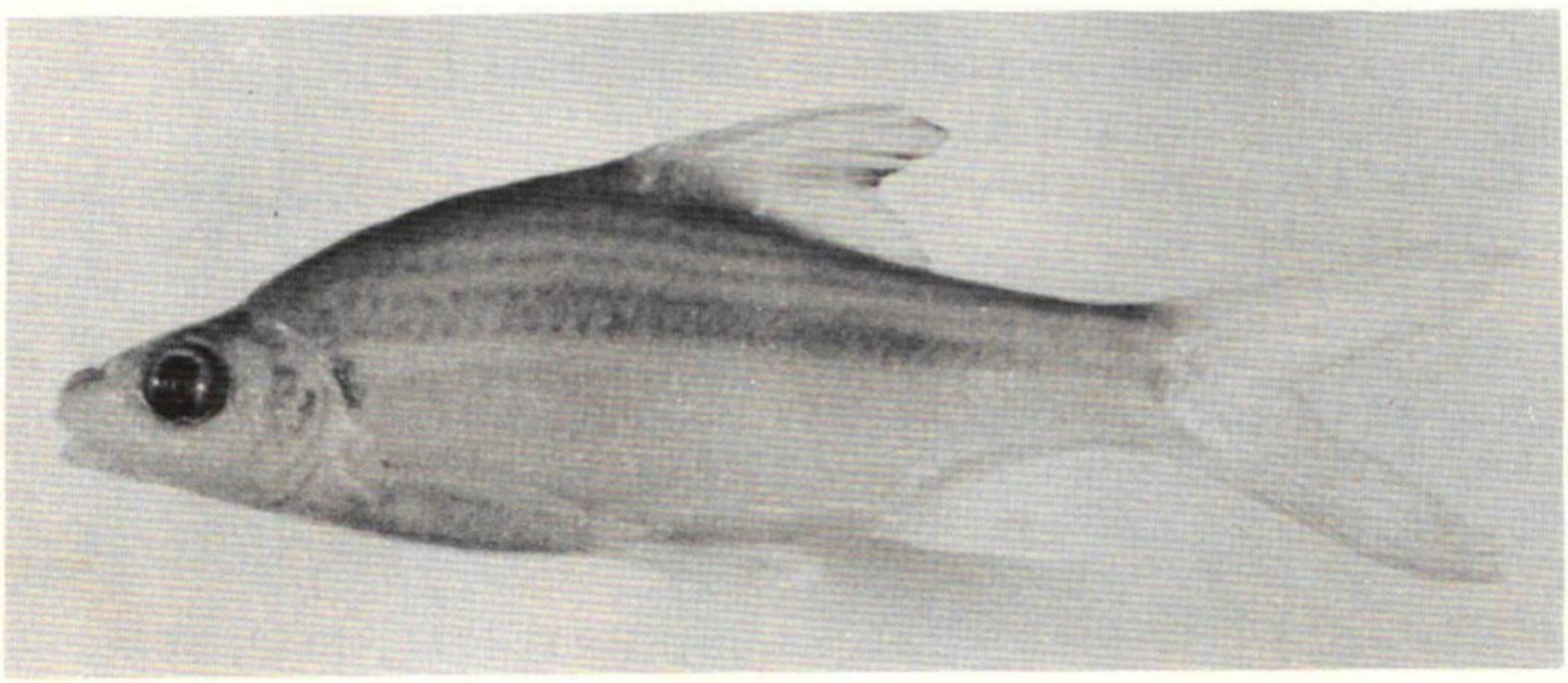


Fig. 131 *Cyclocheilichthys mekongensis* Fowler 110.3 mm SL

Cyclocheilichthys mekongensis- Fowler, 1937 (original description; Kemarat)

Collecting locality - Tha Ngon, Hatdokkeo, Tha Bo, Sithan Tay, Pakse: Station Nos. 12, 13, 15, 22, 23, 26, 31

Material - 19 (7, 45.8 - 110.3 mm, IBRP 4092, 4645, 5718)

Description - D. 4/8; A. 3/5; L. 32-34, Tr. 5. 5-6/1/4 to pelvic fin origin, predorsal scales 12, circumpeduncular scales 16. Body depth 2. 8 - 3. 3, head length 3. 2 - 3. 7 both in standard length; back more or less greatly elevated. Maxillary barbels small, rostral barbels minute, feeble. Gill rakers on lower arch about 5. Gill membranes broadly united with isthmus. Last unbranched dorsal ray osseous, serrated behind. To 15 cm in length.

Life color: Ground color of body brown, with barzen luster, underside light - colored. Each scale on back and upper part of sides with a more or less ill-defined dark spot. A dark oblique bar along upper part of gill opening Distal portion of dorsal and caudal fins blackish; other fins gray to pale.

Cyclocheilichthys armatus (Cuvier and Valenciennes)

Cyclocheilichthys armatus - Fowler, 1937 (Kemarat)

Cyclocheilichthys dumerilii Sauvage

Cyclocheilichthys dumerilii - Fowler, 1973 (Kemarat)
Cyclocheilichthys dumerili - Taki, 1968 (Luang Prabang, Tha Ngon, Hatsalao: Station Nos. 3, 12, 34)

Cyclocheilichthys enoploides Tirant

Cyclocheilichthys enoploides Serene, 1951 (Mekong R. and its affluents)

Xenocheilichthys gudgeri Smith

Laotian name: Pa mang

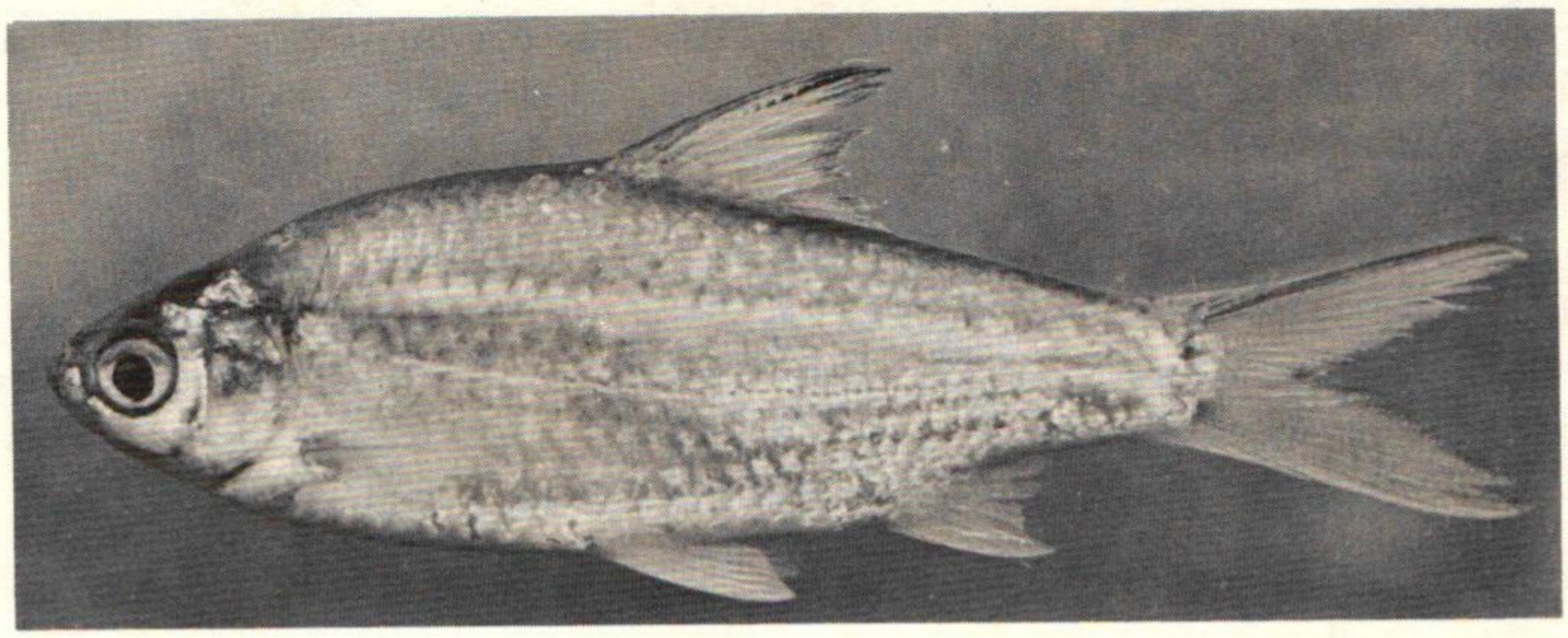


Fig. 132 *Xenocheilichthys gudgeri* Smith 61.0 mm SL

Xenocheilichthys gudgeri-Fowler, 1937 (Kemarat); Serene, 1951 (Affluents of Mekong R., streams); Taki, 1968 (Luang Prabang, Tha Ngon, Pakse: Station Nos. 4, 12, 32)

Collecting locality - Pak Suong, Luang Prabang, Tha Ngon, Vientiane, Tha Bo, Sai Fong, Sithan Tay, Pakse, Hatsalao, Bang Lieng, Pathoum Phon: Station Nos. 1, 3, 4, 12, 13, 14, 21, 23, 25, 26, 31, 34, 38, 39

Material - 1,021 (20, 48.5 - 109.5 mm, IBRP 4031, 4078, 4380, 5240, 5657)

Description - D. 3-4/8; A. 3/5; Ll. 29 - 31, Tr. 5.5/1/3.5 to pelvic fin origin. Body depth 2.5 - 3.2, head length 3.7-4.0 both in standard length. Snout rounded. No barbels. Unbranched dorsal rays osseous, last one serrated behind. Maximum length 15 cm.

Life color: Body uniformly silver. Membranes of dorsal and caudal fins with black melanophores; other fins hyaline.

Amblyrhynchichthys truncatus (Bleeker)

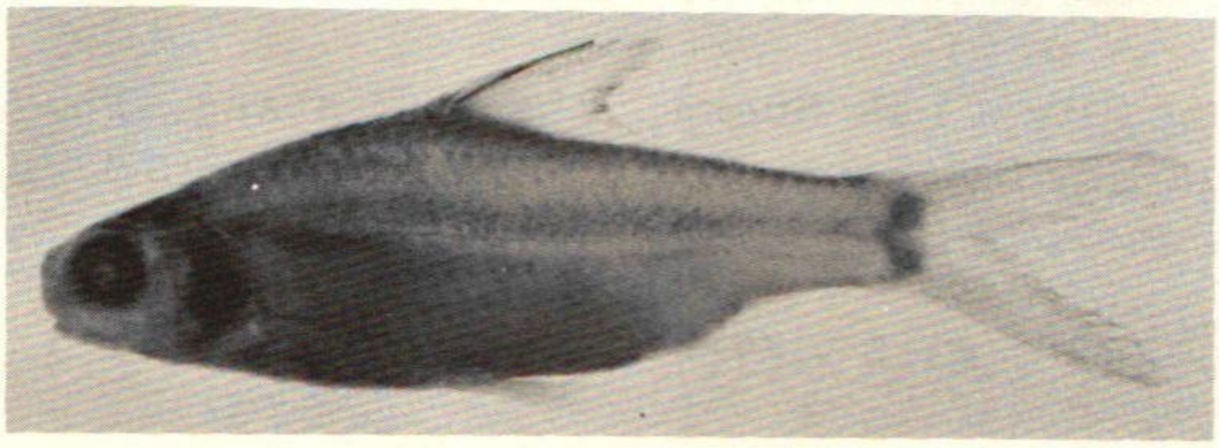


Fig. 133 *Amblyrhynchichthys truncatus* (Bleeker) 51.0 mm SL

Amblyrhynchichthys truncatus- Fowler, 1934a (Chiengsen), 1937 (Kemarat); Serene, 1951 (Mekong R. and its affluents, swamps, ponds)

Amblyrhynichthys truncatus- Taki, 1968 (Luang Prabang, Vientiane market: Station Nos. 3, 4)

Collecting locality - Tha Bo: Station Nos. 23

Material - 3 (3, 41.0 - 51.0 mm, IBRP 4824)

Description - D. 3/8; A. 3/5; Ll. 32-34. Body depth 3.0 - 3.4, head length 3.5 - 3.8 both in standard length. Snout obliquely truncate. Mouth situated near lower corner of snout and below lower level of eyes. Nostrils near tip of snout. No barbels. Dorsal fin short, last unbranched ray long, osseous, serrated behind. Anal fin short, without osseous rays. Reaches more than 30 cm in length.

Life color: Body silvery, back darker. Free margin of dorsal and caudal fins blackish.

Mystacoleucus marginatus (Cuvier and Valenciennes)

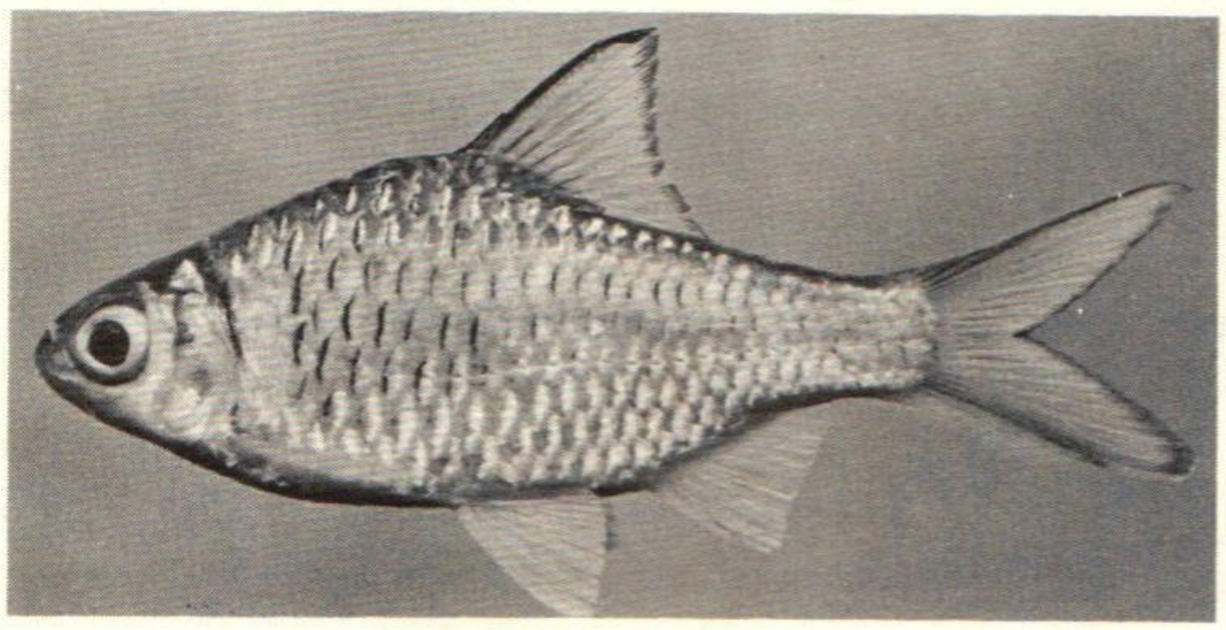


Fig. 134 *Mystacoleucus marginatus* (Cuvier and Valenciennes) 70.0 mm SL

Mystacoleucus marginatus - Fowler, 1937 (Kemarat); Serene, 1951 (Affluents of Mekong R., streams)

Collecting locality - Pak Suong, Luang Prabang, Tha Ngon, Vientiane, Tha Bo, Sai Fong, Sithan Tay, Hatsalao, Bang Lieng, Khinak: Station Nos. 1, 2, 3, 12, 13, 14, 21, 23, 25, 26, 34, 38, 40

Material - 698 (20, 43.5 - 77.4 mm, IBRP 4019, 4370, 4583, 4812)

Description - D. 3 - 4/8; A. 3 - 4/8 -9; Ll. 24 - 26, Tr. 4.5/1/2.5 to pelvic fin origin, predorsal scales 7 - 9, circumpeduncular scales 14. Body deep, compressed, its depth 2.4 - 2.8 in standard length. Head small, its length 3.6 - 4.3 in standard length. Snout short, blunt. Mouth small. Barbels two pairs: maxillary barbels 0.7 - 0.9 eye diameter, rostral ones much shorter. Eyes large. Last simple dorsal ray rather slender, but osseous and denticulated. A procumbent spine in front of dorsal fin, pointing forward, concealed under scales and skin. Attains 20 cm in length.

Life color: Silvery gray, with or without brazen tint, back darker. Each scale on back and sides with a dark crescent. Dorsal fin gray to pale, front and free (=upper) margin blackish; caudal fin pale, free (=hind) margin blackish; other fins hyaline.

Mystacoleucus greenwayi Pellegrin and Fang

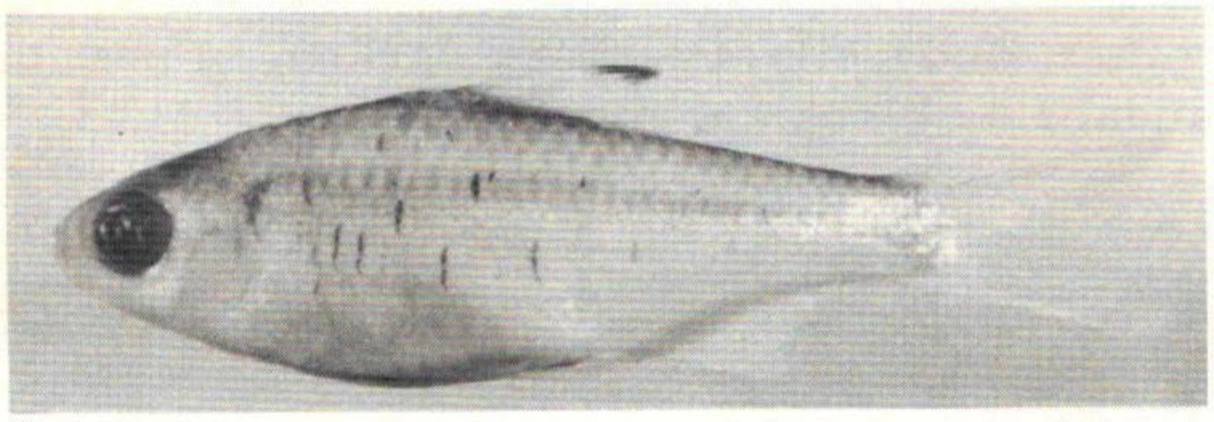


Fig. 135 *Mystacoleucus greenwayi* Pellegrin and Fang 52.5 mm SL

Mystacoleucus greenwayi - Pellegrin and Fang, 1940 (original description; Ban Nam Khueng)

Collecting locality - Pak Suong, Luang Prabang, Tha Ngon, Sithan Tay, Hatsalao: Station Nos. 1, 3, 12, 13, 26, 34

Material - 436 (10, 52.5 - 60.0 mm, IBRP 5563)

Description - D. 3-4/8; A. 3/9; Ll. 27-29, Tr. 5.5/1/2.5 to pelvic fin origin, predorsal scales 8 - 9, circumpeduncular scales 14. Body oblong to elongate, compressed, its depth 2.8 - 3.1 in standard length. Head length 3.7 - 3.9 in standard length. Snout short, somewhat pointed. Mouth small, terminal or subterminal. Maxillary barbels 0.3 - 0.5 eye diameter, rostral barbels very small or missing. Eyes large. Dorsal fin with a slender, ossified, serrated principal simple ray. A recumbent spine in front of dorsal fin, pointing forward, usually not hidden in skin. Largest example 8 cm in length.

Life color: Silvery white, back brownish; median area of each scale on back and sides dark; sides of body with black crescents to some scales. Apex of dorsal fin blackish, front and upper edge may be blackish; free margin of caudal fin weakly blackish.

Remarks - This species resembles *M. chilopterus* Fowler, from which it is differentiated chiefly by the number of lateral line scales, i.e. 27 to 29 instead of 22 - 24.

Mystacoleucus sp.



Fig. 136 *Mystacoleucus* sp. 45.2 mm SL

Collecting locality - Tha Ngon, Tha Bo, Hatsalao: Station Nos. 12, 13, 14, 23, 34

Material - 609 (6, 57.3 - 65.8 mm, IBRP 5104)

Description - D. 3-4/8; A. 3/9; Ll. 30-33, Tr. 6.5/1/3.5-4 to pelvic fin origin, predorsal scales 9 - 10, circumpeduncular scales 16.

Body deep, compressed, its depth 2.4 - 2.8 in standard length. Head small, its length 4.0 - 4.2 in standard length. Snout short, pointed. Mouth small. No barbels. Eyes large. Principal unbranched dorsal ray osseous, serrated behind. A procumbent spine in front of dorsal fin. Largest specimen observed 6.6 cm in length.

Life color: Silvery, upper side bluish to grayish brown. Scales on back and sides with ill-defined dark basal areas; a few scales on sides with more or less distinct blackish crescents. Dorsal fin hyaline or yellowish, its apex with a large black marking; other fins pale.

Remarks - This species has a resemblance to *M. atridorsalis* Fowler. The most significant difference between the two forms is the structure of the simple (=unbranched) rays of dorsal fin: the present species has an osseous, serrated ray while *M. atridorsalis* has no ossified, denticulated ray.

Mystacoleucus atridorsalis Fowler

Mystacoleucus atridorsalis - Fowler, 1937 (original description; Kemarat)

Acrossocheilus deauratus (Cuvier and Valenciennes)

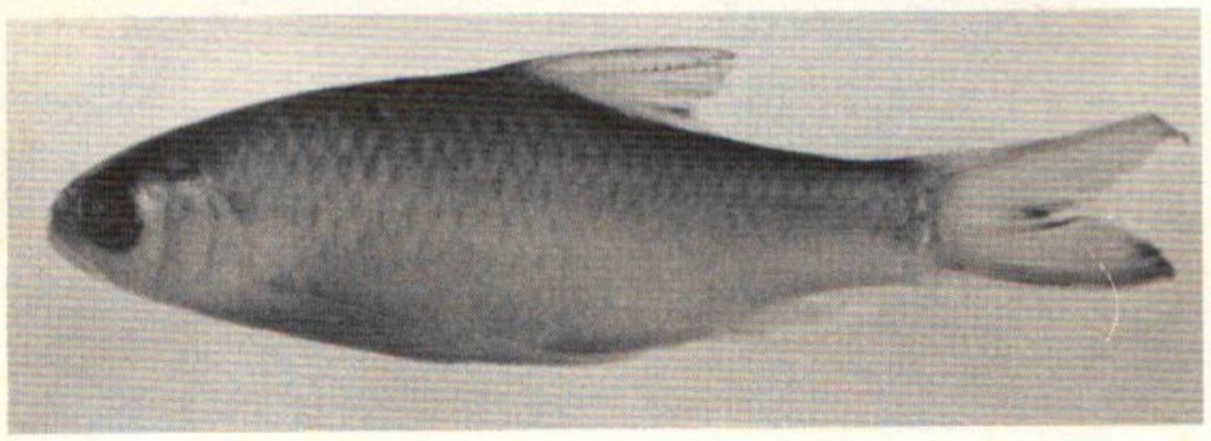


Fig. 137 *Acrossocheilus deauratus* (Cuvier and Valenciennes)
68.5 mm SL

Acrossocheilus deauratus - Smith, 1945 (Huey Nam Puat)

Collecting locality - Luang Prabang, Tha Bo, Sithan Tay: Station Nos. 3, 23, 26

Material - 5 (5, 43.4 - 68.5 mm, IBRP 4137, 4514, 4681, 5681)

Description - D.3/8; A.3/5; Ll.28-30, Tr.5.5/1/2.5 to pelvic fin origin, predorsal scales 12 - 13, circumpeduncular scales 14. Body depth 3.1 - 3.3, head length 3.7 - 4.1 both in standard length. Lower lip distinctly separated from lower jaw. Maxillary and rostral barbels well developed, all longer than eye diameter. Last simple dorsal ray osseous, robust, denticulated behind. Maximum length about 20 cm.

Life color: Body silvery brown to bronze, underside whitish. Each scale on back and sides with a dark base. Fins light yellowish brown to greenish brown. Dorsal and caudal fins blackish, a black longitudinal stripe along upper and lower margin of caudal fin.

Acrossocheilus bantamensis (Rendahl)

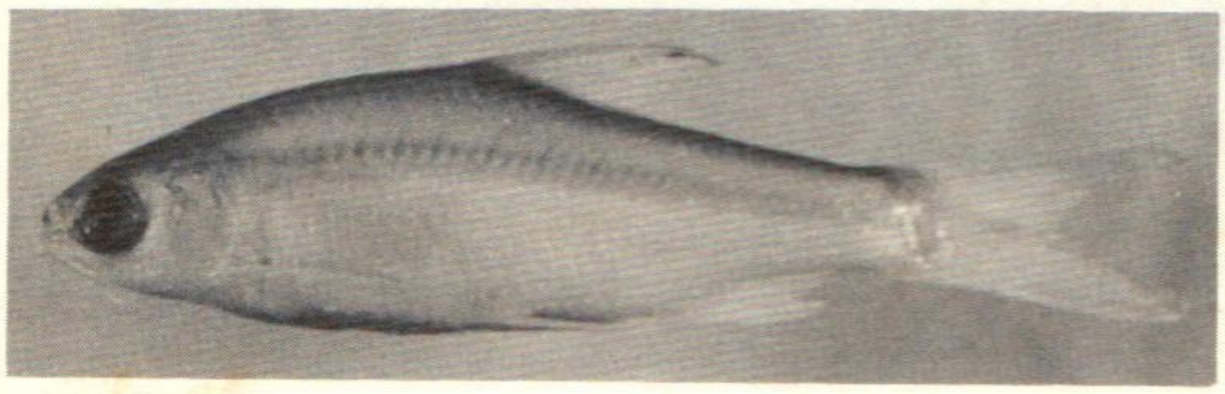


Fig. 138 *Acrossocheilus bantamensis* (Rendahl) 54.0 mm SL

Collecting locality - Pak Suong, Luang Prabang: Station Nos. 1, 3,

Material - 13 (13, 44.6 - 60.0 mm, IBRP 4136, 4163)

Description - D.3/8; A.3/5; Ll.35 - 38, Tr.6.5/1/3 to pelvic fin origin, predorsal scales 12 - 13, circumpeduncular scales 16. Body depth 3.3 - 3.6, head length 3.9 - 4.1 both in standard length. Lower lip separated from lower jaw. Maxillary and rostral barbels somewhat longer than eye diameter. Last simple dorsal ray osseous, stout, strongly serrated behind. Largest record 17.5 cm in length.

Life color: Silvery white to silvery brown, back darker. Each scale on back and sides with a dark base. Dorsal and caudal fins gray, other fins hyaline.

Remarks - This species is closely related to *A. deauratus*. Smith (1945) compared these two species and separated *A. bantamensis* from *A. deauratus* mainly by the greater number of lateral line scales and of predorsal scales and the absence in adult of the dark stripes on the caudal fin. In the material at hand, there is no significant difference in the number of the predorsal scales, but these two froms are readily distinguished from each other in the number of scales in the transverse series and around the caudal peduncle.

Scaphiodonichthys acanthopterus (Fowler)

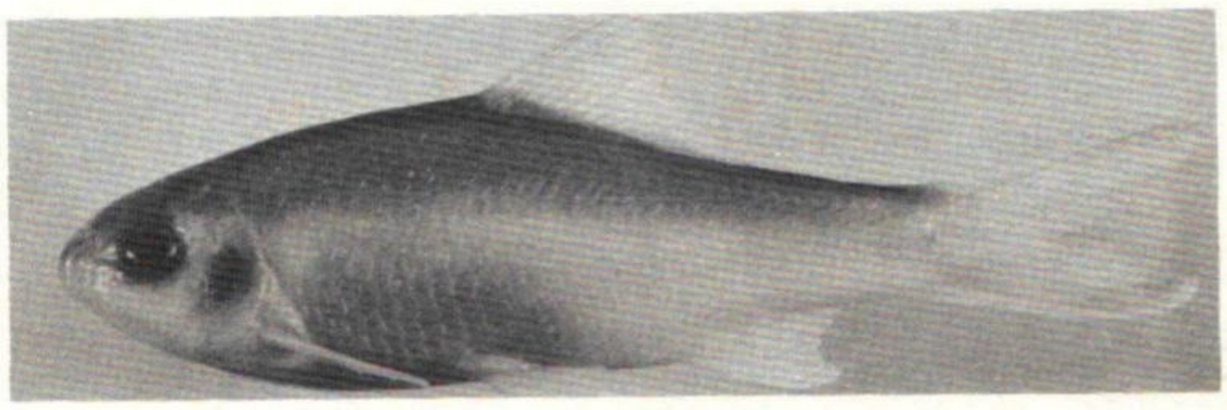


Fig. 139 *Scaphiodonichthys acanthopterus* (Fowler)

Collecting locality - Luang Prabang: Station Nos. 7, 9

Material - 9 (3, 61.0 - 71.0 mm, IBRP 4145)

Description - D. 3-4/11; A. 3/5; Ll. 37-38, Tr. 7.5/1/3 to pelvic fin origin, predorsal scales 13 - 14. Body depth 3.0 - 3.2 in standard length, caudal peduncle slender. Head length 4.1 - 4.3 in standard length; snout broad, obtuse, prominent. Mouth wide, subinferior; lower jaw broad, sharp-edge, without lip. No barbels. Lateral line decurved downward, running in lower part of trunk and of caudal peduncle. Last unbranched dorsal ray ossified, strong, serrated along its hind edge. Unbranched anal rays weakly or little osseous. To 22 cm in length.

Life color: Ground color of body light brown, with silvery blue gleam, ventral surface whitish. Dorsal and caudal fins dusky; other fins hyaline.

Remarks - The allocation of this species in the subfamily Barbinae is provisional.

Scaphoganthops stejnegeri (Smith)

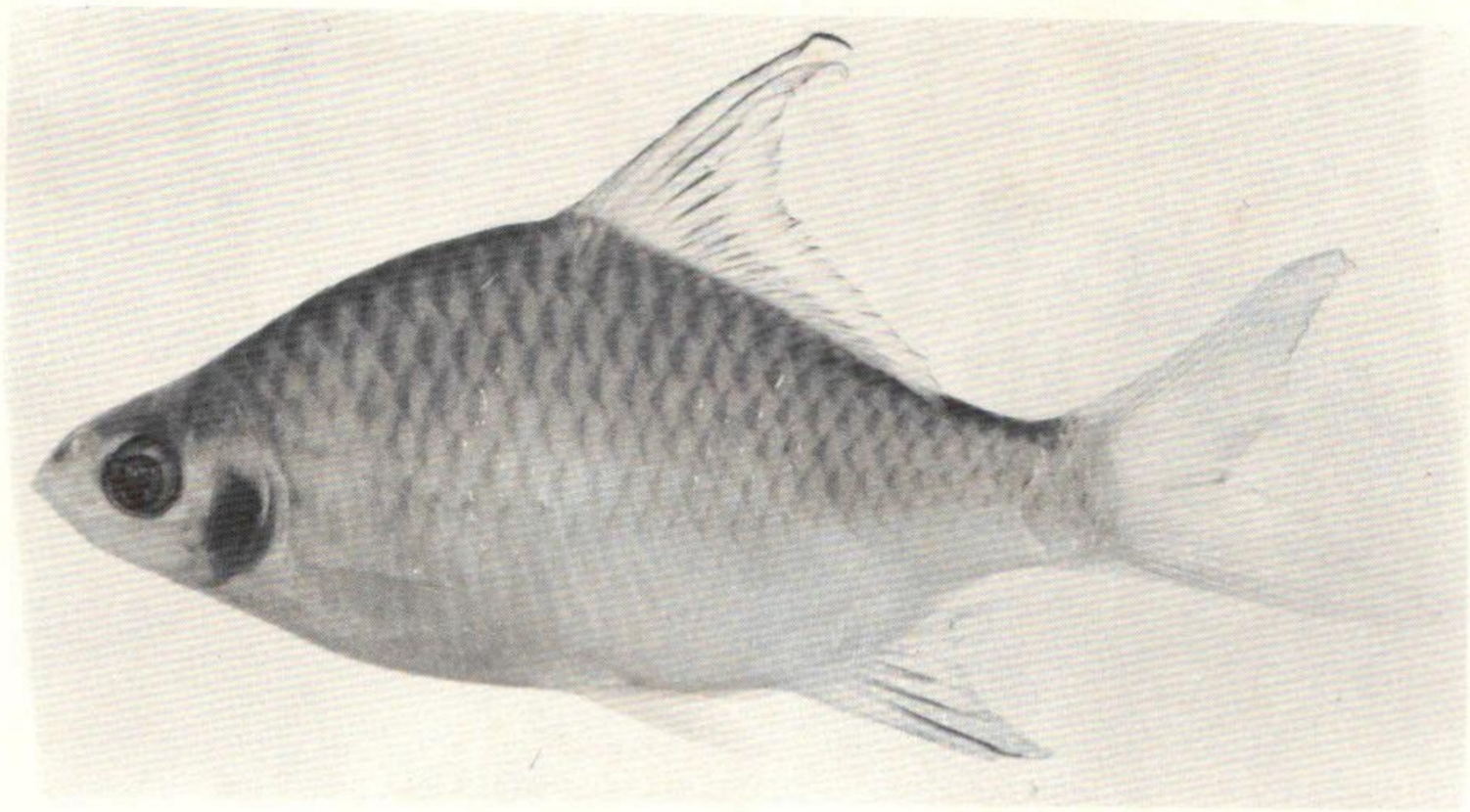


Fig. 140 *Scaphognathops stejnegeri* (Smith) 128.0 mm SL

Scaphognathus stejnegeri- Smith, 1931 (original description; Mekong R., eastern Thailand)

Scaphoganthops stejnegeri- Taki, 1968 (Vientiane, Pakse market: Station No. 20)

Collecting locality - Tha Ngon, Khong Falls: Station Nos. 13, 14, 41

Material - 5 (5, 55.2 - 88.5 mm, IBRP 4038, 4185, 4378, 4410)

Description - D.4/13 - 15; A.3/6; Ll.25 - 26, Tr.5.5/1/2.5-3 to pelvic fin origin, predorsal scales 9, circumpeduncular scales 16. Body deep, its depth 2.1 - 2.6 in standard length, greatly compressed, back elevated. Head small, its length 3.6 - 4.0 in standard length. Snout short, its length 3.3 - 3.6 in head length. Mouth small, terminal; upper lip thick; lower lip occupying only a part of sides of lower jaw and deficient mediantly; a narrow sharp-edged bony process at median part of lower jaw. No barbels. Eyes large. Dorsal fin long, unbranched rays osseous, last one elongate, denticulated behind. Largest specimen recorded 22.5 cm in length.

Life color: Body silver, back darker; each scale on back and sides with a blackish base. Membranes of dorsal and anal fins blackish; pectoral, pelvic and caudal fins dusky yellow.

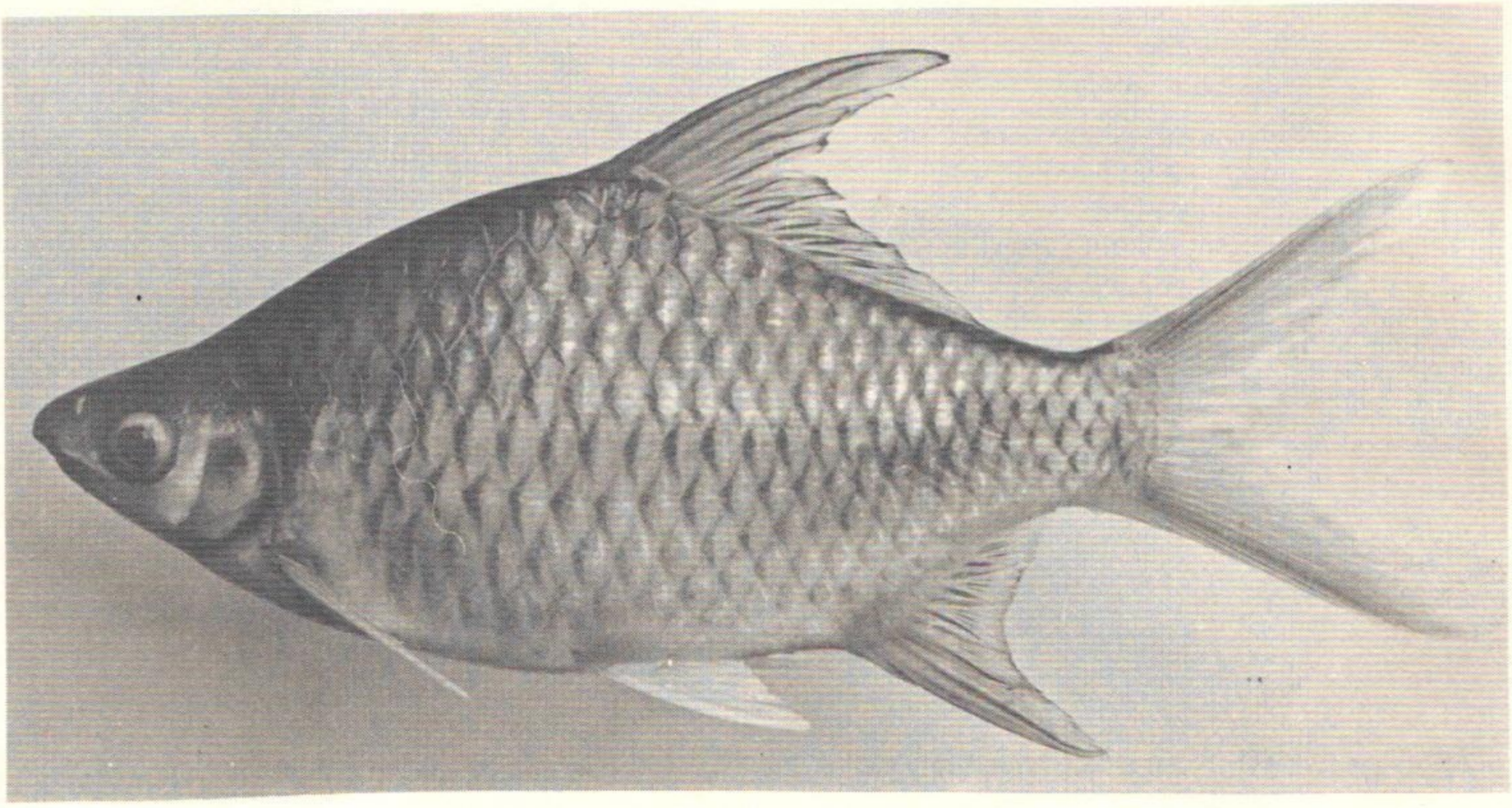


Fig. 141 *Scaphognathops* sp. 145.5 mm SL

Collecting locality - Tha Ngon, Sithan Tay, Hatsalao, Bang Lieng, Khong Falls: Station Nos. 14, 26, 34, 38, 41

Material - 106 (6, 80.0 - 157.5 mm, IBRP 4830, 4857, 5451, 5600, 5751)

Description - D. 4/9; A. 3/5; Ll. 25-28, Tr. 5.5/1/3.5 to pelvic fin origin, predorsal scales 9 - 10, circumpeduncular scales 16. Body shape closely resembling the preceding species. Snout somewhat pointed, prominent; upper lip thin; median portion of lower jaw with a broad, smooth, sharp-edged bony edge, lower lip a mere small fleshy button confined to each corner of mouth. Barbels absent. Dorsal fin shorter than that of the preceding species, last unbranched ray osseous, serrated behind. Largest specimen examined 18 cm in length.

Life color: Almost similar to the preceding species.

Remarks - This species is closely related to *S. stejnegeri*, from which it can easily be distinguished by the number of dorsal and anal fin rays and the broad bony edge of the lower jaw. The allocation of this genus in the subfamily Barbinae is only provisional. It is probable that further studies may indicate its phylogenetic position in a certain subfamily other than the Barbinae.

Probarbus jullieni Sauvage

Laotian name: Pa eun

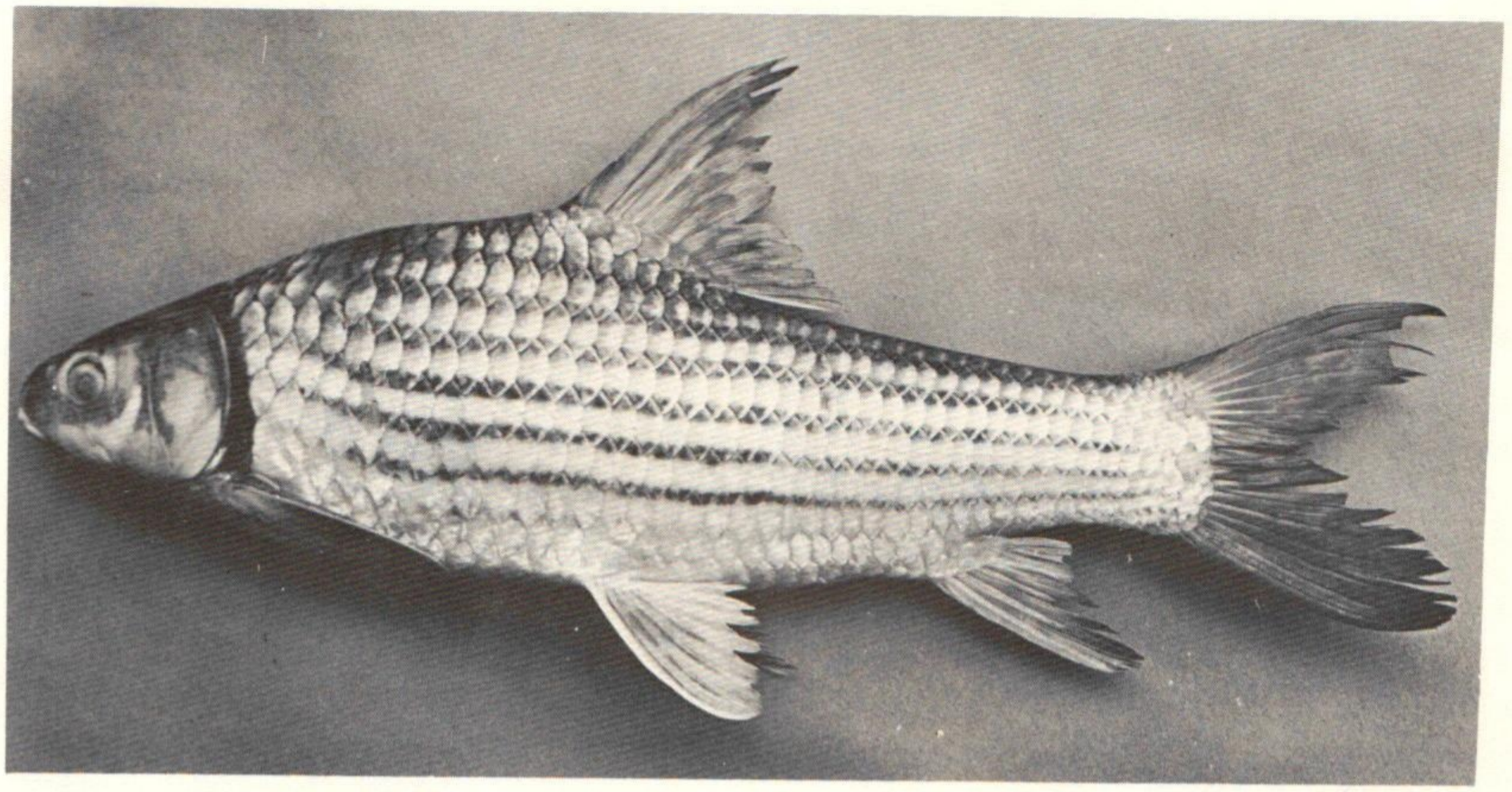


Fig. 142 *Probarbus jullieni* Sauvage 420.0 mm SL

Probarbus jullieni - Serene , 1951 (Mekong R. and its affluents); Taki, 1968 (Luang Prabang, Vientiane, Pakse, Isl. Hin Soune: Station Nos. 3, 20, 32, 37)

Collecting locality - Vientiane, Tha Bo, Sithan Tay, Hatsalao: Station Nos. 21, 23, 26, 34

Material - 41 (8, 44.2 - 102.5 mm, IBRP 4005, 5675)

Description - D. 3-4/9; A. 3/5; Ll. 34-37, Tr. 4.5/1/3-3.5 to pelvic fin origin, predorsal scales 10, circumpeduncular scales 16. Body elongate, not much compressed, its depth 3.4 - 4.0 in standard length. Head broad, its length 3.3 - 3.7 in standard length. Snout long, blunt, with a lateral fold on each side above mouth. Mouth situated at lower corner of snout; lips thick. Barbels maxillary, their length 3/4 - 2/3 eye diameter. Dorsal fin high, unbranched rays osseous but not very strong, last one entire. Largest individual observed 90 cm in length.

Life color: Body brown, with a dark brown median stripe on back and six to eight dark brown longitudinal stripes on either side between each row of scales from gill opening to base of caudal fin.

Cosmochilus harmandi Sauvage

Laotian name: Pa tiok

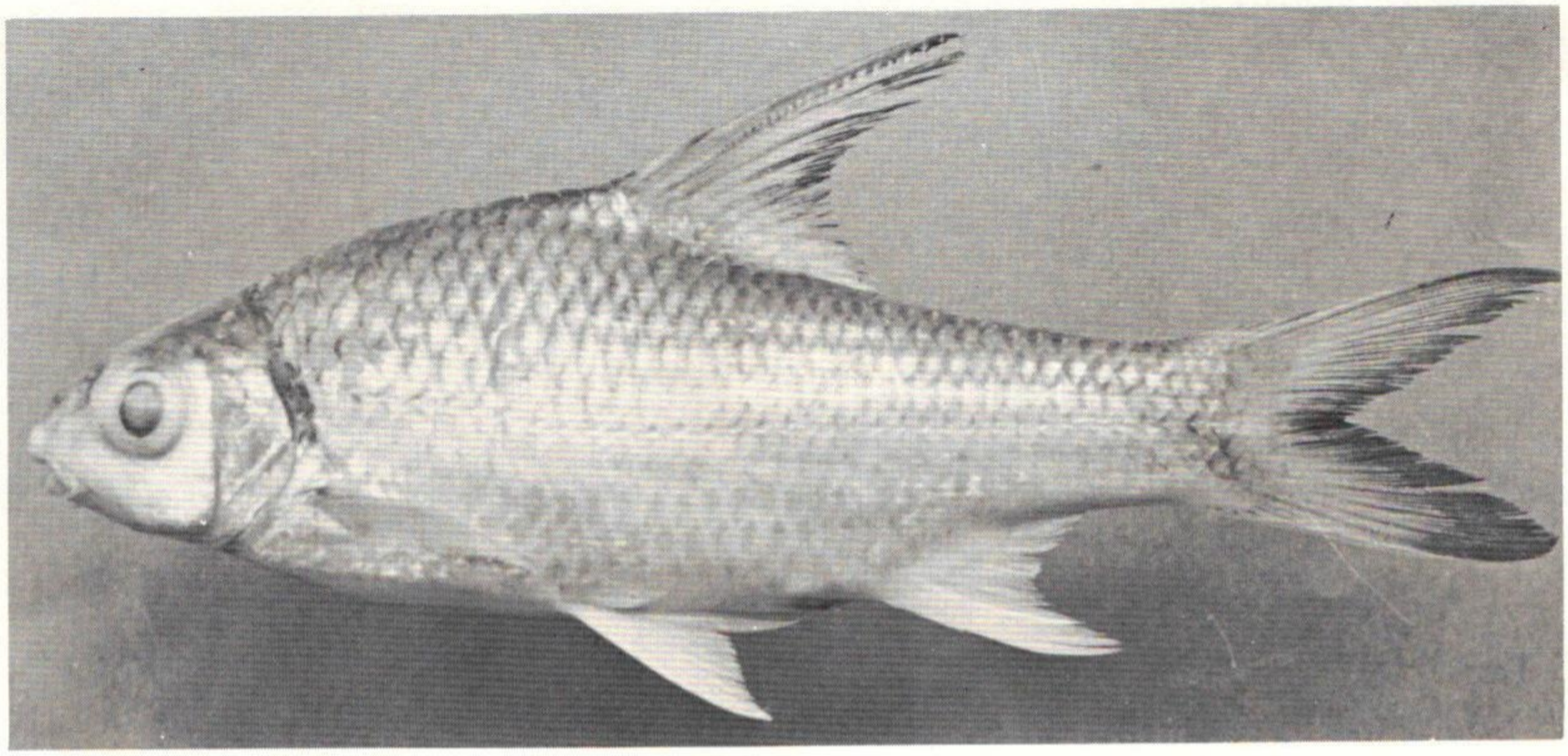


Fig. 143 *Cosmochilus harmandi* Sauvage 158.0 mm SL

Cosmochilus harmandi - Taki,,1968 (Luang Prabang, Vientiane, Pakse, Hatsalao: Station Nos. 3, 20, 32, 34)

Collecting locality - Long O, Tha Ngon, Tha Bo, Sai Fong, Sithan Tay, Pakse, Hatsalao: Station Nos. 5, 12, 13, 14, 15, 23, 25, 26, 31, 33, 34

Material - 640 (6, 109.0 - 290.0 mm, IBRP 4016, 4372, 4642, 4813)

Description - D. 3 - 4/8; A. 3/5; Ll. 34 - 35, Tr. 6.5-7/1/4-4.5 to pelvic fin origin, predorsal scales 12 - 13, circumpeduncular scales 16. Body deep, compressed, its depth 2.4 - 2.8 in standard length, back high, caudal peduncle slender. Head small, its length 3.8 - 4.3 in standard length. Snout short, obtusely

pointed, prominent. Mouth small, subinferior; lips well papillate; jaw edges entire, trenchant. Barbels maxillary and rostral. Eyes large. Dorsal fin very high; last unbranched ray much longer than head length, well ossified, strongly denticulated. Reaches nearly 60 cm in length.

Life color: Bluish silver, back darker. Dorsal and caudal fins densely pigmented with black melanophores; other fins grayish to pale.

Barbichthys laevis (Cuvier and Valenciennes)

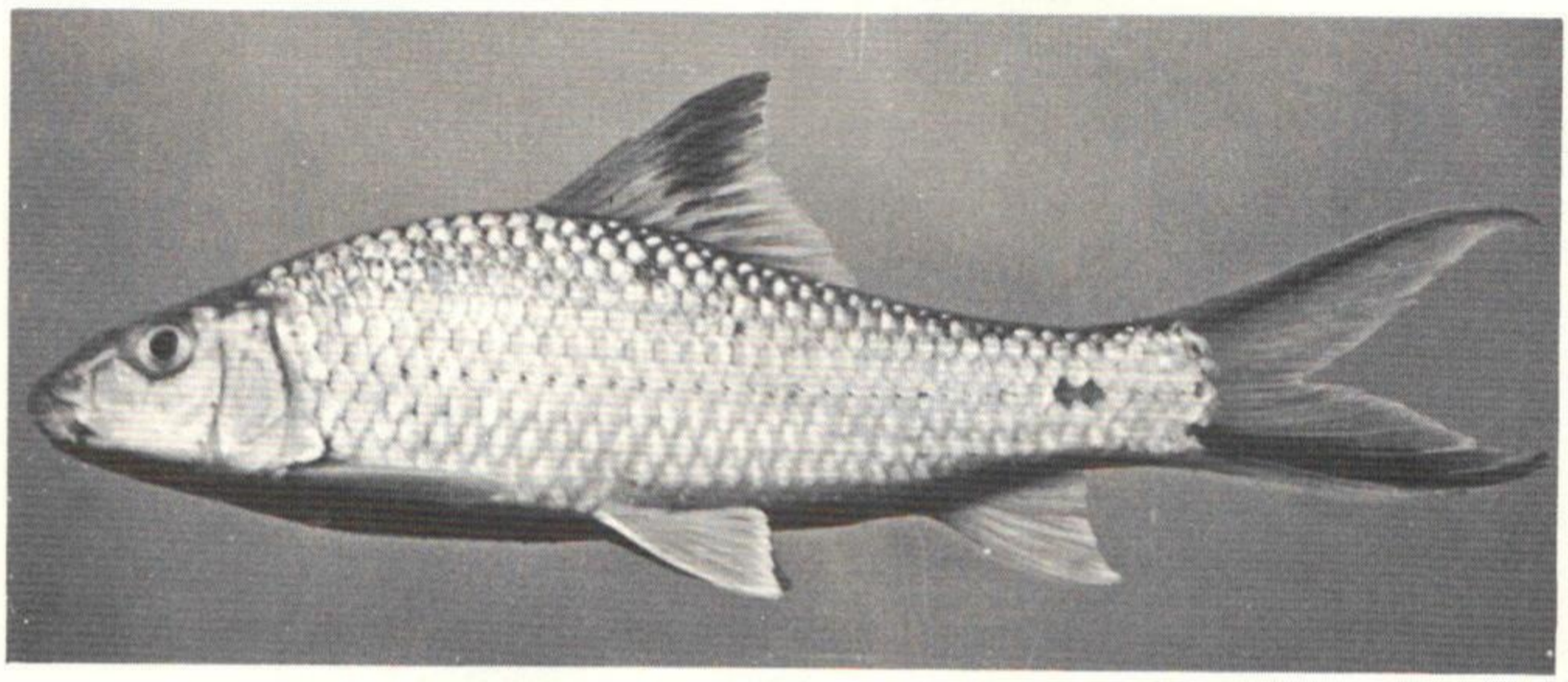


Fig. 144 *Barbichthys laevis* (Cuvier and Valenciennes) 135.0 mm SL

Barbichthys laevis - Fowler, 1935b (Chiengsen Kao); Taki, 1968 (Tha Ngon: Station No. 12)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sai Fong, Sithan Tay: Station Nos. 10, 12, 13, 23, 25, 26

Material - 85 (5, 81.6 - 132.0 mm, IBRP 4079, 5113, 5523)

Description - D.3/8; A.3/5; Ll.32-33, Tr.6.5/1/3.5 to pelvic fin origin, predorsal scales 11 - 12, circumpeduncular scales 16. Body elongate, not much compressed, its depth 3.5 - 3.6 in standard length; dorsal profile arched, ventral profile almost straight. Head length 3.3 - 3.8 in standard length. Snout long, blunt, produced over mouth. Upper lip thin but broadly pendulous; lower lip thick, papillate laterally. Short rostral and maxillary barbels. Suborbital bones broad. Eyes situated in

dorsal half of head. No osseous and denticulated dorsal ray. To 34 cm in length.

Life color: Body silvery with bluish to greenish luster, opercula golden. Dorsal fin red, with a jet black apical blotch; caudal fin red, with a black inframarginal stripe on each lobe; pectoral, pelvic and anal fins yellow.

Morulius chrysophekadion (Bleeker)

Laotian name: Pa phia

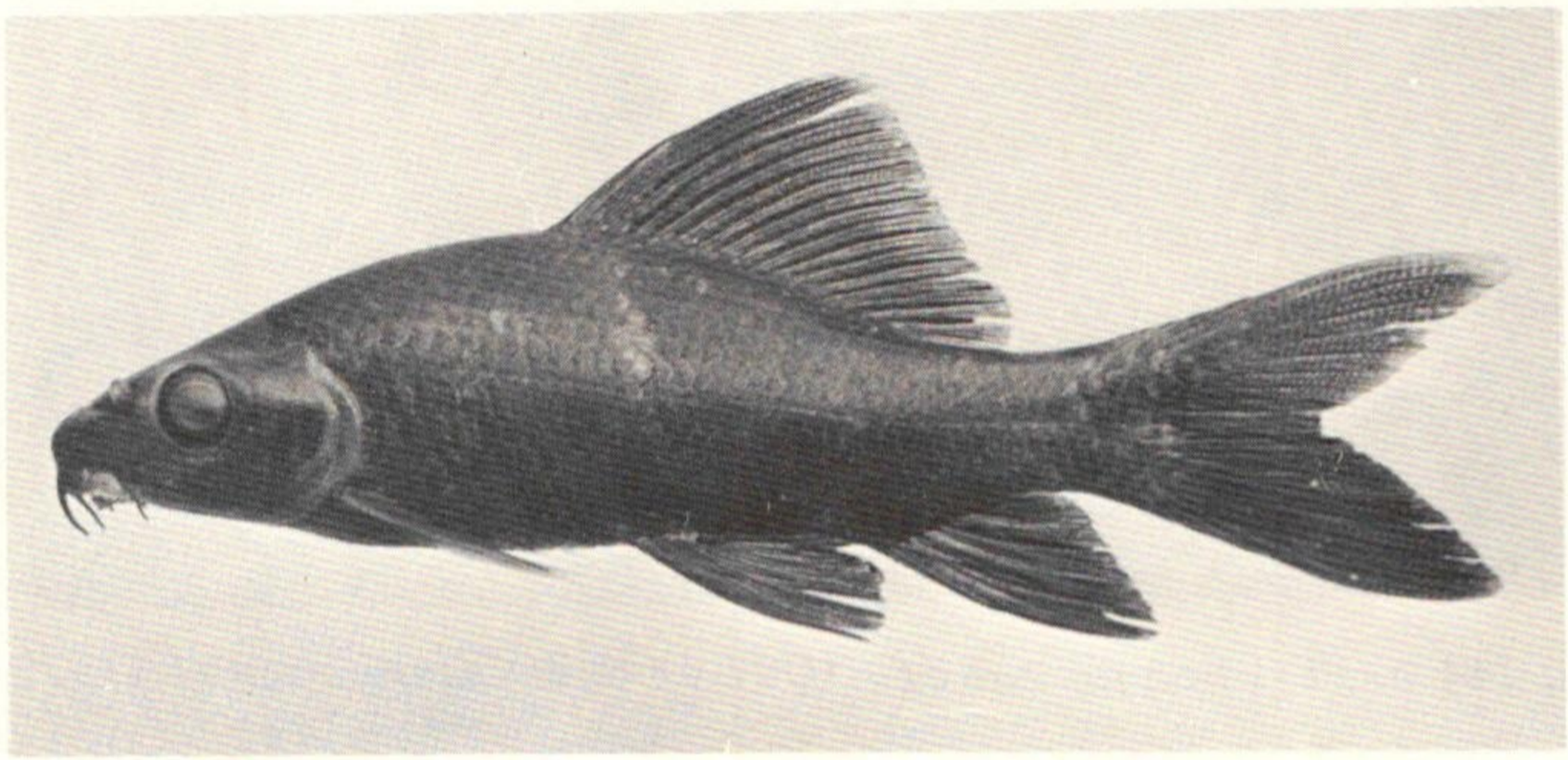


Fig. 145 *Morulius chrysophekadion* (Bleeker) 81.0 mm SL

Morulius pectoralis- Fowler, 1937 (Kemarat)

Labeo (Morulius) chrysophekadion - Serene, 1951 (Mekong R. and its affluents)

Morulius chrysophekadion - Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane, Salakham, Savannakhet market, Pakse: Station Nos. 3, 12, 20, 24, 30, 32)

Collecting locality - Tha Ngon, Tha Bo, Sithan Tay, Pakse, Hatsalao: Station Nos. 12, 13, 14, 15, 23, 26, 33, 34

Material - 152 (6, 44.5 - 133.5 mm, IBRP 4187, 4445, 4562, 5164, 5390)

Description - D. 3-4/15-16; A. 3/5; Ll. 38-39. Body depth 3.0 - 3.3, head length 3.2 - 3.7 both in standard length. Body moderately compressed, back high. Snout broad, rounded, with numerous

pores on front, with a rostral fold covering basal part of upper lip medianly. Mouth inferior, more or less strongly arched; upper lip well fringed, separated from rostrum by a deep groove; lower lip separated from isthmus by a deep groove, well fringed, its median portion with large papillae in clusters. Barbels two pairs, rostral barbels longer than and maxillary barbels about equal to diameter of eye. Fins high; height of dorsal fin much longer than head length and equal to or longer than body depth, pectoral fins extending nearly to insertion of pelvic fins, pelvic fins reaching origin of anal fin, anterior rays of anal fin about equal to body depth and longer than head length. Dorsal fin without osseous rays. To 60 cm in length.

Life color: Uniformly black to violescent or brownish gray, under surface of head light-colored; in large fish each scale on flank with a diffuse yellowish base. Fins black.

Labeo erythrurus Fowler



Fig. 146 *Labeo erythrurus* Fowler 65.5 mm SL

Labeo erythrurus - Fowler, 1937 (original description; Kemarat); Taki, 1968 (Tha Ngon: Station Nos. 12, 13)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sai Fong, Sithan Tay, Pakse, Hatsalao: Station Nos. 10, 12, 13, 14, 15, 23, 25, 26, 33, 34

Material - 99 (11, 64.5 - 97.0 mm, IBRP 4081, 4188, 5242)

Description - D. 3/10-12; A. 3/5; Ll. 31-32. Body depth 3.8 - 4.2, head length 4.0 - 4.4 both in standard length. Body slender, not much compressed. Snout long, pointed, overhanging mouth, with

a labial groove on each side, rostral fold crenulated along its free edge and completely concealing upper lip. Mouth inferior, somewhat arched; lips entire. Rostral and maxillary barbels, the latter shorter than diameter of eye. No osseous dorsal rays. Reaches 12 cm in length.

Life color: Body dark brownish gray to blackish, back darker. Barbels black. A black stripe running from origin of rostral barbels to postorbital region across eye. A large, black, roundish blotch at base of caudal fin entirely across caudal peduncle. Caudal fin orange to vermilion; other fins blackish.

Labeo dyocheilus (McClelland)

Laotian name: Pa va

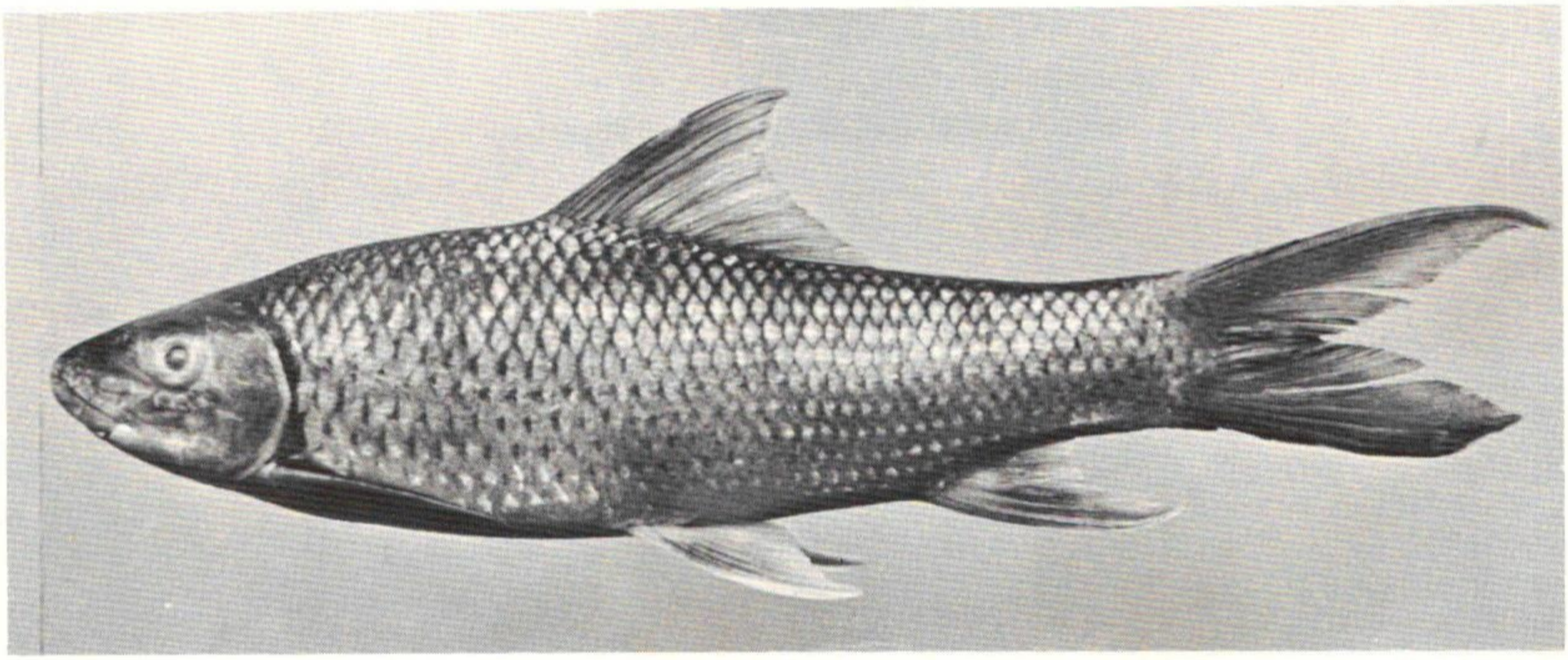


Fig. 147 *Labeo dyocheilus* (McClelland) 197.0 mm SL

Varicorhinus dyocheilus- Fowler, 1935b (Chiengsen Kao), 1937 (Kemarat)

Collecting locality - Vientiane, Hatsalao: Station Nos. 20, 34

Material - 6 (5, 167.0 - 301.0 mm, IBRP 4017, 5243)

Description - D. 3/11; A. 3/5; Ll. 39-40, Tr. 8.5/1/5-5.5 to pelvic fin origin, circumpeduncular scales 22. Body depth 3.2 - 3.5, head length 3.8 - 4.3 both in standard length. Body little compressed. Snout long, broad, rounded or obliquely truncate, over-

hanging mouth, beset with numerous pores, with a large rostral fold concealing median portion of upper lip. Upper lip broad, thick, smooth, separated from snout by a deep groove; lower lip broad, its edge with numerous papillae, separated from isthmus by grooves laterally and continuous with isthmus by a bridge medianly. A pair of small maxillary barbels concealed in labial grooves. Dorsal fin without osseous rays, its height about equal to that of anal and pelvic fins, and slightly shorter than head length. Attains about 45 cm in length.

Life color: Brown to greenish or violescent brown, under surface light. Each scale with a brick-brown base and a bluish or grayish margin. A dark brown or bluish brown bar along humeral region of gill opening. Fins brick-brown, with bluish tint.

Labeo behri Fowler

Laotian name: Pa va ho kham

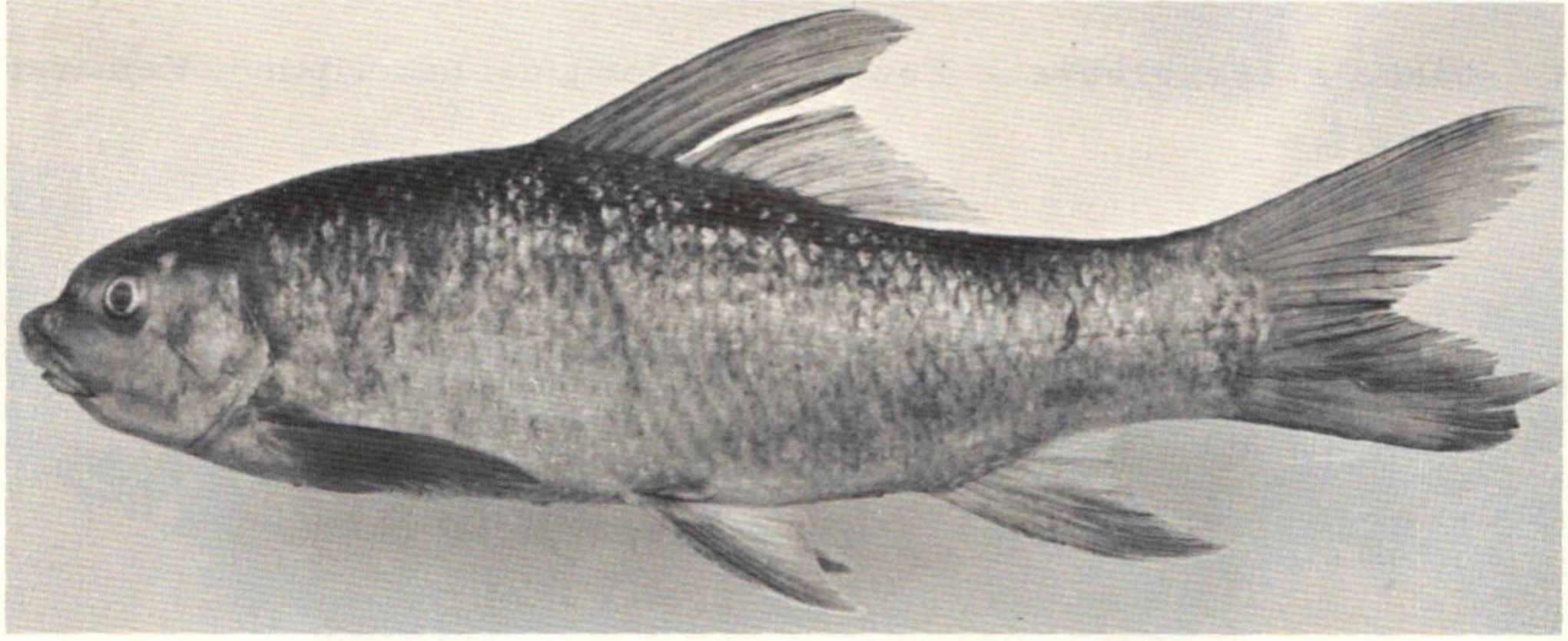


Fig. 148 *Labeo behri* Fowler 188.0 mm SL

Labeo behri - Fowler, 1937 (original description; Kemarat); Taki, 1968 (Luang Prabang, Isl. Hin Soune: Station Nos. 3, 37)

Collecting locality - Khong Falls: Station No. 41

Material - 1 (1, 188.0 mm, deposited at the Laboratory, Direction des Eaux, Forets et Chasses, Vientiane)

Description - D. 3/11; A. 3/5; Ll. 35. Body elongate, moderately compressed, its depth 3.4 in standard length. Head small, its length 4.7 in standard length. Snout with a remarkable transverse depression, tip of snout obtusely truncate and beset with pores; rostral fold broad, concealing most part of upper lip. Mouth inferior; upper lip thick, entire; lower lip fringed. Maxillary barbels minute, concealed in labial grooves; rostral barbels absent. Dorsal fin high, length of anterior rays about equal to body depth, not ossified. To about 40 cm in length.

Life color: Body olivaceous to violescent brown, underside light-colored. All fins dark brick-brown, free margin of caudal fin blackish.

Labeo cheveyi Fowler

Labeo chevey - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Labeo stigmapleura Fowler

Labeo stigmapleura - Fowler, 1937 (original description; Kemarat)

Tylognathus delacouri Pellegrin and Fang

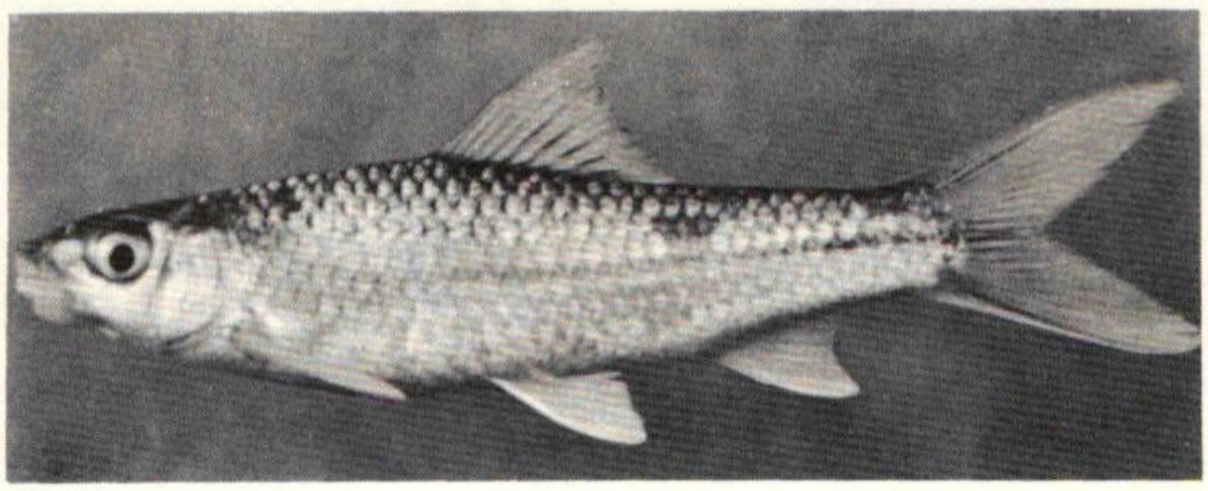


Fig. 149 *Tylognathus delacouri* Pellegrin and Fang 77.0 mm SL

Tylognathus delacouri- Pellegrin and Fang, 1940 (original description; Ban Nam Khueng)

Collecting locality - Nam Ngum dam site, Tha Ngon, Sithan Tay, Pakse, Hatsalao, Khong Falls: Station Nos. 10, 12, 13, 15, 26, 31, 34, 41

Material - 172 (6, 62.5 - 95.0 mm, IBRP 4041, 5457)

Description - D. 3/8; A. 3/5; Ll. 30-31, Tr. 5.5/1/3-3.5 to pelvic fin base. Body depth 3.7 - 4.1, head length 4.0 - 4.5 both in standard length. Snout somewhat pointed, its front with three or four irregular rows of tubercles or pores; rostral fold covering almost entire median part of upper lip. Upper lip entire; lower lip finely papillate; jaw edges entire. Barbels maxillary, their basal portion concealed in labial groove. Dorsal fin without ossified rays. To 10 cm in length.

Life color: Body silvery, back darker with bluish shade. A faint dark base to each scale on back and side. Side of body with an underlying black axial stripe which becomes intense posteriorly and continued on a blackish band on middle caudal rays. Fins dusky yellow; membranes of dorsal and caudal fins blackish.

Remarks - Most of the tylognatid species listed in this report are assigned to the genus *Lobocheilus* by Smith (1945). Fishes of these groups are very closely related to one another, and our present knowledge is far from satisfaction to give a clear specific definition to each of them. The identification of the Laotian specimens at hand is tentative.

Tylognathus brunneus Fowler

Tylognathus brunneus - Fowler, 1934a (original description; Chiengsen)

Tylognathus cryptopogon Fowler

Tylognathus cryptopogon - Fowler, 1935b (Chiengsen Kao); Pellegrin and Fang, 1940 (Ban Nam Khueng)

Tylognathus melanotaenia Fowler

Tylognathus melanotaenia- Fowler, 1937 (Kemarat)

Tylognathus davisi Fowler

Tylognathus davisi - Fowler, 1937 (original description; Kemarat)

Tylognathus gracilis Fowler

Tylognathus gracilis- Fowler, 1937 (original description; Kemarat)

Epalzeorhynchos coatesi (Fowler)

Laotian name: Pa kiang

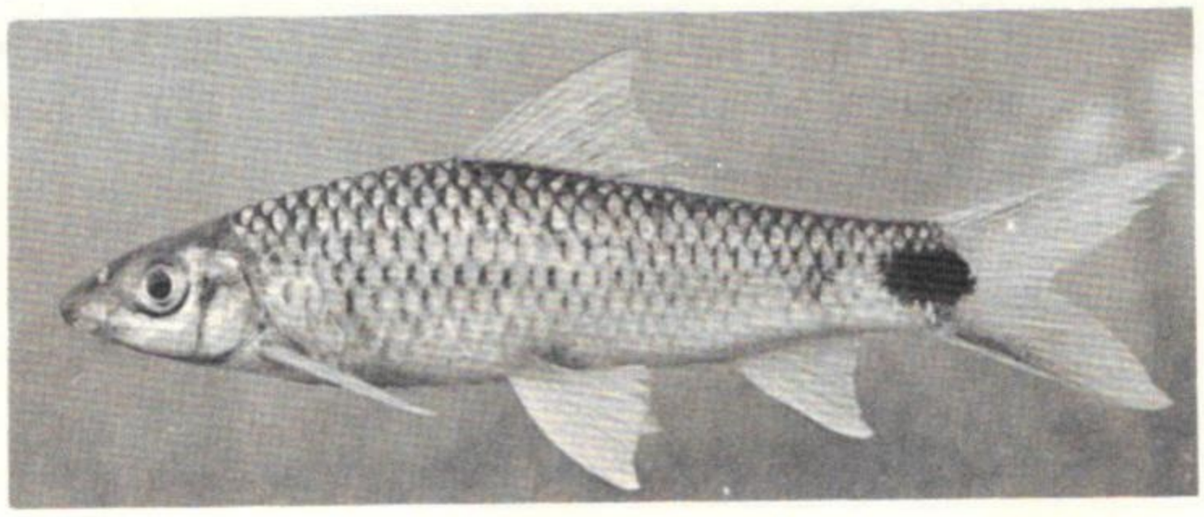


Fig. 150 *Epalzeorhynchos coatesi* (Fowler) 74.0 mm SL

Epalzeorhynchus coatesi- Taki, 1968 (Vientiane, Hatsalao: Station Nos. 20, 34)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay, Pakse, Hatsalao, Bang Lieng, Khong Falls: Station Nos. 10, 12, 13, 15, 23, 26, 31, 34, 38, 41

Material - 402 (16, 43.8 - 85.0 mm, IBRP 4040, 5241)

Description - D. 3/8; A. 3/5; Ll. 30-32, Tr. 4.5/1/3 to pelvic fin base, predorsal scales 8 - 9, circumpeduncular scales 16. Body

elongate, moderately compressed, its depth 3.7 - 4.3 in standard length. Head small, its length 3.9 - 4.2 in standard length. Snout long, tip obtusely pointed, well overhanging mouth. Upper lip broad, with about 16 plicae; lower lip thick, with numerous small papillae. Rostral barbels 0.5 - 0.6 diameter of eye, maxillary barbels absent. No osseous dorsal rays. Attains 14 cm in length.

Life color: Body greenish brown, back darker. Each scale on back and sides with a dark brownish base. A faint axial stripe on posterior part of body. A large black blotch at base of caudal fin. Dorsal and caudal fins yellow, weakly shaded with melanophores; other fins almost pale.

Epalzeorhynchos siamensis Smith

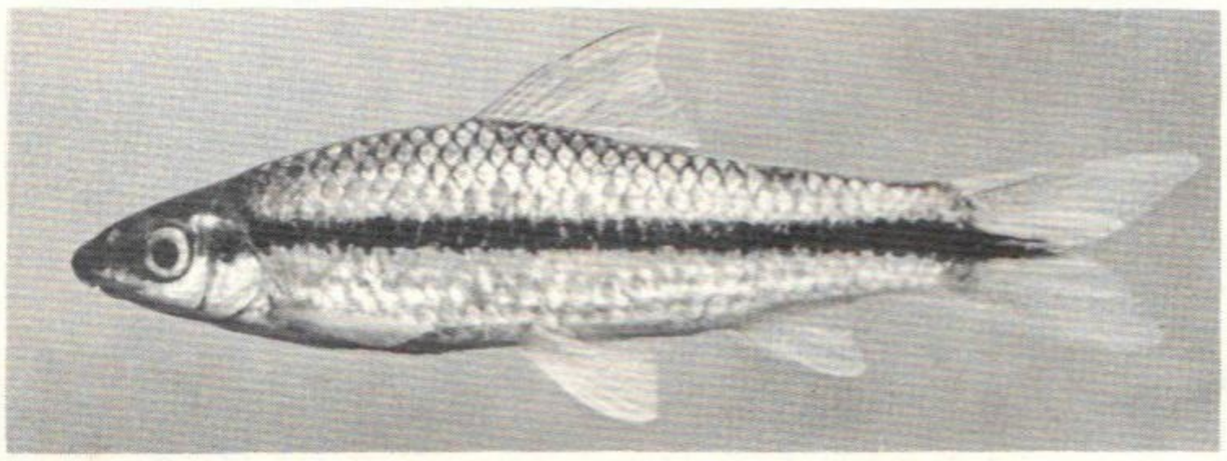


Fig. 151 *Epalzeorhynchos siamensis* Smith 66.0 mm SL

Collecting locality - Luang Prabang, Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay: Station Nos. 2, 10, 12, 13, 14, 15, 23, 26

Material - 109 (11, 48.3 - 72.8 mm, IBRP 5118, 5251, 5431, 5702)

Description - D. 3/8; A. 3/5; Ll. 30-31. Body elongate, moderately compressed, its depth 4.0 - 4.2 (by exception 3.6 in one specimen) in standard length. Head small, its length 4.1 - 4.2 in standard length. Snout pointed, well overhanging mouth. Upper lip finely papillate, its free margin with 14 to 16 plicae; lower lip thick, papillate. Only rostral barbels present. No ossified rays in dorsal fin. To about 14 cm in length.

Life color: Body brownish with olivaceous luster, underside whitish, head dark greenish brown. A jet black axial stripe ex-

tending from gill opening to tip of middle caudal rays, the stripe often extended anteriorly to tip of snout across eye. Dorsal and caudal fins light grayish yellow, other fins hyaline.

Epalzeorhynchos kalliurus Smith

Epalzeorhynchos kalliurus- Smith, 1945 (original description; Chiengsen Kao)

Mekongina erythrospila Fowler

Laotian name: Pa sa i

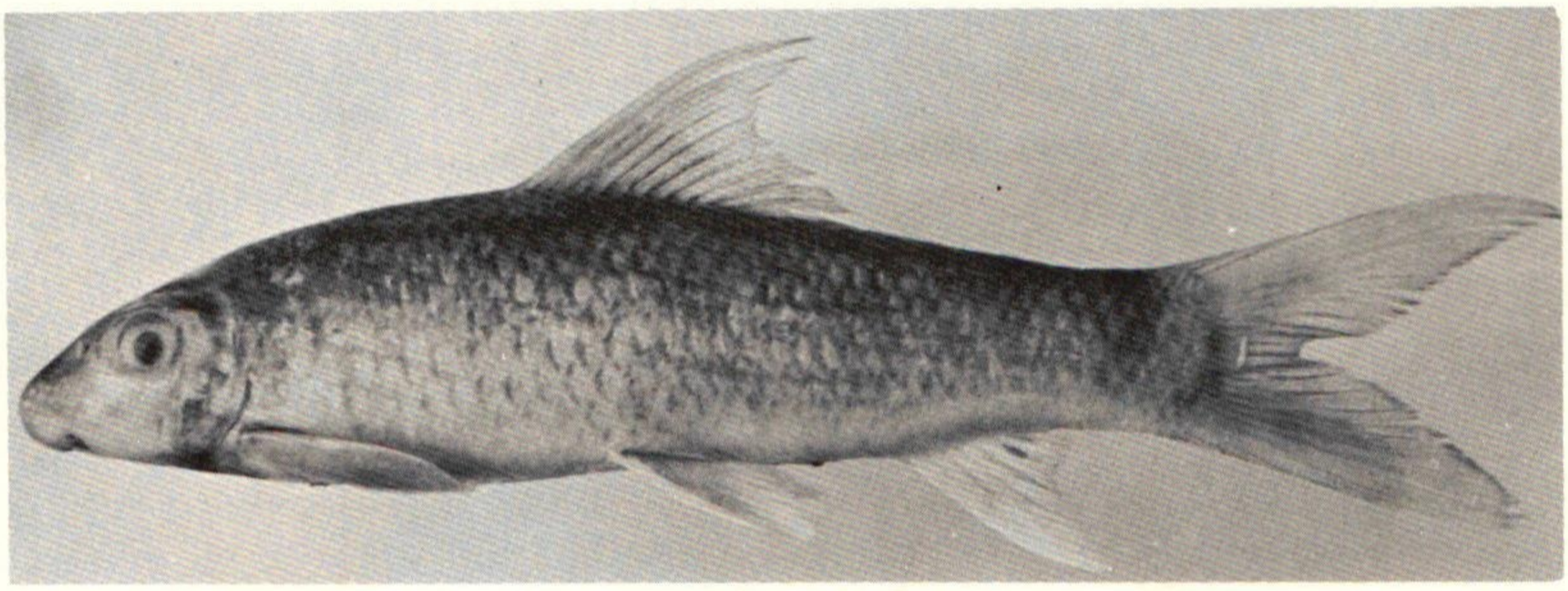


Fig. 152 *Mekongina erythrospila* Fowler 160.5 mm SL

Mekongina erythrospila - Fowler, 1937 (original description, Kemarat); Taki, 1968 (Luang Prabang, Vientiane, Pakse: Station Nos. 3, 20, 32)

Collecting locality - Tha Ngon, Sithan Tay, Hatsalao: Station Nos. 12, 34, 36

Material - 56 (6, 107.0 - 256.5 mm, IBRP 4018, 5252)

Description - D.2-3/10; A.2-3/5; Ll.34-35, Tr.6.5/1/4 to pelvic fin base. Body elongate, somewhat cylindrical, its depth 3.8 -

4.3 in standard length. Head small, rather narrow, its length 3.9 - 4.8 in standard length. Snout long, its tip rounded and densely beset with tubercles, continuous with upper lip without distinct rostral fold. Mouth inferior, little arched; upper lip broad, finely papillate and finely fringed; lower lip broad, entire. Barbels absent. Ventral surface of head and throat somewhat flattened. Pectoral and pelvic fins inserted horizontally. Anterior rays of dorsal fin longer than body depth. Attains 35 cm in length.

Life color: Brown to grayish brown, each scale with a pink spot. Opercular region pink to orange. Fins dusky orange.

Garra fasciacauda Fowler

Laotian name: Pa kikko

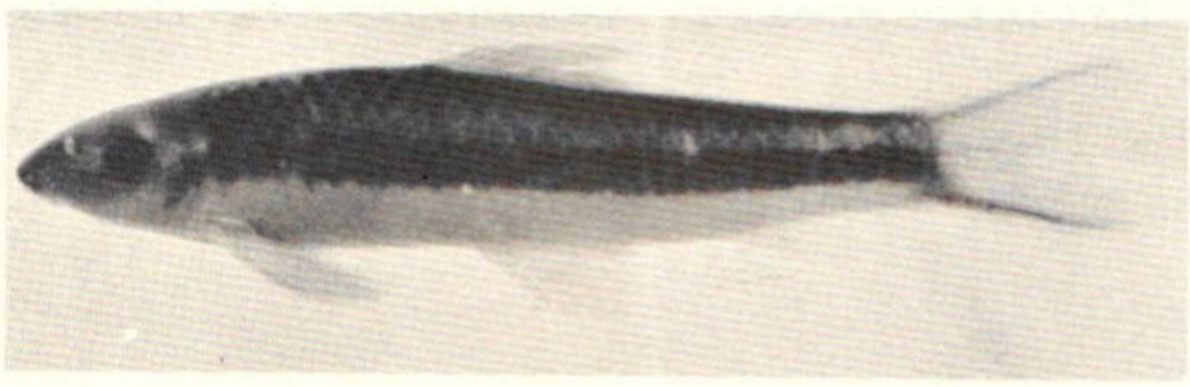


Fig. 153 *Garra fasciacauda* Fowler 63.5 mm SL

Garra fasciacauda - Fowler, 1937 (original description; Kemarat); Taki, 1968 (Hatsalao, Isl. Hin Soune: Station Nos. 34, 37)

Collecting locality - Luang Prabang, Sithan Tay, Hatsalao, Khong Falls: Station Nos. 2, 26, 34, 41

Material - 129 (10, 75.5 - 70.5 mm, IBRP 5244)

Description - D.2-3/8; A.2-3/5; Ll.30-31, Tr.4.5/1/2.5-3 to pelvic fin base, predorsal scales 10, circumpeduncular scales 12. Body very elongate, its depth 4.8 - 5.3 in standard length, only slightly compressed, under surface more or less flat. Head length 4.3 - 4.7 in standard length. Snout pointed, well produced over mouth, with small tubercles on front. Upper lip with numerous small papillae, free edge finely fringed; lower lip formed

into a fleshy disk, its front border broadly papillate, hind margin free from isthmus. Barbels rostral, their length 0.6 - 0.9 eye diameter. Paired fins inserted horizontally. To 11 cm in length.

Life color: Upper side of body dark olive, lower side and under surface whitish. A broad black axial stripe running from gill opening to tip of middle caudal rays. Dorsal fin yellow, distal portion orange; caudal fin yellow to orange, each lobe with a black submarginal stripe; other fins light yellow.

Garra taeniata Smith

Garra taeniata - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Balantiocheilus melanopterus (Bleeker)

Balantiocheilus melanopterus- Fowler, 1937 (Kemarat); Taki, 1968 (Tha Ngon, Vientiane market: Station No. 12)

Catlocarpio siamensis Boulenger

Catlocarpio siamensis - Taki, 1968 (Luang Prabang, Vientiane, Salakham, Pakse: Station Nos. 3, 20, 24, 32)

Crossocheilus reticulatus Fowler

Crossocheilus reticulatus - Taki, 1968 (Tha Ngon, Pakse: Station Nos. 12, 32)

Family Gyrinocheilidae (Gyrinocheilids)

Gyrinocheilus aymonieri (Tirant)

Laotian name: Pa ko

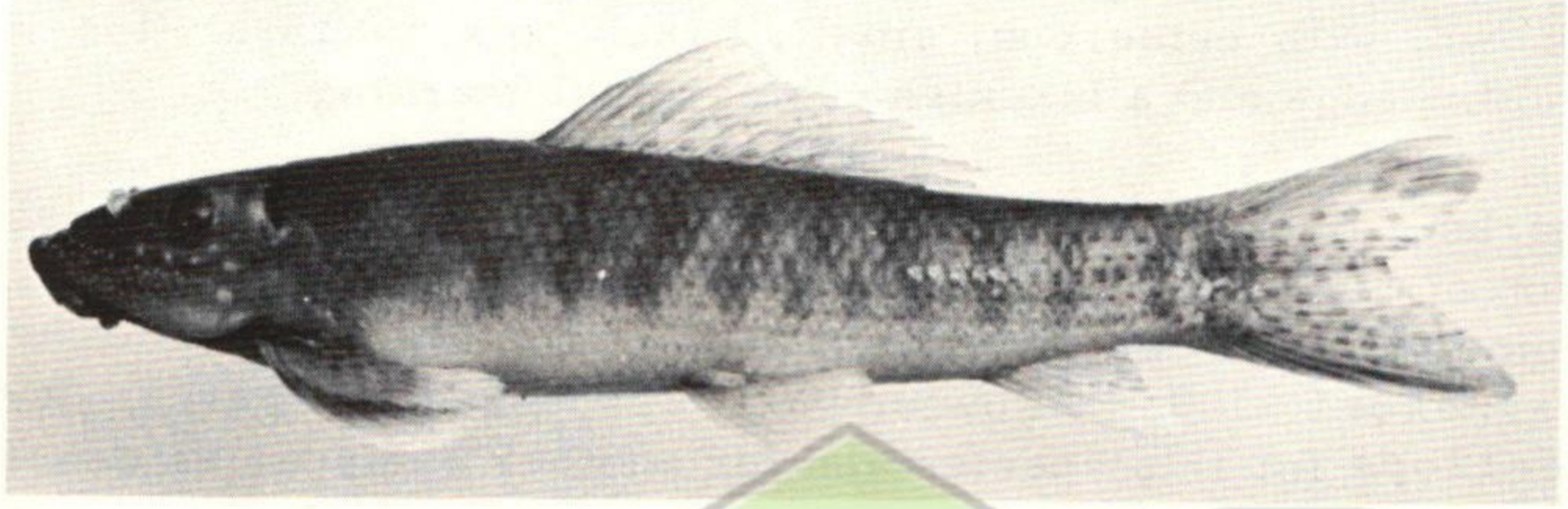


Fig. 154 *Gyrinocheilus aymonieri* (Tirant) 118.5 mm SL

Gyrinocheilus aymonieri - Taki, 1968 (Luang Prabang, Hatdok-keo, Salakham, Hatsalao: Station Nos. 3, 22, 24, 34)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay, Hatsalao, Khong Falls: Station Nos. 10, 12, 13, 15, 23, 26, 34, 41

Material - 1,166 (12, 71.2 - 116.5 mm, IBRP 4044, 5247, 5279, 5371

Description - D. 3-4/10 (rarely 9); A. 3-4/5; Ll. 39-41 (rarely 37). Body elongate, sub-cylindrical, its depth 4.5 - 5.4 in standard length. Head short, opercular flap broad, head length with opercular flap 3.3 - 3.9 in standard length. Ventral surface of head and trunk flattened. Snout long, broad, its length generally more than 0.5 head length, beset with tubercles, anterior end of snout broadly depressed, produced; ventral surface of snout flat, without rostral fold, continued as upper lip. Mouth inferior; upper lip finely crenulated, incised medianly; lower lip broad, its posterior border finely fringed; both lips on each side forming together a coil occupying postlabial groove. Isthmus prolonged into deep postlabial groove medianly. Barbels absent. Eyes

high in position. A supplementary inhalent gill opening above regular gill opening. No osseous dorsal rays; paired fins inserted horizontally; caudal fin not very deeply forked. Attains a length of 20 cm.

Life color: Ground color of body brown with bluish tint on back. Back and side with three lateral rows of about 10 to 13 large, blackish, oval spots, the spots may be connected to each other forming longitudinal or cross bands. Fins yellow to yellowish brown, with numerous, small, dark spots; pectoral fins with a yellow edge and a blackish submarginal marking.

Remarks - Because of the imperfect and inaccurate original description of this species by Tirant (*Psilorhynchus aymonieri* 1883), some authors credit this species to Berg (*Gyrinocheilus Kaznakovi* 1906). Fowler (1937) proposed the genus *Gyrinocheilops* for this species and for another one species described by him, *Gyrinocheilops pennocki*. However, I follow Smith's (1945) opinion that the differences between the two genera as indicated by Fowler (1937) have only specific significance. Futhermore, the possibility that *Gyrinocheilops pennocki* may be conspecific with *Gyrinocheilus aymonieri* is to be considered. According to the original description of *Gyrinocheilops pennocki* (Fowler, 1937), the species has a shorter snout and 10 branched dorsal rays instead of having a longer snout and nine branched dorsal rays as in *Gyrinocheilus aymonieri*. Of the 12 specimens examined in the present work, 11 have long snouts (snout length more than 0.5 head length) and 10 branched dorsal rays, and one has a much shorter snout (snout length less than 0.5 head length) and nine branched dorsal rays.

Gyrinocheilus pennocki Fowler

Gyrinocheilops pennocki - Fowler, 1937 (original description; Kemarat)

Family Homalopteridae (Homalopterids)

Annamia normani (Hora)

Laotian name: Pa tit hin



Fig. 155 *Annamia normani* (Hora) 61.2 mm SL

Annamia normani - Taki, 1968 (Houei Nhang R.: Station No. 29)

Collecting locality - Houei Nhang R.: Station No. 29

Material - 7 (7, 25.5 - 61.2 mm, IBRP 3241)

Description - D. 2/7-8; A. 2/4-5; pectoral rays 1/15-16; pelvic rays 1/10. Body depth 6.6 - 7.6, head length 4.8 - 5.1 both in standard length. Very elongate, head and body much wider than deep, their ventral surface flattened. Snout long, broadly depressed, trenchant, beset with minute granules. Mouth situated on ventral surface of head far behind tip of snout, small, strongly arched; lips rather thin, continuous. Four rostral and two maxillary barbels around mouth, all on ventral surface of head, short. Nostrils large. Eyes small, dorso-ventral in position. Dorsal and anal fins short, the latter situated far back; pectoral fins large, fan-shaped; inserted horizontally, their tip not reaching pelvic fins; pelvic fins rather small, also extended horizontally. Caudal fin long, not much emarginated, lower lobe longer than the upper. Largest specimen at hand 6 cm in length.

Life color: Head and body greenish brown, ventral surface whitish; back and sides of body dappled with irregular-shaped dark greenish black blotches of various sizes. Dorsal and caudal fins light yellowish brown; pectoral, pelvic and anal fins light orange-yellow; all fin rays with blackish pigments.

Homaloptera smithi Hora

Laotian name: Pa tit hin

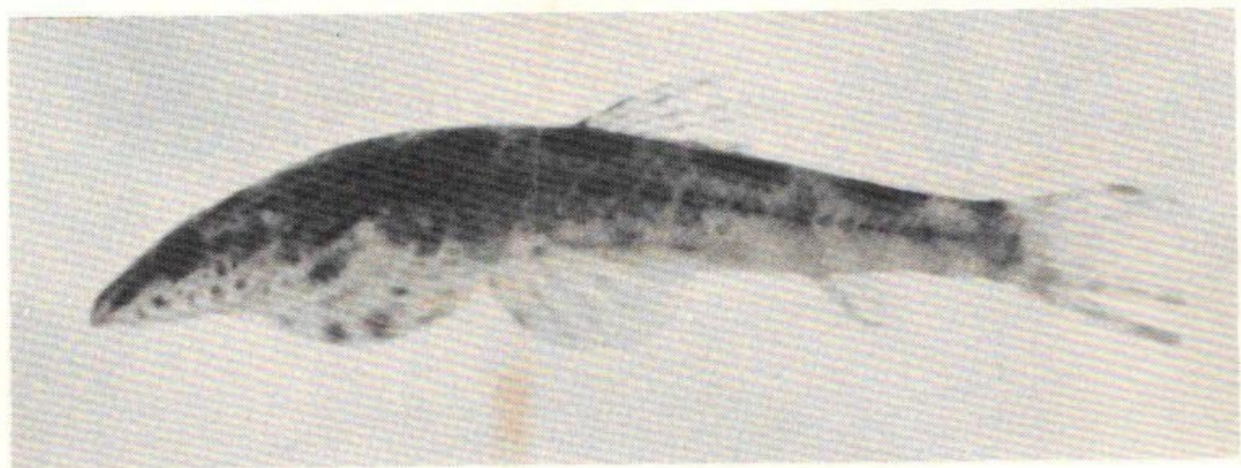


Fig. 156 *Homaloptera smithi* Hora 44.0 mm SL

Collecting locality - Houei Nhang R.: Station No. 29

Material - 36 (10, 38.4 - 45.5 mm, IBRP 3239)

Description - D. 2-3/7; A. 2/5; pectoral rays 6/11; pelvic rays 2/7. Body depth 5.6 - 7.0, head length 3.7 - 4.0 both in standard length. Head and body wider than deep, their ventral surface flattened. Snout broad, trenchant. Mouth situated on ventral surface of head, close to anterior end of snout, small, arched; lips rather thin, continuous. Two pairs of rostral barbels around upper jaw near anterior border of snout and a maxillary barbel at each corner of mouth. Eyes small, dorso-lateral in position. Dorsal fin small, originated far behind pelvic fins; anal fin short, low; pectoral fins well developed, produced into a wing-like extension, originated below gill opening and extending posteriorly far on pelvic fins; pelvic fins also extended horizontally. Largest specimen at hand 4.6 cm in length.

Life color: Head and body dark brown, ventral surface light-colored; back and sides ornamented with marble patterns or blotches. Fins yellow-orange to orange, with many rows of dark, small spots.

Homaloptera lineata Smith

Homaloptera lineata - Smith, 1945 (Chiengsen Kao)

Family Cobitidae (Loaches)

Subfamily Botinae

Botia hymenophysa (Bleeker)

Laotian name: Pa kieo kai

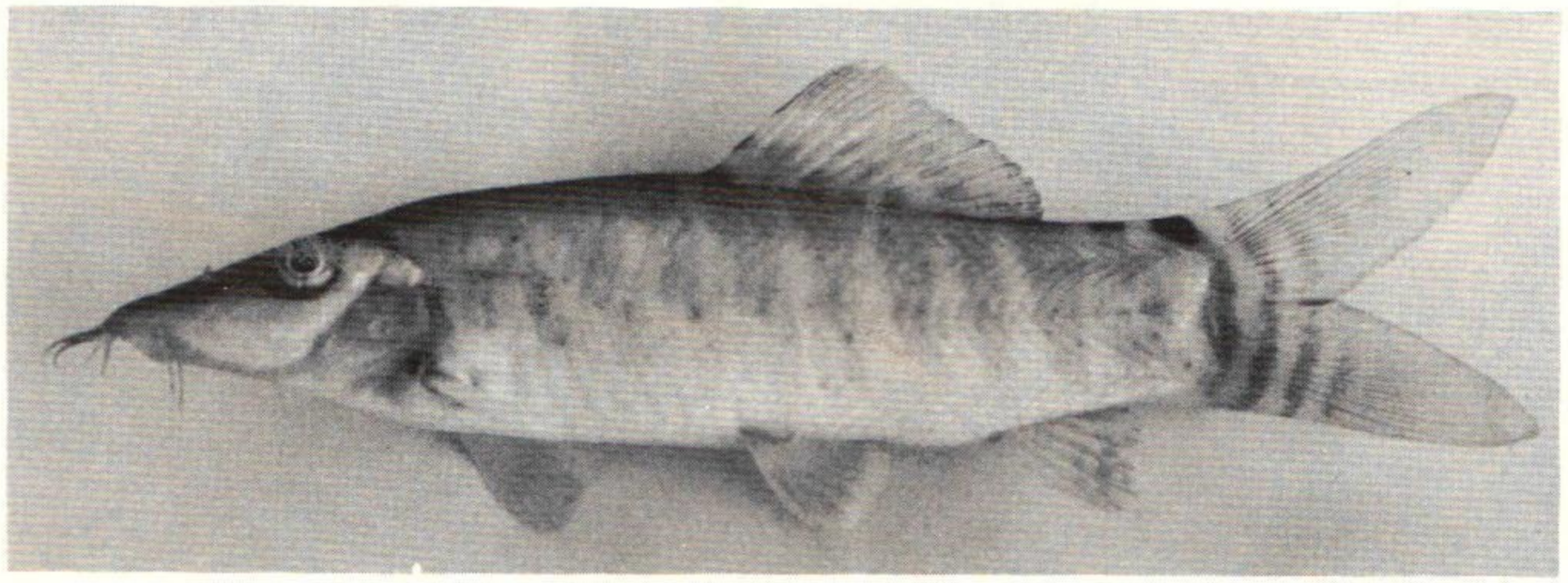


Fig. 157 *Botia hymenophysa* (Bleeker) 127.0 mm SL

Botia hymenophysa - Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane, Hatdokkeo, Salakham, Pakse: Station Nos. 3, 12, 13, 15, 20, 22, 24, 32), 1972 (Tha Ngon, Hatdokkeo, Tha Bo: Station Nos. 12, 22, 23)

Collecting locality - Nam Ngum dam site, Tha Ngon, Hatdokkeo, Tha Bo, Sithan Tay, Pakse, Hatsalao: Station Nos. 10, 12, 15, 22, 23, 26, 30, 34

Material - 187 (15, 62.0 - 170.5 mm, IBRP 3208, 3250, 5334, 5460, 5765)

Description - D. 3-4/12-14; A. 3-4/5. Body depth 3.5 - 4.3, head length 3.0 - 3.6 both in standard length. Elongate, compressed, caudal peduncle deep. Snout prolonged, its length more than 0.5 head length, its tip formed into a tuft bearing two pairs of long rostral barbels. A maxillary barbel at each corner of mouth. Mouth small, subinferior, strongly arched. Upper lip somewhat fringed; lower lip thick, broad, notched at median symphysis, its

median portion with a pair of very small mental lobes. Eyes small, high. A bifid preorbital spine in front of eye, the spine erectile but usually folded in a crescent-shaped groove below eye. Scales very minute. No osseous rays in fins. Attains a length of 25 cm.

Life color: Ground color of body light brown, with greenish or bluish luster over back and sides; operculum and preoperculum olivaceous golden. Head with two black median stripes which are unite together anteriorly and two lateral streaks on its side. Body with 11 broad receded bluish black cross bands; the bands four predorsal, four subdorsal and three postdorsal. Dorsal fin orange, with dark stripes or rows of spots; caudal fin yellow, with dark cross bands; pectoral, pelvic and anal fins yellow to yellow-orange.

Botia beauforti Smith

Laotian name: Pa kieo kai

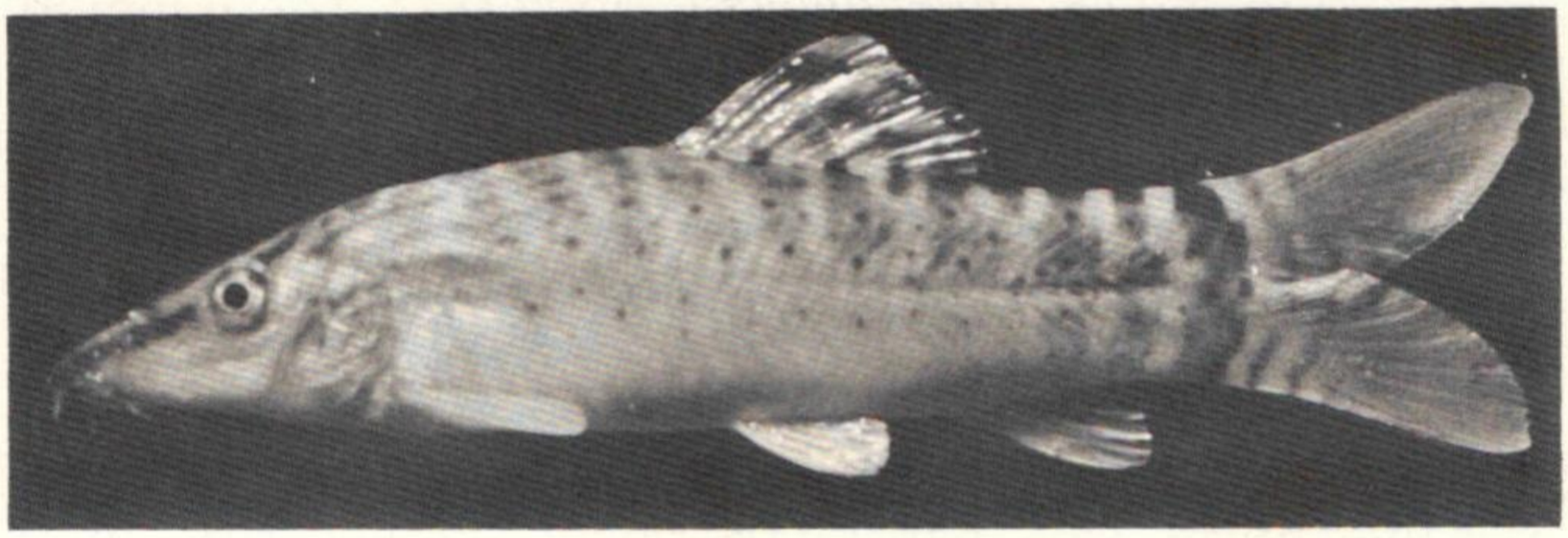


Fig. 158 *Botia beauforti* Smith 48.0 mm SL

Botia beauforti formosa - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Botia beauforti - Taki, 1972 (Tha Ngon, Pakse: Station Nos. 12, 15, 30)

Collecting locality - Tha Ngon, Pakse: Station Nos. 12, 15, 30

Material - 4 (3, 48.0 = 57.5 mm, IBRP 4529, 4554)

Description - D.3/9; A.2-3/5. Body depth 3.7 - 4.1, head length 3.0 - 3.3 both in standard length. Body elongate, compressed;

caudal peduncle deep. Head rather long, low; snout long, pointed, overhanging mouth. Two rostral and one maxillary pairs of barbels, rostral barbels united together at their base, all barbels much longer than diameter of eye. Mouth subinferior, small, arched. Structure of lips similar to that of the preceding species. Eyes situated in dorsal half of head. An erectile bifid preorbital spine in front of eye, the spine usually concealed in a groove below eye. Scales very minute. Dorsal fin without ossified rays. to 19 cm in length.

Life color: General color of body brownish, with iridescent sheen. Head with three longitudinal stripes, one near mid-dorsal line, one across eye, and one below eye. Barbels blackish. Body with 11 broad, bluish black, cross bars, which are four predorsal, three subdorsal, and four postdorsal; two to four dark interrupted longitudinal stripes on each side of back from head to subdorsal region; several longitudinal rows of small dark spots on side. Dorsal and caudal fins orange, with transverse rows of dark spots; pelvic and anal fins yellow; pectoral fins pale yellow.

Botia modesta Bleeker

Laotian name: Pa mou mang

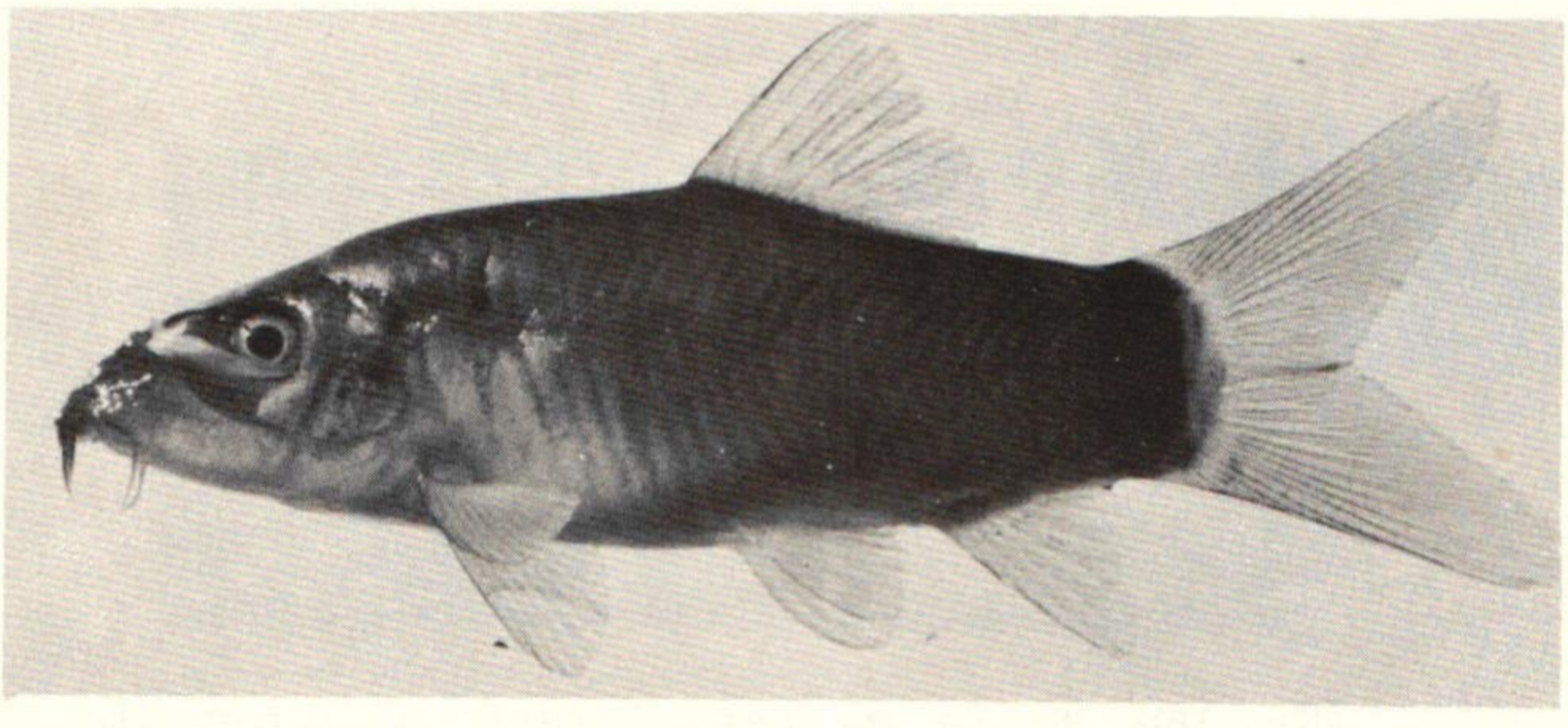


Fig. 159 *Botia modesta* Bleeker 59.2 mm SL

Botia modesta - Fowler, 1937 (Kemarat); Serene, 1951 (Mekong R. and its affluents); Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane, Hatdokkeo, Pakse, Hatsalao: Station Nos. 3, 12, 13, 15, 20, 32, 34), 1972 (Nam Ngum dam site, Tha Ngon, Hatdokkeo: Station Nos. 10, 12, 22)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay, Pakse, Hatsalao: Station Nos. 10, 12, 15, 22, 23, 26, 30, 34

Material - 258 (28, 46.0 - 77.7 mm, IBRP 4576, 4621)

Description - D. 3-4/8 (rarely 7 or 9); A. 3/5. Body depth 2.5 - 2.9, head length 2.7 - 3.1 both in standard length. Body oblong, compressed; caudal peduncle deep. Snout long, its length about 0.5 head length, its tip formed into a short tuft bearing two pairs of rostral barbels. A maxillary barbel at either corner of mouth. Mouth terminal or subinferior, oblique, arched; upper lip rather thick, finely fringed, depressed downward medianly; lower lip very broad, thick, more or less roughly fringed, its mesial portion provided with a pair of fleshy mental lobes, each lobe with a pair of small papillae produced forward. Eyes small, situated in upper half of head. A well-recurved bifid preorbital spine in front of eye, the spine erectile but usually concealed in a crescentic groove below eye. Scales very minute. No osseous rays in fins. Reaches 25 cm in length.

Life color: In adults body greenish, bluish, grayish or brownish, back darker; a faint broad blackish cross band at base of caudal fin; fins blood-red to orange. In juveniles body brown, with seven to nine broad dark brown cross bands on back and side; dorsal, anal and caudal fins eyllow to orange, other fins light yellow.

Botia morleti Tirant

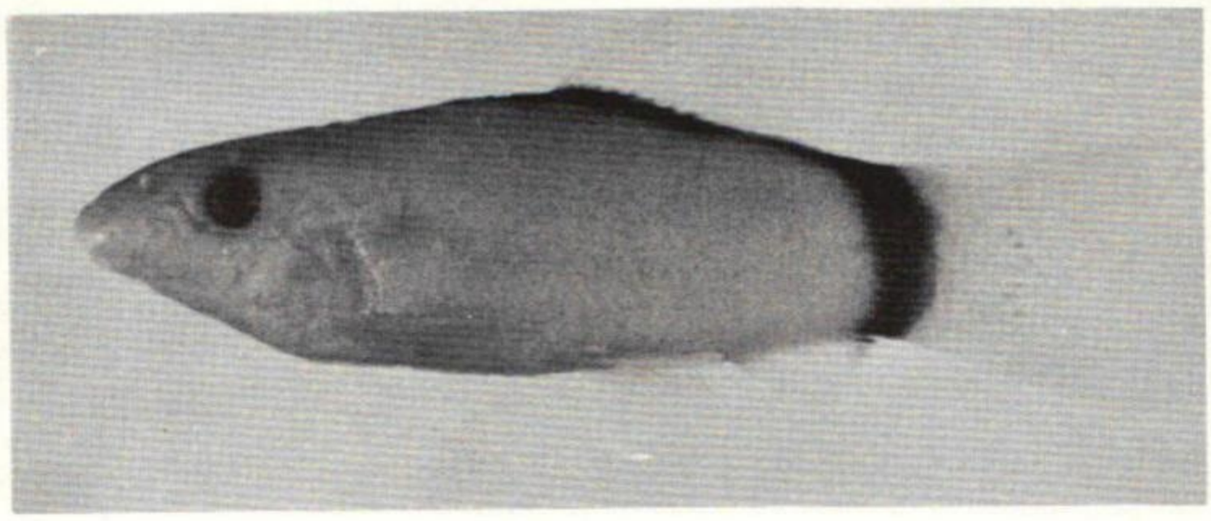


Fig. 160 *Botia morleti* Tirant 32.0 mm SL

B. horae - Taki, 1972 (Hatsalao: Station Nos. 34)

Colloecting locality - Nam Ngum dam site, Hatsalao: Station Nos. 10, 34.

Material - 5 (5, 25.0 - 32.0 mm, IBRP 5022, 5832)

Description - D. 4/8; A. 3/5. Body depth 3.1 - 3.5, head length 2.8 - 3.2 both in standard length. Body oblong to elongate, compressed. Snout long, pointed, slightly overhanging mouth. Two pairs of rostral and one pair of maxillary barbels, rostral barbels united together at their base. Mouth small; lips thick, continuous; upper lip overhanging lower one, its median portion depressed downward; lower lip broad, a fleshy mental lobe on each side of median symphysis, each of the lobe provided with a pair of minute papillae produced forward. Eyes small, high. An erectile bifid preorbital spine usually folded in a groove below eye. Scales very minute. Fins without osseous rays. Usually not exceeding 4 cm in length.

Life color: Light brown, underside whitish. A broad black median stripe extending along mid - dorsal line from tip of snout to base of caudal fin and then continued on a broad black cross band at base of caudal fin. Each side of body with four brownish cross bars, the bars may be indistinct or absent. Dorsal and caudal fins yellowish brown with blackish shade; anal fin pale brown with a dark transverse stripe; other fins light brown or hyaline.

Remarks - *B. horae* Smith (1931) may be synonymous with this species.

Botia lecontei Fowler

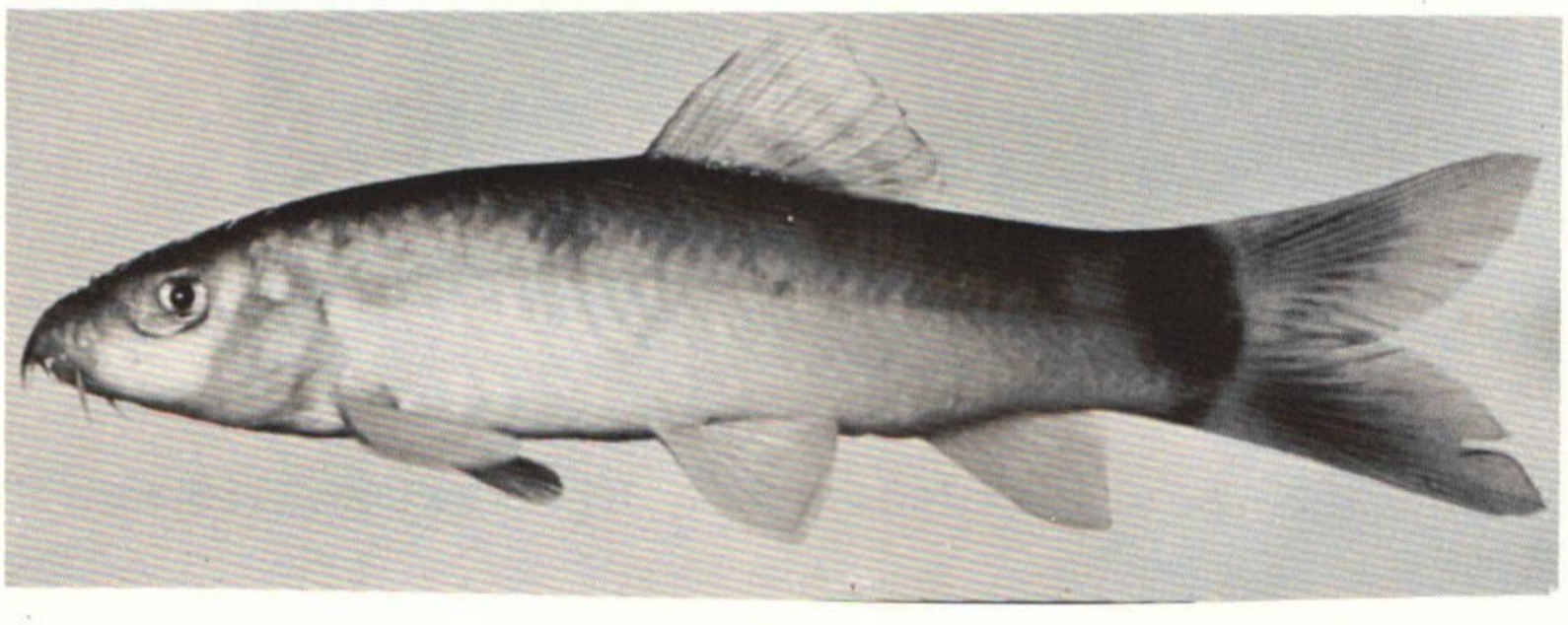


Fig. 161 *Botia lecontei* Fowler 93.0 mm SL

Botia lecontei - Fowler, 1937 (original description; Kemarat); Taki, 1972 (Tha Bo, Pakse, Hatsalao: Station Nos. 23, 32, 34)

Collecting locality - Hatdokkeo, Tha Bo, Pakse, Hatsalao: Station Nos. 22, 23, 32, 34

Material - 119 (17, 60.2 - 101.0 mm, IBRP 3248, 3255, NSMT-P 14541)

Description - D.3-4/8; A.3-4/5. Body depth 3.5 - 4.1, head length 3.2 - 3.9 both in standard length. Body elongate, moderately compressed. Snout length less than 0.5 head length, its tip obtusely pointed. Two rostral and one maxillary pairs of barbels; rostral ones united together at their base. Mouth small, subinferior, arched; lips thick, continuous; lower lip broad, with a fleshy mental lobe at each side of median symphysis, a pair of small papillae on anterior end of the lobe. Eyes small, its lower border on or above body axis. A bifid preorbital spine may be erected in front of eye or folded in a groove below eye. Scales very minute. No ossified rays in fins. To about 15 cm in length.

Life color: General color of head and body olivaceous brown with golden or greenish metalic sheen, belly whitish, operculum and preoperculum greenish golden. A roundish blue-black blotch on caudal peduncle at base of caudal fin. Dorsal fin brownish yellow, with two faint blackish stripes; anal fin brownish yellow, its tip pale; pectoral and pelvic fins dusky yellow; caudal fin dark olive-yellow. Young with dark, narrow, cross bars on back and sides.

Botia sidthimunki Klausewitz

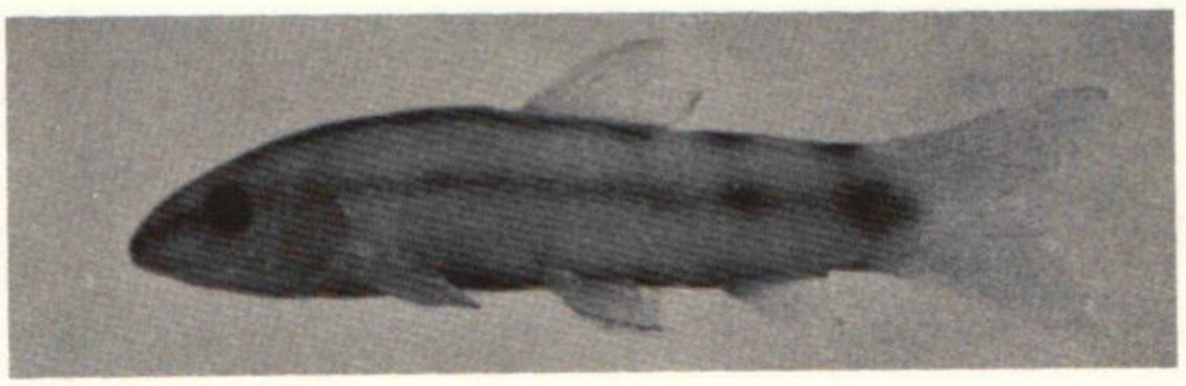


Fig. 162 *Botia sidthimunki* Klausewitz 21.5 mm SL

Botia sidthimunki - Taki, 1968 (Salakham: Station Nos. 24), 1972 (Vientiane, Pakse: Station Nos. 20, 30)

Collecting locality - Pakse: Station Nos. 30, 31

Material - 6 (5, 20.6 - 22.8 mm, IBRP 4555)

Description - D. 3/8; A. 3/5. Body depth 3.5 - 4.0, head length 3.2 - 3.4 both in standard length. Elongate, moderately compressed. Snout obtusely pointed, its length less than 0.5 head length. Barbels short; two rostral pairs at tip of snout united together at their base; a maxillary barbel at each angle of mouth. Mouth small, oblique, arched; upper lip slightly produced over lower lip; lower lip thick, broad, its median portion formed into a pair of bicephalous fleshy buttons and provided with a pair of small mental lobes behind the buttons. Lower margin of eye on axial line of body. A greatly recurved bifid preorbital spine may be erected in front of eye or concealed in a groove below eye. Scales very minute. No osseous rays in fins. A small species not exceeding 3 cm in length.

Life color: Gray to grayish brown, underside whitish. Two dark brown stripes running in parallel on back from tip of snout to base of caudal fin, the stripes united together into a broad, interruped stripe behind dorsal fin; a broad dark brown lateral stripe on side from tip of snout to base of caudal fin across eye. Vertical fins dusky; paired fins pale.

Botia eos Taki



Fig. 163 *Botia eos* Taki 45.5 mm SL

Botia eos - Taki, 1972 (original description; Nam Ngum dam site, Tha Ngon, Hatdokkeo, Tha Bo: Station Nos. 10, 12, 13, 22, 23)

Collecting locality - Nam Ngum dam site, Tha Ngon, Hatdokkeo, Tha Bo, Sithan Tay, Hatsalao, Pathoum Phon: Station Nos. 10, 12, 13, 22, 23, 26, 34, 39

Material - 119 (21, 34.2 - 54.5 mm, IBRP 3249, 3290, 4355, 4556, 5246)

Description - D. 3-4/10-11; A. 2-4/5. Body depth 3.1 - 3.6, head length 3.1 - 3.4 both in standard length. Elongate, moderately compressed. Snout long, its length slightly less than or equal to 0.5 head length, tip pointed, formed into a tuft bearing two pairs of rostral barbels. A maxillary barbel at each mouth angle. Mouth small, oblique, arched; upper lip slightly overhanging lower one, thick, depressed downward medianly; lower lip broad, thick, a fleshy mental lobe with a pair of small conical papillae at each side of median symphysis. Eyes small, high. A moderately recurved, erectile, bifid spine usually concealed in a groove below eye. Scales very minute. No osseous rays in fins. Largest specimen at hand 6 cm in length.

Life color: Yellowish brown to brick-brown with iridescent luster, darker dorsally and lighter ventrally. A broad blue-black cross band at base of caudal fin; six broad blackish indistinct cross bars on each side. Dorsal and anal fins dusky yellow-orange to vermilion, the former with a pale free margin and two dark, ill-defined stripes; pectoral and pelvic fins yellow to orange, tip pale; caudal fin dusky yellow to brick-red, free margin colorless.

Subfamily Cobitinae

Acanthopsis choirorhynchos (Bleeker)

Laotian name: Pa it

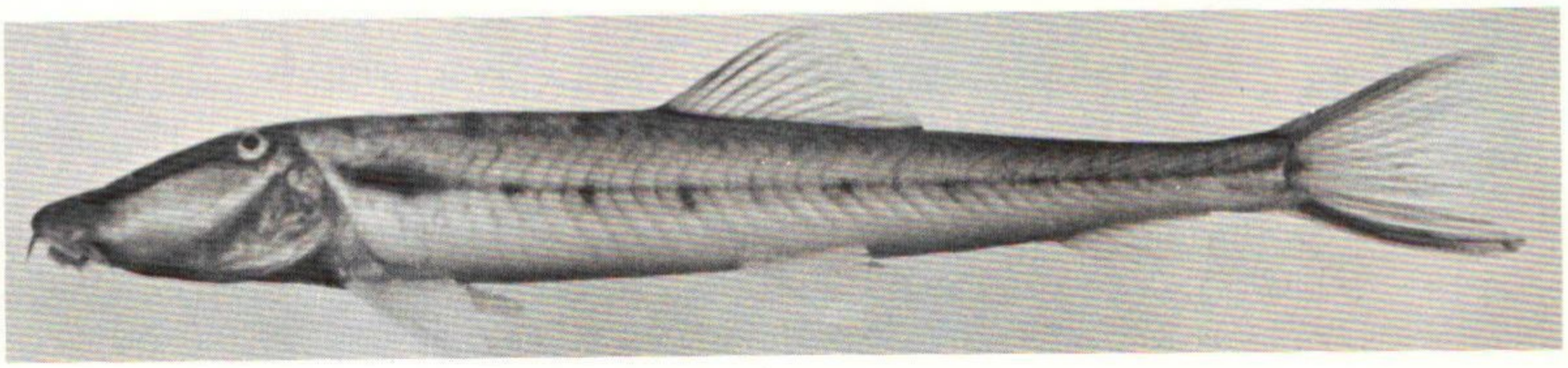


Fig. 164 *Acanthopsis choirorhynchos* (Bleeker) 144.5 mm SL

Acanthopsis choirorhynchos - Fowler, 1937 (Kemarat); Taki, 1968 (Luang Prabang, Vientiane, Salakham, Savannakhet, Pakse: Station Nos. 3, 20, 24, 32)

Acanthopsis choirorhynchus - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Collecting locality - Luang Prabang, Nam Ngum dam site, Tha Ngon, Tha Bo, Sithan Tay, Pakse, Hatsalao, Pathoum Phon: Station Nos. 2, 10, 12, 13, 14, 23, 26, 31, 33, 34, 39

Material - 507 (16, 73.7 - 125.5 mm, IBRP 4749, 4883, 5730)

Description - D. 3 - 4/10; A. 3/5. Body very elongate, not much compressed, tail part slender, body depth 6.1 - 8.0 in standard length. Head compressed, its length 3.7 - 4.2 in standard length. Snout elongate, its length 1.4 - 1.7 in head length. Mouth inferior, small, arched. Three pairs of barbels around upper jaw; a pair of barbels at point of snout, a barbel at midlength of each upper jaw, and a barbel at each vorner of mouth. Upper lip broad, fringed along its free edge; lower lip thick, broad, greatly fringed into barbel-like fleshy process. Eyes small, situated near head dorsum. A short erectile bifid preorbital spine in front of eye, its origin about midway between tip of snout and front border of eye, the spine usually folded in a groove in skin. Scales very minute. Dorsal fin without osseous rays, originated before insertions of pelvic fins; anal fin small, far behind dorsal fin; caudal fin not much emarginated. Attains a length of 23 cm.

Life color: Pale brown, underside whitish. Back with 16 small dark brown cross bars; a brownish streak along lateral line with about 10 small brown spots; much smaller spots of the same color scattered over back and sides. Dorsal and caudal fins light brown; other fins pale.

Acanthopsoides gracilis Fowler



Fig. 165 *Acanthopsoides gracilis* Fowler 32.8 mm SL

Acanthopsoides gracilis - Fowler, 1934a (original description; Chiengsen)

Collecting locality - Luang Prabang, Tha Ngon, Sithan Tay, Hatsalao, Pathoum Phon: Station Nos. 2, 4, 8, 15, 26, 34, 39

Material - 47 (13, 21.5 - 57.4 mm, IBRP 4222, 4242, 5350, 5829)

Description - D. 3/7 (rarely 8); A. 3/5. Body depth 8.8 - 10.6, head length 4.8 - 5.4 both in standard length. Body very elongate, slender, moderately compressed. Snout strongly compressed, its tip pointed in dorsal view and obtuse or truncate in lateral view. Mouth small, subinferior. Lips separated from snout and isthmus by a deep groove; upper lip rather thick; lower lip lobular, fringed. Barbels three pairs; one barbel on each side near point of upper jaw, one at midlength of each side of upper jaw, and one at each corner of mouth. Eyes small, high. A short movable bifid preorbital spine in front of eye. Scales minute. Dorsal fin without osseous rays, situated over pelvic fins; caudal fin slightly emarginated. To about 6 cm in length.

Life color: Pale grayish brown, lower side white. Fourteen to 17 small brownish spots on back along mid-dorsal line; about the same number of small spots along lateral line; on back above lateral line many smaller scattered dots of the same color; a conspicuous small black spot at base of upper rays of caudal fin and a less intense blackish spot at bases of lower rays of the fin. Caudal fin with several dark transverse stripes or rows of small spots; other fins pale.

Lepidocephalus hasselti (Cuvier and Valenciennes)

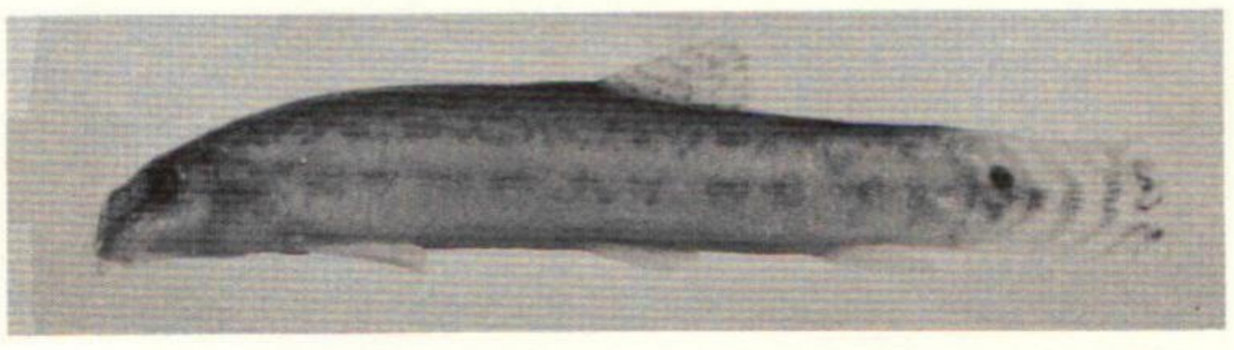


Fig. 166 *Lepidocephalus hasselti* (Cuvier and Valenciennes) 49.0 mm SL

Lepidocephalus hasselti- Pellegrin and Fang, 1940 (Ban Nam Khueng)

Collecting locality - Nam Done R., near Luang Prabang: Station No. 9

Material - 1 (1, 49.0 mm, IBRP 4153)

Description - D. 2/6; A. 2/5. Body depth 5.4, head length 4.1 both in standard length. Elongate, moderately compressed; caudal peduncle deep. Head short, compressed; tip of snout obtuse. Barbels three pairs around upper jaw; one pair on front of upper jaw, one pair on each side of the jaw, and one pair at each mouth angle. Mouth inferior, small; lower lip lobular, provided with long barbel-like fleshy processes. Eyes small, situated in anterior half of head, high up. An erectile bifid spine below eye usually concealed in a groove of skin. Scales minute. Dorsal fin over pelvic fins, without osseous rays; caudal fin truncate. Attains about 14 cm in length.

Coloration of preserved specimen: Body light brown; back mottled with dark brown dots. Along lateral line a series of irregular-shaped dark spots. Snout with a dark streak extending from its tip to eye. Dorsal fin with five dark brown transverse stripes; caudal fin with five V-shaped cross bands and a well defined blackish spot at its base.

Cobitophis anguillaris (Vaillant)

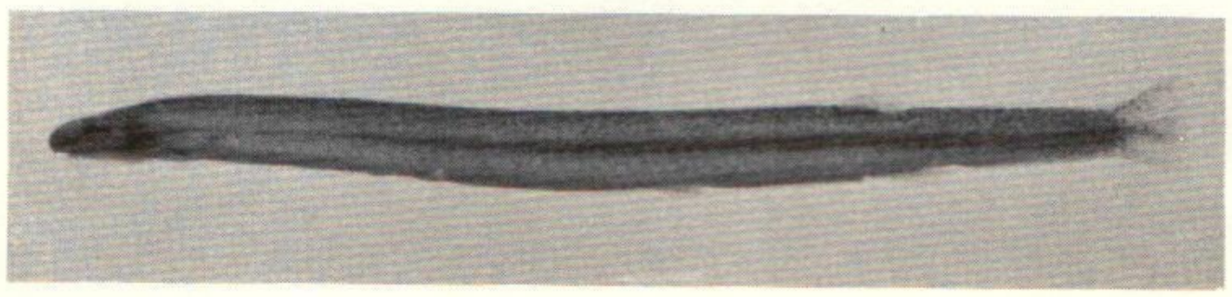


Fig. 167 *Cobitophis anguillaris* (Vaillant) 59.5 mm SL

Collecting locality - Hatsalao: Station No. 34

Material - 2 (2, 51.5 and 59.5 mm, IBRP 4221, 4291)

Description - D. 3/6; A. 3/5. Body very elongate, eel-shaped. Head small; snout greatly compressed, its tip pointed in dorsal view and obtuse in lateral view. Barbels three pairs; one pair on front of snout, one pair on upper jaw near each mouth angle, and one pair at each corner of mouth. Lips thick. Anterior nostril with a long flap. Eyes very small, high up and advanced in head. A bifid movable spine below eye. Scales very minute. Pectoral fins somewhat rudimentary; pelvic, dorsal and anal fins situated far back; caudal fin truncate. No ossified rays in fins. To 9 cm in length.

Life color: Light bluish gray, underside pink-white. A narrow blackish stripe extending along middle line of side from tip of snout to base of caudal fin; the stripe continued on a broad diffuse blackish band on middle caudal rays. Fins pale yellow or hyaline.

Subfamily Noemacheilinae

Noemacheilus sp.

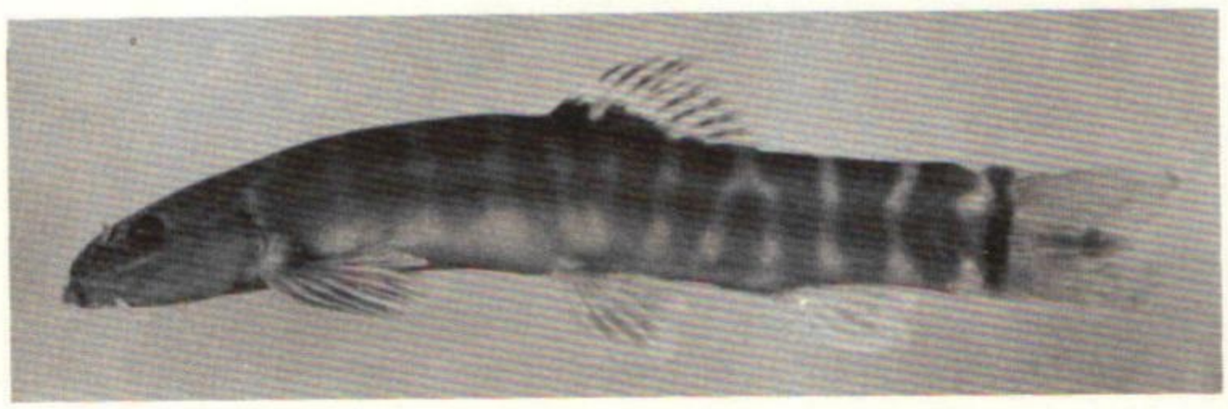


Fig. 168 *Noemacheilus* sp. 56.6 mm SL

Noemacheilus sp. - Taki, 1968 (Houei Nhang: Station No. 29)

Collecting locality - Tha Bo, Houei Nhang: Station Nos. 23, 29

Material - 51 (10, 41.6 - 56.5 mm, IBRP 3245)

Description - D. 4/8; A. 4/5. Body depth 5.1 - 6.3, head length 4.1 - 4.3 both in standard length. Body elongate, slightly deeper than wide, ventral surface flattened. Head slightly depressed; snout broad. Mouth inferior, not much arched. Lips thick, continuous; upper lip separated from snout by a deep groove; lower lip incised and finely fringed mesially, separated from isthmus by grooves laterally and continuous with isthmus medianly. Barbels well developed, two pairs rostral and one pair maxillary. Eyes small, dorso-lateral. Pelvic fins inserted horizontally; dorsal fin over pelvic fins, its origin in advance of insertion of pelvic fins; caudal fin not much emarginated. No osseous rays in fins. Largest specimen at hand 5.6 cm in length.

Life color: Ground color of body brown, top of head dark brown, ventral surface light. Back and side with about 10 broad dark brown cross bands. Dorsal fin orange, rays blackish; other fins yellow to orange-yellow, all rays blackish; a narrow dark cross band at base of caudal fin.

Noemacheilus spilopterus (Cuvier and Valenciennes)

Nemachilus spiloptera - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Noemacheilus bucculentus Smith

Noemacheilus bucculentus - Smith, 1945 (original description; Ban Nam Puat)

Family Belonidae (Needlefishes)

Xenentodon cnaciloides (Bleeker)

Laotian name: Pa sa thong

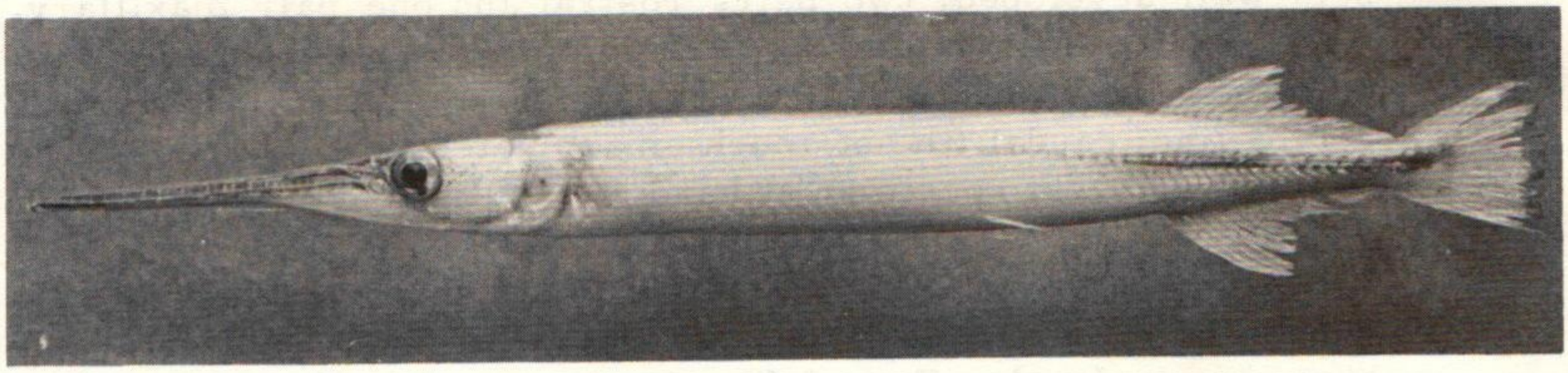


Fig. 169 *Xenentodon canciloides* (Bleeker) 182.5 mm SL

Xenentodon canciloides + X.cancila - Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane, Salakham, Hatsalao: Station Nos. 3, 12, 15, 20, 24, 34)

Collecting locality - Nam Ngum dam site, Tha Ngon, Tha Bo, Sai Fong, Sithan Tay, Hatsalao, Khinak: Station Nos. 10, 12, 13, 15, 23, 25, 26, 34, 40

Material - 90 (15, 142.3 - 223.5 mm, IBRP 4796, 4839, 4999, 5439)

Description - D.2 (rarely 3)/13-15; A.2 (rarely 3)/13-15. Body depth 10.1 - 13.6 in standard length, 0.95 - 1.2 times width of body; head length 2.4 - 2.6 in standard length. Body very elongate, cylindrical. Jaws prolonged and narrowed, forming a slender beak, provided with a band of minute teeth and a series of canines. Gills without gill-rakers. Eyes large. Scales very minute. Lateral line running on lower side of trunk and tail. Pectoral fins inserted high; dorsal and anal fins long, opposite to each other, situated far back; caudal fin slightly rounded. Largest specimen at hand about 28 cm in length.

Life color: Pale brown to milky white, with iridescent luster. A silvery gray longitudinal stripe running on side along middle line from gill opening to base of caudal fin, becoming broad on tail. Fins light gray to hyaline.

Family Channidae (Snakeheads)

Channa striata (Bloch)

Laotian name: Pa kho

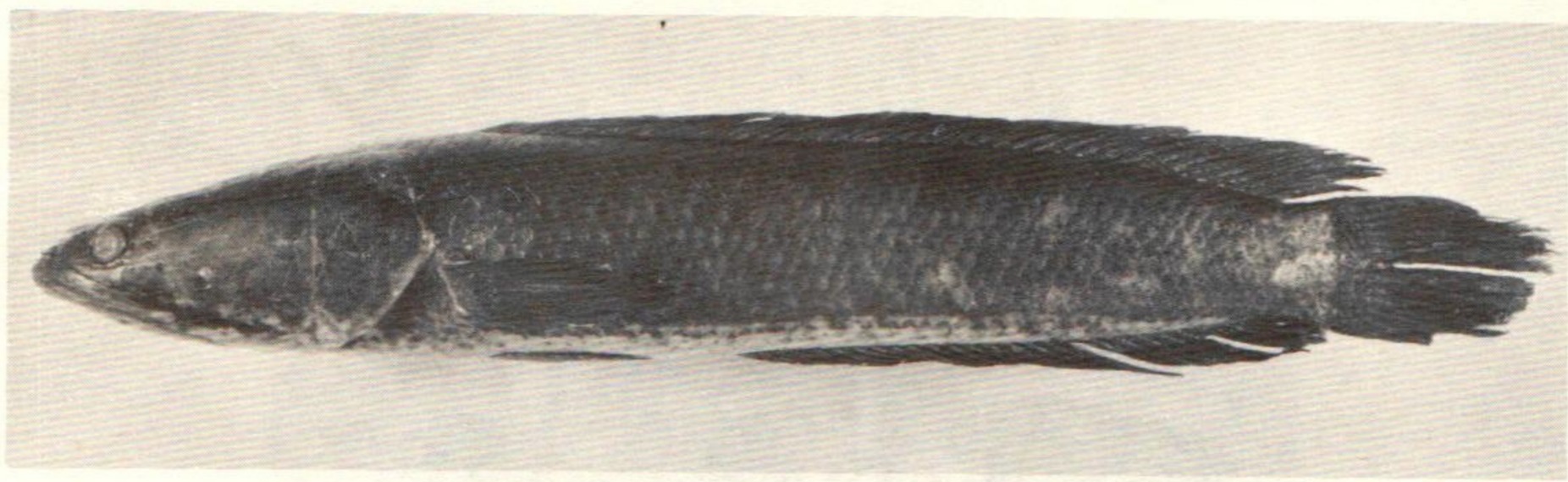


Fig. 170 *Channa striata* (Bloch) 289.0 mm SL

Channa striata – Fowler, 1937 (Kemarat)
Ophiocephalus striatus- Pellegrin and Fang, 1940 (Ban Nam Khueng); Serene, 1951 (Mekong R. and its affluents, swamps, ponds)
Ophicephalus striatus- Taki, 1968 (River at Luang Prabang, Nong Teng - Station No. 16, pond, paddy, canal and stream at Vientiane, lake and swamp at Savannakhet, pond, canal and paddy at Pakse)

Collecting locality - Sithan Tay: Station No. 26

Material - 4 (4, 54.3 - 289.0 mm, IBRP 4533, 5197)

Description - D. 40-42; A. 26; Ll. 53-55. Body depth 5.6 - 6.0, head length 3.2 - 3.3 both in standard length. Body elongate, subcylindrical; head depressed, wider than deep; caudal peduncle compressed. Snout rather short, flattened. Mouth very wide and deeply cleft, its corner extending far beyond eye; jaws with wide bands of small teeth, lower jaw prominent. Eyes large, dorsolateral, well advanced in head. Top and sides of head covered with large scales. Lateral line dropping two rows at 16th or 17th

to 19th or 20th perforated scale. Dorsal and anal fins without spines, long, extending posteriorly nearly to base of caudal fin; pectoral fins large, pelvic fins small, inserted close together on lower surface of body; caudal fin rounded. Reaches 80 cm in length.

Life color: Gray to brownish gray, back dark, ventral surface whitish. Side of body with obscure blackish irregular-shaped cross bands. Fins dark gray to dark brownish gray.

Channa gachua (Hamilton-Buchanan)

Laotian name: Pa kan

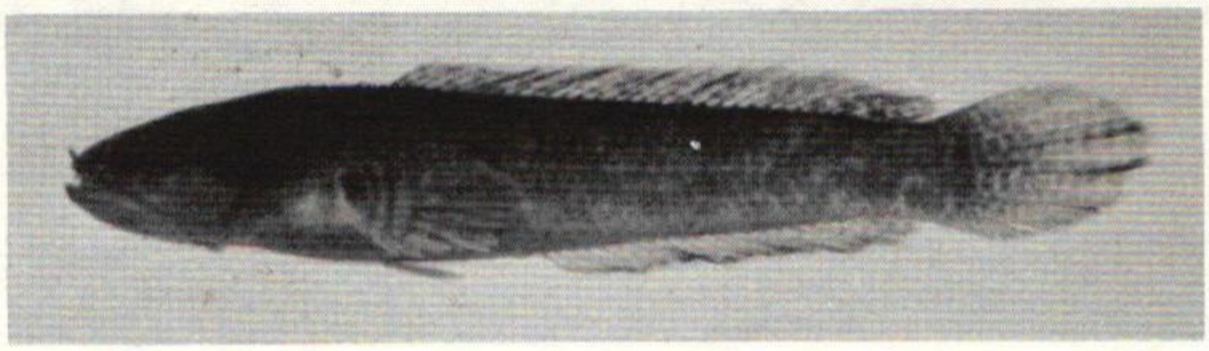


Fig. 171 *Channa gachua* (Hamilton-Buchanan) 75.0 mm SL

Ophiocephalus gachua - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Ophicephalus gachua - Smith, 1945 (Ban Nam Puat); Taki, 1968 (Pond at Luang Prabang, Nong Teng - Station No. 16, pond and paddy at Vientiane, pond at Pakse)

Collecting locality - Pak Suong, Nam Pat R., Nam Done R., Tha Bo, Pakse: Station Nos. 1, 7, 8, 9, 23, 33

Material - 7 (7, 38.2 - 79.5 mm, IBRP 4147, 4155, 4265, 4341, 4589)

Description - D. 33-36; A. 21-23; Ll. 40-42. Body depth 4.9 - 6.0, head length 3.1 - 3.4 both in standard length. Head broad, much wider than deep; snout flattened. Body subcylindrical, compressed posteriorly. Mouth very wide, deeply cleft, its corner extending below hind border of eye; jaws with wide bands of small teeth, lower jaw slightly prominent. Eyes large, dorso-lateral. Top and sides of head covered with large scales. Lateral line

dropping one row at 11th to 13th perforated scale. Dorsal and anal fins long, extending posteriorly nearly to base of caudal fin; pectoral fins well developed, inserted vertically; pelvic fins somewhat rudimentary, close together, inserted on ventral surface of body; caudal fin roundly pointed. To 20 cm in length.

Life color: Head and body dark gray to dark brownish gray, lower side light-colored; back and sides with dark obscure marmorations. Fins dark gray, free margins of dorsal, anal and caudal fins orange to blood-red.

Channa micropeltes (Cuvier and Valenciennes)

Channa micropeltes - Fowler, 1937 (Kemarat)
Ophicephalus micropeltes Taki, 1968 (Paddy at Luang Prabang, Tha Ngon - Station No. 12, Nong Teng - Station No. 16, canal and swamp at Vientiane, Pakse market)

Channa melasoma (Bleeker)

Channa malasoma - Fowler, 1937 (Kemarat)

Channa lucius (Cuvier and Valenciennes)

Ophicephalus lucius - Taki, 1968 (Swamp at Vientiane, pond at Pakse)

24/VII
ห้ามจำหน่าย

Family Anabantidae (Climbing perches)

Anabas testudineus (Bloch)

Laotian name: Pa keng

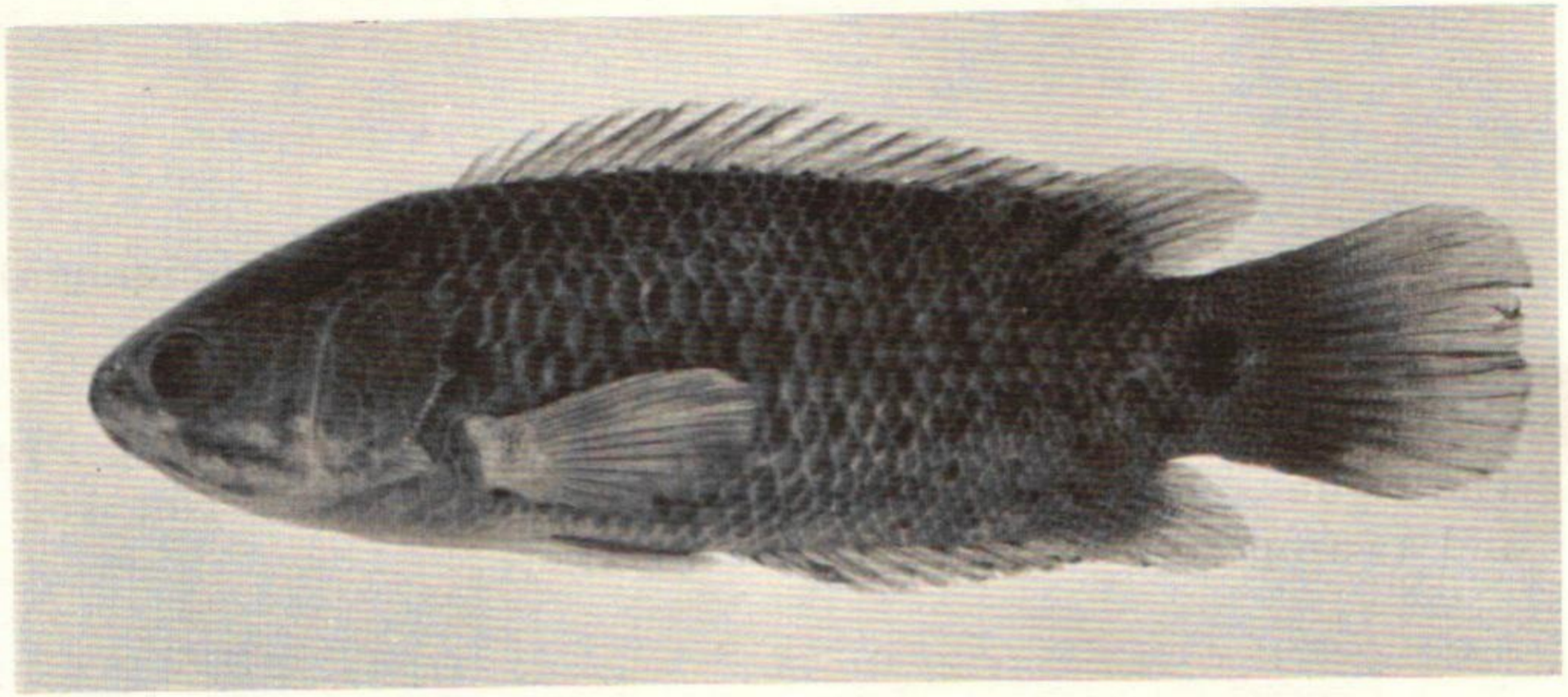


Fig. 172 *Anabas testudineus* (Bloch) 93.0 mm SL

Anabas testudineus- Pellegrin and Fang, 1940 (Ban Nam Khueng); Serene, 1951 (Affluents of Mekong R., swamps, ponds); Taki, 1968 (Pond and canal at Vientiane, swamp and stream at Pakse)

Collecting locality - Tha Ngon, Tha Bo, Sithan Tay: Station Nos. 12, 13, 15, 23, 26

Material - 19 (13, 56.0 - 97.0 mm, IBRP 4351, 4632, 5062, 5126, 5174)

Description - D. XVI-XVIII/8-11; A. VIII-X/9-12; Ll.15-19 + 10-14. Body oblong, its depth 2.5 - 3.0 in standard length, strongly compressed posteriorly. Head large, its length 2.5 - 3.0 in standard length. Snout short, tip rounded. Mouth terminal, oblique, deeply cleft; jaw teeth in wide bands, short, sharp. Eyes large. Top and sides of head scaled. Margin of operculum indented. Lateral line in two series. Dorsal and anal fins long, with strong spines; caudal fin somewhat rounded. Maximum length 23 cm.

Life color: Brown, lower side lighter. Side of body with dark brown spots in regular or irregular transverse rows. Gill membrane at posterior tip of operculum black. A large dark brown roundish spot at base of caudal fin. Dorsal, anal and caudal fins brown, other fins pale brown.

Family Belontidae (Gouramies and their allies)

Trichogaster trichopterus (Pallas)

Laotian name: Pa ka dout

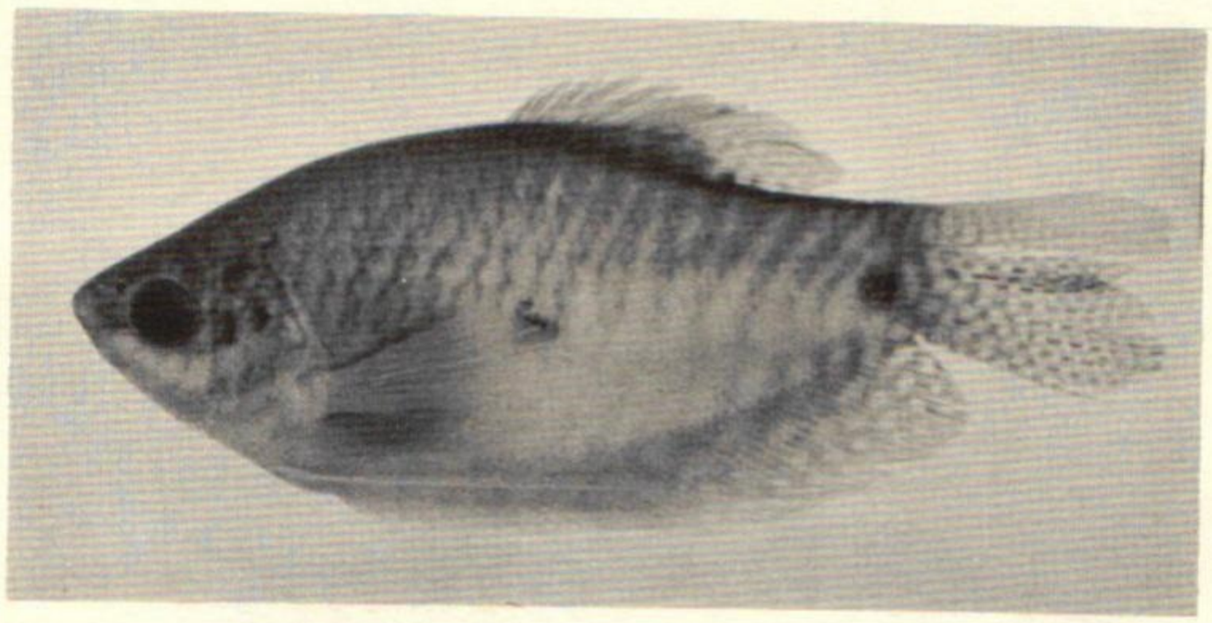


Fig. 173 *Trichogaster trichopterus* (Pallas) 67.5 mm SL

Trichopodus trichopterus - Fowler, 1935b (Chiengsen Kao); Pellegrin and Fang, 1940 (Ban Nam Khueng)

Trichogaster trichopterus - Serene, 1951 (Swamps, ponds, streams); Taki, 1968 (Canal and paddy at Luang Prabang, Tha Ngon - Station Nos. 12, 15, Nong Teng - Station No. 16, swamp, pond and paddy at Vientiane, pond at Pakse)

Collecting locality - Tha Ngon, Tha Bo, Sithan Tay, Hatsalao: Station Nos. 12, 15, 23, 26, 34

Material - 25 (10, 59.0 - 68.2 mm, IBRP 4209)

Description - D. VII/8-9. Body depth 2.5 - 2.7, head length 3.2 -

3.3 both in standard length. Body oblong, greatly compressed. Head rather short; snout short. Mouth small, directed upward at tip of snout; lips thick, continuous. Eyes large. Head almost wholly covered with scales. Lateral line complete, greatly recurved. Dorsal fin short, soft rays prolonged, its base with a scally sheath; anal fin very long, higher posteriorly, spiny portion with a scally sheath, basal part of soft portion covered with small scales; first soft pelvic ray prolonged into a thread-like tentacle extending nearly to end of caudal fin, other rays rudimentary; caudal fin slightly emarginated or truncate. A length of 12 cm is attained.

Life color: Light brownish or olivaceous gray, belly whitish to yellowish. Side of body with 12 to 20 faint dark grayish oblique cross bands and two round black spot, one underneath origin of dorsal fin and the other on caudal peduncle at base of caudal fin. Dorsal, anal and caudal fins bluish gray mottled with small blackish spots; other fins light yellow to pale.

Trichogaster pectoralis (Regan)

Laotian name: Pa sa lit

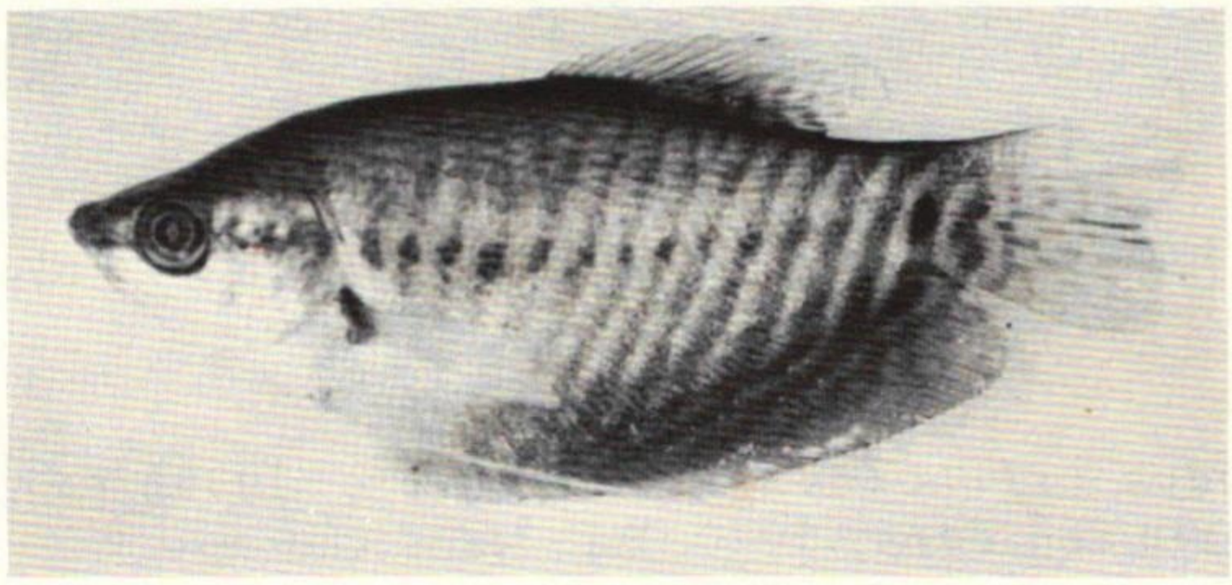


Fig. 174 *Trichogaster pectoralis* (Regan) 63.0 mm SL

Trichopodus pectoralis - Fowler, 1937 (Kemarat)

Trichogaster pectoralis - Taki, 1968 (Nong Teng - Station No. 16, canal and paddy at Vientiane, lake at Savannakhet, pond at Pakse)

Collecting locality - Sithan Tay: Station No. 26

Material - 2 (2, 84.5 and 97.8 mm, IBRP 4579)

Description - D. III/11; Ll. 52 - 57. Body depth 2.4 - 2.5, head length 3.2 - 3.3 both in standard length. Oblong, greatly compressed. Mouth small, terminal, directed obliquely upward; lips thick, continuous. Head almost entirely covered with scales. Eyes large. Dorsal fin with rather short spines and long soft rays, its base with a scally sheath; anal fin very long, higher posteriorly, all spiny portion and basal part of soft portion covered with minute scales; pectoral fins well developed; pelvic fins with first soft ray prolonged into a tentacle extending posteriorly to hind margin of caudal fin; caudal fin slightly emarginated. Attains a length of 20 cm.

Life color: Gray to brown, with bluish or greenish gleam. Side of body with a number of dark brownish oblique transverse streaks. Dorsal, anal and caudal fins brown with small dark blotches; paired fins pale brown.

Trichopsis vittatus (Cuvier and Valenciennes)

Laotian name: Pa mat

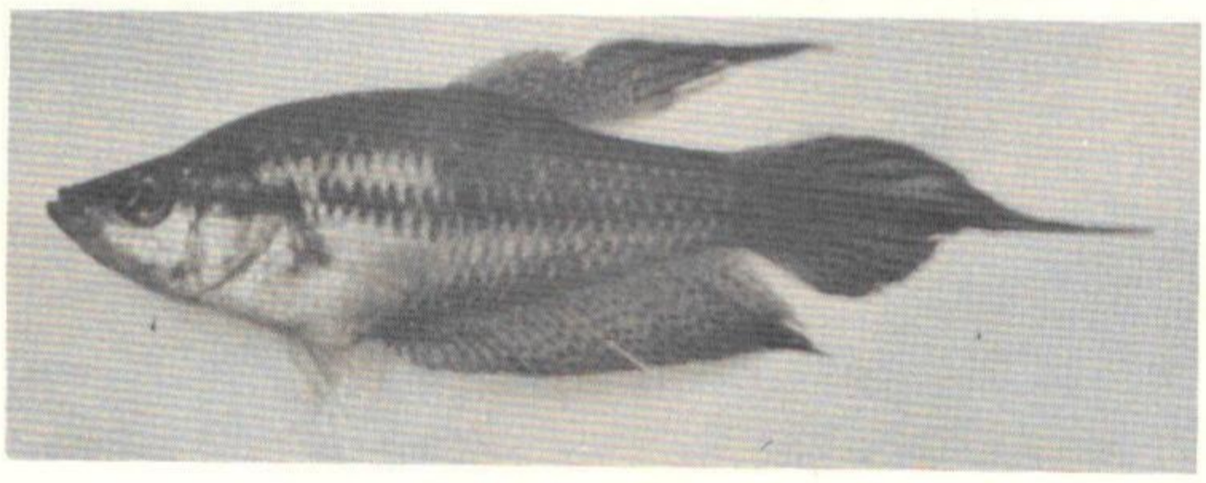


Fig. 175 *Trichopsis vittatus* (Cuvier and Valenciennes)
28.3 mm SL

Trichopsis vittatus - Taki, 1968 (Nong Teng - Station No. 16, ponds, canal and paddy at Vientiane, Salakham - Station No. 24, paddy at Pakse)

Collecting locality - Sithan Tay, Pakse, Khinak: Station Nos. 26, 31, 40

Material - 4 (4, 19.6 - 39.3 mm, IBRP 4059, 4608, 5440)

Description - D.IV/7; A.VIII/22 - 25. Body depth 2.8 - 3.3, head length 2.9 - 3.1 both in standard length. Elongate, strongly compressed. Head rather low, nape concave, snout pointed. Mouth terminal, relatively large, directed obliquely upward. Sides of snout naked, other part of head scaled. Eyes large. Lateral line vestigial. Dorsal fin short, soft rays elongate, situated in posterior half of body; anal fin long, posterior soft rays prolonged, continuous with caudal fin at their base, basal part covered with scales; pelvic fins with a spine, first soft ray very long, thread-like; caudal fin pointed. To 6.5 cm in length.

Life color: Ground color of head and body brown, with bluish glitter, back darker. Each side of body with three more or less distinct dark longitudinal stripes running from snout to base of caudal fin and a large black spot above pectoral fin. Dorsal, anal and caudal fins dark brown; pectoral fins brown; pelvic fins blackish, prolonged ray pale brown.

Betta splendens Regan

Betta splendens - Taki, 1968 (Pond and canal at Vientiane, Salakham; Station No. 24)

Family Osphronemidae (Giant gouramy)

Osphronemus goramy Lacepede

Laotian name: Pa meng

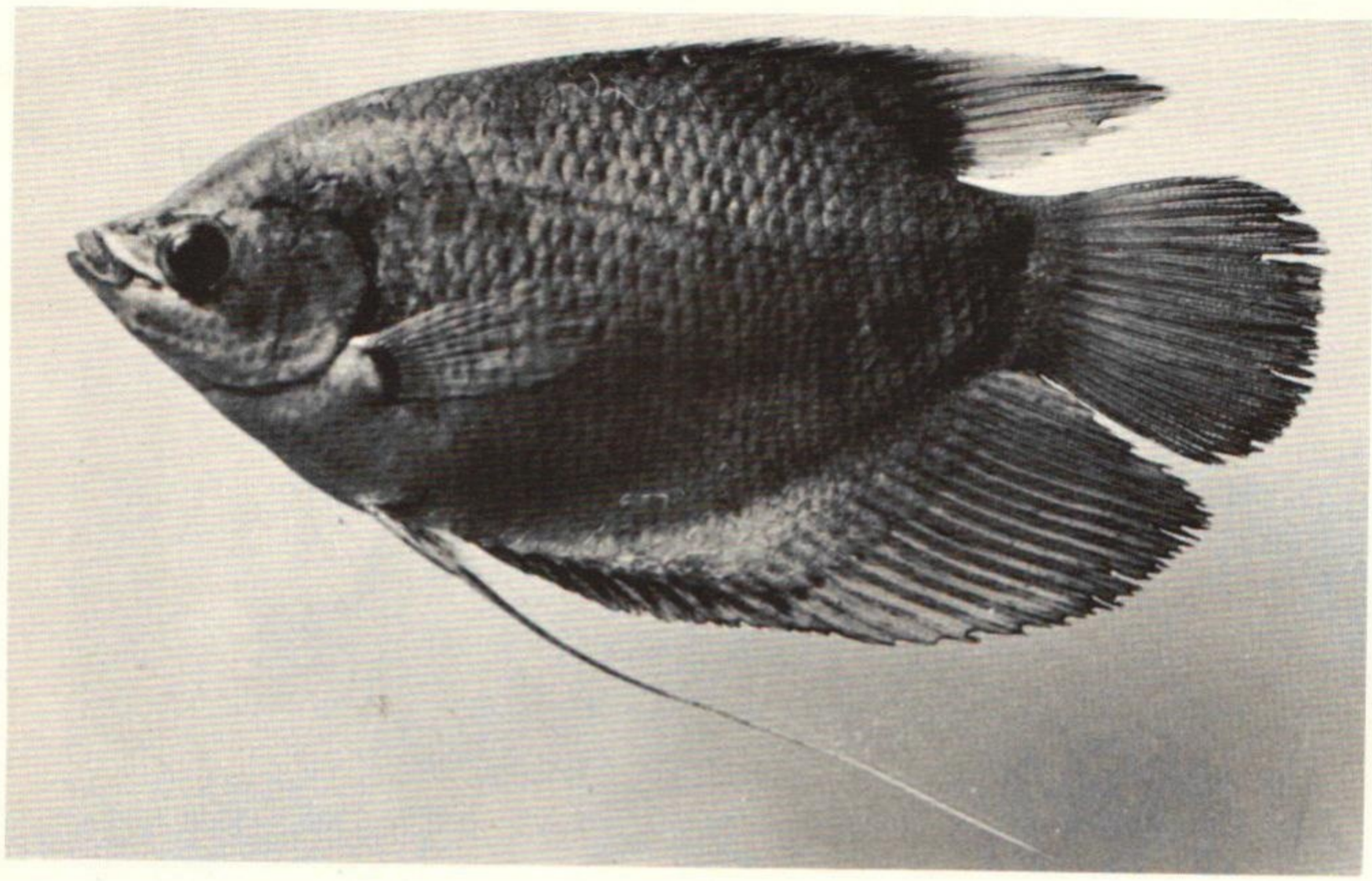


Fig. 176 *Osphronemus goramy* Lacepede 145.0 mm SL

Osphronemus goramy - Serene, 1951 (Affluents of Mekong R., swamps, ponds); Taki, 1968 (Canal at Vientiane)

Collecting locality - Khinak: Station No. 40

Material - 3 (3, 45.2 - 145.0 mm, IBRP 4058)

Description - D. XII-XVI/10; A. IX-XIII/18; Ll. 31-32. Body thickset, strongly compressed, its depth 1.9 - 2.0 in standard length. Head length 2.5 - 3.0 in standard length; snout pointed. Mouth relatively small; lower jaw slightly prominent, with a tuberous projection in large individuals. Eyes large. Top and sides of head scaled. Dorsal fin long, higher posteriorly, with a scally sheath along its base; anal fin very long, connected with caudal fin at their base; pelvic fins with a spine, first soft ray prolonged into a thread-like tentacle extending posteriorly to or beyond hind margin of caudal fin; caudal fin rounded. Maximum size 60 cm in length.

Life color: Head and body yellowish to chocolate brown, sometimes with greenish gleam. Side of body with dark irregular-shaped cross bands. Fins brownish, pectoral fins paler.

Family Nandidae (Nandids)

Nandus nandus (Hamilton-Buchanan)

Laotian name: Pa ka

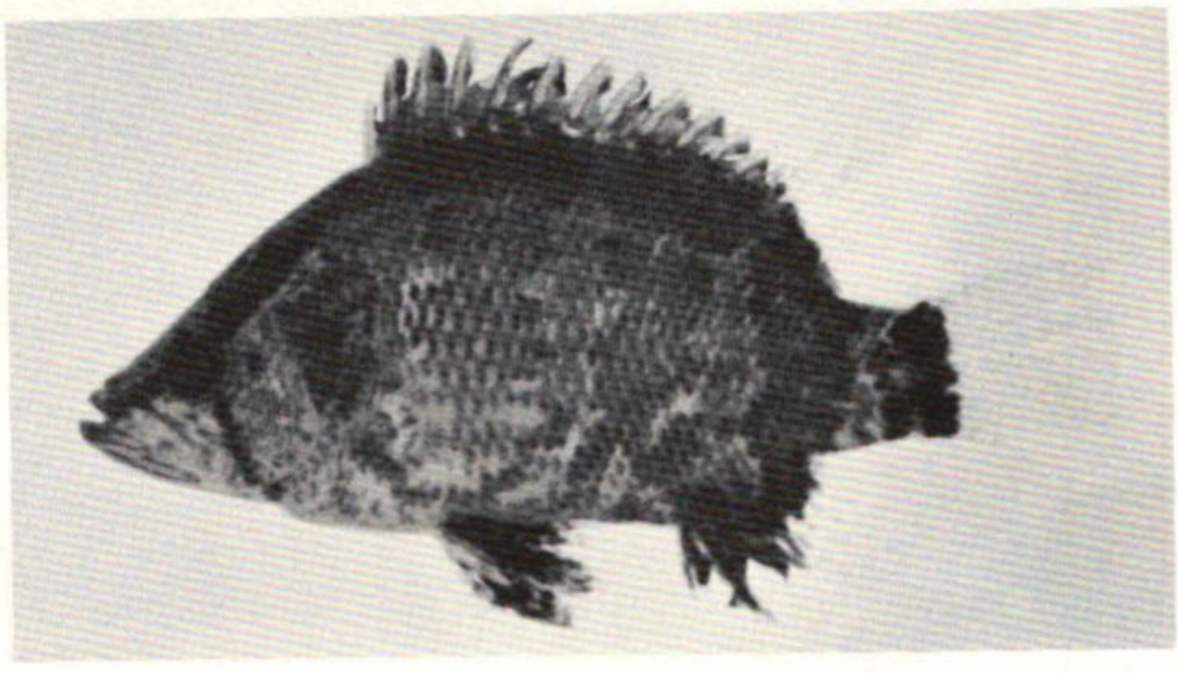


Fig. 177 *Nandus nandus* (Hamilton-Buchanan) 51.0 mm SL

Nandus nandus + N. nebulosus - Taki, 1968 (Vientiane: Station No. 18)

Collecting locality - Tha Ngon, Tha Bo, Sithan Tay, Khinak: Station Nos. 12, 14, 15, 23, 26, 40

Material - 16 (17, 38.4 - 61.0 mm, IBRP 4200, 4460, 4717, 4945, 5146)

Description - D.XIII/10-12; A.III/6-7; Ll.28 - 31 + 8 - 12 (in total number 37 - 42), scales between lateral line and base of pelvic fin 14. Body deep, strongly compressed, back elevated. Snout pointed; mouth protrusible, very deeply cleft, maxilla extending below hind border of eye, lower jaw slightly prominent. Eyes large. Operculum and preoperculum scaled, posterior tip of the

former with a single opercular spine and triangular cutaneous flap. Lateral line of two rows. Dorsal fin long, soft portion high; anal fin short, second spine stout, long; pectoral fins comparatively small; pelvic fins with a short strong spine; caudal fin truncate. Largest specimen at hand 6.1 cm in length.

Life color: Ground color brown, with dark marble patterns. A broad dark brown more or less well defined stripe running on each side of head dorsum across eye; a dark brown narrow stripe on each side of head extending obliquely from eye to isthmus. Spinous dorsal and anal fins dark brown, soft portions pale brown; pectoral fins light brown; pelvic fins blackish, free margin pale; caudal fin pale brown with many rows of dark minute dots, scally base of the fin dark brown.

Remarks - The Laotian specimens are completely intermediate between *N. nandus* and *N. nebulosus* in the meristic counts except the number of dorsal spine in which they approach *N. nandus*. Further comparative studies are required to clarify their taxonomic status.

Nandus nebulosus (Gray)

Nandus nebalusus - Serene, 1951 (affluents of Mekong R., swamps, ponds).

Family Pristolepidae (Pristolepids)

Pristolepis fasciatus (Bleeker)

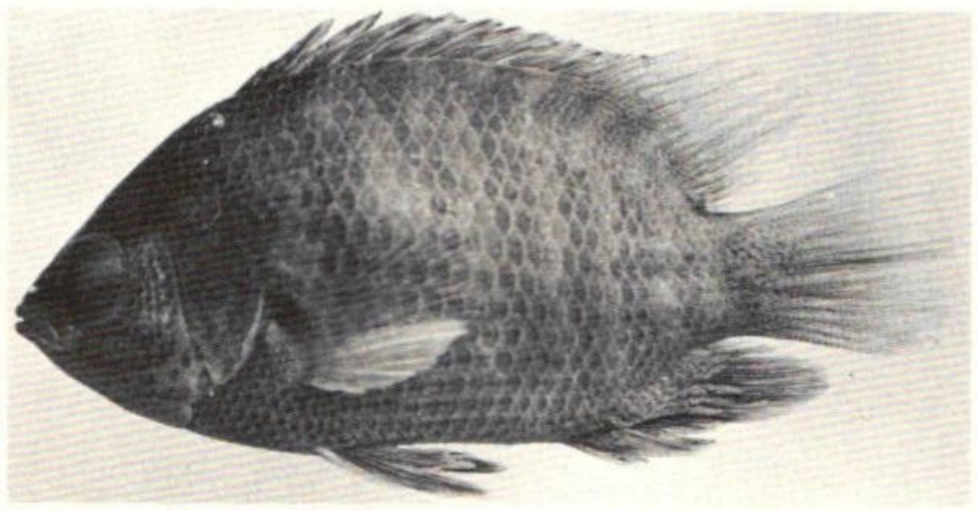


Fig. 178 *Pristolepis fasciatus* (Bleeker) 71.0 mm SL

Pristolepis fasciatus - Serene , 1951 (Mekong R. and its affluents, swamps, ponds); Taki, 1968 (Tha Ngon, Vientiane, Pakse: Station Nos. 12, 15, 18, 33)

Collecting locality - Pak Suong, Nam Ngum dam site, Tha Ngon, Tha Bo, Hatsalao, Khinak: Station Nos. 1, 10, 12, 13, 15, 23, 34, 40

Material - 65 (15, 33.0 - 61.0 mm, IBRP 4800, 4901, 5001, 5065, 5177)

Description - D. XIII-XIV/14-15; A. III/8-9; Ll. 21-24 + 7-8 (in total number 28 - 32). Body depth 1.7 - 2.0, head length 2.4 - 2.7 both in standard length. Thickset, deep, compressed. Mouth no protrudent, maxilla terminating slightly behind front border of eye. Eyes large, situated in dorsal half of head. Operculum and preoperculum scaled; preorbital finely serrated; operculum with two short flat spines at hind border. Gill membrane on each side broadly united together at isthmus. Lateral line of two series, interrupted under soft dorsal fin and displaced on the scale two rows below. Spinous dorsal fin with a scally sheath at its base, soft dorsal fin high, covered with small scales basally; anal fin with a robust second spine, soft rays prolonged; pectoral fins large; pelvic fins with a short spine; caudal fin rounded. Reaches 20 cm in length.

Life color: Greenish brown to fuscus olive, under surface of head and belly whitish. Each side of body with about 10 dark irregular cross bands. Fins brownish to greenish.

Family Centropomidae (Snooks and glassfishes)

Chanda siamensis Fowler

Laotian name: Pa khap khong

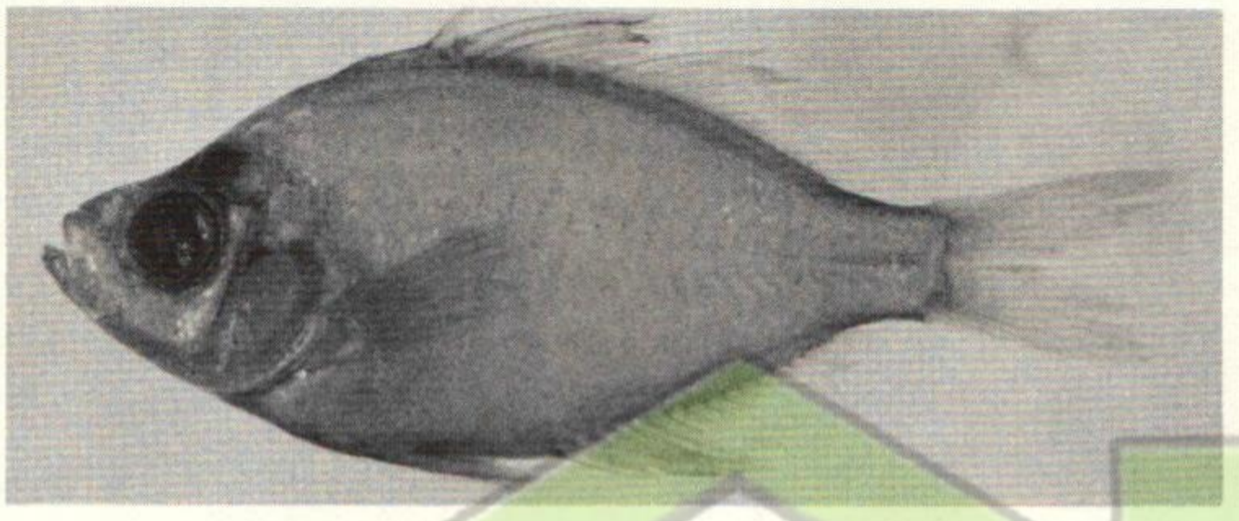


Fig. 179 *Chanda siamensis* Fowler 40.2 mm SL

Chanda siamensis - Fowler, 1937 (original description; Kemarat)
Chanda sp. - Taki, 1968 (Tha Ngon, Vientiane, Hatdokkeo, Pakse, Hatsalao: Station Nos. 12, 15, 20, 22, 32, 34)

Collecting locality - Luang Prabang, Tha Ngon, Tha Bo, Sai Fong, Sithan Tay, Hatsalao: Station Nos. 3, 12, 13, 14, 15, 23, 25, 26, 34

Material - 1,820 (15, 28.0 - 40.2 mm, IBRP 4255, 5261)

Description - D_1 VII, D_2 I/14-15; A. III/14; Ll. 46-49. Body depth 1.9 - 2.1, head length 2.6 - 2.8 both in standard length. Deep, greatly compressed. Snout short; mouth oblique, deeply cleft, lower jaw produced. Eyes large. Lower margin of operculum serrated. Lateral line complete. First dorsal fin high, continuous with second dorsal fin at their base, second dorsal fin relatively long, preceded by a spine; first anal spine shorter than the second and third; pectoral fins rather small, without spine; pelvic fins with a spine; caudal fin deeply forked. Attains about 6 cm in length.

Life color: Body transparent as glass, delicate amber-colored, vertebral columnand gas-bladder visible. Fins pale.

Family Toxotidae (Archerfishes)

Toxotes microlepis Günther"

Laotian name: Pa meo

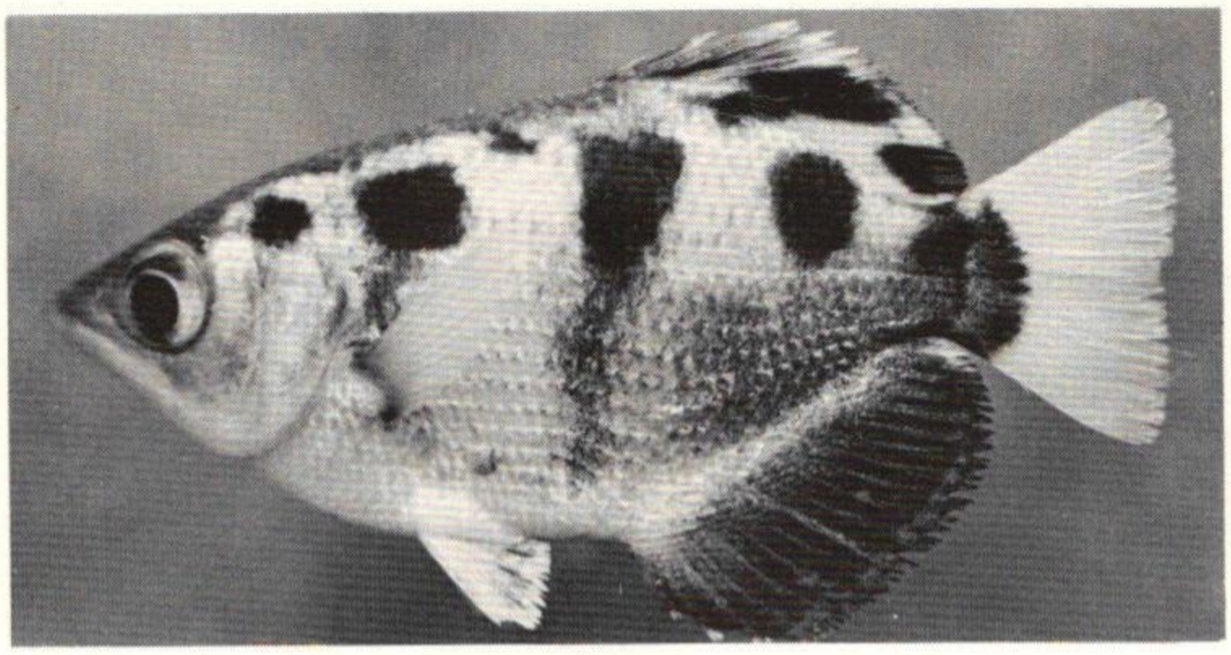


Fig. 180 *Toxotes microlepis* Günther" 73.0 mm SL

Toxotes chatareus - Taki, 1968 (Tha Ngon, Pakse: Station Nos. 12, 32)

Collecting locality - Tha Ngon, Sithan Tay, Hatsalao: Station Nos. 12, 13, 26, 34

Material - 9 (6, 53.6 - 113.3 mm, IBRP 4461, 4503, 5397)

Description - D. V/12-14; A. III/16-18; Ll. 34-37. Body depth 2.0 - 2.2, head length 2.6 - 3.0 both in standard length. Oblong, strongly compressed. Snout pointed; mouth large, directed obliquely upward, its corner extending beyond vertical from center of eye; lower jaw produced. Eyes large. Lateral line complete, ascending one row at 5th to 8th perforated scale and then descending one row at 12th to 14th scale. Dorsal fin inserted well back, soft portion almost entirely covered with small scales; anal fin opposite to dorsal, almost completely covered with minute scales; pectoral fins inserted high, without spines; pelvic fins with a robust spine, caudal fin truncate. To about 15 cm in length.

Life color: Ground color silvery gray to amber, back dark, underside with yellowish tint. Each side of body with five jet-black roundish or oblong blotches in a longitudinal series from eye to upper base of caudal fin, second and third blotches large,

continued downward on a faint dark cross bar; in predorsal region two small black spots near back; a small black spot at dorsal fin base. Dorsal fin with two large black blotches; anal fin blackish; pectoral fins pale brown to hyaline; pelvic fins blackish; caudal fin light brown to yellow with a dark base.

Family Lobotidae (Tripletails)

Datnioides microlepis Bleeker

Laotian name: Pa soua

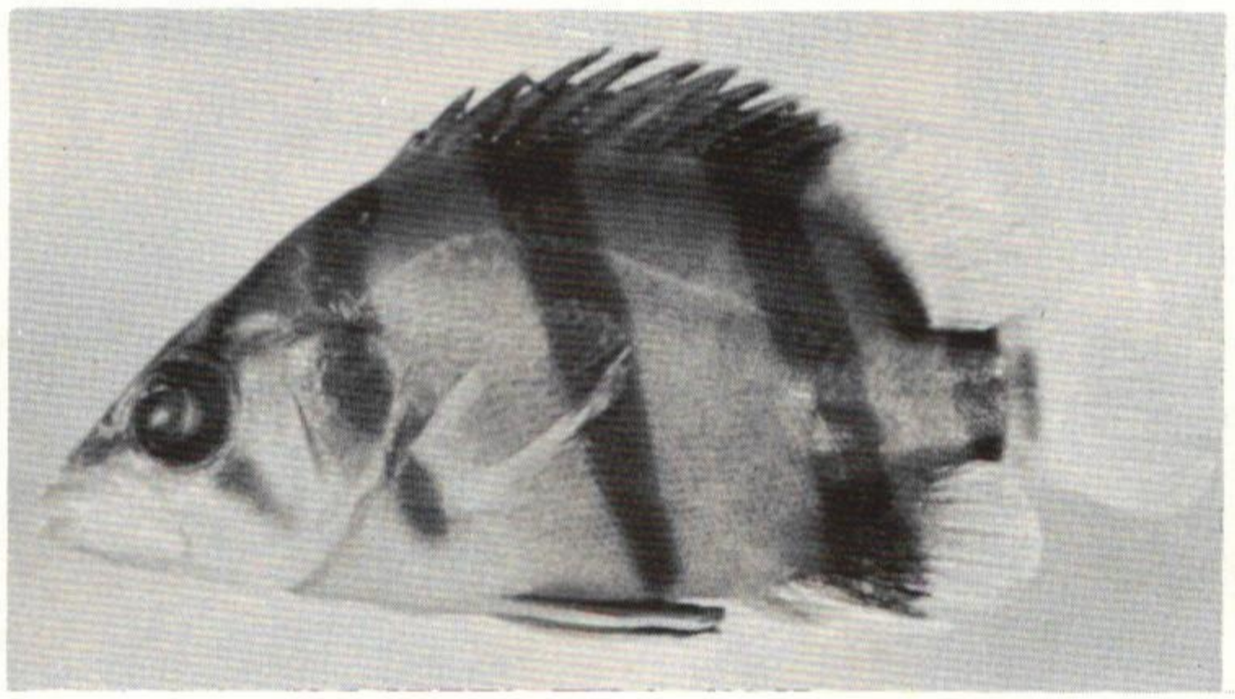


Fig. 181 *Datnioides microlepis* Bleeker 44.6 mm SL

Datnioides microlepis - Taki, 1968 (Luang Prabang, Tha Ngon, Vientiane, Pakse: Station Nos. 3, 12, 20, 30, 32)

Collecting locality - Hatsalao, Bang Lieng: Station Nos. 34, 38

Material - 12 (4, 117.2 - 130.0 mm, IBRP 4035, 5458)

Description - D. XII/16; A. III/10. Body depth 2.2 - 2.3, head length 2.6 - 2.9 both in standard length. Mouth protruded, deeply cleft, its corner reaching below center of eye. Eyes large. Cheek scaled. Margin of preoperculum serrated. Scales small. Lateral line greatly arched. Dorsal spines stout, spinous dorsal fin

with a scally sheath along its base, basal part of soft dorsal fin beset with minute scales; anal fin with a robust second spine, covered with scales as in dorsal fin; pelvic fins with a slender spine; caudal fin rounded. To 40 cm in length.

Life color: Ground color light brown to pale chocolate. Head with a dark chocolate brown stripe running from eye to origin of dorsal fin and another from eye obliquely across cheek. Each side of body with four broad dark chocolate brown cross bands, last one on caudal peduncle close to a narrower cross band on caudal fin. Fins light brown, membranes of spiny dorsal and pelvic fins blackish.

Family Sciaenidae (Drums and croakers)

Pseudosciaena soldado (Lacepede)

Laotian name: Pa khouang

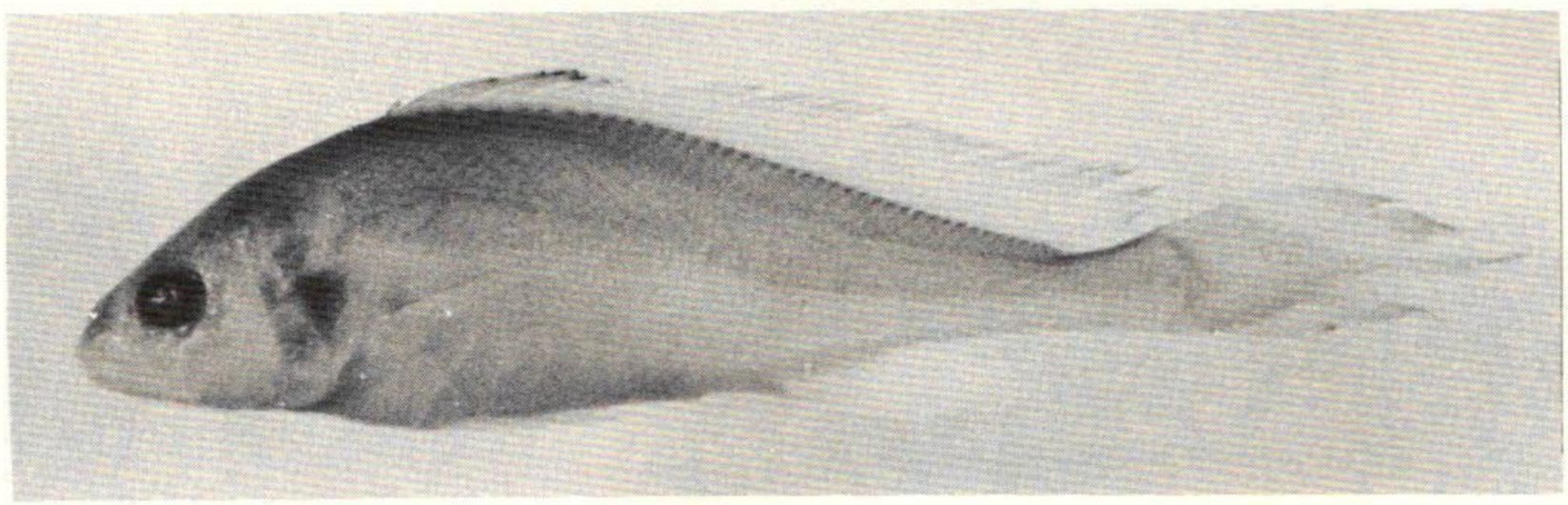


Fig. 182 *Pseudosciaena soldado* (Lacepede) 108.0 mm SL

Johnius soldado - Serene, 1951 (Mekong R. and its affluents): Taki, 1968 (Vientiane, Pakse, Hatsalao: Station Nos. 20, 32, 34)

Collecting locality - Hatsalao: Station No. 34

Material - 6 (6, 72.5 - 153.5 mm, IBRP 4015, 4308)

Description - D. XI/32 - 33; A. II/7. Body depth 3.3 - 3.8, head length 3.3 - 3.6 both in standard length. Back more or less greatly elevated, caudal peduncle slender. Snout bluntly rounded. Mouth large, its corner extending beyond vertical from center of eye; jaws equal or upper jaw slightly overhanging the lower. Eyes somewhat elliptic, high. Cheek scally; post-temporal finely ciliated. Scales small. Lateral line complete. Spinous dorsal fin more or less deeply incised from soft; second anal spine strong, robust; caudal fin pointed, spear-shaped. Reaches 45 cm in length.

Life color: Light greenish or grayish brown, lower side whitish; obscure ripple markings over upper side of body. Fins pale brown to yellow; spinous dorsal fin with a dark margin; caudal fin blackish.

Family Gobiidae (Gobies)

Ctenogobius ocellatus (Fowler)

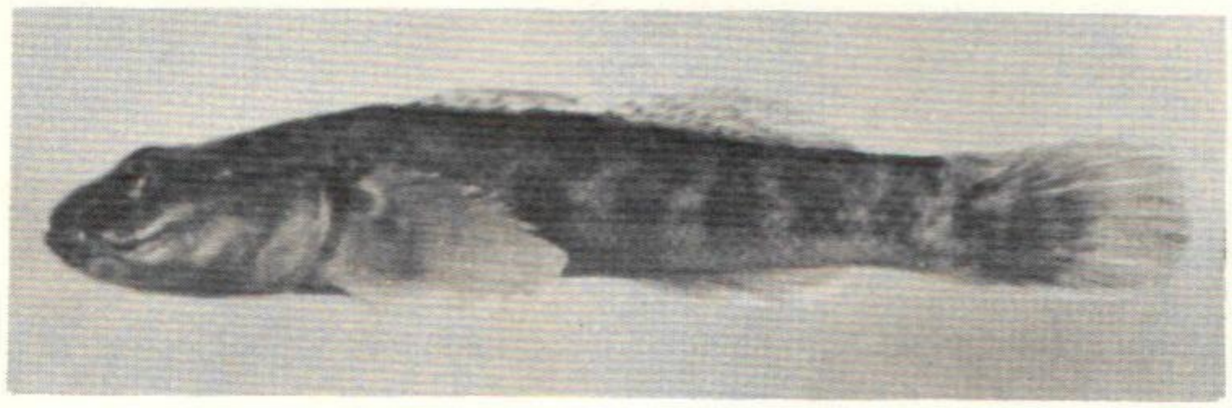


Fig. 183 *Ctenogobius ocellatus* (Fowler) 59.5 mm SL

Tukagobius ocellatus - Fowler, 1937 (original description; Kemarat)

Collecting locality - Pak Suong, Isl. Don Tio, Luang Prabang, Hatsa lao, Pathoum Phon: Station Nos. 1, 2, 3, 4, 34, 39

Material - 77 (11, 43.6 - 65.8 mm, IBRP 4165, 5343, 5354, 5459)

Description - D_1 VI, D_2 I/10-11; A. I/9. Body elongate, its depth 4.9 - 5.8 in standard length, compressed posteriorly. Head large, depressed, its length 3.0 - 3.4 in standard length, depth 1.3 - 1.6 in its width. Mouth terminal, large, deeply cleft, its corner extending below eye. Eyes dorso-lateral. Head naked. First dorsal fin of feeble spines, second dorsal fin preceded by a feeble spine; pectoral fins well developed; pelvic fins united together and modified into a sucking disk; caudal fin rounded. To about 10 cm in length.

Life color: Ground color of body brown, underside somewhat whitish. Head mottled with dark brown irregular-shaped markings. Body with seven or eight dark brown transverse saddles across back, the saddles usually irregular-shaped, not very distinct. First and second dorsal fins with a few rows of small dark spots; pectoral fins with a black spot at bases of upper rays, the spot may be white-bordered; caudal fin grayish brown, with a small black spot at bases of upper rays.

Ctenogobius mekongianus (Pellegrin and Fang)

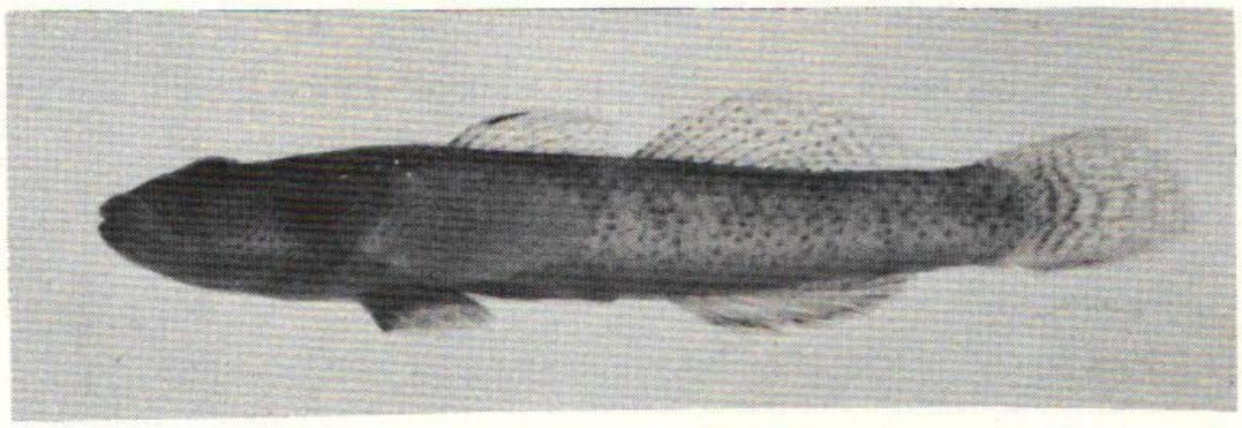


Fig. 184 *Ctenogobius mekongianus* (Pellegrin and Fang)
43.5 mm SL

Gobius mekongianus - Pellegrin and Fang, 1940 (original description; Ban Nam Khueng)

Collecting locality - Nam Pat R., Nam Done R.: Station Nos. 8, 9

Material - 2 (2, 31.1 and 43.5 mm, IBRP 4148, 4156)

Description - D_1 VI, D_2 I/8; A. I/7. Body depth 5.0 - 6.0, head length 3.1 - 3.4 both in standard length. Head broad, depressed. Snout rather long, flattened; mouth large, deeply cleft, its corner extending nearly or quite to vertical from center of eye; jaws

with wide bands of short canines. Eyes dorso-lateral. Head naked. Structure of fins similar to that of the preceding species. Largest record 43.5 mm in length.

Coloration of preserved specimens: Pale yellowish brown, lower side whitish. Head, body, dorsal and caudal fins with very small brownish spots. Upper part of membrane between first and second dorsal spines black; anal fin with a blackish free margin.

Family Eleotridae (Sleepers)

Oxyeleotris marmoratus (Bleeker)

Laotian name: Pa bout

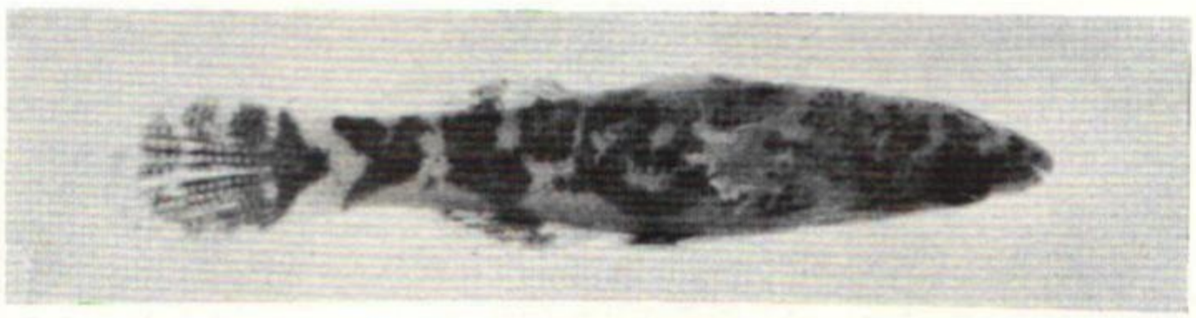


Fig. 185 *Oxyeleotris marmoratus* (Bleeker) 27.0 mm SL (juvenile)

Oxyeleotris marmoratus - Taki, 1968 (Wattai near Vientiane, Nong Hoi near Pakse: Station Nos. 19, 35)

Collecting locality - Hatsalao: Station No. 34

Material - 4 (4, 20.2 - 27.0 mm, IBRP 4227, 4303)

Description - The description given below is based on both the juvenile specimens listed above and adult specimens collected in 1966. D_1 VI, D_2 I/9; A. I/8. Head large, depressed, much wider than deep; snout flattened. Body robust, compressed posteriorly. Mouth directed obliquely upward, very wide and deeply cleft, lower jaw prominent. Eyes large, dorso-lateral. Scales small. Dorsal fin of two sections; pectoral fins well developed,

inserted high; pelvic fins well developed, inserted on lower surface of body in advance of pectoral fins, not united together into a sucking disk; caudal fin long, rounded. To 50 cm in length.

Life color: Ground color of body brown to brick-brown, top of head dark, underside of body somewhat pale. Back and sides of body with many cloudy vaguely-delimited dark blotches. Fins brownish, with irregular-shaped dark spots.

Family Soleidae (Soles)

Synaptura harmandi Sauvage

Laotian name: Pa pe

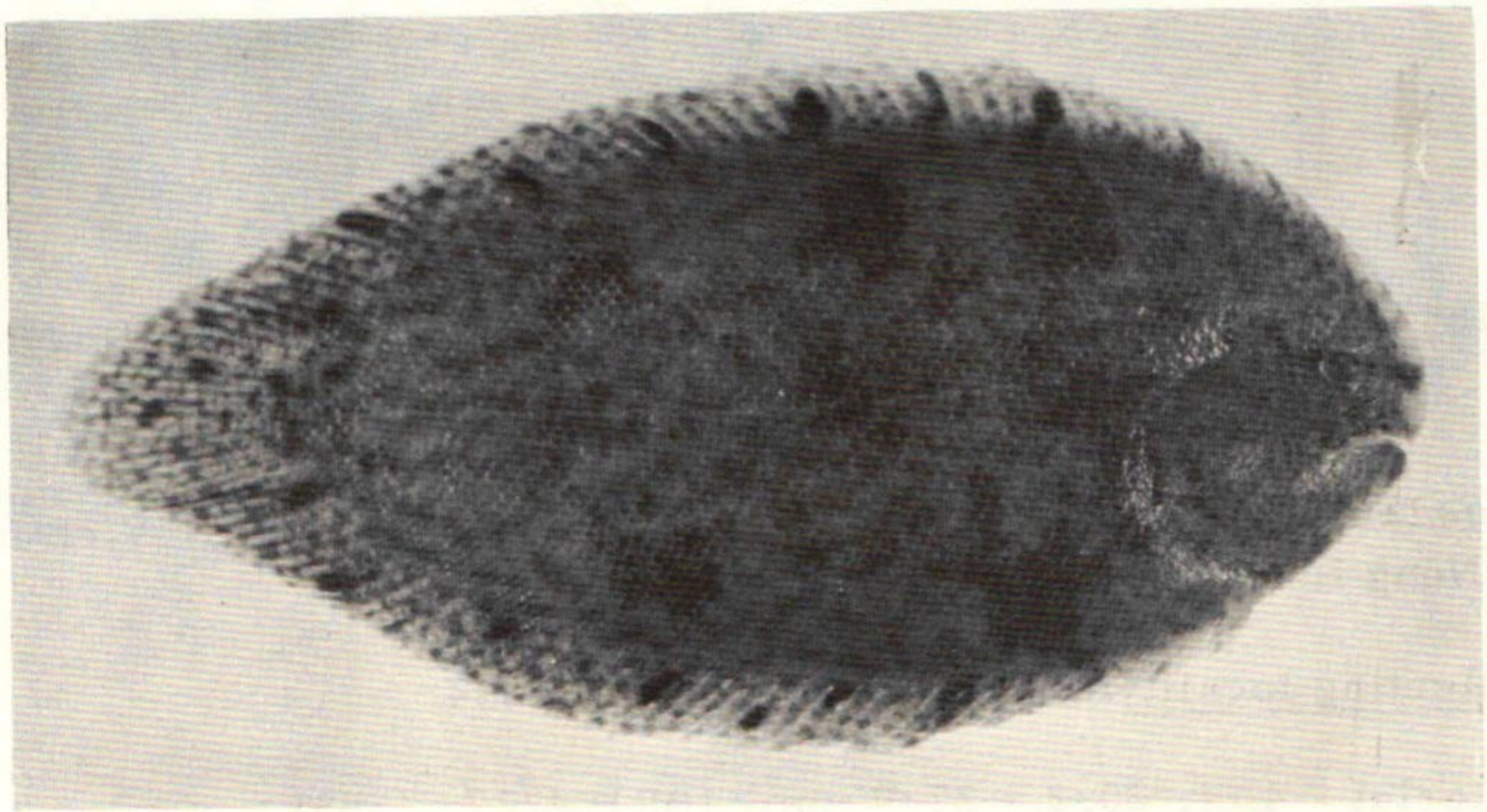


Fig. 186 *Synaptura harmandi* Sauvage 66.9 mm SL

?*Synaptura orientalis*- Serene, 1951 (Mekong R.)
Synaptura harmandi - Taki, 1968 (Luang Prabang, Vientiane, Hatsalao: Station Nos. 3, 20, 34)

Collecting locality - Luang Prabang, Tha Ngon, Tha Bo, Hatsalao: Station Nos. 4, 12, 13, 23, 34

Material - 13 (13, 22.2 - 82.5 mm, IBRP 4122, 4298, 4393, 4502, 4532, 5259, 5396, 5609)

Description - D. 53 - 56; A. 40 - 43. Body oval, flat, consisting of colored side (right) and blind side (left). Head asymmetric, both eyes situated on right side. Mouth relatively large, recurved, its right side corner reaching immediately below lower eye. Nostrils close to mouth. Eyes small. Head wholly covered with small scales; numerous minute papillae around mouth, on both sides of throat and along anterior part of dorsal fin base on blind side. Dorsal and anal fins very long, the former commencing on snout, both fins confluent with small caudal fin; pectoral fins rudimentary, inserted at upper end of gill opening on each side; pelvic fins small, close together, situated immediately before origin of anal fin. Maximum length about 15 cm.

Life color: Colored side brown, with many dark brown blotches of various sizes and shapes; blind side white to pale brown, posterior half somewhat dark.

Family Tetraodontidae (Puffers or globefishes)

Chonerhinus modestus (Bleeker)

Laotian name: Pa pao luang

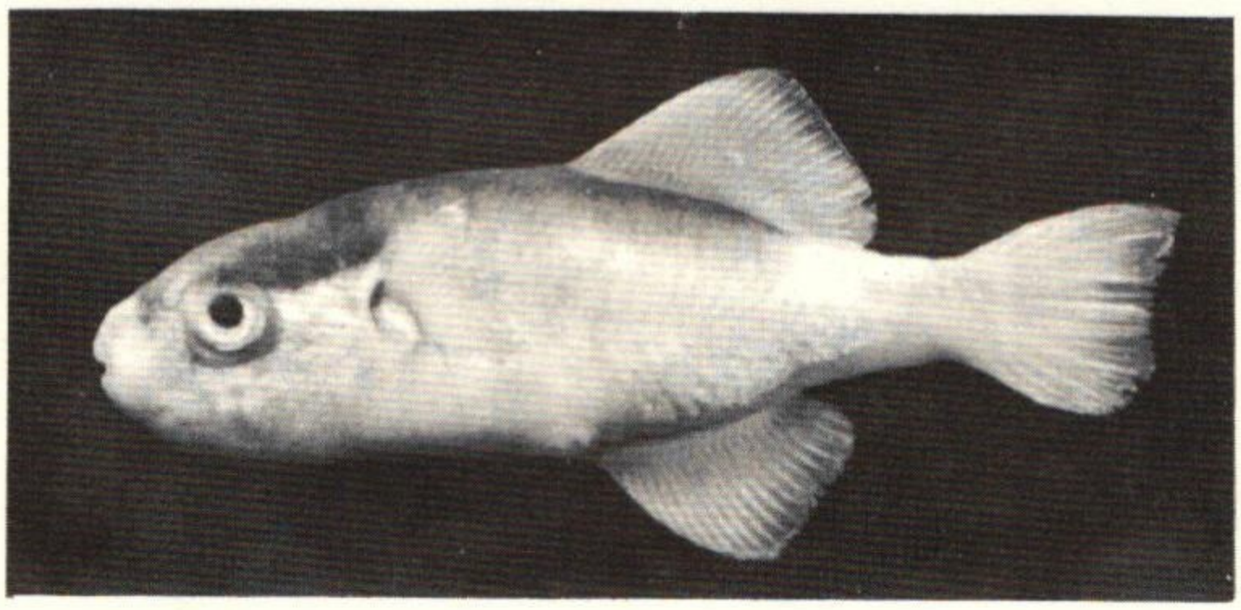


Fig. 187 *Chonerhinus modestus* (Bleeker) 58.0 mm SL

Collecting locality - Tha Ngon, Sai Fong, Sithan Tay, Hatsalao: Station Nos. 12, 13, 14, 25, 26, 34

Material - 21 (10, 36.0 - 73.5 mm, IBRP 4272, 4396, 4506, 4611, 4804, 5399, 5484)

Description - D. 25-28; A. 21-22. Body elongate, moderately compressed, its depth 2.9 - 3.5 in standard length. Head large, more or less broad, its length 2.7 - 3.1 in standard length. Snout long, high. Each nostrils with a simple imperforated cavity surrounded by a high lim. Mouth small, terminal, straight. Eyes large, positioned in upper half of head. Gill openings very narrow. Abdomen with minute dermal spines. No lateral line. Dorsal fin comparatively long, high; anal fin opposite to dorsal, high; pectoral fins less developed, inserted high; pelvic fins absent; caudal fin truncate. Reaches about 13 cm in length.

Life color: Back and upper side of head and body olivaceous golden, underside pale yellow to white. Dorsal and caudal fins greenish yellow; anal fin pale yellow; pectoral fins hyaline.

Tetraodon leiurus Bleeker

Laotian name: Pa pao

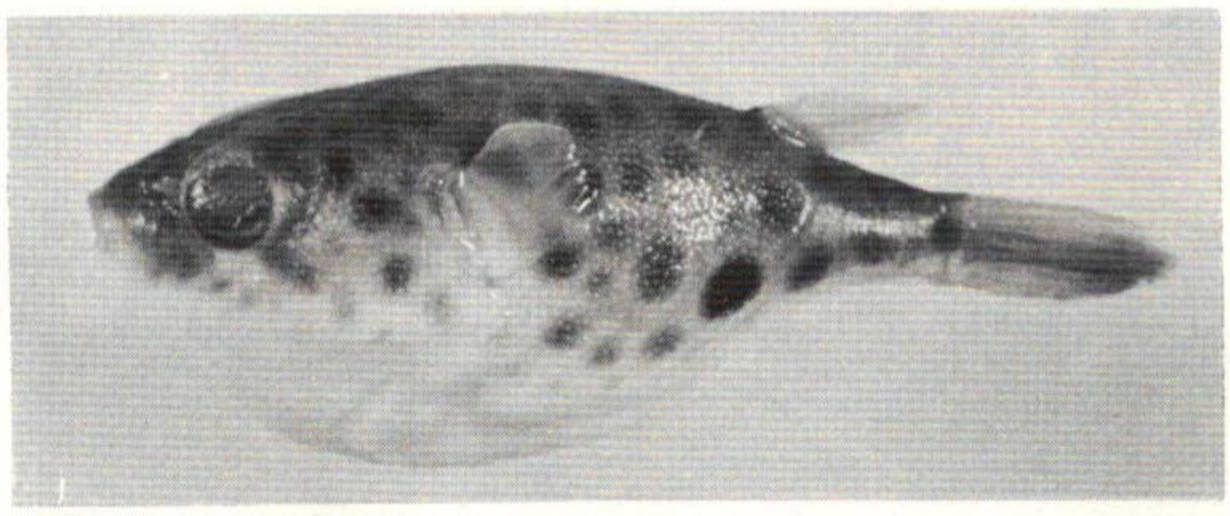


Fig. 188 *Tetraodon leiurus* Bleeker 46.5 mm SL

Tetraodon leiurus - Taki, 1968 (Luang Prabang, Tha Ngon, Pakse: Station Nos. 3, 12, 32)

Collecting locality - Tha Ngon, Sithan Tay, Hatsalao: Station Nos. 12, 26, 34

Material - 7 (6, 43.2 - 63.5 mm, IBRP 5442, 5792)

Description - D. 12-14; A. 10-12. Body oblong, somewhat globate, caudal peduncle slender. Head large, slightly depressed. Mouth small, terminal, straight. Nostrils with tubular nasal tentacles. Eyes large, positioned high in head. Gill openings very narrow. Skin set with minute dermal spines. No lateral line. Dorsal and anal fins inserted well back, short; pectoral fins broad, inserted high; pelvic fins absent; caudal fin slightly rounded. Up to 13 cm in length.

Life color: Back dark grayish to greenish brown, flanks yellow to yellowish brown, belly whitish. Close-set dark brown roundish or polygonal blotches on body except whole or center of ventral surface, the blotches various in size, usually become smaller on lower part of flanks, one on middle of side somewhat in front of origin of dorsal fin large and intense.

Tetraodon cutcutia Hamilton-Buchanan

Laotian name: Pa pao



Fig. 189 *Tetraodon cutcutia* Hamilton-Buchanan 43.0 mm SL

Collecting locality - Luang Prabang, Tha Ngon, Tha Bo, Pakse, Hatsalao: Station Nos. 3, 13, 23, 33, 34

Material - 26 (6, 25.0 - 43.0 mm, IBRP 4128, 4271, 4312, 4397, 4898)

Description - D. 12-13; A. 10-11. Body somewhat globate, caudal peduncle slender, both dorsal and ventral profiles arched. Head large. Snout long, somewhat pointed; mouth rather small, terminal. Eyes large, high in position. Gill openings very narrow. No lateral line. Skin with small dermal spines. Dorsal and anal fins situated well back, the former originated slightly in advance

of the latter; pectoral fins broad; pelvic fins absent; caudal fin slightly rounded. Reaches a length of 15 cm.

Life color: Back olive-brown, flanks pale yellowish brown, belly whitish sometimes with dark pigments. Lower lip with a black median blotch and a black spot on each side. A diffuse pale stripe uniting eyes. A round black eye-spot with a white center and a silverly outer margin on middle of each side immediately before vertical from origin of dorsal fin. Back and side with many obscure cloudy patterns or ill-defined polygonal blotches.

Tetraodon fluviatilis Hamilton-Buchanan

Tetrodon (Crayracion) fluviatilis- Pellegrin and Fang, 1940
(Ban Nam Khueng)

Family Mastacembelidae (Spiny eels)

Macrognathus aculeatus (Bloch)

Laotian name: Pa lot

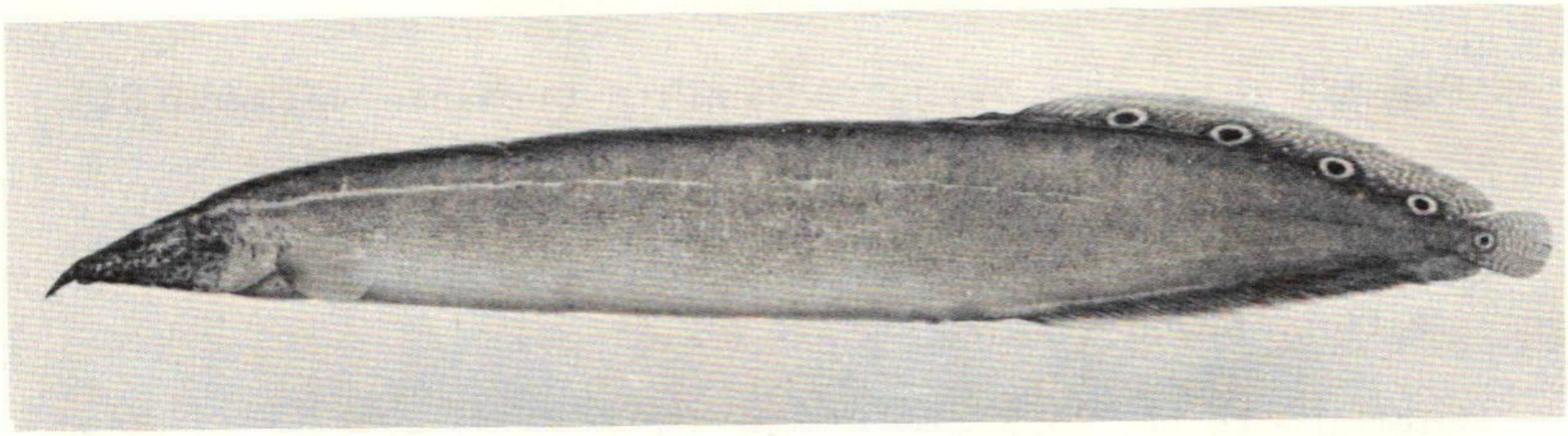


Fig. 190 *Macrognathus aculeatus* (Bloch) 192.0 mm SL

Rhynchobdella aculeata - Fowler, 1935b (Chiengsen Kao), 1937 (Kemarat)

Macrognathus aculeatus - Serene, 1951 (Affluents of Mekong R., swamps, ponds, streams); Taki, 1968 (Tha Ngon, Pakse: Station Nos. 12, 15, 33)

Collecting locality - Tha Ngon, Vientiane, Tha Bo, Hatsalao, Khinak: Station Nos. 12, 13, 21, 23, 34, 40

Material - 37 (11, 83.5 - 201.0 mm, IBRP 4352, 4537, 5178, 5233)

Description - D. XIV - XVI/52-56; A. III/50-54. Greatly elongate, compressed. Head short, low; snout long, produced into a mobile rostral appendage which is trilobal with a tubular anterior nostril on each side of the appendage. Mouth small. Eyes small, situated high in head. Gill openings rather small, opening in ventral surface. Body covered with minute scales. Dorsal and anal fins consisting of a row of isolated spines followed by a long continuous soft portion, both fins extending to but not confluent with caudal fin, the spines can be depressed in skin; pelvic fins absent; caudal fin small. To about 35 cm in length.

Life color: Chocolate brown to dark gray, underside pale. A row of three to six white-bordered ocelli on dorsal fin and a smaller ocellus on caudal fin.

Mastacembelus armatus favus Hora

Laotian name: Pa lat



Fig. 191 *Mastacembelus armatus favus* Hora 159.0 mm SL

? *Macrognathus armatus* - Serene, 1951 (Affluents of Mekong R., streams)

Mastocembelus armatus favus - Taki, 1968 (Luang Prabang, Tha Ngon, Pakse market: Station Nos. 3, 12, 15)

Collecting locality - Tha Ngon, Tha Bo, Sai Fong, Hatsalao, Khinak: Station Nos. 12, 13, 23, 25, 34, 40

Material - 35 (8, 141.0 - 205.0 mm, IBRP 4110, 4802, 4893, 5735)

Description - D. XXXIV - XXXVI/77-82; A. III/74-81. Very elongate, compressed. Head small; snout produced, with a rostral appendage on front; the appendage mobile, trilobular with a tubular anterior nostril on each side. Mouth small. Eyes small, high in head. Scales minute. Dorsal and anal fins consisting of a series of isolated erectile spines and a continuous soft portion, both fins confluent with small caudal fin; pectoral fins short, roundish; pelvic fins absent. Attains a length of about 50 cm.

Life color: Body ornamented with dark chocolate brown reticulations enclosing broad light brown saddles on back and roundish spots of the same color on flanks and underside; the saddles on back, as well as the spots on underside, may be connected to each other. Head with dark chocolate brown longitudinal streaks.

Mastacembelus alboguttatus Boulenger

Mastacembelus alboguttatus - Pellegrin and Fang, 1940 (Ban Nam Khueng)

Family Synbranchidae (Swamp eels)

Fluta alba (Zuiew)

Monopterus albus - Pellegrin and Fang, 1940 (Ban Nam Khueng): Serene, 1951 (Mekong R. and its affluents, swamps, ponds)

Fluta alba - Taki, 1968 (Paddy and stream at Luang Prabang, Nong Teng - Station No. 16, canal at Vientiane, pond at Pakse Fish Culture Station)

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