

NOTES ON A COLLECTION  
OF FISHES FROM LOWLAND LAOS

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Text-Fig. 1 Map of the collection sites.

- A ----- Riv. Nam Khan. B ----- Riv. Nam Ngum  
 C ----- Riv. Se Don.  
 1 ----- Luang Prabang. 2 ----- Tha Ngon. 3 ----- Nong Teng.  
 4 ----- Vientiane. 5 ----- Salakham. 6 ----- Hatdorkieo.  
 7 ----- Kouai Deng. 8 ----- Savannakhet. 9 ----- Pakse.  
 10 ----- Hatsalao. 11 ----- Ils. Hin Soung.

## INTRODUCTION

From April, 1966 to April, 1967, I was engaged in field work in Laos as a member of a team working on a fisheries development project sponsored by USAID Mission through a contract with U.S. Consultants, Inc.

During this period fish specimens were obtained by operation of small gill-nets, from fishing nets of local fishermen, or villagers, and at markets. The areas of the collection were restricted to places near the larger towns (see Text-fig. 1). The localities are :

1. Luang Prabang. River Mekong, River Nam Khan and market.
2. Tha Ngon. River Nam Ngum and River Nam Khem.
3. Nong Teng. Reservoirs, ponds and canals.
4. Vientiane. River Mekong, streams, canals and market.
5. Salakham. Canals and paddy fields during and after the inundation of the Mekong in September, 1966.
6. Hatdorkieo. River Mekong.
7. Kouai Deng. River Mekong.
8. Savannakhet. Market.
9. Pakse. Nam Se Don, River Mekong, Houei Nhang and market.
10. Hatsalao. River Mekong.
11. Ils. Hin Soung. River Mekong.

As to the fishes of Laos, few records have been published concerning the fishes of Laos. Although there have been a considerable number of studies on the fishes of Thailand and former French Indochina, few of them refer to the fishes in the Laos area. Serrene's report (1951), enumerating 85 species including 59 identified species, is probably the only comprehensive record from Laos.

In the present study 119 species in 25 families are listed as a preliminary finding. The localities surveyed are all in the lowland section of Laos, with scanty data obtained from the mountainous area. Thus, the report practically covers almost exclusively "Lowland Laos".

Before proceeding further I wish acknowledge my indebtedness rendered by many persons : to Mr. C.P. Wilder and Dr. W.D. Strong, USAID Agriculture Division, Messrs. B. Chanthapanya, S. Chanthepha, M. Traymany, B. Rithvixay and Tiao Kampheng, Water and Forest Service, Royal Lao Government; Mr. S. Morinaga, Japanese Peace Corps; Messrs. S. Sugitani, G. Ishii and T. Igarashi, U.S. Consultants, Inc., Fisheries Team.

## LIST OF FISH

One hundred and nineteen species all collected from the natural waters are listed here with collecting sites. (In one species, *Pangasianodon gigas*, no complete specimen was obtained). Besides the species in the list there are two cultivated species, *Tilapia mossambica* and *Carassius auratus*, which have not yet been acclimatized to the natural waters in the area.

Vernacular names are shown in the list with the localities where they were checked. It is virtually impossible to represent exactly a phonetic system of a language by any foreign characters. Particularly, the delicate accent of the Lao is quite difficult to indicate in Roman letters. In the Laotian language different accents in a word of the same spelling in Roman letters make the meaning different. Moreover, to make the matter more complicated, the Lao have many "pa khao" in the list, in most cases it means white fish while in *Wallago attu* it stands for horn fish with a different accent. Thus, it must be stressed that the phonetic symbols used here only suggest approximate tones.

LIST OF FISHES OF THE LOWLAND LAOS

Scientific name	LAOTIAN NAME		
	Luang Prabang	Vientiane	Pakse
DASYATIDAE			
<i>Dasyatus</i> sp.	pa fa lai	pa fa lai	pa fa lai
CLUPEIDAE			
<i>Clupea kanagurta</i>	pa kham	pa mak pang	pa mak pang
NOTOPTERIDAE			
<i>Notopterus chitala</i>	pa thong	pa thong	pa thong
<i>Notopterus notopterus</i>	pa thong	pa thong	pa thong
CYPRINIDAE			
<i>Chela laubuca</i>	+	pa sieu houa gnen	+
<i>Oxygaster oxygasteroides</i>	+	pa thep	pa thep
<i>O. siamensis</i>		pa thep	+
<i>Paralaubuca riveroi</i>		pa thep	
<i>P. typus</i>		pa thep	pa thep
<i>Macrochirichthys macrochirus</i>	+	pa hang fa, pa ka fa	pa hang fa
<i>Danio</i> sp.	pa sieu		
<i>Esomus metallicus</i>		pa sieu	+
<i>Rasbora argyrotaenia</i>		pa sieu	pa sieu ao
<i>R. trilineata</i>		+	+
<i>R. borapetensis</i>		pa sieu	
<i>Luciosoma bleekeri</i>	pa sieu ao	pa sieu ao, pa mak wai, pa hao	pa pom
<i>Leptobarbus hoevenii</i>		+	pa phong
<i>Thynichthys thynoides</i>		pa keum	pa keum
<i>Balantiocheilus melanopterus</i>		pa pit	+
<i>Cirrhinus jullieni</i>	+	pa khao	pa soi
<i>C. microlepis</i>	pa phon	pa phon	pa phon
<i>Puntius waandersi</i>		pa sa kang, pa i keng	pa sa kang
<i>Puntius leiacanthus</i>		pa khao	+
<i>P. pessuliferus</i>		+	
<i>P. binotatus</i>			pa chat

<i>Puntius daruphani</i>	pa mak kham	pa pak, pa pak gnoua	
<i>P. javanicus</i>	pa pak	pa pak	pa pak
<i>P. hugenini</i>		pa pak	+
<i>P. orphoides</i>		pa khao, pa pok	pa pok
<i>P. altus</i>		pa khao, pa loun fai	pa khao
<i>P. schwanenferdii</i>		pa pak kham	pa vien fai
<i>Puntioplites proctozysron</i>	pa sa kang	pa sa kang	pa sa kang
<i>Scaphognathops stejnegeri</i>		+	+
<i>Cyclocheilichthys apogon</i>		pa khao i thai	pa dok gniou
<i>C. dumerili</i>	pa tiok	pa tiok	pa tiok
<i>C. enoplos</i>	pa tiok	pa tiok	pa tiok
<i>Cosmochilus harmandi</i>	pa tiok	pa tiok, pa toik pan	pa tiok
<i>Probarbus jullieni</i>	pa eun	pa eun	pa eun
<i>Xenocheilichthys gudgeri</i>	pa mang	pa mang	pa mang
<i>Amblyrhynchichthys truncatus</i>	+	pa khing	
<i>Baroichthys laevis</i>		+	+
<i>Catlocarpio siamensis</i>	pa eun mo	pa sa houm	+
<i>Hampala macrolepidota</i>		pa sou	+
<i>H. disper</i>		pa sou	
<i>Barilius guttatus</i>	+	pa sa nak	pa sa nak
<i>Tor tambroides</i>	pa hien	+	
<i>Osteochilus hasselti</i>		pa mak lai, pa khao mong, pa i thai	pa ka phok
<i>O. duostigma</i>		pa khao mong, pa i thai	
<i>O. prosemion</i>	pa keng	+	pa keng
<i>O. melanopleura</i>		pa nok khao	pa nok khao
<i>O. vittatus</i>	pa khiang	pa tiok souan	pa kang lai
<i>Labeo behri</i>	pa va ho kham		pa va ho kham
<i>L. erythrurus</i>		+	

*Morulius chrysophekadion*

	pa phia, pa va	pa phia, pa va	pa phia, pa va
<i>Dangila siamensis</i>	+	pa khao, kheu lam	pa khoui lam
<i>Cyprinus carpio</i>	pa nai		
<i>Crossocheilus reticulatus</i>		+	+
<i>Mekongia erythrospila</i>	pa sa i khom	pa sa i	pa sa i
<i>Garra fasciacauda</i>			+
<i>Eparzeorhyncus coatesi</i>		+	pa khiang

GASTROMYZONIDAE

<i>Annamia normani</i>			pa tit hin
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GYRINOCHEILIDAE

<i>Gyrinocheilus aymonieri</i>	pa bou	+	pa kor
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COBITIDAE

<i>Botia modesta</i>	pa kieu kai	pa kieu kai	pa kieu kai
<i>B. hymenophysa</i>	pa kieu kai, pa mou man	pa kieu kai, pa mou man	pa mou man
<i>B. sedthimunkii</i>		+	
<i>Noemacheilus sp.</i>			+
<i>Acanthopsis coirorhynchus</i>	+	pa it	pa it

SILURIDAE

<i>Wallago attu</i>	pa khao	pa khao	pa khao
<i>W. dinema</i>	pa khop	pa khop	pa khop
<i>W. miostoma</i>	+	+	+
<i>Ompok bimaculatus</i>	pa kho	pa souam	pa souam
<i>Kryptopterus apogon</i>	pa dan deng	pa nang	pa nang
<i>K. bicirrhis</i>		pa pi kai, pa souam lao	pa pi kai
<i>K. bleekeri</i>	pa sa ngoua	pa souam	pa souam
<i>K. cryptopterus</i>		+	+
<i>K. schilbeides</i>		+	+

CLARIDAE

<i>Clarias batracus</i>		pa douk	pa douk
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SCHILBEIDAE

<i>Helicophagus waandersii</i>	pa gnon phon	pa gnon mou, pa na nou	pa nou
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<i>Pangasius nastus</i>	pa ling	pa ling, pa phom	
<i>P. pangasius</i>	pa souei	pa souei	pa souei
<i>P. larnaudii</i>	+	pa hou mat	+
<i>P. siamensis</i>	pa gnon	pa gnon	pa gnon
<i>P. sutchi</i>		+	pa gnon
<i>P. santiwongsei</i>	pa leum	pa leum	pa leum
<i>Pangasianodon gigas</i>		pa beuk	
BAGARIDAE			
<i>Bagroides macracanthus</i>		pa ka theung	+
<i>Heterobagrus bocourti</i>		pa ka gnen	pa ka gnen pho
<i>Mystus nemurus</i>	pa kot	pa kot	pa kot
<i>M. wickii</i>	pa kheung	pa kheung	pa kheung
<i>M. nigriceps</i>	+	pa ka gnen	pa ka gnen
<i>M. vittatus</i>		pa ka gnen	pa ka gnen
<i>Leiocassis siamensis</i>	pa ki hia	pa ki hia	pa ki hia
SISOLIDAE			
<i>Bagarius bagarius</i>	pa ke	pa ke	pa ke
BELONIDAE			
<i>Xenentodon canciloides</i>	pa thot thong	pa sa thong	pa sa thong
<i>X. cancila</i>		pa sa thong	
OPHICEPHALIDAE			
<i>Ophicephalus micropeltes</i>	+	pa do, pa sa do	pa do
<i>O. striatus</i>	pa kho	pa kho	pa kho
<i>O. gachua</i>	pa khouang	pa kan	pa kan
<i>O. lucius</i>		pa tion	pa kon
ANABANTIDAE			
<i>Anabas testudineus</i>		pa kheng	pa kheng
<i>Betta splendens</i>		pa kat	+
<i>Trichopsis vittatus</i>		pa mat	pa mat
<i>Trichogaster trichopterus</i>	pa ka dout	pa ka dout	pa ka dout
<i>T. pectoralis</i>		pa sa lit	pa sa lit
<i>Osphronemus goramy</i>		pa meng	+

LOBOTIDAE

*Datnioides microlepis* pa soua pa soua pa soua

NANDIDAE

*Nandus nandus* pa ka +

*N. nebulosus* pa ka

*Pristrolepis fasciatus* + +

TOXOTIDAE

*Toxotes chatareus* + pa meo pa meo

SCIANIDAE

*Johnius soldado* pa khouang pa khouang

CHANDIDAE

*Chanda sp.* pa khap khong pa khap khong

ELEOTRIDAE

*Oxyeleotris marmoratus* pa bout pa bout

TETRAODONTIDAE

*Tetraodon leiurus* pa pao pa pao pa pao

*T. sp.* pa pao

SOLEIDAE

*Synaptura harmandii* pa pe pa pe, pa pe,  
pa pan pa pan

MASTOCEMBELIDAE

*Mastocembelus armatus favus* pa lat pa lat pa lat

*Macrogathus aculeatus* pa lot pa lot

FLUTIDAE

*Fluta alba* pa yen pa yen pa yen

## DESCRIPTION OF FISHES

In the description each datum is arranged in the following, order :

1. Frequency.  
+++ abundant, ++ common, + rare. Very rare species are shown by the number of specimens collected.
2. Size of specimen collected or observed in standard length.
3. Locality of the collection and observation.
4. Number of dorsal fin ray, anal fin ray and lateral line scale. Soft rays are counted together whether they are ossified or non-ossified, branched or unbranched. In Cyprinidae number of principal fin ray is shown; undeveloped ray are not counted.  
  
Number of lateral line scale is counted up to tip of hypural bone of caudal peduncle.
5. Remarks.

### DASYATIDAE

#### *Dasyatus* sp.

++, to 40 cm. in disc length. Luang Prabang (Mekong), Vientiane (Mekong), Pakse (Mekong).

### CLUPEIDAE

#### *Clupea kanagurta* (BLEEKER)

++, 11.5 to 13 cm. Luang Prabang (Mekong), Vientiane (Mekong), Pakse (Mekong), Hatsalao (Mekong). D 16; A 23; Sc 42. Gill raker (lower limb) nearly 140.

### NOTOPTERIDAE

#### *Notopterus chitala* (HAMILTON-BUCHNAN)

+++ , to 90 cm. Vientiane (swamp, reservoir and pond), Savan-nakhet (market), Nong Teng (reservoir and pond), Pakse (swamp and canal). D 9-10; Usually 6 to 10 spots in one series on side along base of anal fin.

Scales on head and body same size.

#### *Notopterus notopterus* (PALLAS)

+++ , to 65 cm. Vientiane (swamp), Nong Teng (reservoir), Pakse (swamp and canal). D 8-9. Most of the large specimens with 20 to 30 dark irregular cross bars which are usually indistinct anteriorly.

Scales on opercle and preopercle larger than body scales. Both *N. Chitala* and *N. notopterus* are very important comestible fishes, customarily cooked in "lap", minced raw flesh dressed with spice.

#### CYPRINIDAE

##### *Chela laubuca* (HAMILTON)

+, one. 4.8 cm. Tha Ngon (Nam Ngum). D 9; A 20; Sc 34.

##### *Oxygaster oxygasteroides* (BLEEKER)

++, 5.4 to 8.0 cm. Luang Prabang (Mekong), Tha Ngon (Nam Ngum), Hatdorkieo (Mekong), Hatsalao (Mekong), Ils. Hin Soung (Mekong).

##### *Oxygaster siamensis* (GUNTHER)

+, to 9.0 cm. Kouai Deng (Mekong).

##### *Paralaubuca reveroi* (FOWLER)

+, Tha Ngon (Nam Ngum).

##### *Paralaubuca typus* (BLEEKER)

+, 5.5 to 8.2 cm. Tha Ngon (Nam Ngum), Hatsalao (Mekong).

##### *Macrochilichthys macrochirus* (CUVIER ET VALENCIENNES)

++, 17 to 38 cm. Vientiane (Mekong), Pakse (Mekong). D 8; A 21; Sc 115-116. Caught mainly during dry season, October, November and December.

##### *Danio* sp.

+, 2.1 to 2.6 cm. Luang Prabang (stream).

##### *Esomus metallicus* AHL

+++ , to 6.6 cm. Vientiane (pond), Nong Teng (reservoir, pond and canal) D 7; A 6.

*Rasbora argyrotaenia* (BLEEKER)

++, 4.5 to 9.0 cm. Tha Ngon (Nam Khem), Salakham (canal and paddy after the inundation), Pakse (stream). D 8; A 6.

*Rasbora trilineata* STEINDACHNER

+, two. Salakham (during the inundation).

*Rasbora borapetensis* SMITH

++, to 4.5 cm. Nong Teng (reservoir and canal). D 8; A 6.

*Luciosoma bleekeri* STEINDACHNER

+++ , 5.4 to 11.2 cm. Luang Prabang ( Mekong ), Salakham (stream), Tha Ngon (Nam Ngum), Pakse (Mekong).

*Leptobarbus hoevenii* (BLEEKER)

++, 12.4 to 22.5 cm. Vientiane (unknown at market), Tha Ngon (Nam Ngum), Pakse (Mekong). D 8; A 6; Sc 35. The immature specimen bears a black longitudinal stripe on side from gill opening to base of caudal fin.

*Thynichthys thynoides* (BLEEKER)

++, to 15.2 cm. Vientiane (Mekong), Tha Ngon (Nam Ngum), Pakse (Mekong) D 9; A 6. This important fish in Cambodia is not so abundant in Laos. No collection nor information of its existence from Luang Prabang was obtained.

*Balantiocheilus melanopterus* (BLEEKER)

+, to approx. 15 cm. Tha Ngon (Nam Ngum), Pakse (unknown at market). D 9; A 6; Sc 34.

*Cirrhinus jullieni* SAUVAGE

+, to 12 cm. Vientiane (unknown at market), Luang Prabang (stream), Pakse (Mekong).

*Cirrhinus microlepis* SAUVAGE

++, 24 to 65 cm. Luang Prabang (Mekong), Vientiane (Mekong), Pakse (Mekong), Iles. Hin Soung (Mekong). D 9; A 6; Sc 58-59. Popular in the southern part but not abundant in the north. One of the most excellent food fish of large size in the Mekong.

*Puntius waandersi* (BLEEKER)

++, 5.7 to 23 cm. Vientiane (Mekong), Tha Ngon (Nam Ngum), Hatdorkieo (Mekong), Hatsalao (Mekong). D 9; A 6; Sc 34-36.

*Puntius leiacanthus* (BLEEKER)

++, 5.0 to 7.5 cm. Vientiane (Mekong), Tha Ngon (Nam Ngum), Pakse (unknown at market). D 9; A 6; Sc 24-25.

*Puntius pessuliferus* (FOWLER)

++, 3.2 to 7.0 cm. Nong Teng (pond, canal). D 9; A 6; Sc 24.  
All Laotian specimens bear only five short black bars on side above lateral line with one spot on back near origin of dorsal fin. The 4th bar on side sometimes indistinct or missing.

*Puntius binotatus* (CUVIER ET VALENCIENNES)

+, 3.0 to 4.2 cm. Pakse (stream). D 9; A 6.

*Puntius daruphani* (SMITH)

++, 5.4 to 6.0 cm. Luang Prabang (Mekong), Vientiane (Mekong). D 9; A 6; Sc 25-26.

*Puntius javanicus* (BLEEKER)

+++ , to 23 cm. Luang Prabang (Mekong), Vientiane (Mekong), Tha Ngon (Nam Ngum), Pakse (Mekong). D 9; A 7; Sc 29.

Maxillary barbel minute, rostral barbel rudimentary. A great number caught from October to February in Vientiane area.

*Puntius hugenini* (BLEEKER)

++, to approx. 25 cm. Vientiane (Mekong), Pakse (Mekong).

*Puntius orphoides* (CUVIER ET VALENCIENNES)

++, 4.8 to 12 cm. Tha Ngon (Nam Ngum and Nam Khan), Pakse (Mekong). D 9; A 6; Sc 28. Black submarginal band on each caudal lobe occasionally faint or indistinct.

*Puntius altus* (GUNTHER)

+++ , to 13 cm. Vientiane (Mekong), Tha Ngon (Nam Ngum), Savannakhet (an affluent of the Mekong), Pakse (Se Don). D 9; A 6; Sc 31-32. One of the most popular Puntid fish in Laos.

*Puntius schwanenferdii* (BLEEKER)

++, to 17.5 cm. Vientiane (Mekong), Pakse (unknown at market). D 9; A 6; Sc 33.

*Puntioplites proctoysron* (BLEEKER)

+++ , 5.6 to 22 cm. Luang Prabang (Mekong), Vientiane (Mekong), Salakham (during the inundation), Tha Ngon (Nam Ngum and Nam Khem), Kouai Deng (Mekong), Pakse (Mekong). D 9; A 7; Sc 37.

*Scaphognathops stejnegeri* (SMITH)

+, 12.5 to 14.2 cm. Vientiane (Mekong), Pakse (unknown at market). D 15; A 7; Sc 26-27.

*Cyclocheilichthys apogon* (CUVIER ET VALENCIENNES)

+++ , 3.6 to 12.5 cm. Tha Ngon (Nam Ngum), Pakse (Mekong). D 9; A 6; Sc 34. A great number of the fish measuring from 5 to 10 cm. caught from the Nam Ngum at the beginning of dry season.

*Cyclocheilichthys dumerili* SAUVAGE

++, 9.7 to 15.5 cm. Luang Prabang (Mekong), Tha Ngon (Nam Ngum), Hatsalao (Mekong). D 9; A 6; Sc 33-34. Both maxillary and rostral barbels minute.

*Cyclocheilichthys enoplos* (BLEEKER)

++, Luang Prabang (Mekong), Vientiane (Mekong), Pakse (Mekong), Iles. Hin Soung (Mekong). D 9; A 6. Barbels short. In most of the Laotian specimens a part of lateral line scales with bifid tubes.

*Cosmochilus harmandi* SAUVAGE

++, to approx. 40 cm. Luang Prabang (Mekong), Vientiane (Mekong), Pakse (Mekong), Hatsalao (Mekong). D 9; A 6; Sc 36-37.

*Probarbus jullieni* SAUVAGE

+++ , 21 to approx. 120 cm. Luang Prabang (Mekong), Vientiane (Mekong), Iles. Hin Soung (Mekong), Pakse (Mekong). Flesh has a good flavor, important food fish. During March many large specimens over 80 cm. with fully ripe eggs were observed at Pakse and Vientiane. Immature fish 12 months old were 21 to 23 cm. long.

*Xenocheilichthys gudgeri* SMITH

++, 7.5 to 17.3 cm. Luang Prabang (Nam Khan), Tha Ngon (Nam Ngum), Pakse (Mekong). D 9; A 6; Sc 29.

*Amblyrhynchichthys truncatus* (BLEEKER)

+, to 19.0 cm. Luang Prabang (Mekong and Nam Khan), Vientiane (unknown at market).

*Barbichthys laevis* (CUVIER ET VALENCIENNES)

+, 8.2 to 9.5 cm. Tha Ngon (Nam Ngum). D 9; A 6; Sc 36.

*Catlocarpio siamensis* BOULENGER

++, 3.5 to 68.4 cm. Luang Prabang (Mekong), Vientiane (Mekong), Salakham (during the inundation), Pakse (Mekong). D 10; A 6; Sc 34-35. During and after the flood of the Mekong in September, 1966 many small specimens of about 4 or 5 cm. were caught at Salakham. Color of the young brownish orange, fins reddish.

*Hampala macrolepidota* VAN HASSELT

+++ , 5.3 to 33 cm. Tha Ngon (Nam Ngum and Nam Khan), Hatsalao (Mekong). D 9; A 6; Sc 25.

*Hampala disper* SMITH

+, Tha Ngon (Nam Ngum).

This species is very similar to the former. The differences from *H. macrolepidota* are : a round spot on side, absence of submarginal bands on caudal lobes and short maxillary barbel; while in *H. macrolepidota* a cross bar on side, submarginal bands on caudal lobes and long barbel. *H. disper* may be a variation of *H. macrolepidota*, but I do not have enough data to determine this.

*Barilius guttatus* (DAY)

++, to 23.6 cm. Luang Prabang (Mekong), Vientiane (Mekong), Pakse (Se Don). D 8; A 11; Sc 47-48.

*Tor tambroides* (BLEEKER)

+, to 40 cm. Luang Prabang (Mekong), Vientiane (Mekong). D 9; A 6; Sc 22-23.

*Osteochilus hasselti* (CUVIER ET VALENCIENNES)

+++ , 5.8 to 16.5 cm. Tha Ngon (Nam Ngum and Nam Khem), Pakse

(Mekong). D 15-16; A 6; Sc 31-32.

One of the most abundant fish in the Nam Ngum, always caught in large quantity by large dip-nets set on rafts.

*Osteochilus duostigma* FOWLER

++, 7.1 to 8.2 cm. Tha Ngon (Nam Ngum). D 15-16; A 6, Sc 29-30.

*Osteochilus prosemion* FOWLER

++, 17.6 to 24.5 cm. Luang Prabang (Mekong and Nam Khan), Vientiane (Mekong), Pakse (Mekong). D 13; A 6; Sc 39. A dark cross bar at the 5th and 6th scale of lateral line. A dominant species in Luang Prabang in December and January.

*Osteochilus melanopleura* (BLEEKER)

++, 8.9 to approx. 30 cm. Tha Ngon (Nam Ngum), Hatdorkieo (Mekong), Hatsalao (Mekong). D 18; A 6; Sc 48-52.

*osteochilus vittatus* (CUVIER ET VALENCIENNES)

++, 9.6 to 12.5 cm. Luang Prabang (Mekong), Vientiane (Mekong), Ils. Hin Soung (Mekong). D 11-12; A 6; Sc 32.

*Labeo behri* FOWLER

+, 14.4 to 18.0 cm. Luang Prabang (Mekong), Ils. Hin Soung (Mekong). D 13; A 6; Sc 34.

*Labeo erythrurus* FOWLER

+, 4.8 to 5.4 cm. Tha Ngon (Nam Ngum). D 11-12; A 6; Sc 29-30.

*Morulius chrysophekadion* (BLEEKER)

+++ , to approx. 70 cm. Luang Prabang (Mekong), Vientiane (Mekong), Tha Ngon (Nam Ngum), Salakham (during the inundation), Savannakhet (unknown at market), Pakse (Mekong and Se Dong) . D 16-18; A 6; Sc 39-41.

The most important Cyprinoid fish, densely distributed from the north to the south.

*Cyprinus carpio* LINNE

+, Luang Prabang (Nam Khan).

*Cyprinus carpio* occurs only in northern Laos; rarely goes

down to the Mekong in Luang Prabang area.

*Dangila siamensis* FOWLER

+++ , 6.4 to 11.3 cm. Luang Prabang (Nam Khan), Salakham (during the inundation), Hatdorkieo (Mekong), Pakse (Mekong).  
D 25-26; A 6; Sc 31-32.

*Crossocheilus reticulatus* FOWLER

+ , four. 3.7 to 5.8 cm. Tha Ngon (Nam Ngum), Pakse (Mekong).  
D 9; A 6; Sc 31. Maxillary barbel absent in one specimen.

*Mekongia erythrospila* FOWLER

++ , 17.3 to approx. 35 cm. Luang Prabang (Mekong), Vientiane (Mekong), Pakse (Mekong). D 11; A 6; Sc 35-36.

*Garra fasciacauda* FOWLER

+ , 4.5 to 9.6 cm. Hatsalao (Mekong), Ils. Hin Soung (Mekong). D 9; A 6; Sc 31.

*Eparseorhyncus coatesi* (FOWLER)

+ , to 9.5 cm. Vientiane (Mekong), Hatsalao (Mekong).

GASTROMYZONIDAE

*Annamia normani* (HORA)

+ , one. 4.7 cm. Pakse (Houei Nhang).

This species, previously known only from Kontum in South Vietnam, is added to the Laotian fauna, probably the first record of its occurrence outside Kontum, from a single specimen taken from Houei Nhang. The Gastromyzonidae family are Cyprinoid fishes which are considered to have been evolved from primitive Cobitidae polygenetical in Borneo and continental Asia (Hora 1932, Silas 1952, Inger and Kong 1961). All fishes of the family have undergone conspicuous adaptive modifications induced by the life in torrential streams. They are completely or almost completely isolated geographically and ecologically from each other, so that the grade of specialization varies according to species. Out of 16 hitherto described genera, six are endemic to Borneo, one is endemic to Taiwan, seven occur in China and two genera both monotypic, *Sewellia lineolata* and *Annamia normani*, are restricted to Indo-China. The Laotian specimen of *Annamia* was collected on March 16,

1967, from the Houei Nhang at Pakse Fish Culture Station 3 km. upstream from the town of Pakse. The fish is 4.7 cm. in standard length and 6.2 cm. in total length. Head contained 5, depth of body 7.8 in standard length; depth of head 2.5, width of head 1.4 in its length; depth of caudal peduncle 2 in its length. Head and anterior part of body depressed, ventral surface entirely flattened. Snout long, broadly pointed. Mouth inferior, greatly arched. Barbels short, four rostral and two at corner of mouth. Eye dorso-lateral. Gill-opening extends to ventral surface. D 10; P 17; V 11; only first ray of pectoral and ventral unbranched. Pectoral fin begins well behind eye and widely separated from ventral fin. Color brownish, ventral surface whitish. Back and side covered by dark irregular pattern.

#### GYRINOCHEILIDAE

##### *Gyrinocheilus aymonieri* (TIRANT)

++, 5.2 to 16.4 cm. Luang Prabang (Mekong), Salakham (during the inundation), Hatdorkieo (Mekong), Hatsalao (Mekong). D 11; A 6; Sc 41.

#### COBITIDAE

##### *Botia modesta* BLEEKER

++, 4.2 to 11.7 cm. Luang Prabang (Mekong), Vientiane (Mekong), Tha Ngon (Nam Ngum and Nam Khem), Pakse (Mekong), Hatsalao (Mekong). D 9; A 6. The immature specimens assume brownish orange in body color with four to seven cross bands and several narrower indistinct bands between the broad bands. These bands become indistinct at a length of about 7 to 8 cm. Large specimens usually bluish grey in body color, all fins blood red.

##### *Botia hymenophysa* (BLEEKER)

+++ , 2.3 to 20.5 cm. Luang Prabang (Mekong), Vientiane (Mekong), Tha Ngon (Nam Ngum and Nam Khem), Salakham (during the inundation), Hatdorkieo (Mekong), Pakse (Mekong).

Fowler established a very closely related species to the present one, *Botia lucas-bahi*. By his description (1937, 1939) the characteristic features of *B. lucas-bahi* distinguishable from *A. hymenophysa* are; nine to ten branched dorsal ray, entirely or partly black margined dorsal fin and other minor characteristics.

Smith (1945) emphatically suggested that *B. luca-bahi* would be a variation or *B. hymenophysa*.

Among seven specimens, 3.4 to 6.3 cm., from Tha Ngon, two specimens are in accordance with his description in dark distal margin of the dorsal fin, nine branched dorsal ray and 13 cross bands. Nevertheless, there are five other specimens which bear entirely black distal margin of the dorsal fin and 12 branched dorsal ray. Another specimen 16.7 cm. from Vientiane, with 13 branched dorsal ray and plain distal margin of the dorsal fin, bears several series of dark spots on the side which is characteristic of *B. lucas-bahi*. Since these facts make it difficult to distinguish the 2 species, I adopt Smith's concept in this report.

*Botia sedthimunkii* KLAUSEWITZ

+, 2.4 to 2.6 cm. Salakham (during the inundation).

*Noemacheilus* sp.

+, 4.9 to 6.6 cm. Pakse (Houei Nhang).

*Acanthopsis choirorhyncos* (BLEEKER)

+++ to 14.5 cm. Luang Prabang (Mekong), Vientiane (Mekong), Salakham (during the inundation), Savannakhet (Mekong), Pakse (Mekong). D 10-11; A 6.

SILURIDAE

*Wallago attu* (BLOCH)

+++ to 110 cm. Luang Prabang (Mekong), Vientiane (Mekong), Savannakhet (Mekong), Pakse (Mekong). This is the most widely consumed catfish in the Mekong, the fishing season extends through the year and its peak is during November and December.

*Wallago dinema* BLEEKER

+++ to approx. 60 cm. Luang Prabang (Mekong), Vientiane (Mekong), Tha Ngon (Nam Ngum), Hatdorkieo (Mekong), Ils. Hin Soung (Mekong).

*Wallago miostoma* VALLIANT

++, to approx. 80 cm. Luang Prabang (Mekong), Vientiane (Mekong), Pakse (Mekong).

*Ompok bimaculatus* (BLOCH)

+++ , to 36 cm. Luang Prabang (Mekong), Tha Ngon (Nam Ngum), Hatsalao (Mekong).

*Kryptopterus apogon* (BLEEKER)

++ , to 60 cm. Luang Prabang (Mekong and Nam Khan), Hatdorkieo (Mekong), Hatsalao (Mekong).

*Kryptopterus bicirrhis* (CUVIER ET VALENCIENNES)

++ , 5.3 to 8.4 cm. Tha Ngon (Nam Ngum and Nam Khem), Pakse (Mekong), Hatsalao (Mekong).

*Kryptopterus bleekeri* GUNTHER

++ , 26.8 to 45 cm. Luang Prabang (Mekong), Vientiane (Mekong), Ils. Hin Soung (Mekong).

*Kryptopterus chryptopterus* (BLEEKER)

++ , to 11.7 cm. Tha Ngon (Nam Khem), Pakse (Mekong).

*Kryptopterus schilbeides* (BLEEKER)

+ , Tha Ngon (Nam Ngum), Hatsalao (Mekong).

CLARIIDAE

*Clarias batracus* (LINNE)

+++ , to approx. 40 cm. Vientiane, Savannakhet, Pakse (all from paddies, swamps, canals, etc.).

This species and *Ophicephalus striatus* are the out-standing staple food fishes of Laos. It is sold in basins with a little water in markets every single day. The flesh is very appreciated by the local people, cooked in "lap", "ponne" (boiled flesh with egg-plant and soup), etc.

SCHILBEIDAE

*Helicophagus waandersii* BLEEKER

+++ , to 28.8 cm. Luang Prabang (Mekong), Vientiane (Mekong), Tha Ngon (Nam Ngum), Pakse (Mekong), Ils. Hin Soung (Mekong).  
D I, 7; A 37-39.

Widely and densely distributed in the Mekong and its affluents.

*Pangasius natus* (BLEEKER)

++, to 65 cm. Luang Prabang (Mekong), Vientiane (Mekong), Thagong (Nam Ngum). D II, 7; A 30-31. The most common Pangasid fish in Laos.

*Pangasius pangasius* (HAMILTON)

++, to approx. 100 cm. Luang Prabang (Mekong), Thagong (Nam Ngum), Pakse (Mekong).

*Pangasius larnaudii* BOCOURT

++, to approx. 120 cm. Vientiane (Mekong), Thagong (Mekong).

*Pangasius siamensis* STEINDACHNER

++, to 20.5 cm. Luang Prabang (Mekong and Nam Khan), Vientiane (Mekong), Kouai Deng (Mekong), Hatsalao (Mekong).

*Pangasius sutchi* FOWLER

++, to 11 cm. Vientiane (Mekong), Pakse (Mekong).

*Pangasius santiwongsei* SMITH

++, to approx. 150 cm. Luang Prabang (Mekong), Vientiane (Mekong), Pakse (Mekong). D II, 7; A 31.

The largest is the genus *Pangasius*. A considerable quantity of the species is caught during dry season. The flesh is not so tasty in contrast to the other giant catfish, *Pangasianodon gigas*.

*Pangasianodon gigas* CHEVEY

This famous giant catfish of the Mekong seems to be decreasing in population year by year. I tried to observe a complete specimen, but the fish had become so scarce even during the fishing season that it was impossible to see a complete fish, only sliced fish could be observed in the morning market of Vientiane. I was told by an official of the Laotian Government that the total catch of the fish did not exceed 200 tails in one year.

BAGRIDAE

*Bagroides macracanthus* BLEEKER

+++ , 10.8 to 15.0 cm. Vientiane (Mekong), Kouai Deng (Mekong). D II, 7; A 13.

*Heterobagrus bocourti* BLEEKER

++ , 11.5 to 16.6 cm. Vientiane (Mekong), Hatdorkieo (Mekong), Pakse (Mekong). D II, 7; A 9.

*Mystus nemurus* (CUVIER ET VALENCIENNES)

+++ , to 60 cm. Luang Prabang (Mekong), Vientiane (Mekong), Tha Ngon (Nam Ngum), Pakse (Mekong). D I, 7; A 11.

*Mystus wickii* (BLEEKER)

+++ , to 45 cm. Luang Prabang (Mekong), Vientiane (Mekong), Pakse (Mekong). D I, 7; A 11. All Laotian specimens are light violet color on back and side, underside white; all fins brilliant orange or red.

*Mystus nigriceps* (CUVIER ET VALENCIENNES)

+++ , to 16.5 cm. Luang Prabang (Mekong), Tha Ngon (Nam Ngum), Hatdorkieo (Mekong), Pakse (Mekong). D I, 7; A 10. Maxillary barbel reaches to or over middle of caudal fin. Adipose fin very long-based, connecting to posterior base of dorsal fin.

*Mystus vittatus* (BLOCH)

++ , 5.1 to 8.0 cm. Vientiane (Mekong), Tha Ngon (Nam Ngum), Hatsalao (Mekong). D I, 7; A 10-11.

*Leiocassis siamensis* REGAN

++ , 8.4 to 12.0 cm. Luang Prabang (Mekong), Tha Ngon (Nam Ngum and Nam Khem), Pakse (Mekong). D I, 6-7; A 13.

SISOLIDAE

*Bagarius bagarius* (HAMILTON)

+++ , to approx. 120 cm. Luang Prabang (Mekong), Vientiane (Mekong), Kouai Deng (Mekong), Pakse (Mekong). D I, 5; A 10. All Laotian specimens have large marbel patterns of dark brown

color. Fishing season starts in September when the water of the Mekong begins to decrease, the peak is during October and November. Very important species as comestible fish.

#### BELONIDAE

##### *Xenentodon canciloides* (BLEEKER)

++, 14.3 to approx. 40 cm. in total length. Luang Prabang (Mekong), Vientiane (Mekong), Tha Ngon (Nam Ngum and Nam Khem), Hatsalao (Mekong). D 15; A 15.

##### *Xenentodon cancila* (HAMILTON)

+, one. 6.8 cm. in total length. Salakham (during the inundation).

#### OPHICEPHALIDAE

##### *Ophicephalus micropeltes* CUVIER ET VALENCIENNES

++, to 85 cm. Luang Prabang (paddy), Vientiane (canal, swamp), Nong Teng (reservoir), Tha Ngon (Nam Ngum), Pakse (unknown at market). D 40; A 25; Sc 85-87. Common snake head fish in Laos next to *O. striatus*. The largest in the genus.

##### *Ophicephalus striatus* BLOCH

+++ to 80 cm. Luang Prabang (river), Vientiane (pond, paddy, canal and stream), Nong Teng (reservoir and pond), Savannakhet (lake and swamp), Pakse (pond, canal and paddy). D 38-43; A 23-27; Sc 53-56.

The most important and abundant fish, probably both in total number and total weight of catch for consumption. Widely distributed all over the lowland, also found in mountain streams about 1,000 meters in altitude.

##### *Ophicephalus gachua* HAMILTON

++, to 18 cm. Luang Prabang (pond), Vientiane (pond and paddy), Nong Teng (pond and reservoir), Pakse (pond). D 35; A 23-24; Sc 41-43.

##### *Ophicephalus lucius* CUVIER ET VALENCIENNES

++, to approx. 40 cm. Vientiane (swamp), Pakse (pond). D 40; A 28; Sc 65-66.

ANABANTIDAE

*Anabas testudineus* (BLEEKER)

++, to 20 cm. Vientiane (pond and canal), Pakse (swamp and canal).

*Betta splendens* REGAN

++, to 3.3 cm. Vientiane (pond and canal), Salakham (during the inundation). This wild type of Siamese fighting fish is found in swamps, ponds and canals in Vientiane area. All fish show dark red color with bluish tint and one or two dark longitudinal stripes.

*Trichopsis vittatus* (CUVIER ET VALENCIENNES)

+++ , to 6 cm. Vientiane (pond, canal and paddy), Nong Teng (reservoir and pond), Salakham (during the inundation), Pakse (paddy). D II-IV, 6-7; A VI-VII, 24-27; Sc 28.

*Trichogaster trichopterus* (PALLAS)

+++ , to 8.2 cm. Luang Prabang (canal and paddy), Vientiane (swamp, pond and paddy), Nong Teng (reservoir), Tha Ngon (Nam Ngum and Nam Khem), Pakse (pond).

A dominant species in stagnant water, also found in river Nam Ngum and Nam Khem during the minimum water stage.

*Trichogaster pectoralis* (REGAN)

+++ , to 16.5 cm. Vientiane (canal and paddy), Nong Teng (reservoir), Savannakhet (lake), Pakse (pond). D VIII, 10-11; A IX-X, 36-37.

Densely distributed in the central and southern lowland Laos. The flesh has a good flavor, the lap is a popular way of cooking.

*Osphronemus goramy* LACEPEDE

++, 9.0 to 37.5 cm. Vientiane (canal).

The original habitat of the species is thought to be Greater Sunda Islands, thence introduced to various countries in the early days. It is certain that the species was not previously indigenous to Laos, and so the fish is not widely and densely propagated in the natural waters in the area. Smith (1945) reported an interesting account that the species had been kept in ponds in the compounds of temples in Thailand. In Laos I also observed the same circumstance at several temples.

LOBOTIDAE

*Datnioides microlepis* BLEEKER

++, 5.6 to 38 cm. Luang Prabang (Mekong), Vientiane (Mekong),  
Tha Ngon (Nam Ngum), Pakse (Mekong and Se Don). D XII, 16,  
A III, 10.

NANDIDAE

*Nandus nandus* (HAMILTON)

+, 3.6 to 5.5 cm. Vientiane (stream). D XII, 11; A III, 7.

*Nandus nebulosus* (GRAY)

+, Vientiane (stream).

*Pristolepis fasciatus* (BLEEKER)

++, 5.7 to 16 cm. Vientiane (stream), Tha Ngon (Nam Ngum and  
Nam Khem), Pakse (canal). D XIII-XIV, 14-15; A III, 8-9, Sc  
28.

TOXOTIDAE

*Toxotes chatareus* (HAMILTON)

+, Tha Ngon (Nam Ngum), Pakse (Mekong). D V, 13; A III, 17;  
Sc 33.

SCIANIDAE

*Johnius soldado* (LACEPEDE)

++, to 63 cm. Vientiane (Mekong), Pakse (Mekong), Hatsalao  
(Mekong). D XI, 33; A II, 7. The catch mostly limited to  
drought season, from January to April.

CHANDIDAE

*Chanda* sp.

++, Vientiane (Mekong), Tha Ngon (Nam Ngum and Nam Khem),

Hatdorkieo (Mekong), Pakse (Mekong), Hatsalao (Mekong).

ELEOTRIDAE

*Oxyeleotris marmoratus* (BLEEKER)

++, 17.4 to 38 cm. Vientiane (Mekong and swamp), Pakse (Mekong). D1 VI, D2 I, 9; A I, 9-10; Sc 73-81. It occurs usually in rivers but occasionally found in large "nong" (swamp or lake) mostly during dry season.

TETRAODONTIDAE

*Tetraodon leiurus* BLEEKER

++, 3.5 to 7.8 cm. Luang Prabang (Mekong), Tha Ngon (Nam Ngum), Pakse (Mekong). D 12; A 10.

*Tetraodon* sp.

+, Tha Ngon (Nam Ngum).

SOLEIDAE

*Synaptura harmandii* SAUVAGE

++, 5.1 to 11.5 cm. Luang Prabang (Mekong), Vientiane (Mekong), Hatsalao (Mekong). D 48-51; A 38-42, Sc approx. 55-65. Pectoral fin rudimentary.

MASTOCEMBELIDAE

*Mastocembelus armatus favus* HORA

+++ to 37 cm. Luang Prabang (Mekong), Tha Ngon (Nam Ngum and Nam Khem), Pakse (unknown), at market.

*Macrognathus aculeatus* (BLOCH)

+++ to 34 cm. Tha Ngon (Nam Ngum and Nam Khem), Pakse (Mekong). Number of ocelli in the Laotian specimens four or five subdorsal and one caudal.

FLUTIDAE

*Fluta alba* (ZUIEW)

+++; to 70 cm. Luang Prabang (paddy and stream), Vientiane (canal), Nong Teng (reservoir and pond), Pakse (pond).

## GENERAL CHARACTERISTICS OF THE ICHTHYOLOGICAL FAUNA OF LOWLAND LAOS

Although the present study is by no means substantial, the findings will still be sufficient to discuss the general feature of the fish fauna and pattern of distribution.

The characteristics of the fauna in the area can be summarized in two terms. The one is a strong affinity between the fish fauna of lowland Laos and central Thailand, the neighboring Menam Chao Phya basin. The other is poorness of fauna in northern lowland Laos compared with that of the central and southern sections, from both qualitative and quantitative standpoints.

The poorness of fauna in Luang Prabang area is particularly remarkable in stagnant water fishes such as Anabantidae. *Anabas testudineus* and *Trichopsis vittatus* are fairly common species in central and southern Laos, but no specimen was obtained from Luang Prabang area. *Trichogaster pectoralis*, one of the most abundant species in swamps, paddies and canals in Vientiane area, was also not collected from the north. Information regarding its existence in certain ponds near Luang Prabang was obtained from a local inhabitant, nevertheless, it is likely that the population is low.

The fishes in the river Mekong and its affluents will be gathered in two groups, marine origin species and Ostariophysi.

Among the collected specimens ten species belong to families which have evolved and differentiated in the sea. It will be noteworthy that most of these species inhabit all the area from Luang Prabang to Pakse and there occur many immature fishes of *Datnioides microlepis*, *Toxotes chatareus*, *Chanda* sp., *Tetraodon leiurus* and *Synaptura harmandii*. This fact makes it quite difficult to imagine that such fishes spawn in the sea and the young and immature migrate for over 1,000 km. to Vientiane and Luang Prabang. They surely must spend their whole lives in the fresh water.

*Dasyatis* sp. may also repeat its life cycle entirely in the Mekong considering its occurrence in Luang Prabang area, about 2,000 km. from the estuary of Mekong. Existence of another land-locked Dasyatid fish in the Yangtze river of China will support this conception.

Although there is not sufficient observation data to discuss the procedure of their immigration and adaptation to the fresh water, it may be possible in some species that they were locked inland in consequence of the crustal desormation during or after tertiary.

It is also remarkable that *Clupea kanagurta* occurs throughout the Mekong up to Luang Prabang. But no ecological observations were made in the study.

The fishes of Ostariophysi such as Cyprinidae and Siluridae, which form a major group in the fauna of Laos, mostly occur in the Mekong and its large affluents excepting several small species which inhabit only small streams. The composition of species of Ostariophysi is common between Vientiane and Pakse, while in Luang Prabang absence of many species of Cyprinidae is observed.

As mentioned before, the present surveys were made only in the lowland along the Mekong, therefore the said poorness of the fish fauna in the north is applicable only to the low area. Further investigations in the mountainous area will yield very interesting findings.



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ຫ້າມຈຳໜ່າຍ

REFERENCES :

- Bardach, J. 1959 : Report on fisheries in Cambodia. USOM/Cambodia.
- Bung Boraphet Fisheries Station. 1961 : List of the fishes of Bung Boraphet.
- Chevey, P. 1932 : Poissons des campagnes du "de Lanessan." Trav. Inst. Oceanogr. Indochine, 4e mémoire.
- Chevey, P. et F. Le Poulain. 1940 : La pêche dans les eaux douces du Cambodge. Trav. Inst. Oceanogr. Indochine, 5e mémoire.
- Fily, M. and F. d'Aubenton. 1963 : Report on fisheries technology in the Great Lake and Tonle Sap. Nation. Mus. Nat. Hist., France.
- Fowler, H. W. 1934 - 1936 : Zoological results of the third de Schauensee Siamese expedition, Part I, V, VI, VII, VIII, IX. Proc. Acad. Nat. Sci. Philadelphia, vol. 86, 87, 89, 91.
- Hora, S. L. 1932 : Classification, binomics and evolution of Homalopterid fishes. Mem. Ind. Mus., 12.
- Inger, R. F. and C. P. Kong. 1961 : The Bornean Cyprinoid fishes of the genus *Gastromyzon* GUNTHER. Copeia, 1961, No. 2.
- Kuronuma, K. 1961 : A check list of fishes of Vietnam. USOM/Vietnam.
- Serrene, R. 1945 : Pratiques et coutumes de pêche des Laotiens. Indochine, N. 233.
- Serrene, R. 1951 : Sur la faune ichthyologique du Laos. Indo Pacific Fisheries Council.
- Silas, E. G. 1953 : Classification, zoogeography and evolution of the Cyprinoid families Homalopteridae and Gastromyzonidae. Rec. Ind. Mus., 50 (2).
- Shiraishi, Y. 1967 : Fisheries of Cambodia. Nihon Suisan Shigen Hogo Kyokai, Tokyo.
- Smith, H. M. 1945 : The fresh-water fishes of Siam, or Thailand. Bull. US. Nat. Mus., No. 188.
- Thiemmedh, J. 1966 : Fishes of Thailand; their English, Scientific and Thai names. Kasetsart Univ. Fish. Res. Bull., No. 4.
- Weber, M. and L. F. De Beaufort. 1911 - : The fishes of the Indo-Australian archipelago. E. J. Brill, Leiden.

Laotian name	Locality	Scientific name
pa beuk	LP, VT, PKS	<i>Pangasianodon gigas</i>
pa bou	LP, VT, PKS	<i>Gyrinocheilus aymonieri</i>
pa bout	VT, PKS, HSL	<i>Oxyeleotris marmoratus</i>
pa chat	PKS	<i>Puntius binotatus</i>
pa dan deng	LP	<i>Kryptopterus apogon</i>
pa do	VT, PKS	<i>Ophicephalus microlepis</i>
pa dok gniou	PKS	<i>Cyclocheilichthys apogon</i>
pa douk	VT, SVT, PKS	<i>Clarias batracus</i>
pa eun	LP, VT, PKS	<i>Probarbus jullieni</i>
pa eun mo	LP	<i>Catlocarpio siamensis</i>
pa fa lai	LP, VT, PKS	<i>Dasyatus sp.</i>
pa hang fa	VT, PKS	<i>Macrochirichthys macrochilus</i>
pa hao	VT	<i>Luciosoma bleekeri</i>
pa hien	LP	<i>Tor tembroides</i>
pa hou mat	LP, VT, TNG, PKS	<i>Pangasius larnaudii</i>
pa i keng	TNG	<i>Puntius waandersi</i>
pa i thai	TNG	<i>Osteochilus hasselti</i>
pa i thai	TNG	<i>Osteochilus duostigma</i>
pa it	VT, PKS	<i>Acanthopsis coirorhyncos</i>
pa ka	VT, PKS	<i>Nandus nandus</i>
pa ka	VT	<i>Nandus nebulosus</i>
pa ka dout	LP, VT, TNG, PKS	<i>Trichogaster trichopterus</i>
pa ka fa	VT	<i>Macrochirichthys macrochilus</i>
pa ka gnen	VT, KD	<i>Heterobagrus bocourti</i>
pa ka gnen	VT, TNG, PKS	<i>Mystus nigriceps</i>
pa ka gnen	VT, TNG	<i>Mystus vittatus</i>
pa ka gnen pho	PKS	<i>Heterobagrus bocourti</i>
pa ka phok	PKS	<i>Osteochilus hasselti</i>
pa ka theung	VT	<i>Bagroides macracanthus</i>
pa kham	LP, VT, PKS	<i>Clupea kanagurta</i>
pa kan	VT, PKS	<i>Ophicephalus gachua</i>
pa kang lai	PKS	<i>Osteochilus vittatus</i>
pa khao	VT	<i>Cirrhinus jullieni</i>
pa khao	VT, TNG	<i>Puntius leiacanthus</i>
pa khao	VT, TNG	<i>Puntius orphoides</i>
pa khao	VT, TNG, PKS	<i>Puntius altus</i>
pa khao	LP, VT, PKS	<i>Wallago attu</i>
pa khao i thai	VT, TNG	<i>Cyclocheilichthys apogon</i>
pa khao kheu lam	VT	<i>Dangila siamensis</i>
pa khao mong	VT, TNG	<i>Osteochilus hasselti</i>
pa khao mong	TNG	<i>Osteochilus duostigma</i>
pa khap khong	VT, TNG, HDK	<i>Chanda sp.</i>
pa kat	VT	<i>Betta splendens</i>
pa ke	LP, VT, KD, PKS	<i>Bagarius bagarius</i>
pa keng	LP, PKS	<i>Osteochilus prosemion</i>
pa kheng	VT, PKS	<i>Anabas testudineus</i>
pa keum	VT, TNG, PKS	<i>Thynichthys thynoides</i>
pa kheung	LP, VT, TNG, PKS	<i>Mystus wickii</i>

pa ki hia	LP, VT, TNG, PKS	<i>Leiocassis siamensis</i>
pa khiang	LP, VT, PKS	<i>Osteochiles vittatus</i>
pa khiang	PKS	<i>Eparzeorhyncus coatesi</i>
pa kio kai	LP, VT, TNG, PKS	<i>Botia modesta</i>
pa kio kai	LP, VT, TNG	<i>Botia hymeophysa</i>
pa khing	VT	<i>Amblyrhynchichthys truncatus</i>
pa kho	LP, VT, PKS	<i>Ophicephalus striatus</i>
pa kon	PKS	<i>Ophicephalus lucius</i>
pa khop	LP, VT, TNG, PKS	<i>Wallago dinema</i>
pa kor	PKS	<i>Gyrinocheilus aymonieri</i>
pa kot	LP, VT, TNG, PKS	<i>Mystus nemurus</i>
pa khouang	LP	<i>Ophicephalus gachua</i>
pa khouang	VT, PKS	<i>Johnius soldado</i>
pa khoui lam	PKS	<i>Dangila siamensis</i>
pa khoum	LP	<i>Ompok bimaculatus</i>
pa lat	LP, VT, TNG, PKS	<i>Mastocembelus armatus favus</i>
pa leum	LP, VT, PKS	<i>Pangasius santiwongsei</i>
pa ling	LP, VT	<i>Pangasius nastus</i>
pa lot	VT, TNG, PKS	<i>Macragnathus aculeatus</i>
la loun fai	VT	<i>Puntius altus</i>
pa mak kham	LP	<i>Puntius daruphani</i>
pa mak lai	VT	<i>Osteochilus hasselti</i>
pa mak pang	VT, PKS	<i>Clupea kanagurta</i>
pa mak wai	VT	<i>Luciosoma bleekeri</i>
pa mang	LP, VT, TNG, PKS	<i>Xenochelichthys gudgeri</i>
pa mat	VT, PKS	<i>Trichopsis vittatus</i>
pa meng	VT, PKS	<i>Osphronemus goramy</i>
pa meo	VT, TNG, PKS	<i>Toxotes chatareus</i>
pa mou mang	LP, VT, TNG	<i>Botia hymenophysa</i>
pa na nou	VT	<i>Helicophagus waandersii</i>
pa nai	LP	<i>Cyprinus carpio</i>
pa nang	VT, TNG, PKS	<i>Kryptopterus apogon</i>
pa nok khao	VT, TNG, PKS	<i>Osteochilus melanopleura</i>
pa nou	PKS	<i>Helicophagus waandersii</i>
pa gnon	LP, VT, TNG, PKS	<i>Pangasius siamensis</i>
pa gnon	PKS	<i>Pangasius sutchi</i>
pa gnon mou	VT	<i>Helicophagus waandersii</i>
pa gnon phon	LP	<i>Helicophagus waandersii</i>
pa pak	VT	<i>Puntius daruphani</i>
pa pak	LP, VT, PKS	<i>Puntius javanicus</i>
pa pak	VT	<i>Puntius hugenini</i>
pa pak kham	VT	<i>Puntius schwanenferdii</i>
pa pak gnoua	VT	<i>Puntius daruphani</i>
pa pan	VT, PKS	<i>Synaptura harmandii</i>
pa pao	LP, VT, TNG, PKS	<i>Tetraodon leiurus</i>
pa pao	TNG	<i>Tetraodon sp.</i>
pa pe	LP, VT, PKS	<i>Synaptura harmandii</i>
pa pi kai	VT, TNG, PKS, HSL	<i>Kryptopterus bicirrhus</i>
pa phia	LP, VT, TNG, SVT, PKS	<i>Morulius chrysophekadion</i>
pa pit	VT	<i>Balantiocheilus melanopterus</i>

pa pok	VT, PKS	<i>Puntius orphoides</i>
pa pom	PKS	<i>Luciosoma bleekeri</i>
pa phom	VT, TNG	<i>Pangasius nastus</i>
pa phon	LP, VT, PKS	<i>Cirrhinus microlepis</i>
pa phong	PKS	<i>Leptobarbus hoevenii</i>
pa sa do	VT	<i>Ophicephalus microlepis</i>
pa sa ngoua	LP	<i>Kryptopterus bleekeri</i>
pa sa houm	VT	<i>Catlocarpio siamensis</i>
pa sa i	VT, PKS	<i>Mekongia erythrospila</i>
pa sa i khom	LP	<i>Mekongia erythrospila</i>
pa sa kang	VT, TNG, PKS	<i>Puntius waandersi</i>
pa sa kang	LP, VT, TNG, PKS	<i>Puntioplites proctozysron</i>
pa sa lit	VT, SVT, PKS	<i>Trichogaster pectoralis</i>
pa sa nak	VT, PKS	<i>Barilius guttatus</i>
pa sa thong	LP, VT, TNG, PKS	<i>Xenentodon canciloides</i>
pa sa thong	VT	<i>Xenentodon cancila</i>
pa sieu	LP	<i>Danio sp.</i>
pa sieu	VT	<i>Esomus metallicus</i>
pa sieu	VT	<i>Rasbora borapetensis</i>
pa sieu	VT, TNG	<i>Rasbora arygyrotaenia</i>
pa sieu ao	PKS	<i>Rasbora arygyrotaenia</i>
pa sieu ao	LP, VT	<i>Luciosoma bleekeri</i>
pa sieu houa gnen	TNG	<i>Chela laubuca</i>
pa soi	PKS	<i>Cirrhinus jullieni</i>
pa sou	VT, TNG	<i>Hampala macrolepidota</i>
pa sou	VT	<i>Hampala disper</i>
pa soua	LP, VT, TNG, PKS	<i>Datnioides microlepis</i>
pa souam	VT, TNG, PKS	<i>Ompok bimaculatus</i>
pa souam	VT, PKS	<i>Kryptopterus bleekeri</i>
pa souam lao	TNG	<i>Kryptopterus bicirrhis</i>
pa souei	LP, VT, TNG, PKS	<i>Pangasius pangasius</i>
pa thep	VT, TNG, PKS	<i>Oxygaster oxygasteroides</i>
pa thep	VT	<i>Oxygaster siamensis</i>
pa thep	TNG	<i>Paralaubuca reveroi</i>
pa thep	TNG, HSL	<i>Paralaubuca typus</i>
pa tiok	LP, TNG, PKS, HSL	<i>Cyclocheilichthys dumerili</i>
pa tiok	LP, VT, PKS, HS	<i>Cyclocheilichthys enoplos</i>
pa tiok	LP, VT, PKS	<i>Cosmochilus harmandi</i>
pa tiok pan	VT	<i>Cosmochilus harmandi</i>
pa tiok soua	VT	<i>Osteochilus vittatus</i>
pa tion	VT	<i>Ophicephalus lucius</i>
pa tit hin	PKS	<i>Annamia normani</i>
pa thong	LP, VT, PKS	<i>Notopterus chitala</i>
pa thong	LP, VT, PKS	<i>Notopterus notopterus</i>
pa thot thong	LP	<i>Xenentodon canciloides</i>
pa va	LP, VT, TNG, SVT, PKS	<i>Morulius chrysophekadion</i>
pa va ho kham	LP, PKS	<i>Labeo behri</i>
pa vien fai	PKS	<i>Puntius schwanenferdii</i>
pa yen	LP, VT, PKS	<i>Fluta alba</i>





FIG. 1. *Notopterus chitala*  
(at the morning market of Vientiane)

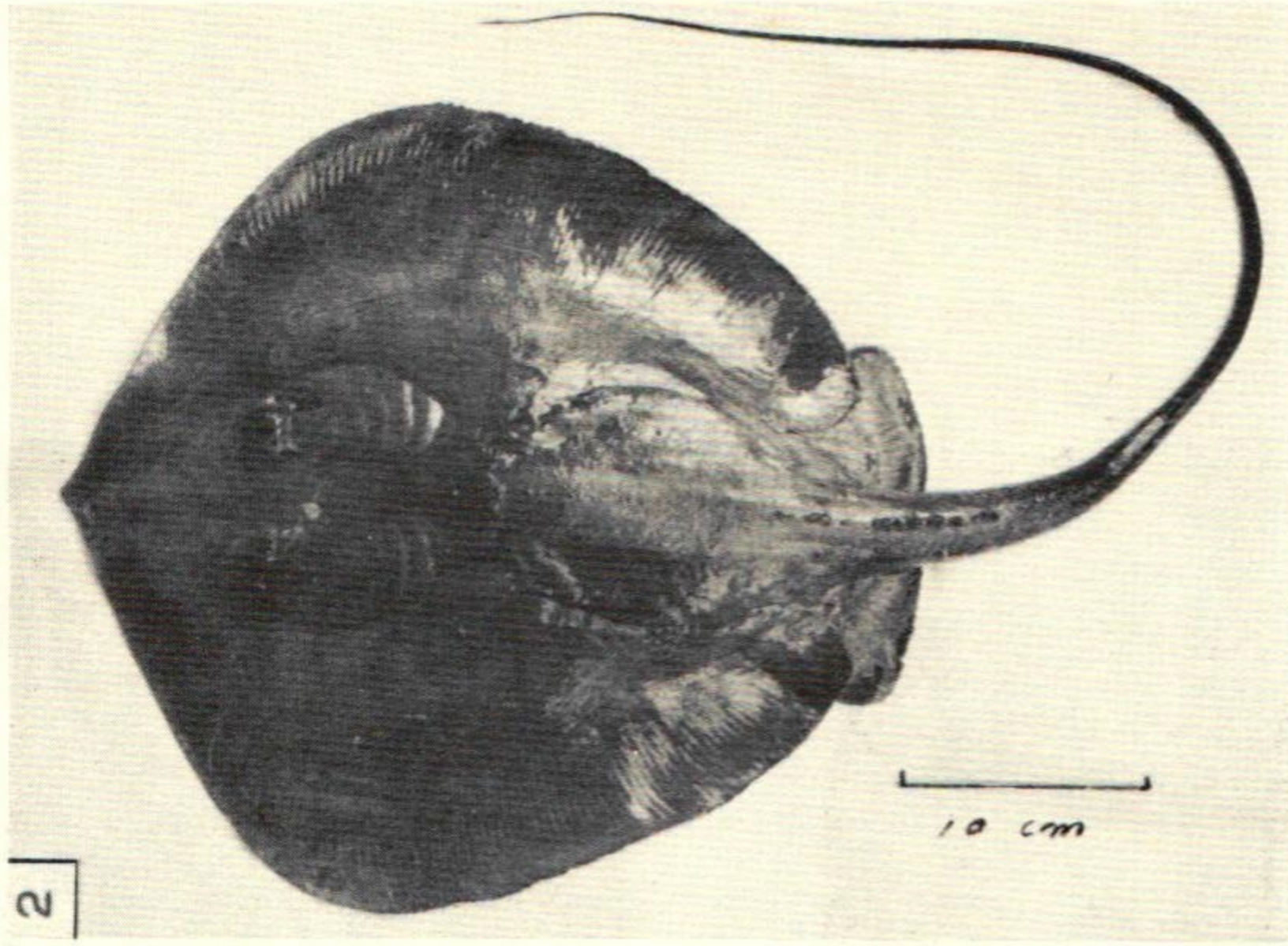


FIG. 2. *Dasyatis* sp.

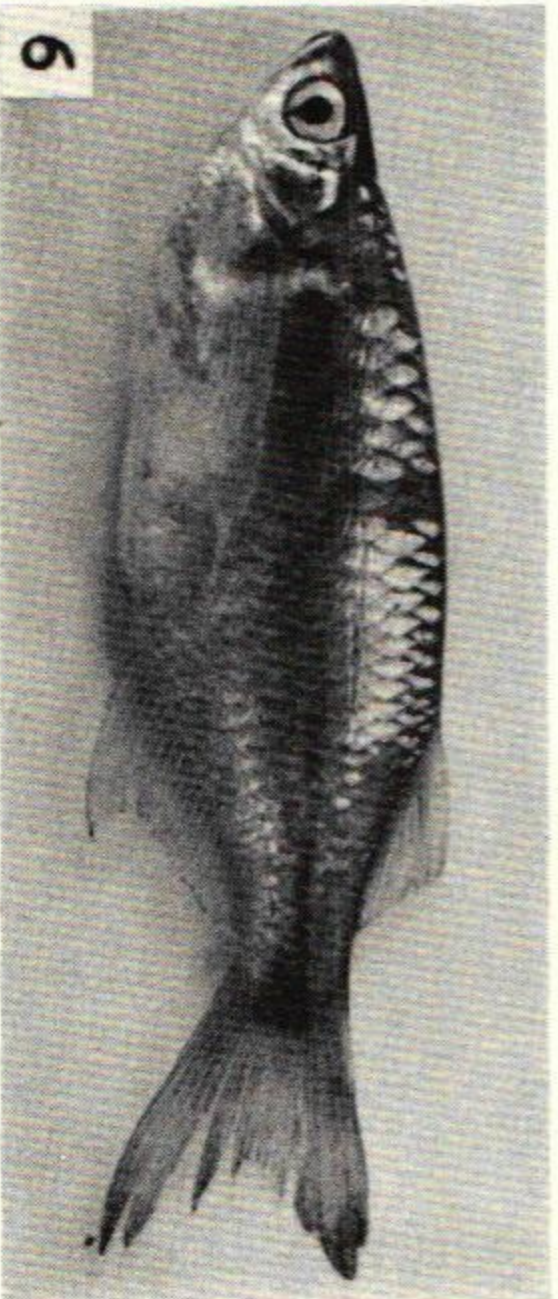
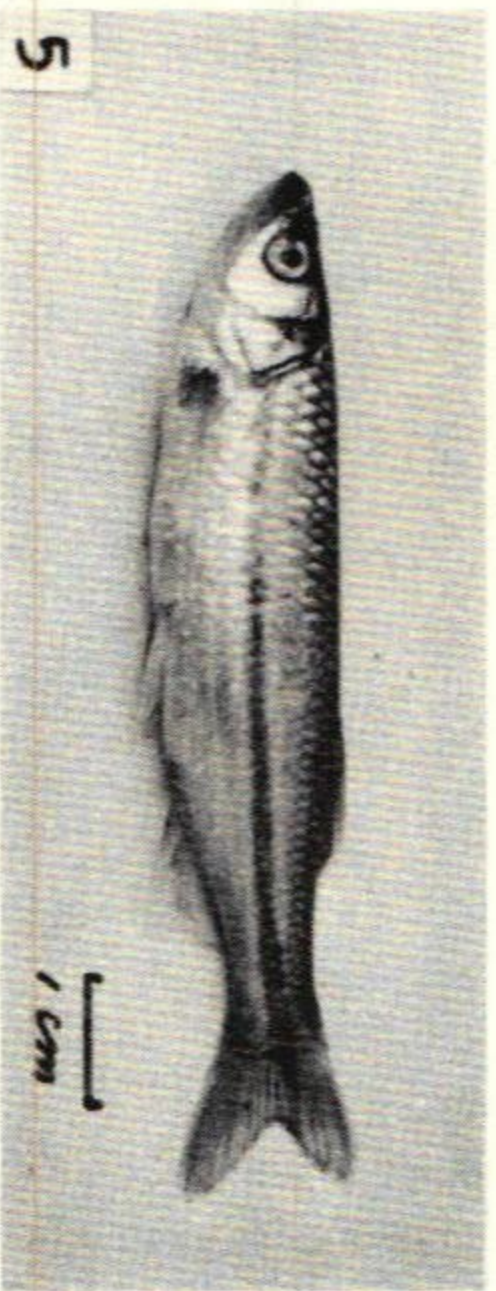
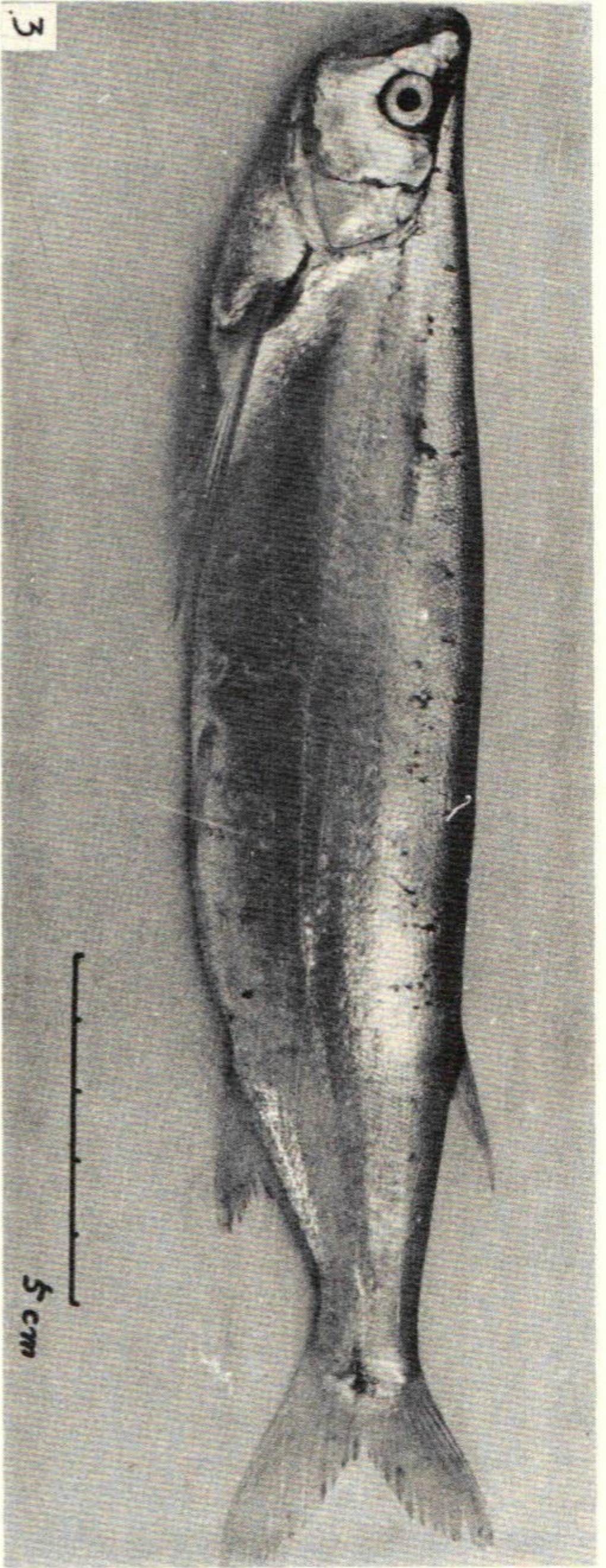


FIG. 3 *Macrochirichthys macrochirus*  
 FIG. 4 *Rasbora argyrotaenia*  
 FIG. 5 *Luciosoma bleekeri*  
 FIG. 6 *Chela laubuca*

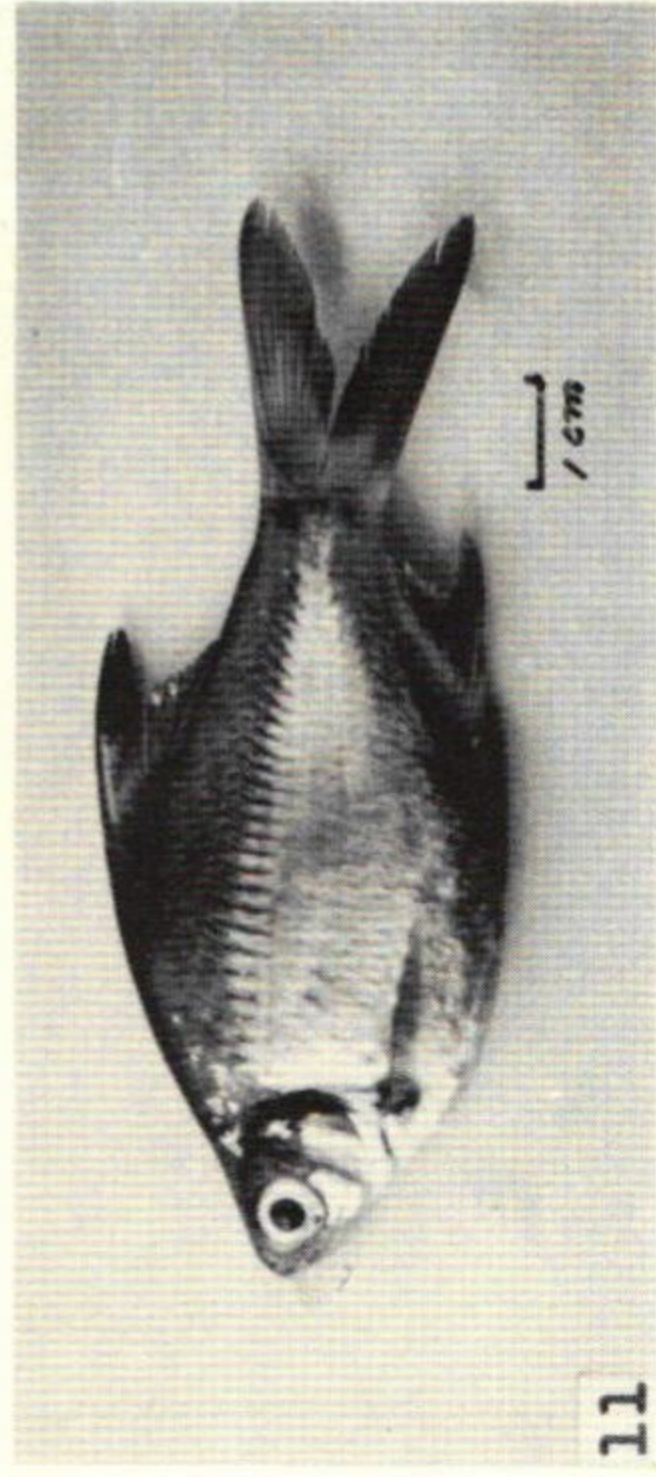
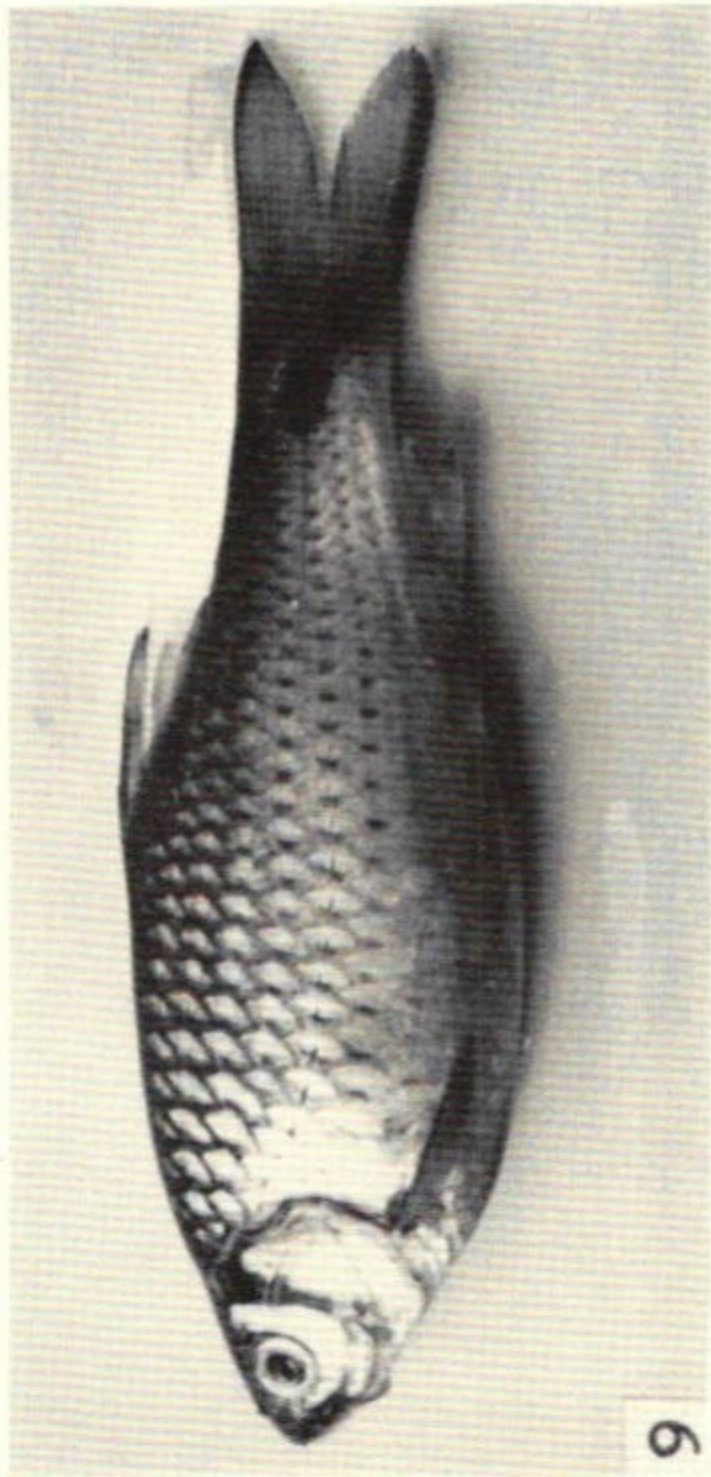
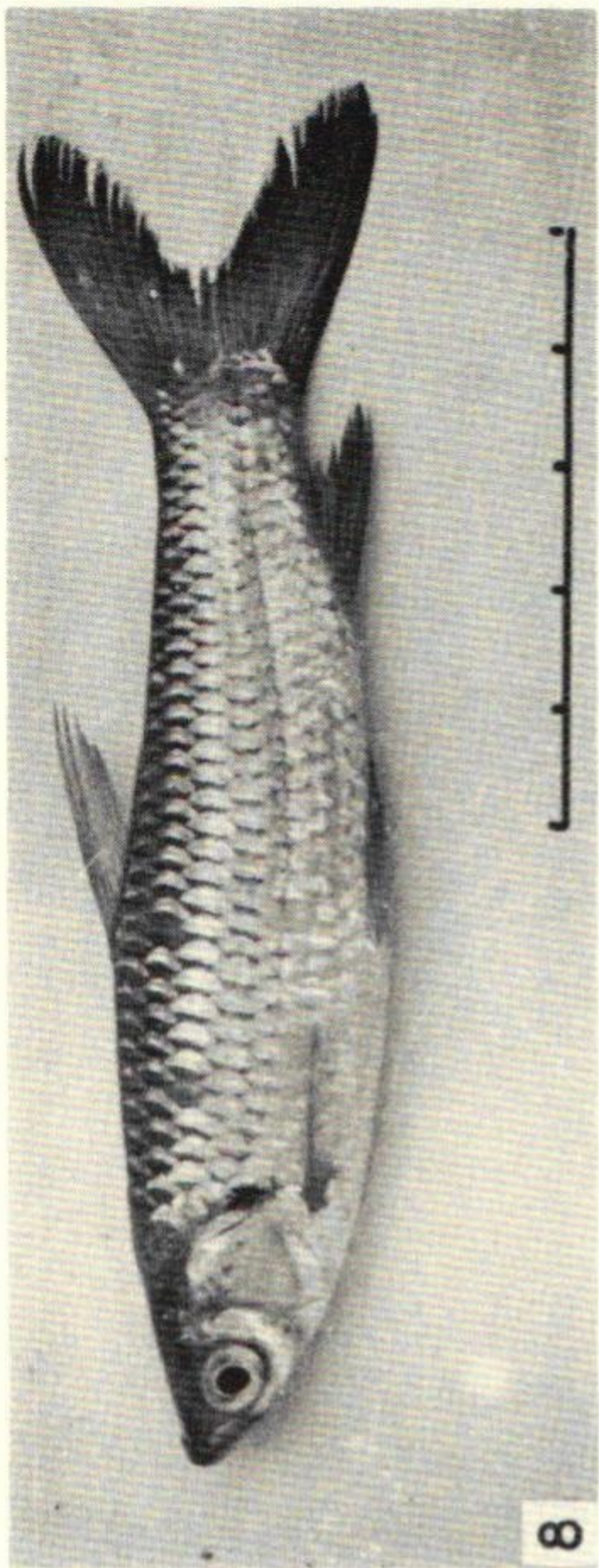
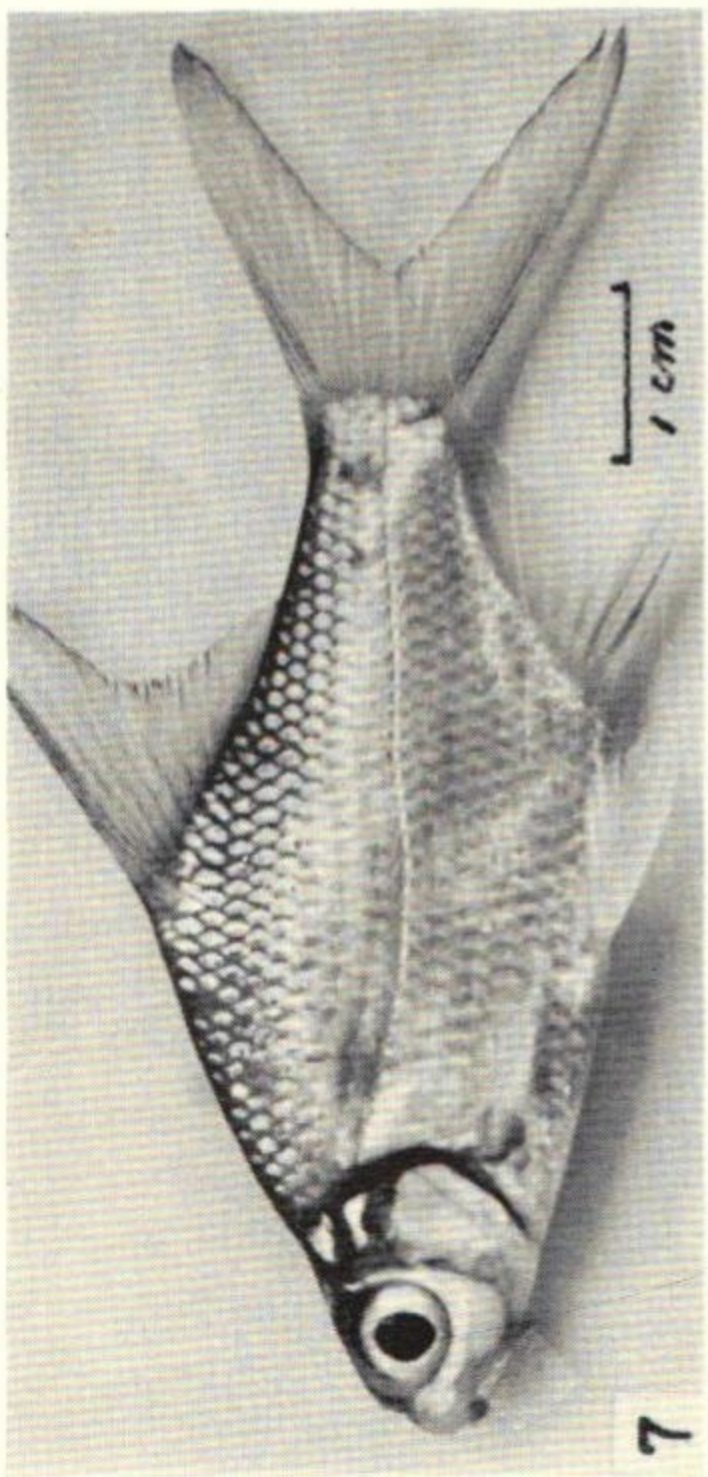


FIG. 7 *Puntius waandersi*  
 FIG. 8 *Leptobarbus hoeveni*  
 FIG. 9 *Puntius orphoides*  
 FIG. 11 *Thynnichthys thynoides*  
 FIG. 12 *Puntius altus*

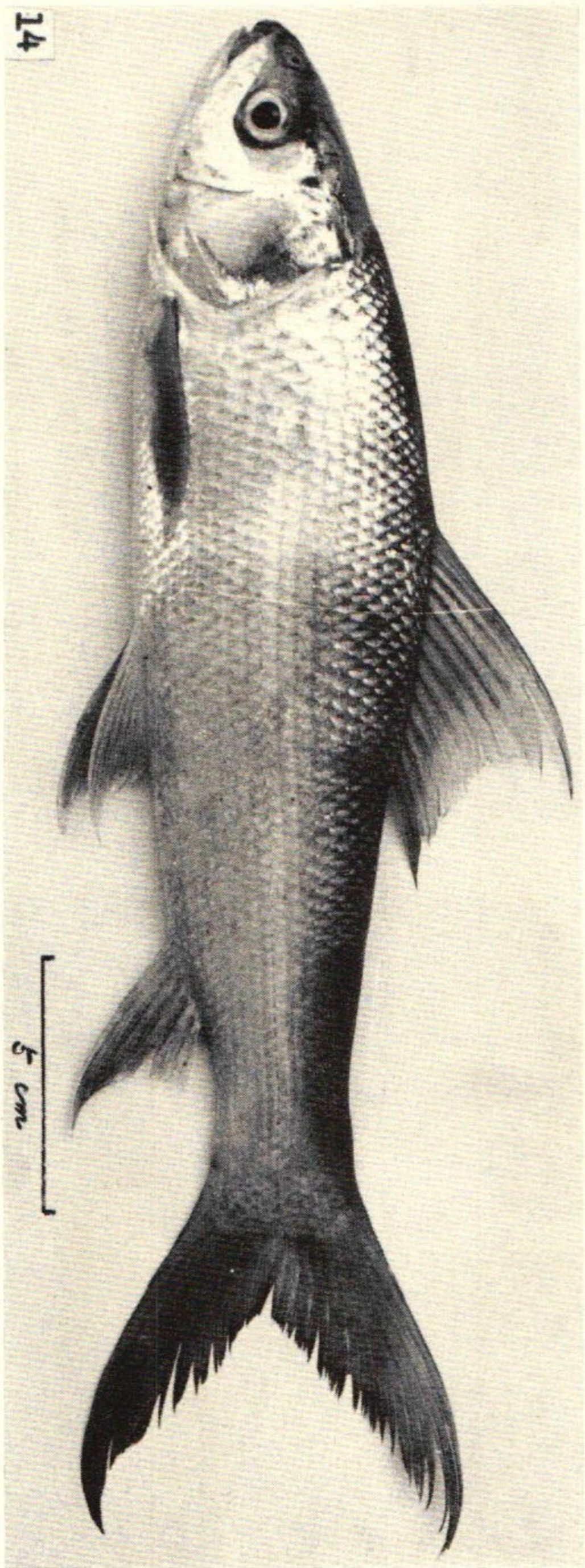
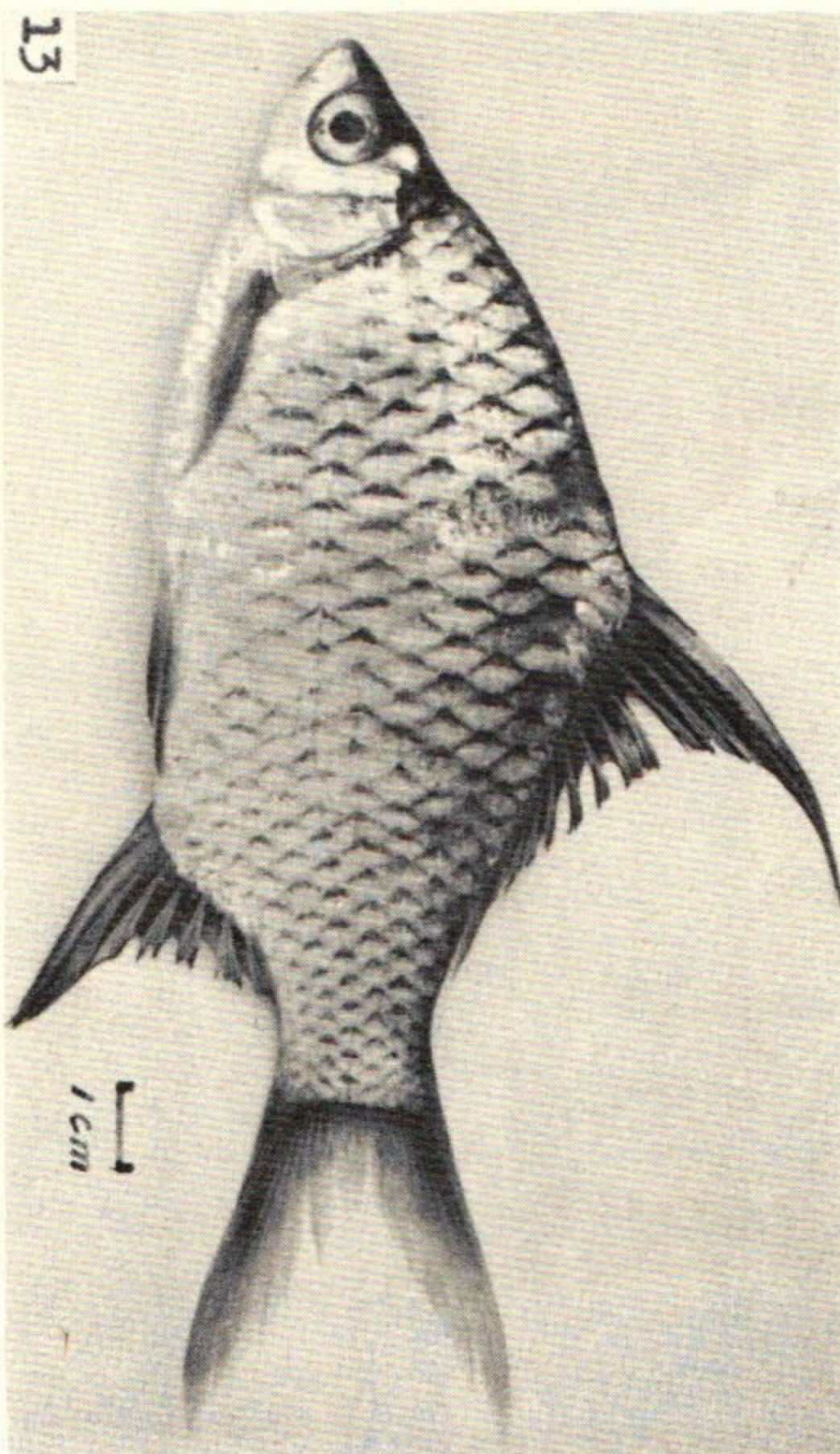
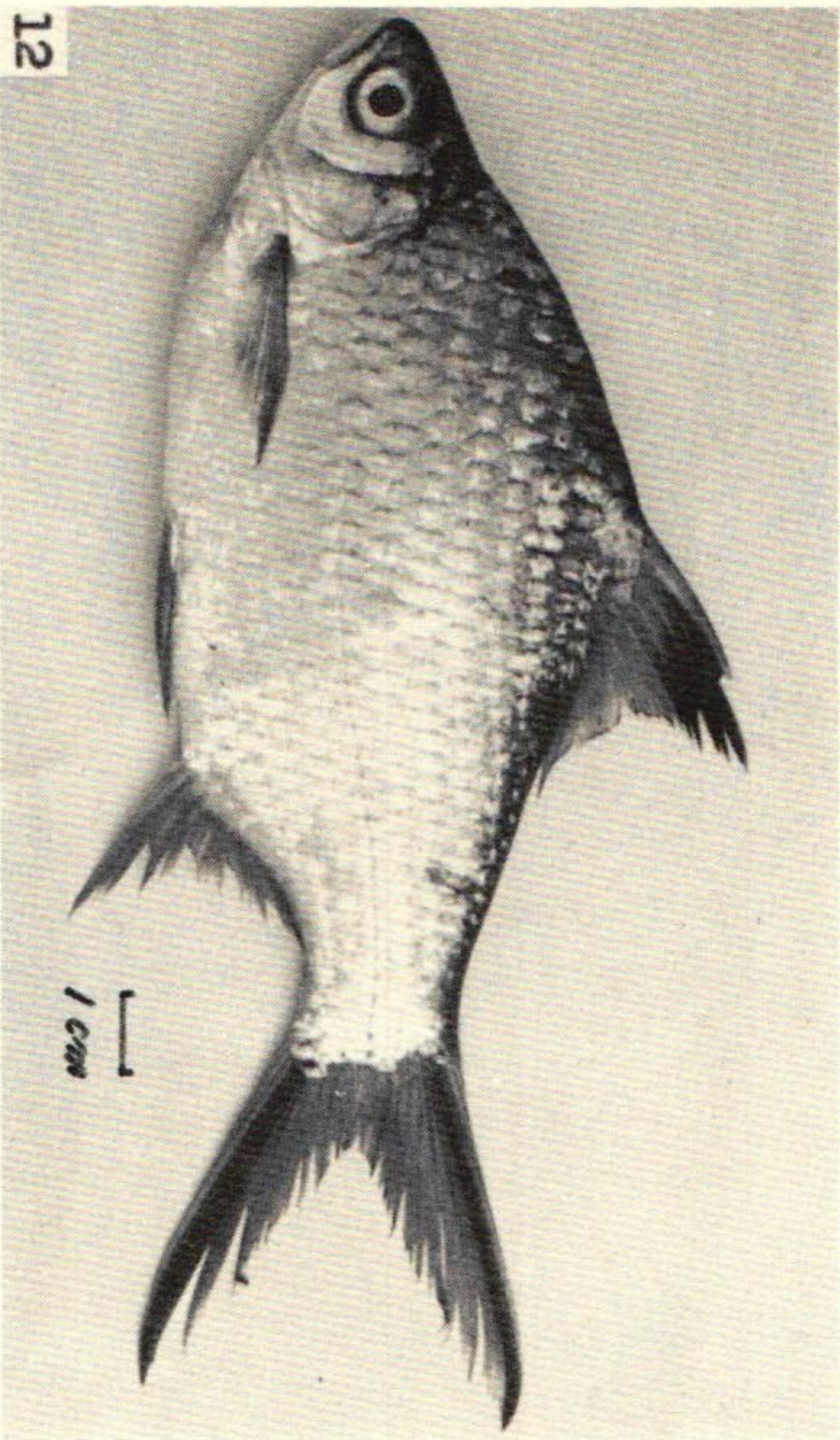


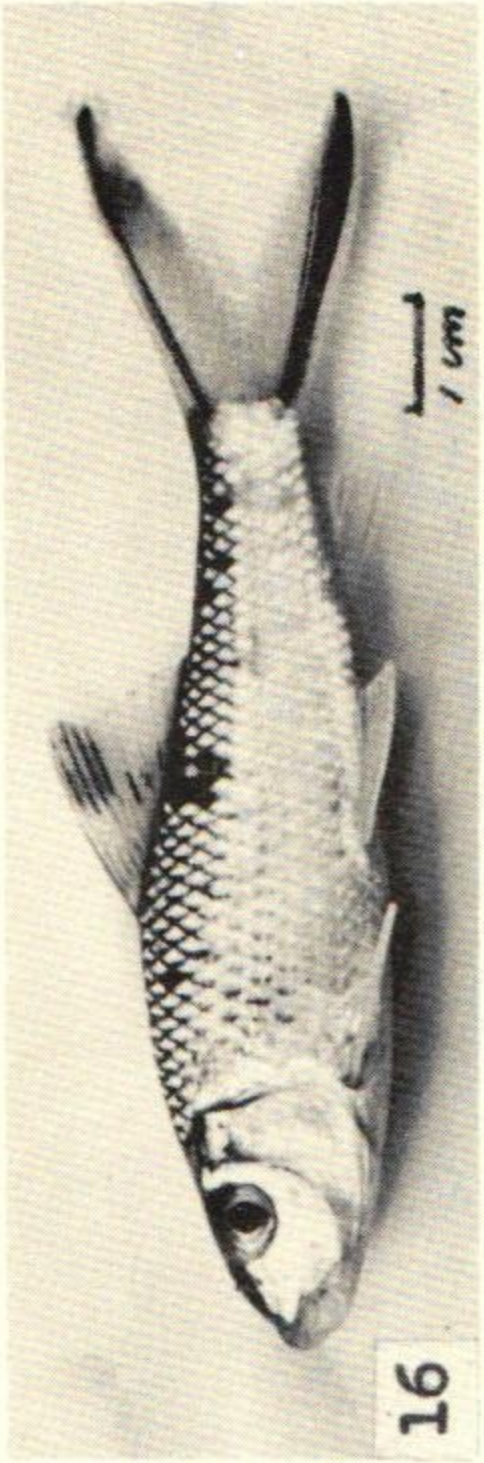
FIG. 12 *Puntius schwanenferdii*

FIG. 13 *Scaphognathops stejnegeri*

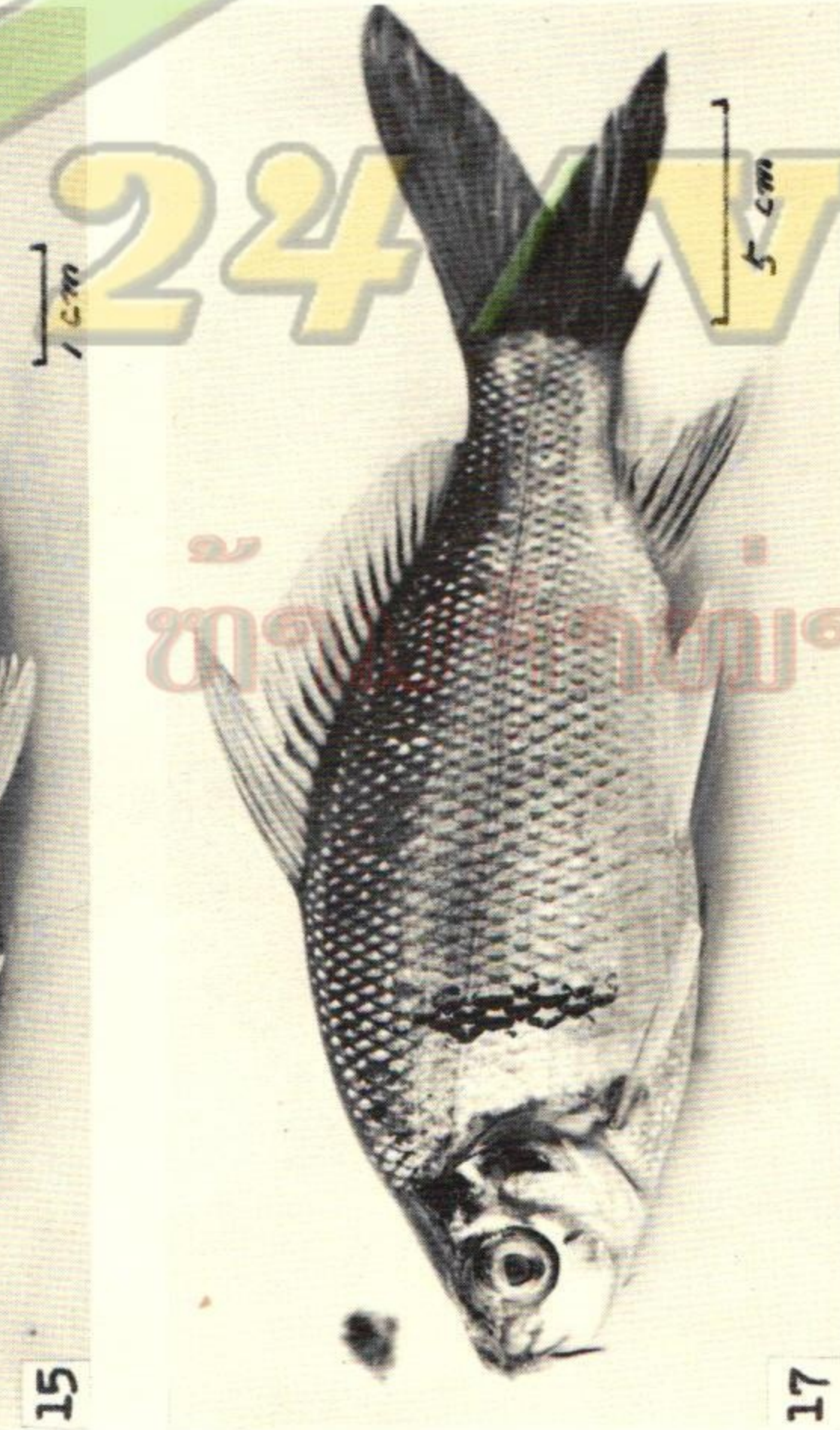
FIG. 14 *Cirrhinus microlepis*



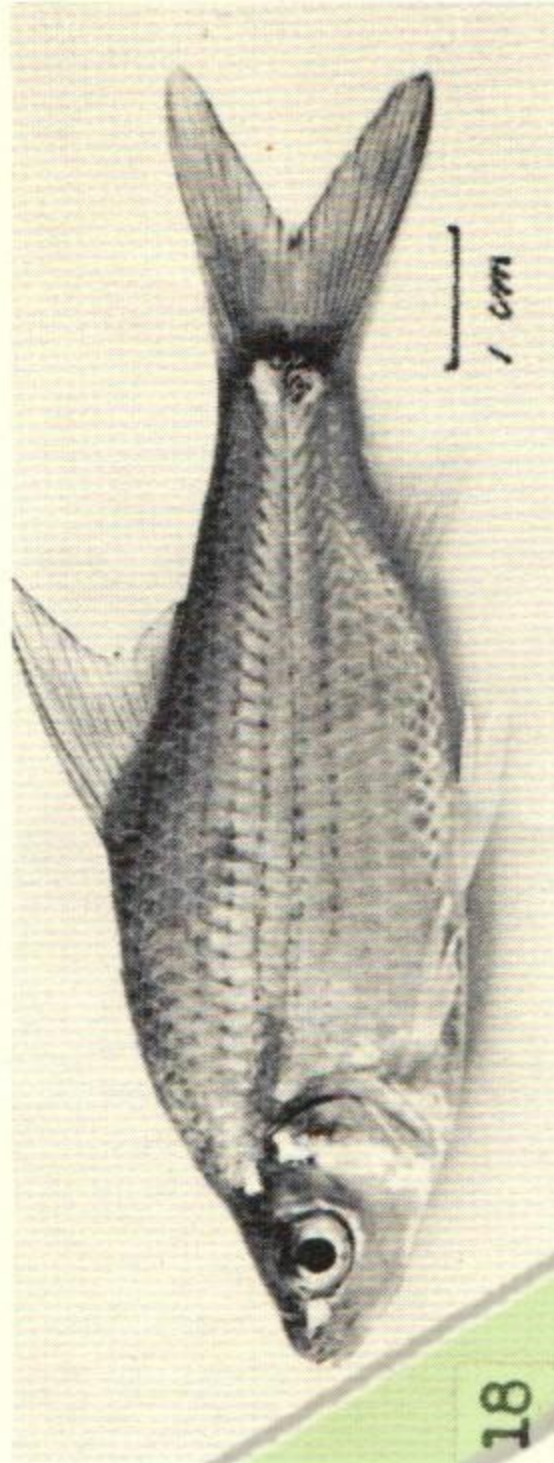
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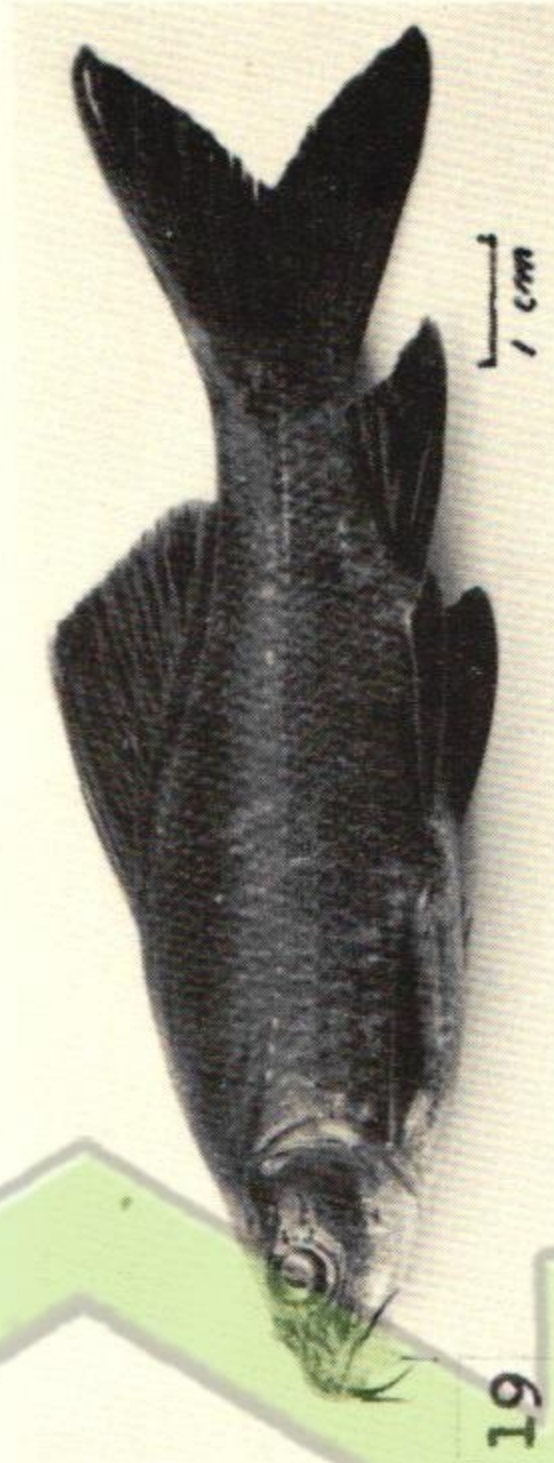
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FIG. 15 *Hampala macrolepidota*

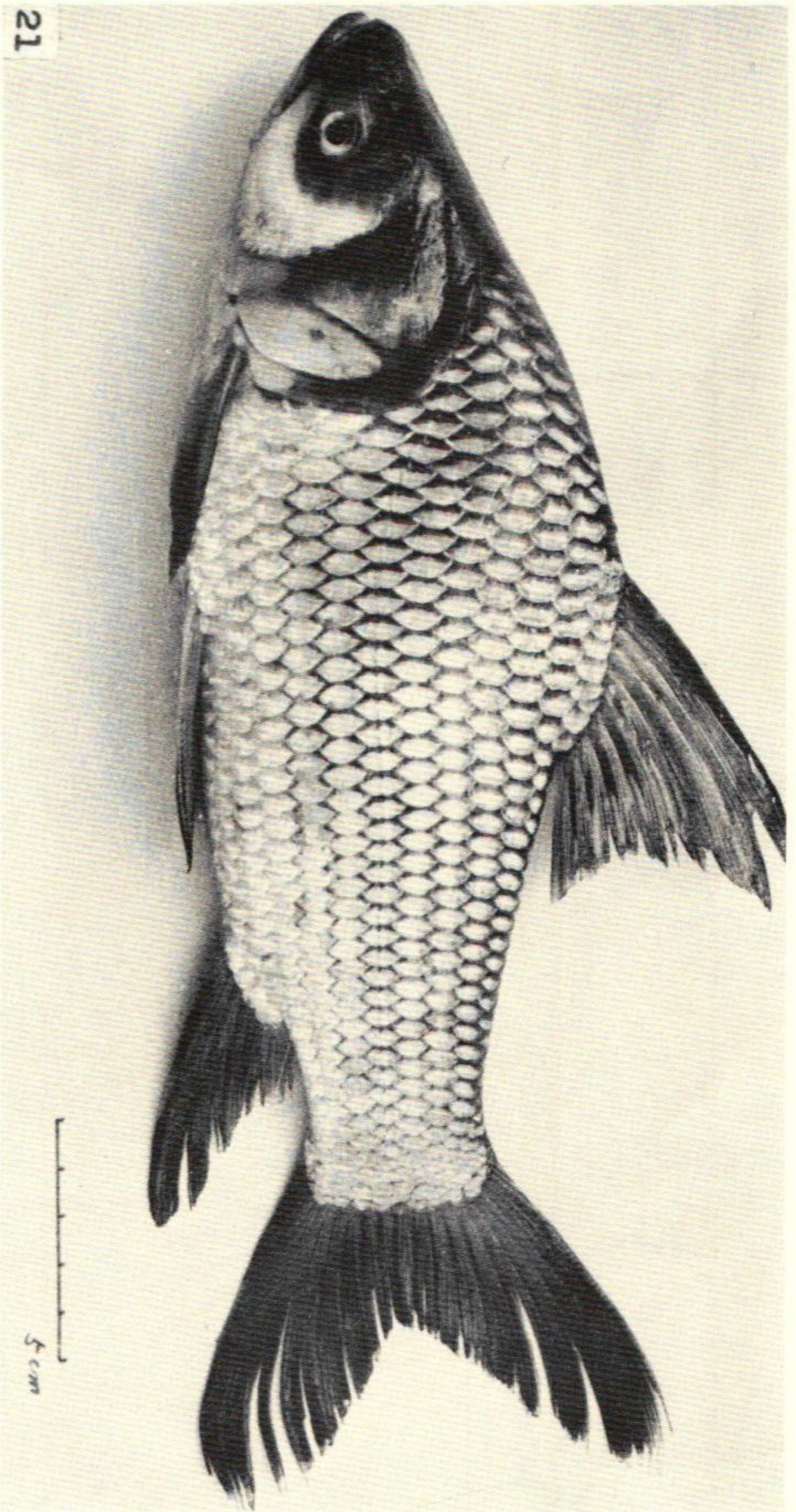
FIG. 16 *Barbichthys laevis*

FIG. 17 *Osteochilus melanopleura*

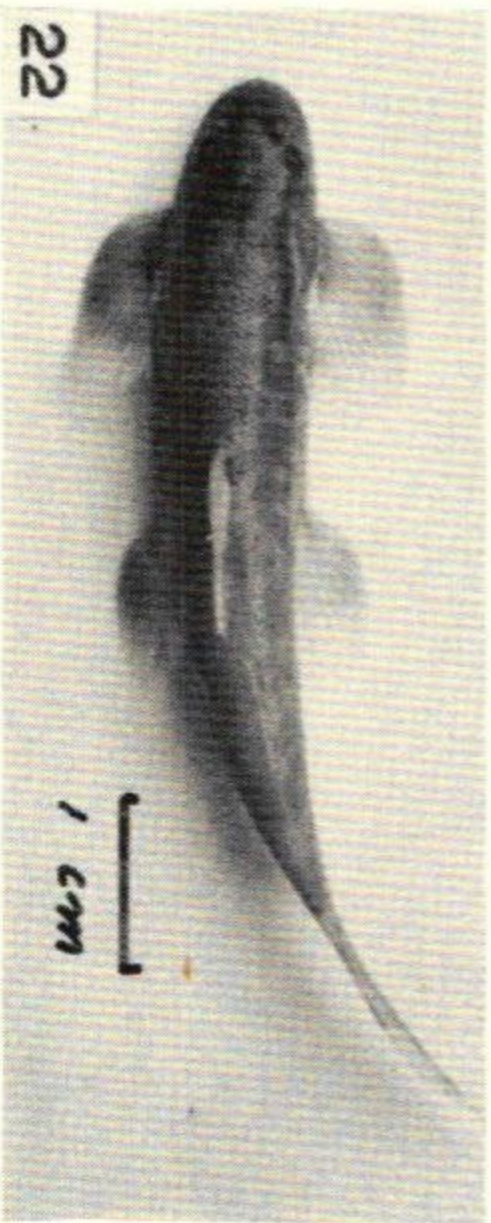
FIG. 18 *Cyclocheilichthys apogon*

FIG. 19 *Morulus chrysophekadion*

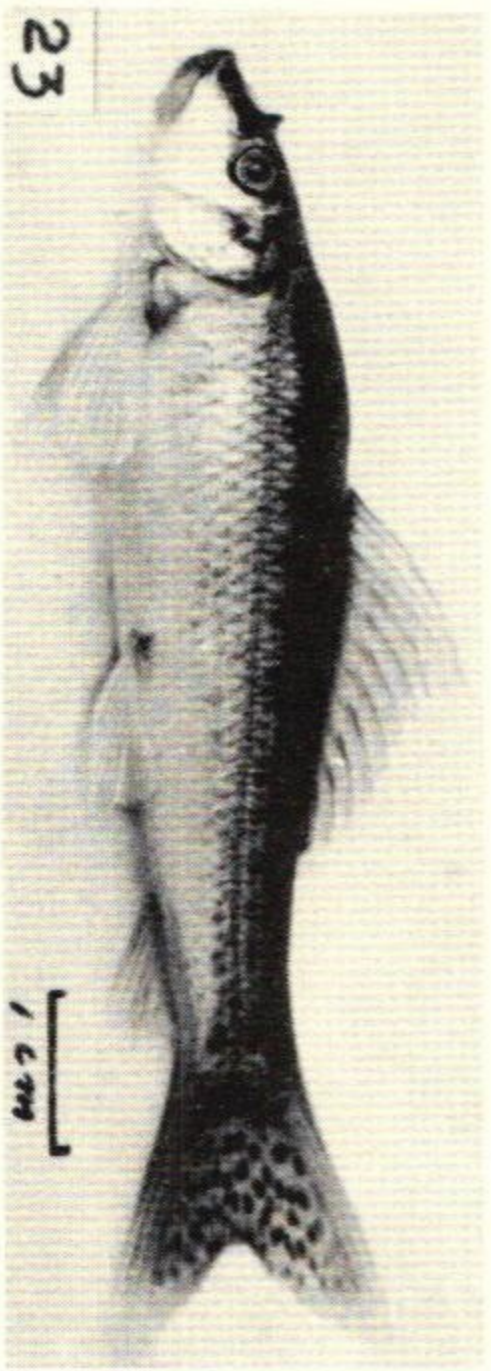
FIG. 20 *Labeo erythrurus*



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FIG. 21 *Catlocarpio siamensis*

FIG. 22 *Annamia normani*

FIG. 23 *Gyriinocheilus aymonieri*

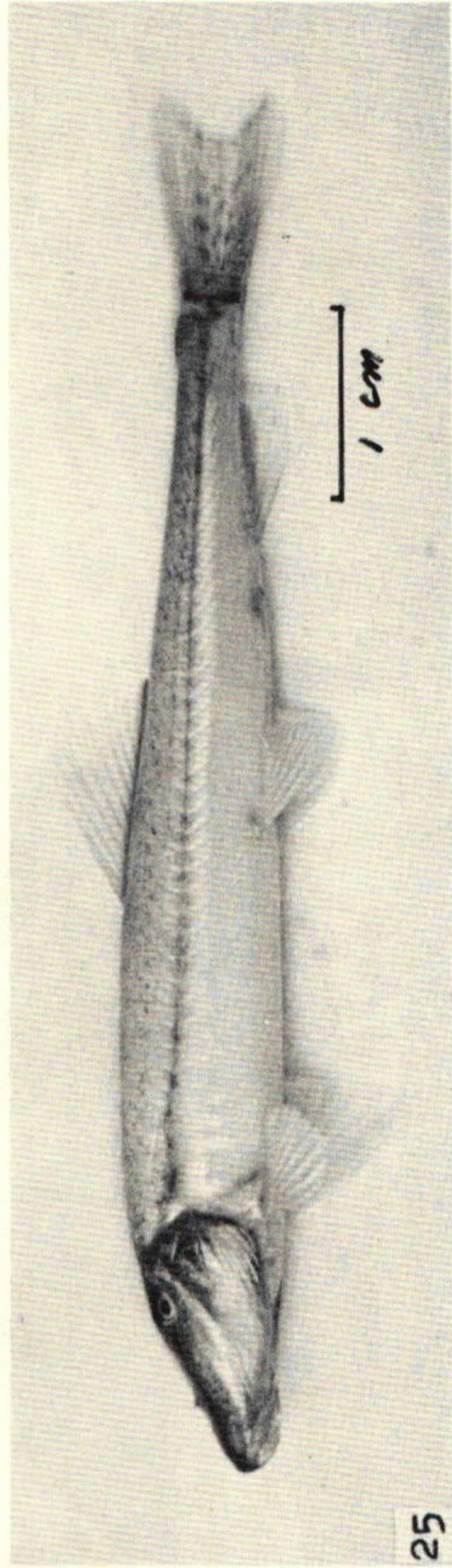
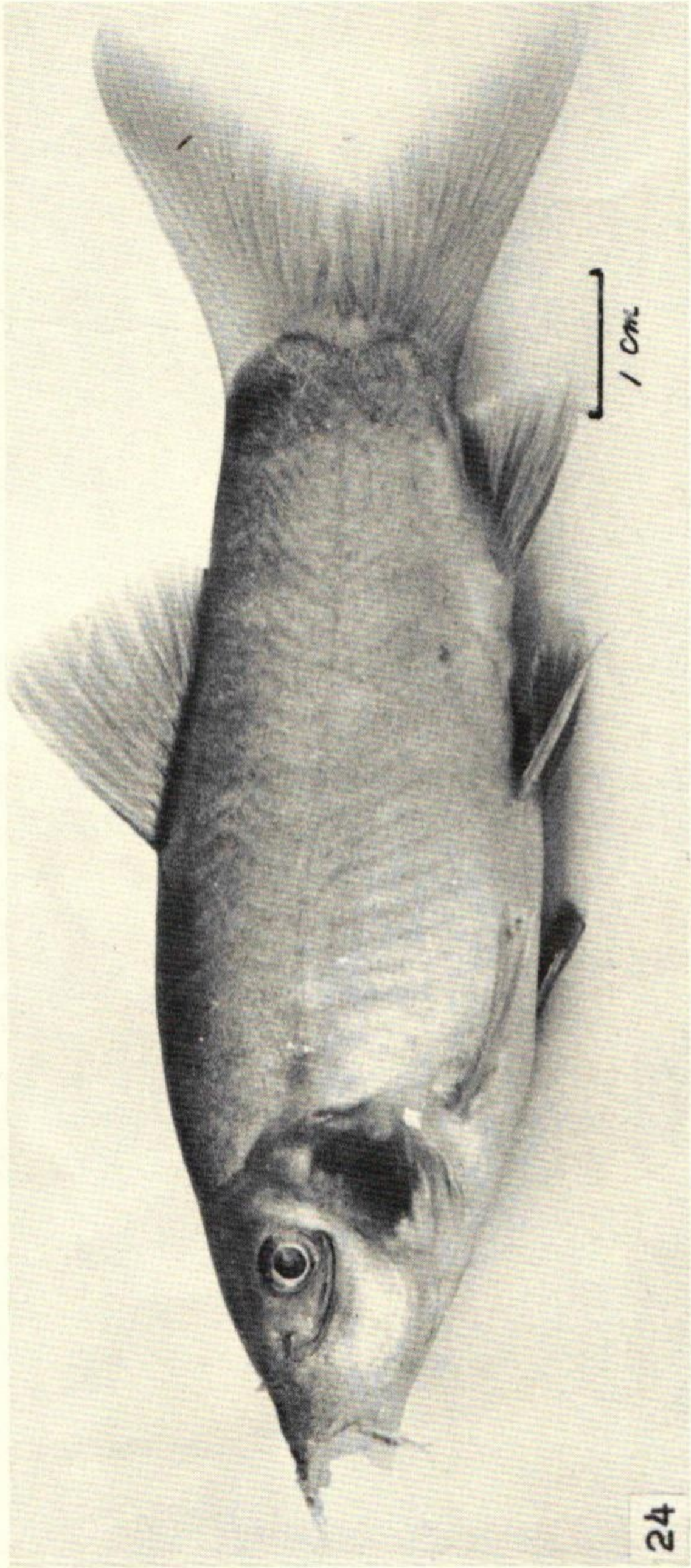


FIG. 24 *Botia modesta*  
FIG. 25 *Acanthopsis coirorhyncos*

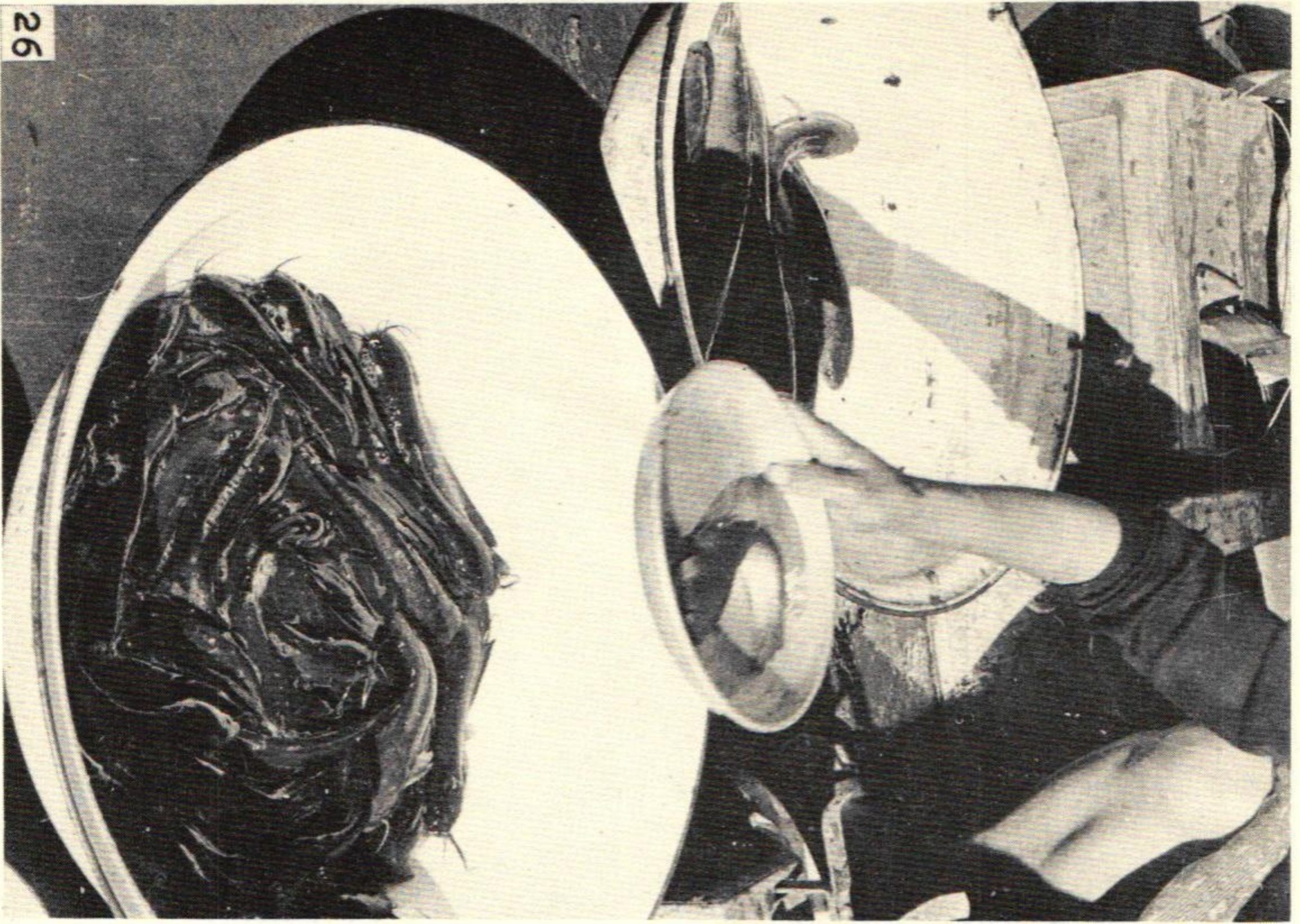
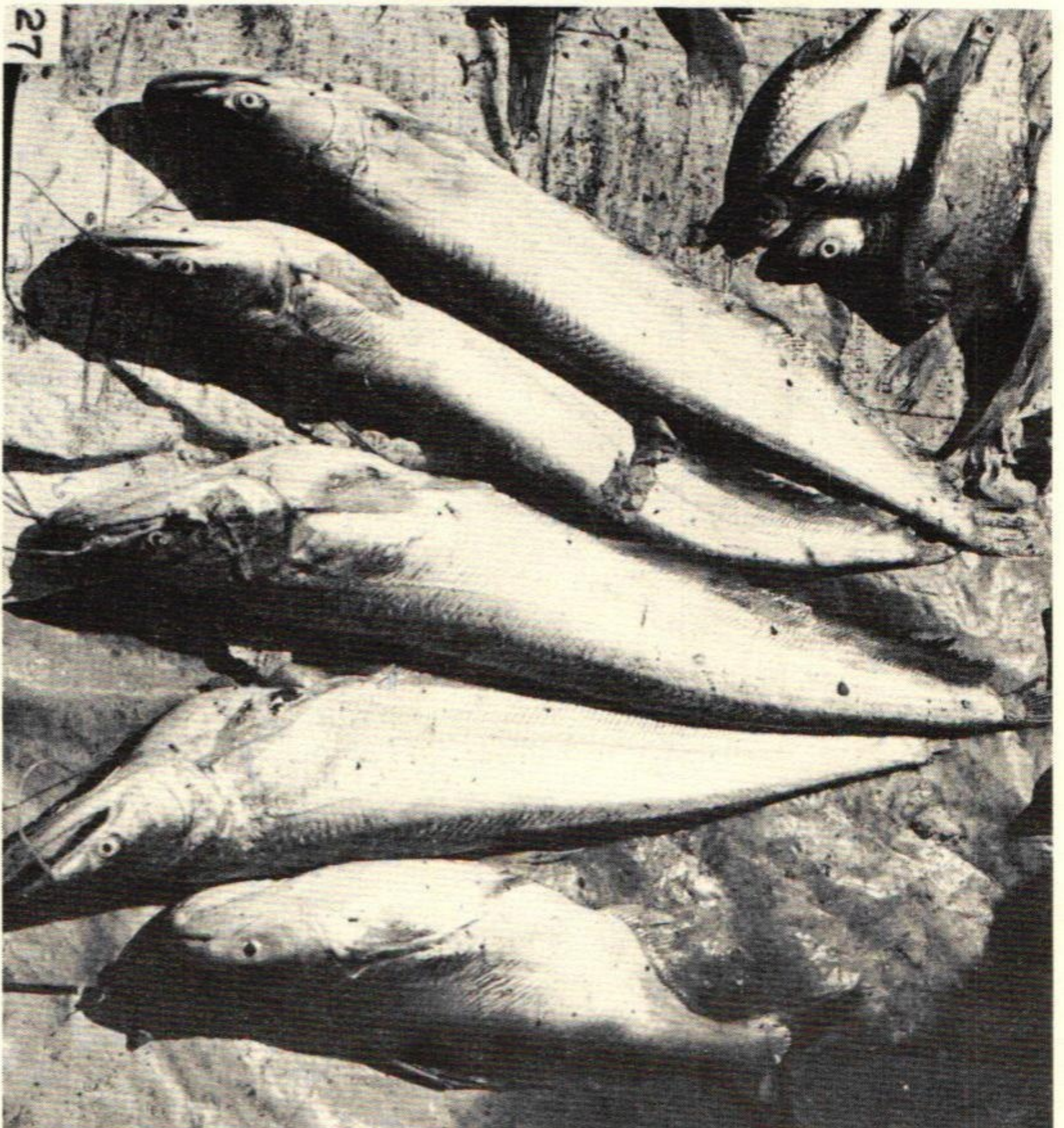
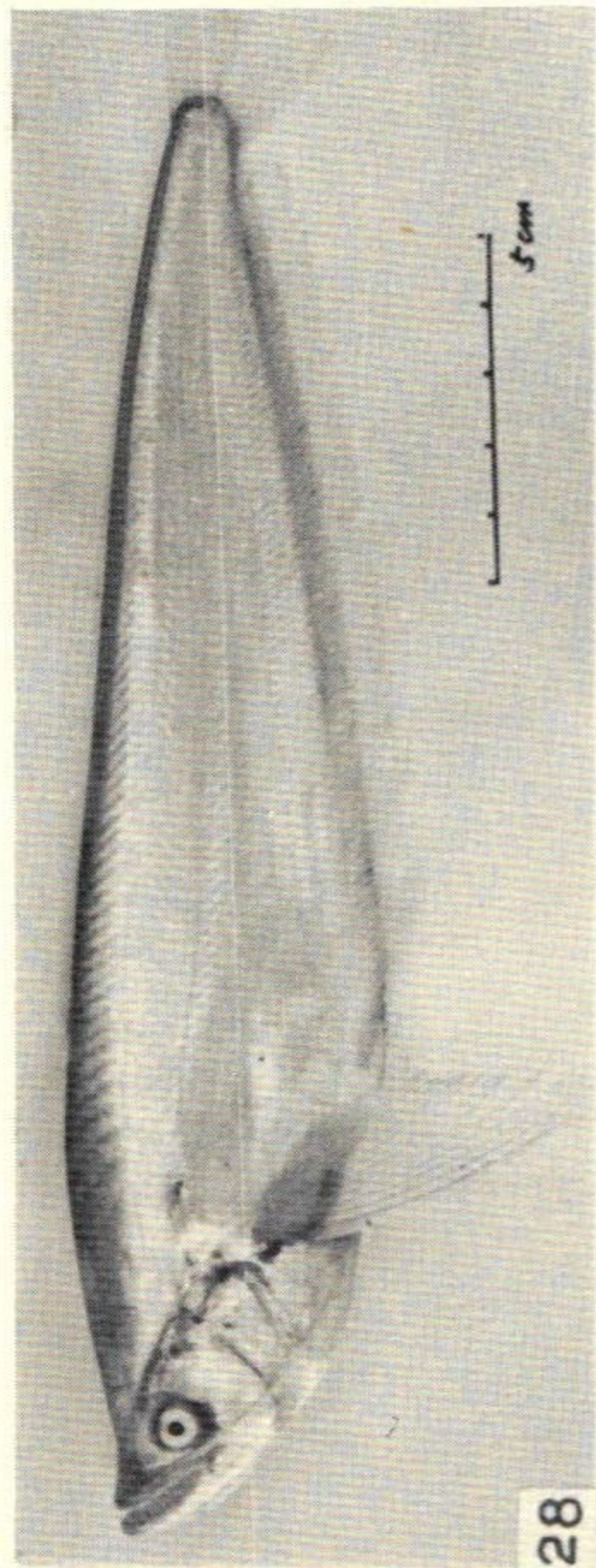


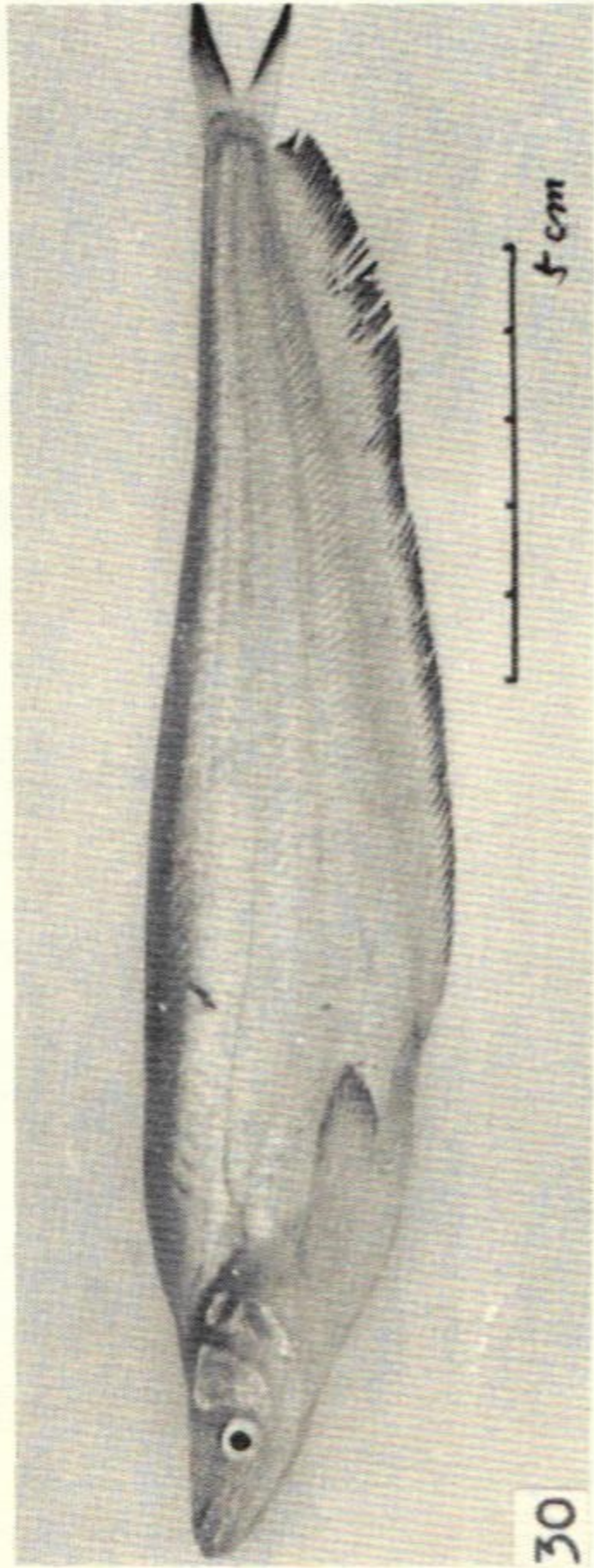
FIG. 26 *Clarias batracus*  
(below at the morning market  
of Vientiane)

FIG. 27 *Wallago attu*  
(at the morning market  
of Vientiane)

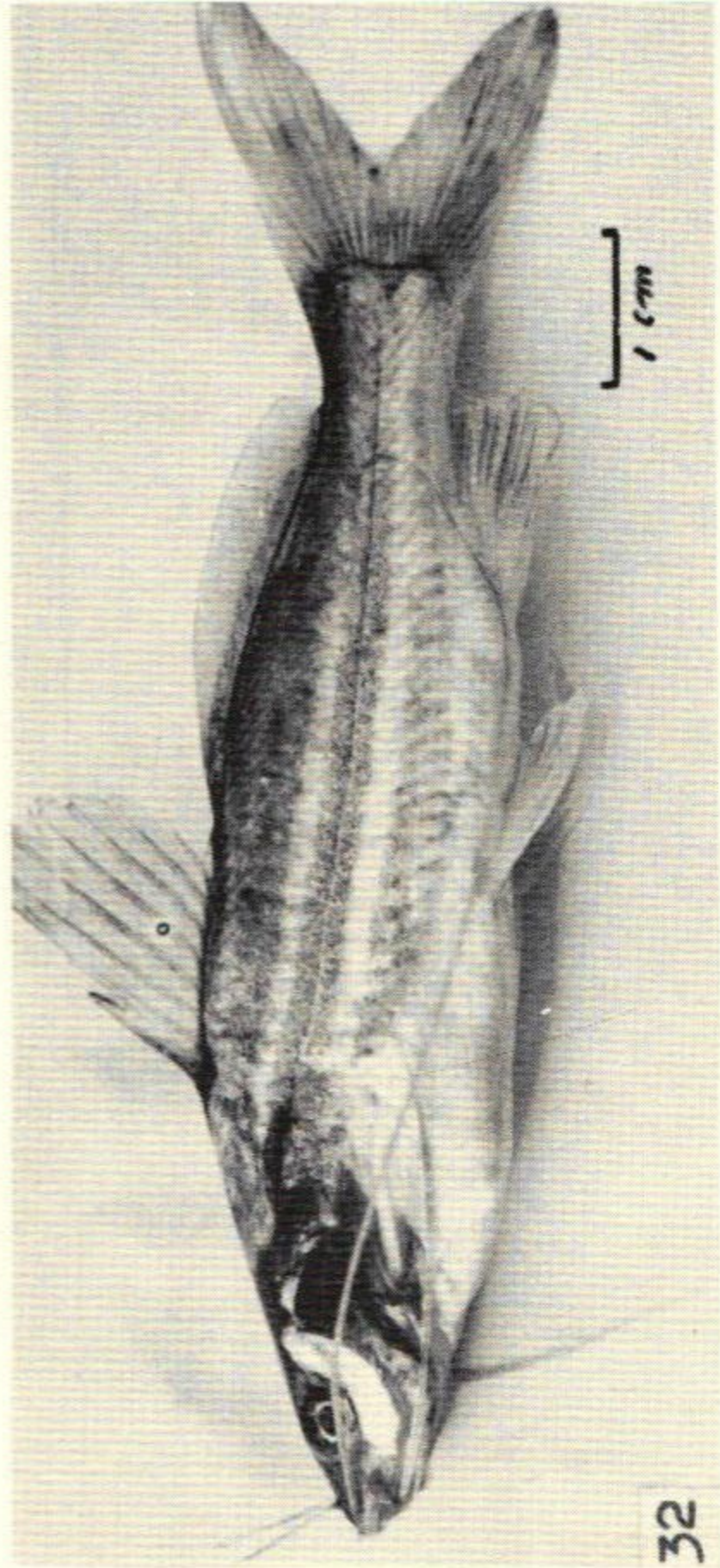




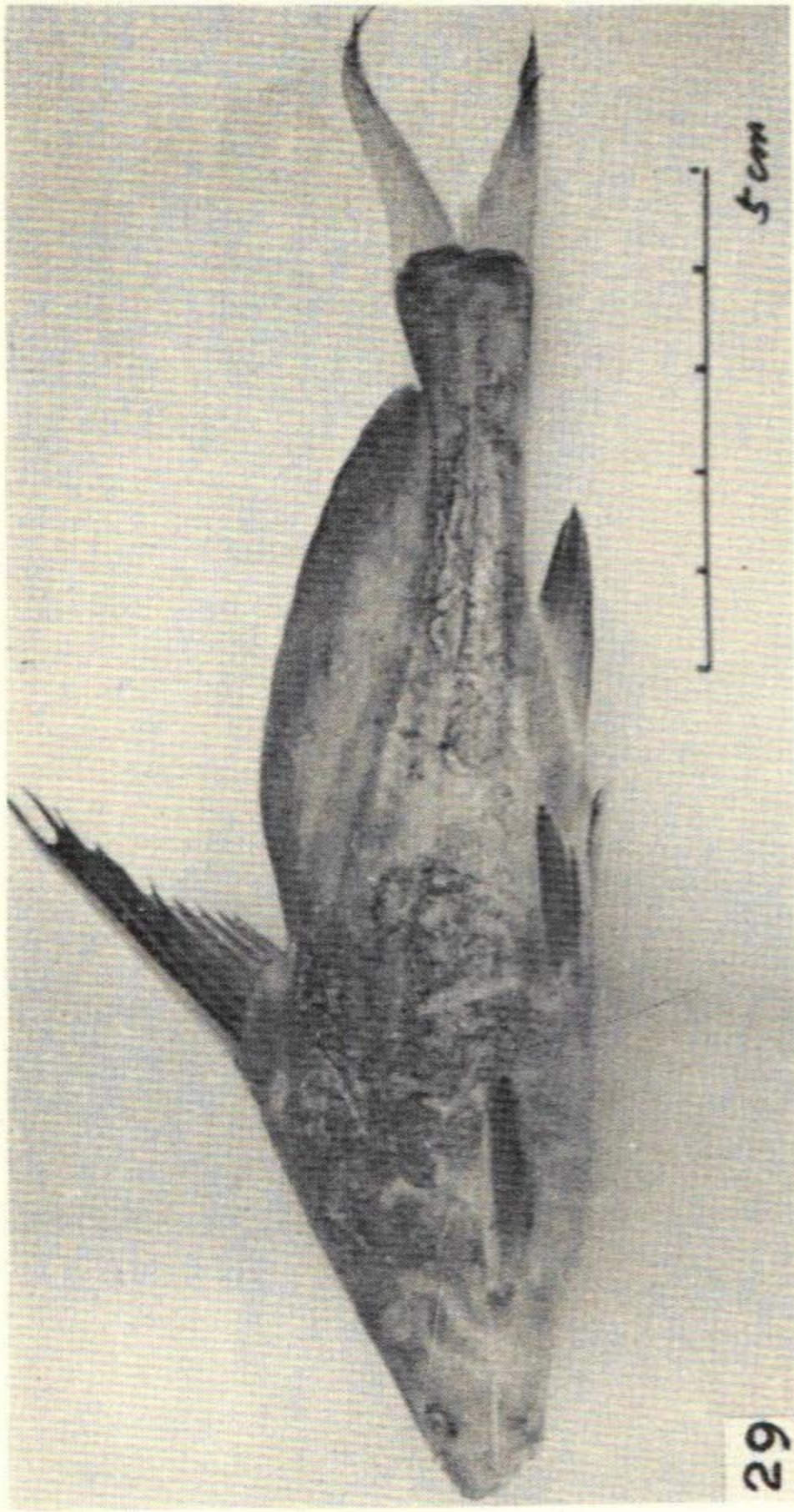
28



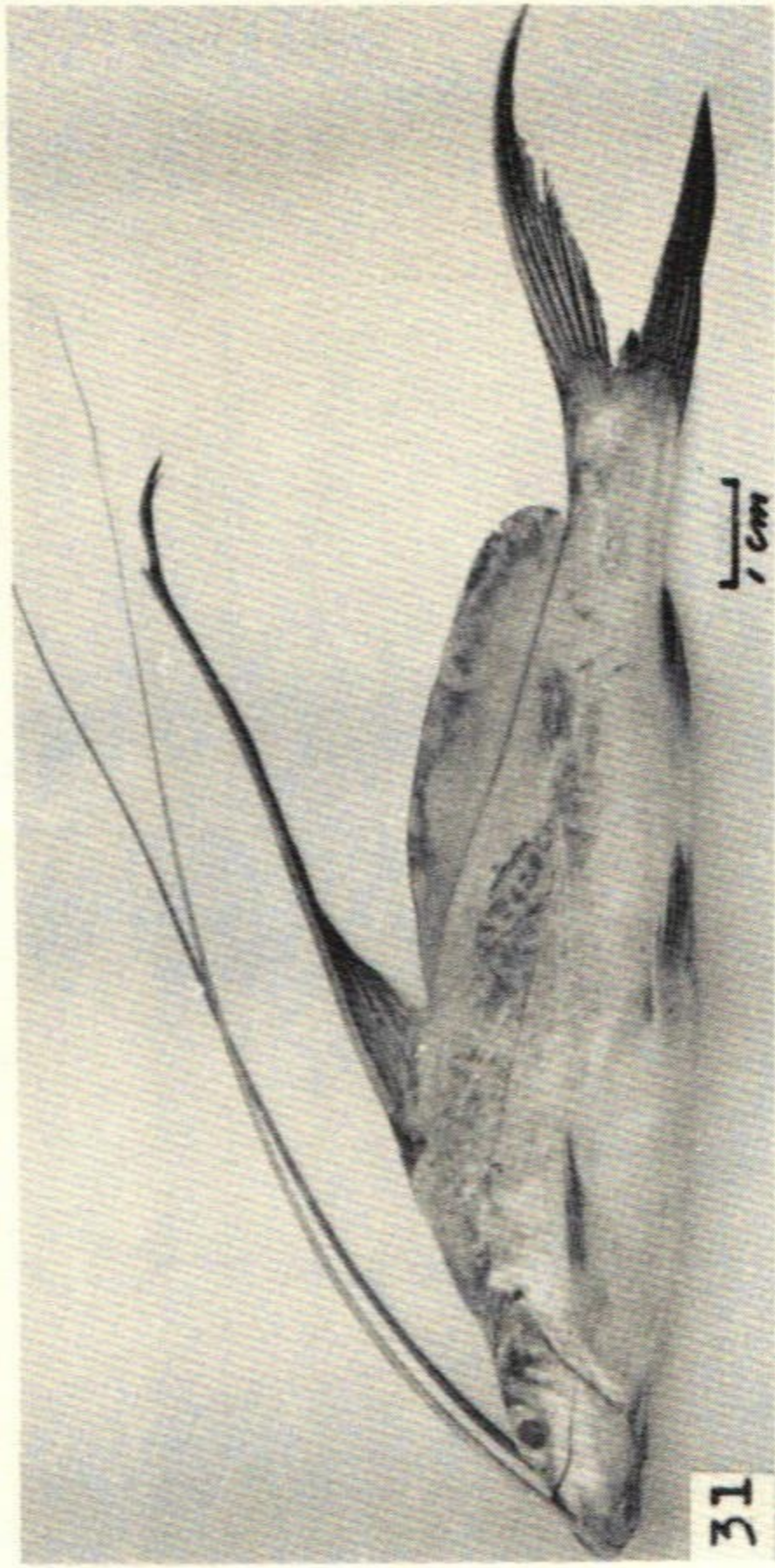
30



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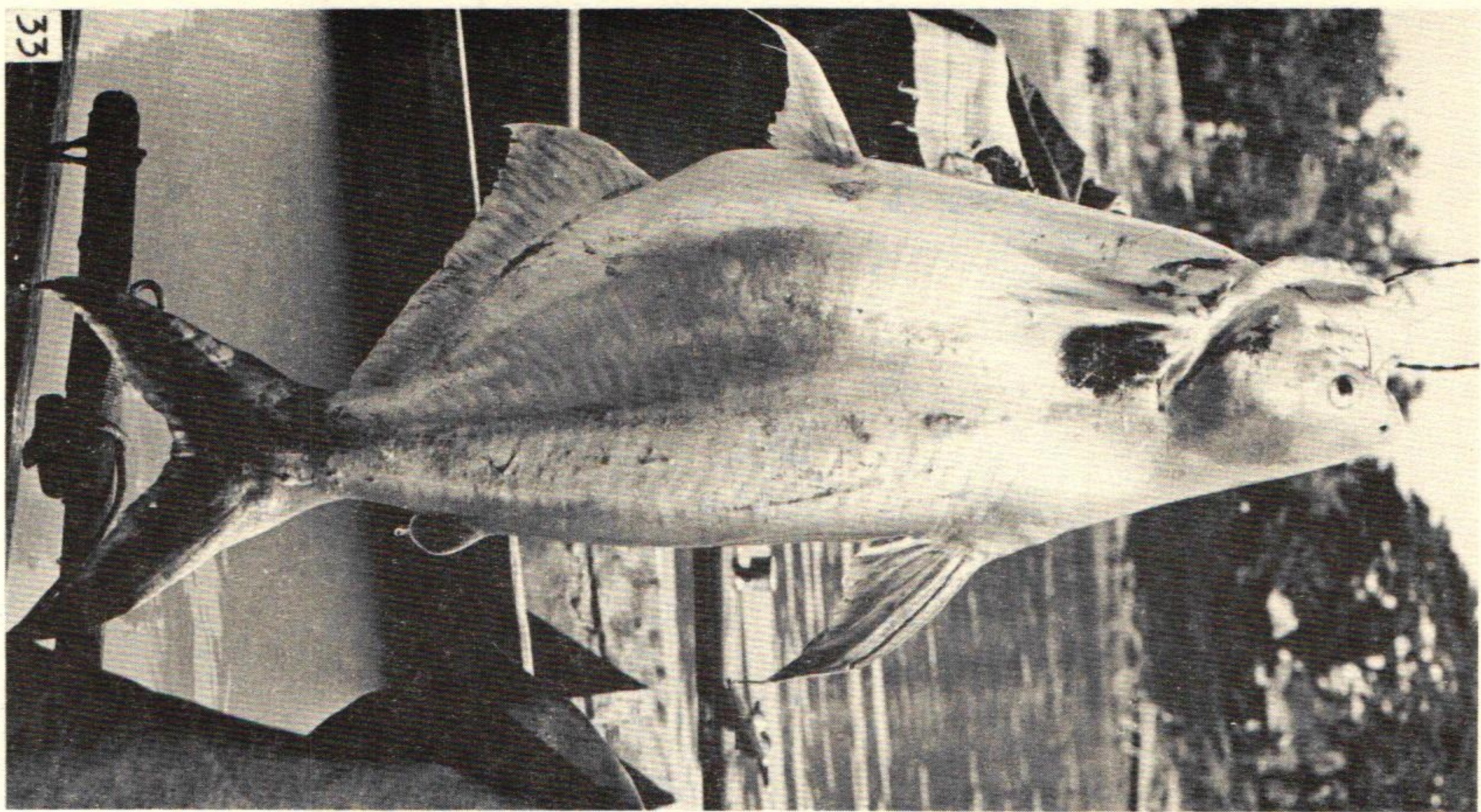


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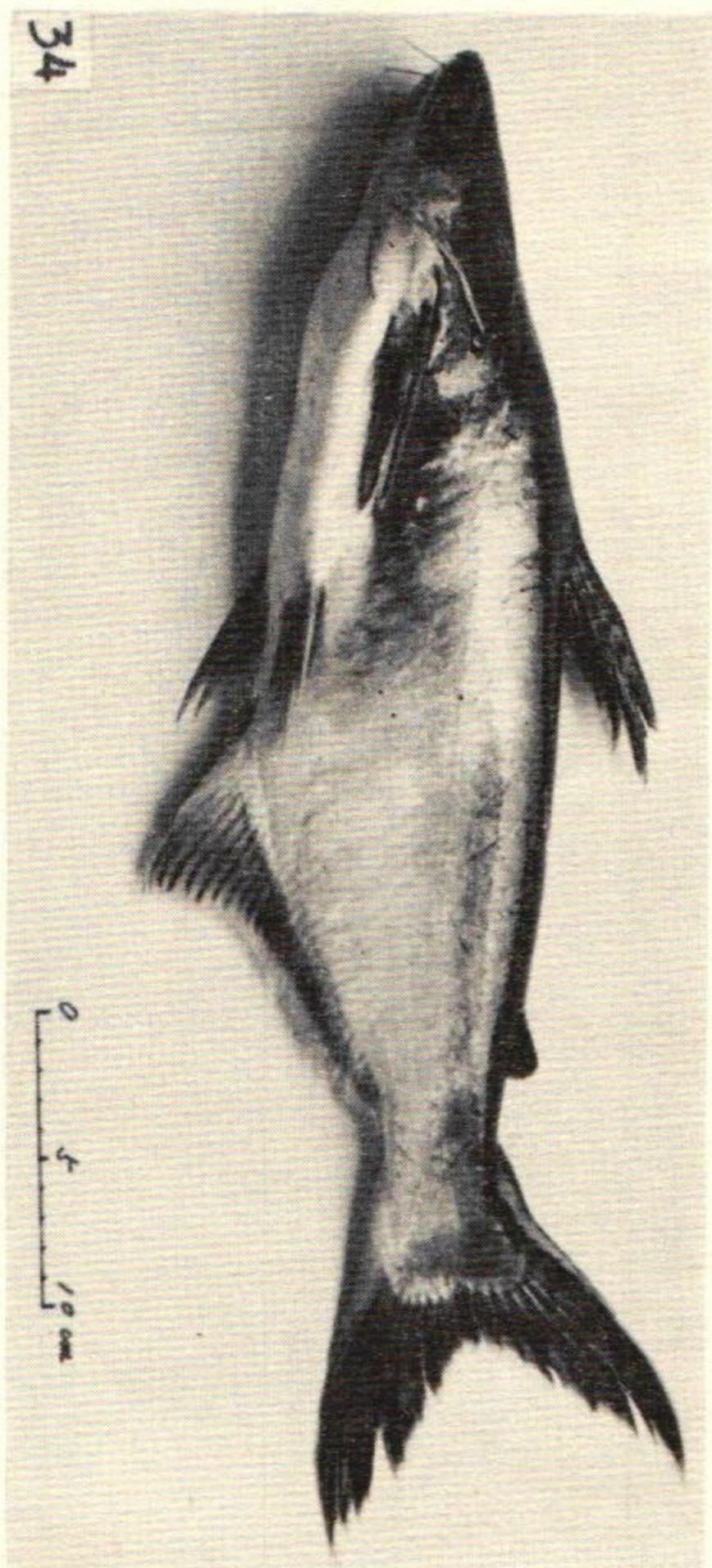


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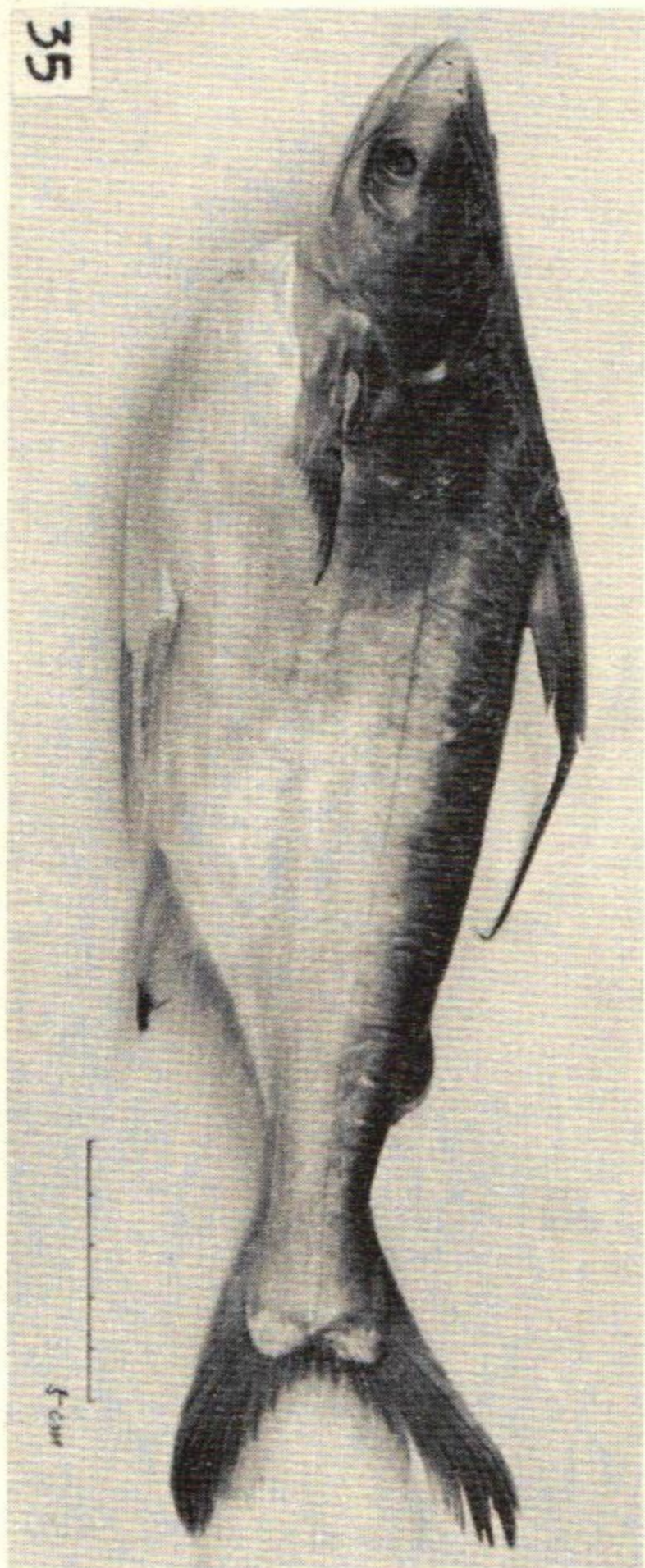
- FIG. 28 *Wallago dinema*  
 FIG. 29 *Bagroides macracanthus*  
 FIG. 30 *Kryptopterus bleekeri*  
 FIG. 31 *Heterobagrus bocourti*  
 FIG. 32 *Mystus nigriceps*



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FIG. 33 *Pangasius larnaudii*

FIG. 34 *Pangasius nastus*

FIG. 35 *Pangasius santiwongsei*

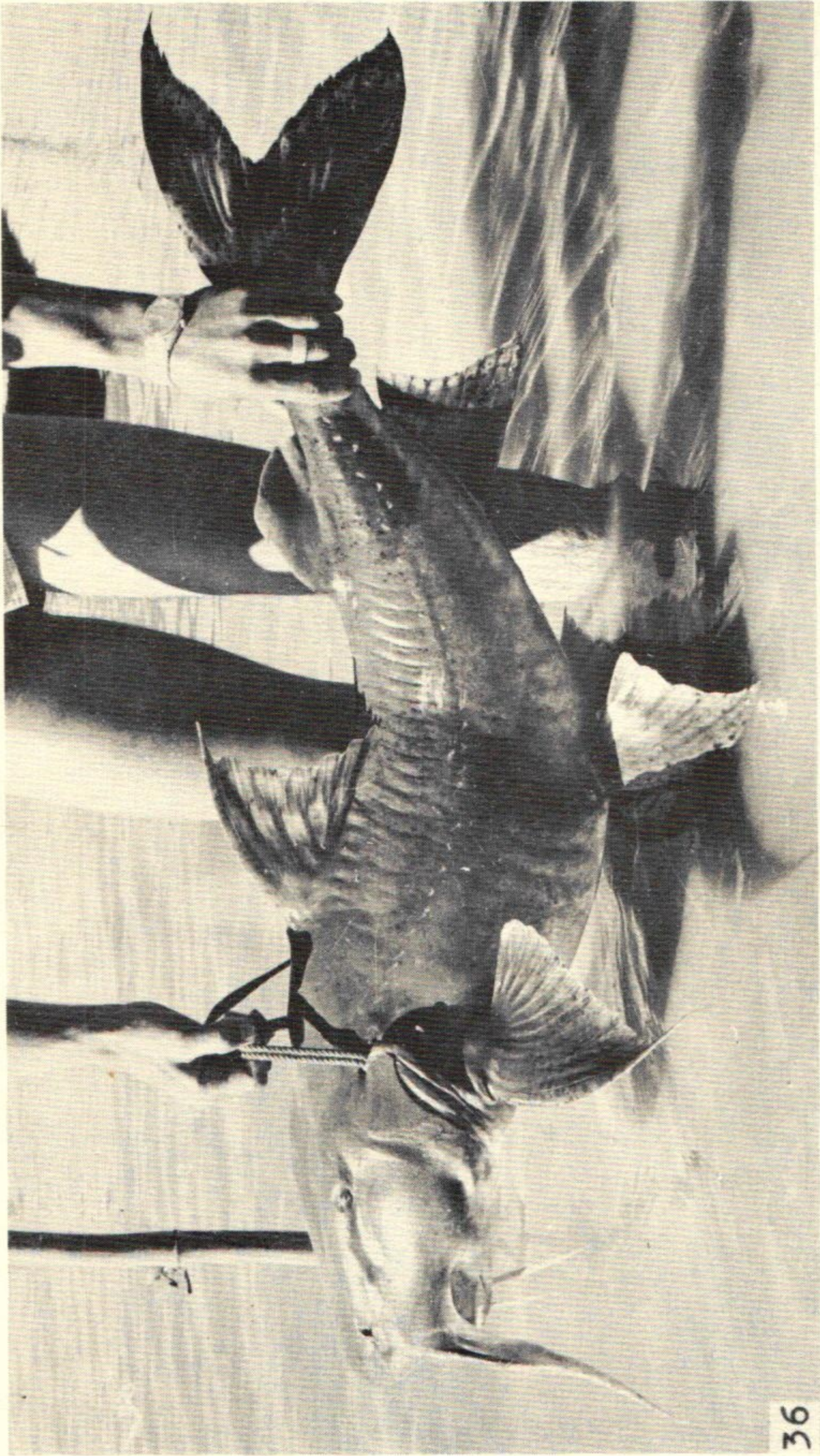
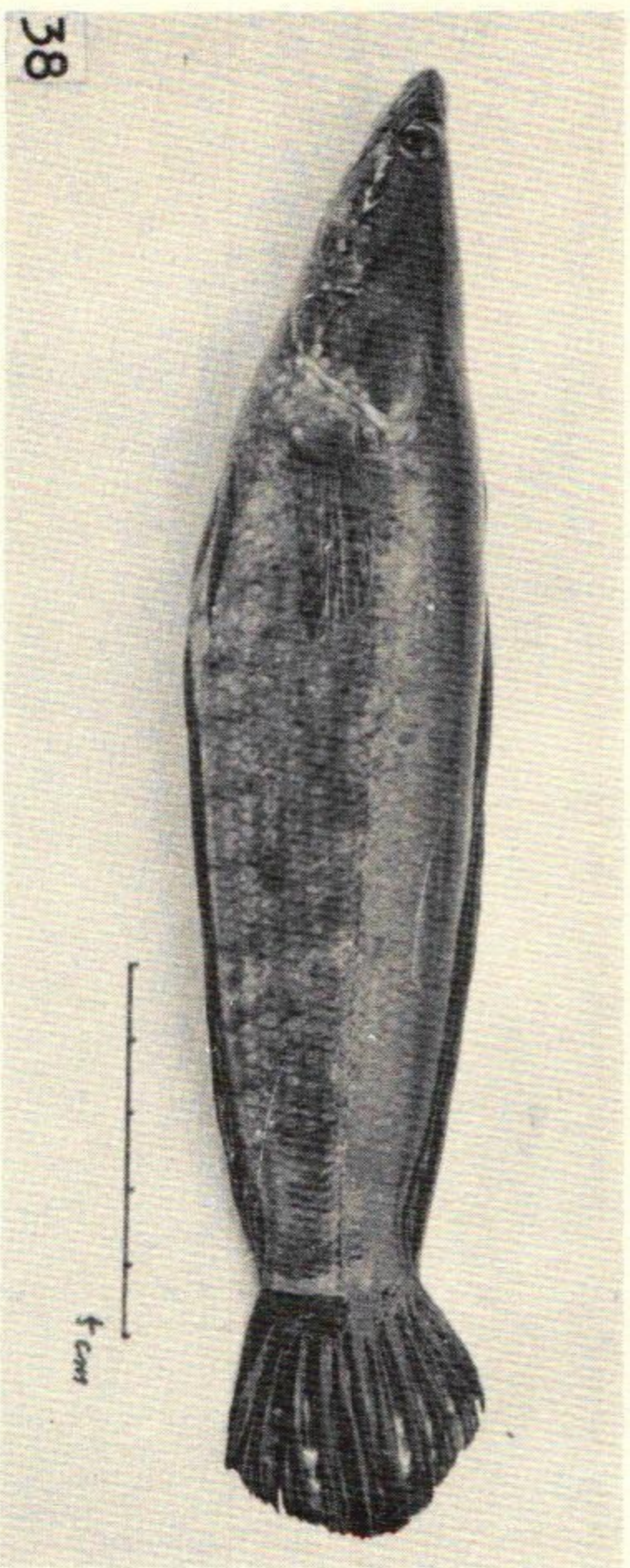
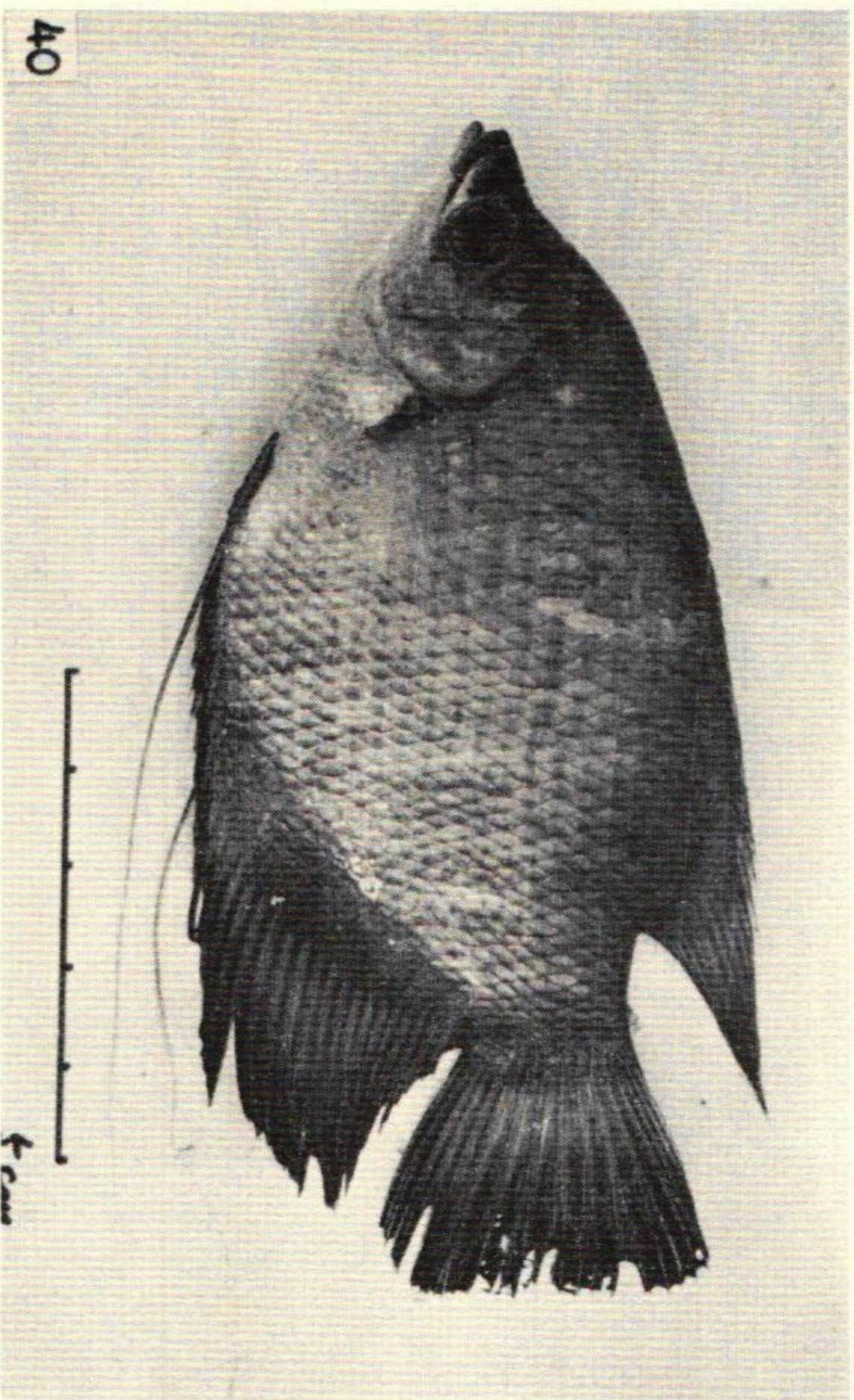


FIG. 36  
*Bagarius bagarius*  
(Ban Kouai Deng)

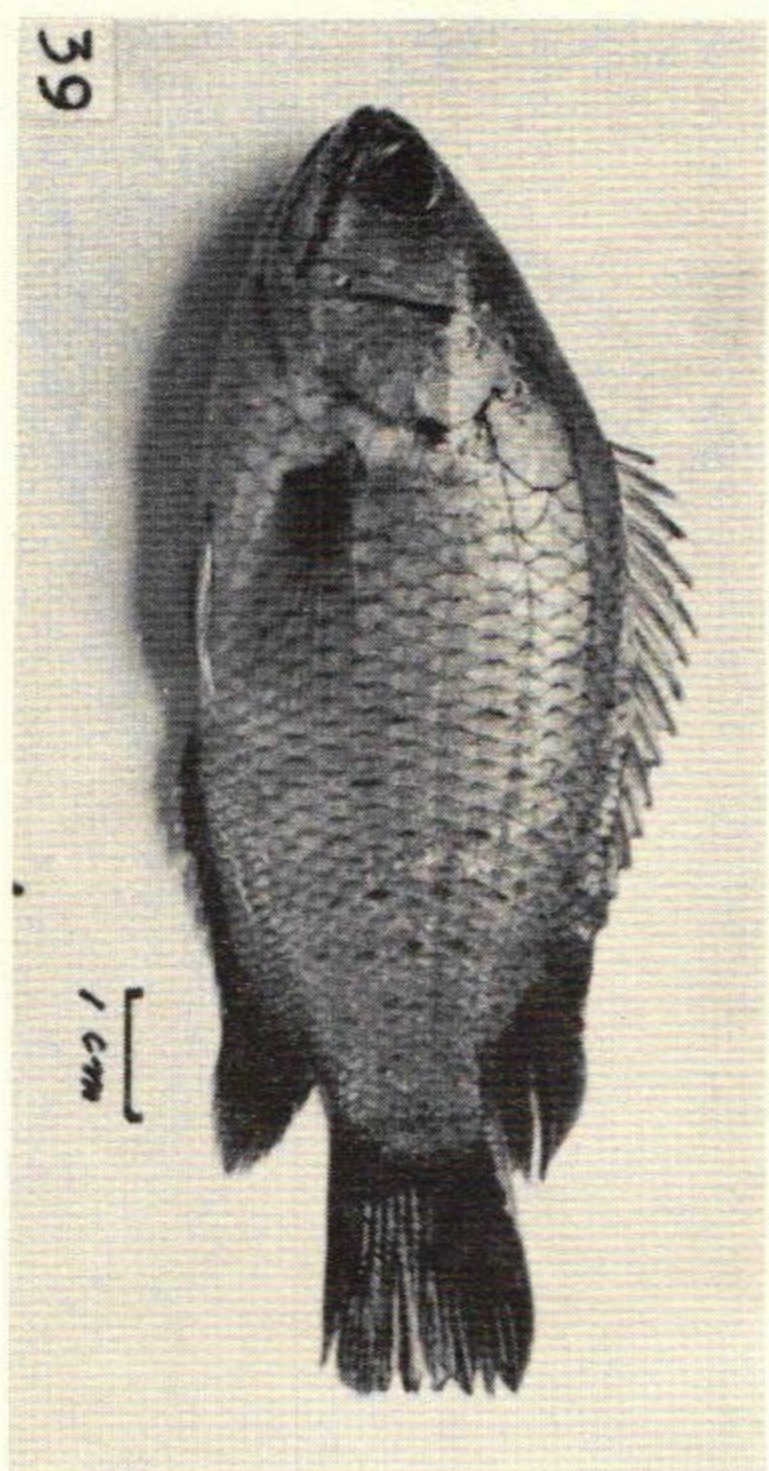
FIG. 37  
ditto



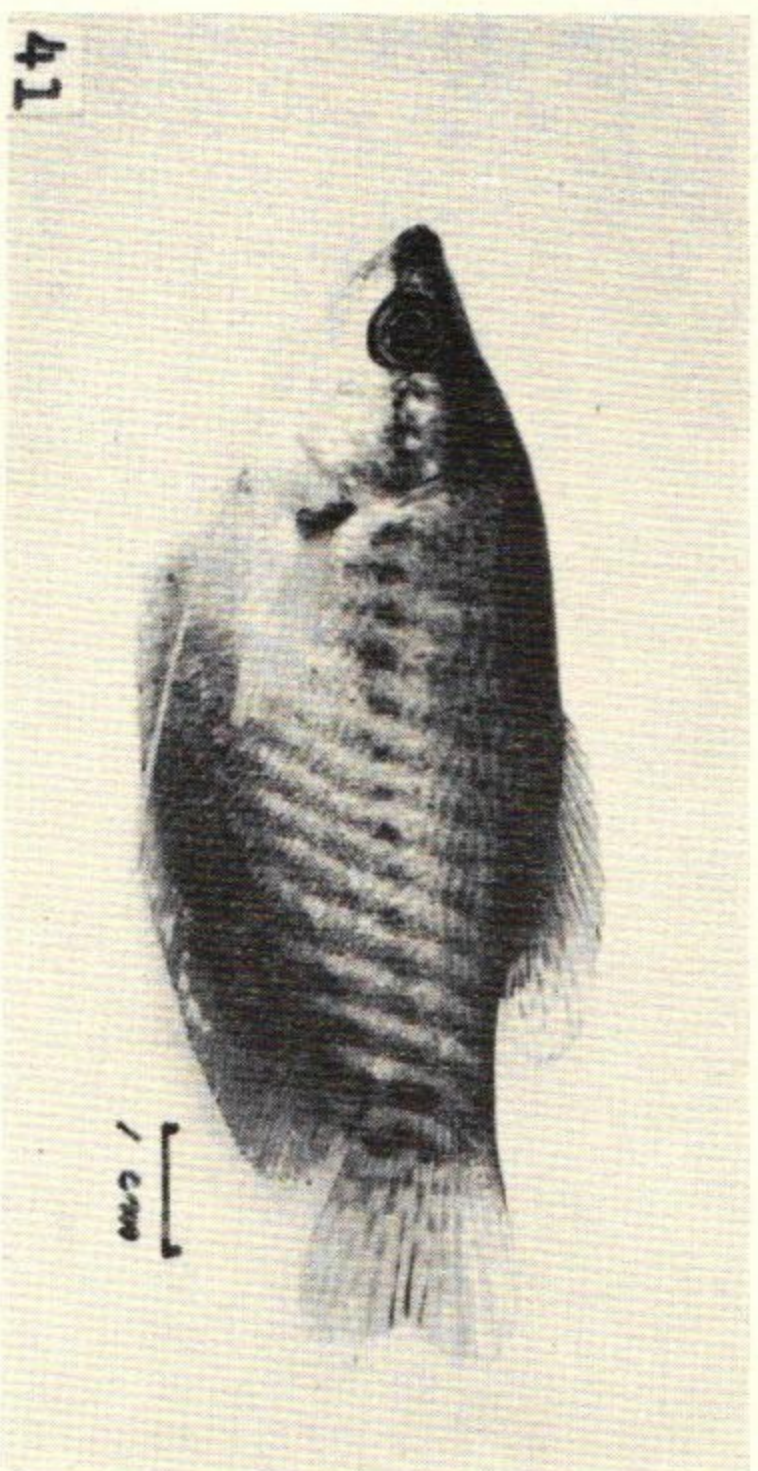
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- FIG. 38 *Opficephalus lucius*
- FIG. 39 *Anabas testudineus*
- FIG. 40 *Osphronemus goramy*
- FIG. 41 *Trichogaster pectoralis*

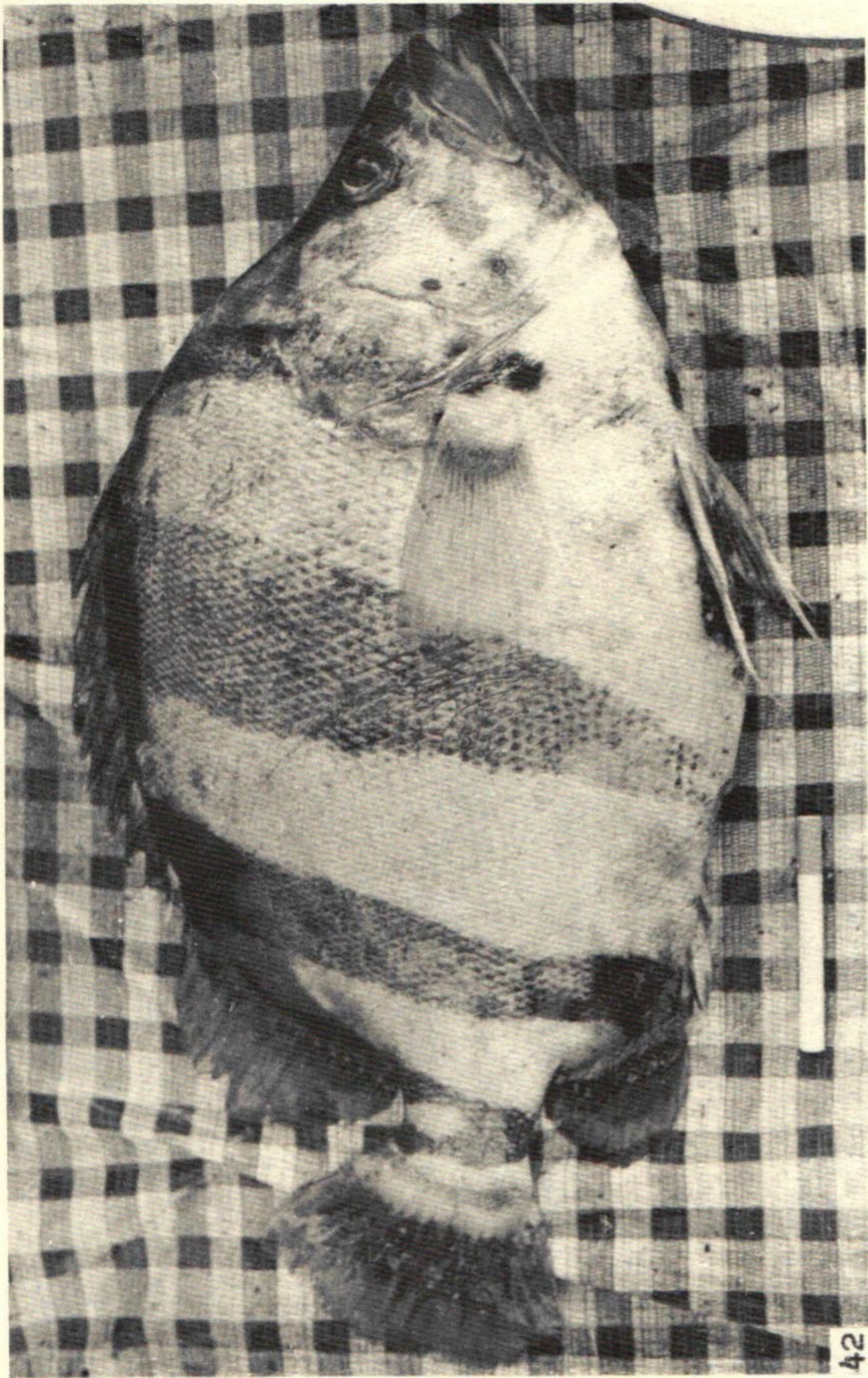


FIG. 42 *Datnioides microlepis*

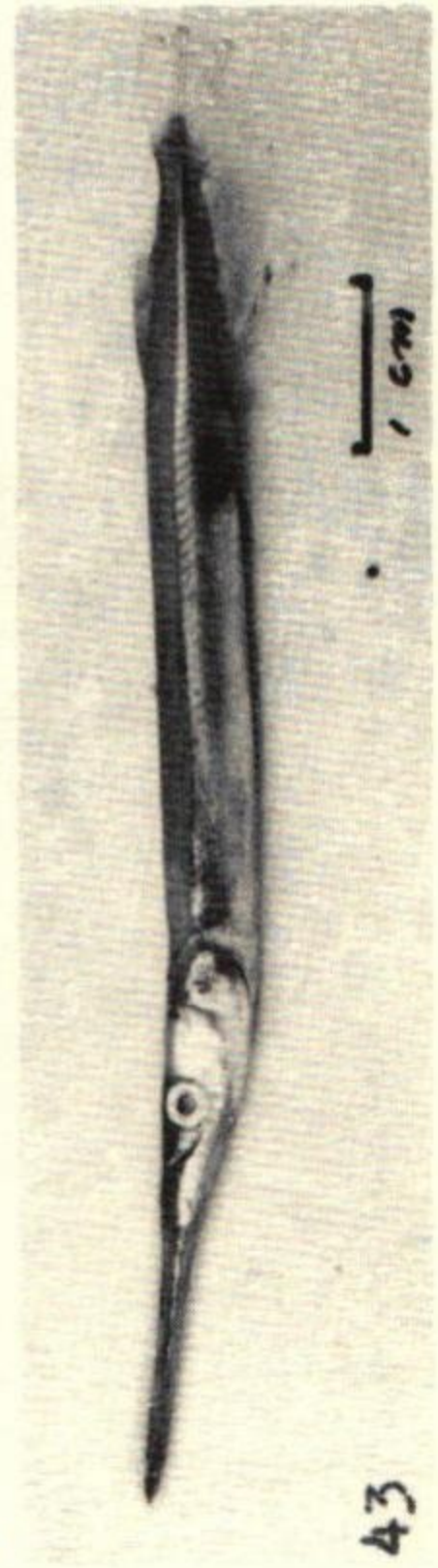


FIG. 43 *Xenentodon cancilloides*

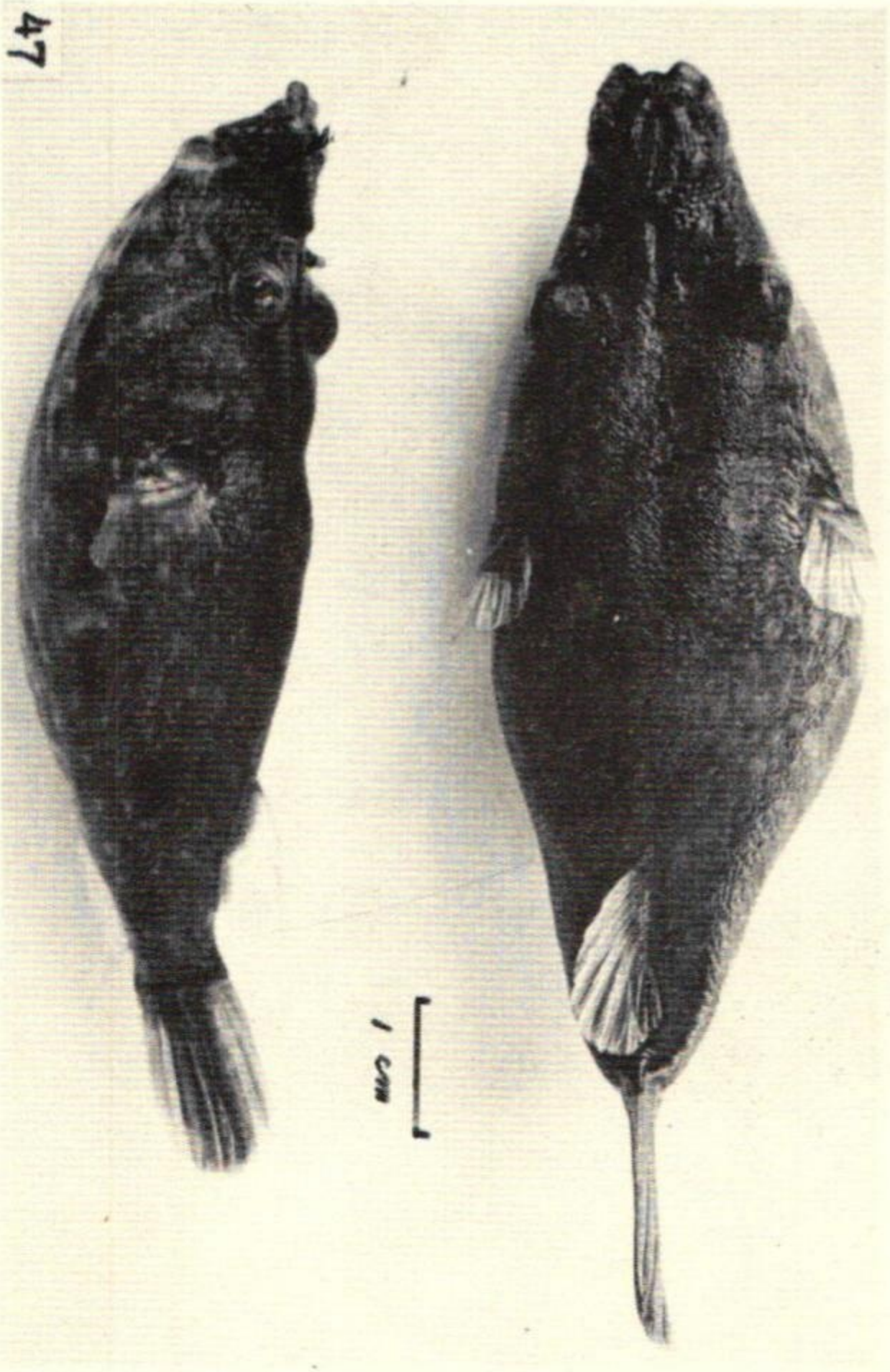


FIG. 44 *Toxotes chatareus*      FIG. 45 *Oxyeleotris marmoratus*  
 FIG. 46 *Pristolepis fasciatus*      FIG. 47 *Tetradon leiurus*  
 FIG. 48 *Nandus nandus*

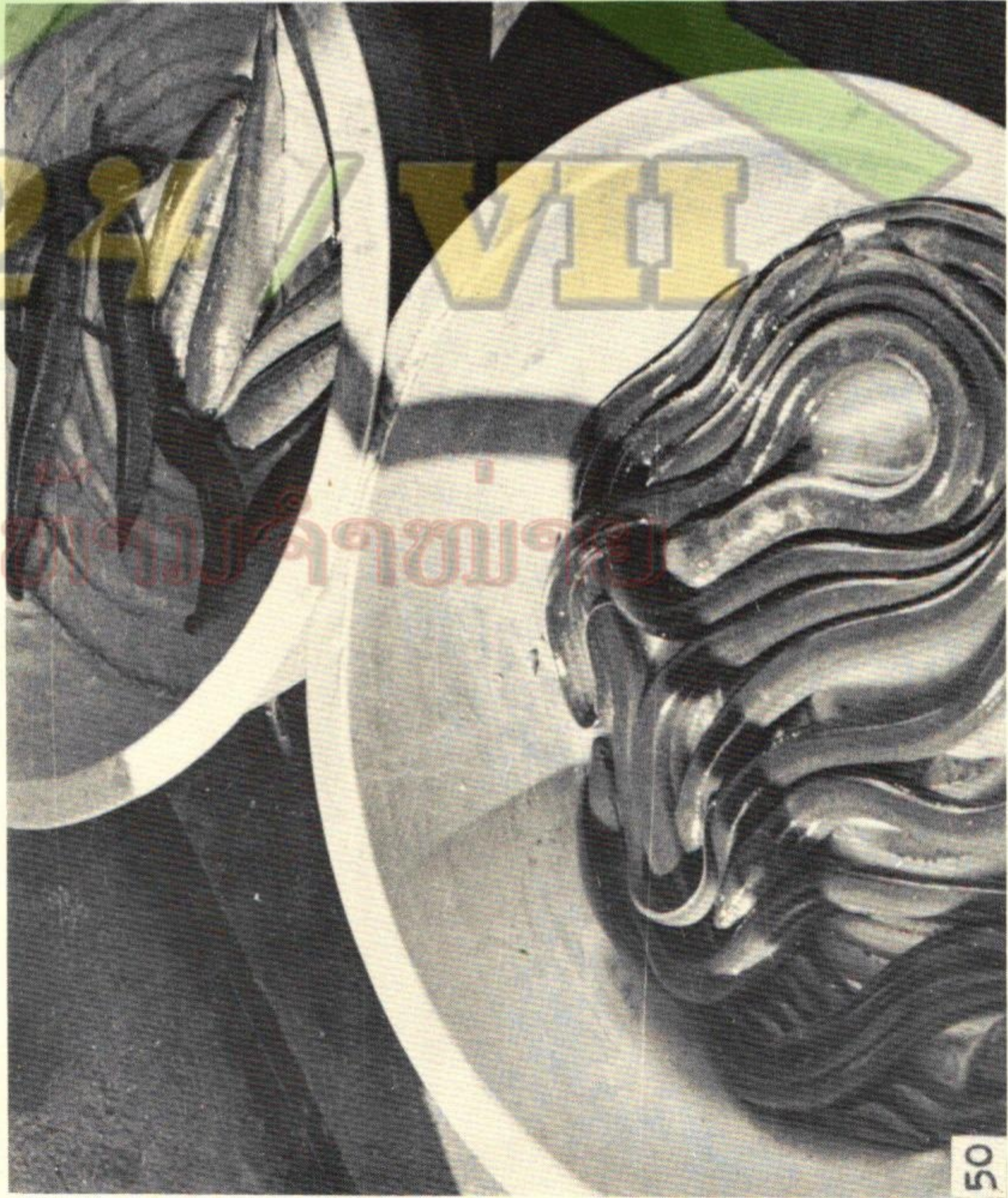


FIG. 49 *Mastocembelus armatus favus*

FIG. 50 *Fluta alba*  
(below at the morning market  
of Vientiane)

FIG. 51 *Synaptura harmandii*

