



Inland Fisheries Research and Development Institute (IFReDI)



For sustainable development of inland fisheries in Cambodia

BIOLOGICAL REVIEWS OF IMPORTANT CAMBODIAN FISH SPECIES, BASED ON FISHBASE 2004.

Volume 2: *Pangasius larnaudii*; *Clarias batrachus*; *Cirrhinus microlepis*; *Leptobarbus hoevenii*; *Thynnichthys thynnoides*; *Trichogaster microlepis*; *Trichogaster pectoralis*; *Anabas testudineus*; *Boesemania microlepis*; *Oxyeleotris marmorata*.

Leng Sy Vann, Eric Baran, Chheng Phen, Touch Bun Thang



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Volume 2:

Catfishes	<i>Pangasius larnaudii</i> ; <i>Clarias batrachus</i>
Cyprinids	<i>Cirrhinus microlepis</i> ; <i>Leptobarbus hoevenii</i> ; <i>Thynnichthys thynnoides</i>
Gouramis	<i>Trichogaster microlepis</i> ; <i>Trichogaster pectoralis</i>
Perch	<i>Anabas testudineus</i> ;
Croaker	<i>Boesemania microlepis</i>
Goby	<i>Oxyeleotris marmorata</i>

Leng Sy Vann, Eric Baran, Chheng Phen, Touch Bun Thang



formerly known as "ICLARM - The World Fish Center"

Our Commitment:

to contribute to food security and poverty eradication in developing countries.

A Way to Achieve This:

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We believe this work will be most successful when undertaken in partnership with governments and nongovernment institutions and with the participation of the users of the research results.

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Contents

I. <i>Pangasius larnaudii</i>.....	
1.1. Summary information on the family Pangasiidae.....	1
1.2. Information on the genus <i>Pangasius</i> and its synonyms.....	1
1.3. General information on <i>Pangasius larnaudii</i>	2
1.4. Synonyms, misidentifications, etc. used for <i>Pangasius larnaudii</i>	3
1.5. Common names for <i>Pangasius larnaudii</i>	3
1.6. Distribution of <i>Pangasius larnaudii</i>	3
1.7. Summary information (no. of records) available for <i>Pangasius larnaudii</i>	4
1.8. Morphology of <i>Pangasius larnaudii</i>	4
1.9. Genetic information for <i>Pangasius larnaudii</i>	5
1.10. General information on the reproduction of <i>Pangasius larnaudii</i>	5
1.11. Ecology of <i>Pangasius larnaudii</i>	6
1.12. Food items for <i>Pangasius larnaudii</i>	6
1.13. Length-Weight relationships of <i>Pangasius larnaudii</i>	7
1.14. References used for <i>Pangasius larnaudii</i>	8
II. <i>Clarias batrachus</i>.....	
2.1. Summary information on the family Clariidae.....	13
2.2. Information on the genus <i>Clarias</i> and its synonyms.....	13
2.3. General information on <i>Clarias batrachus</i>	14
2.4. Synonyms, misidentifications, etc. used for <i>Clarias batrachus</i>	15
2.5. Common names for <i>Clarias batrachus</i>	15
2.6. Distribution of <i>Clarias batrachus</i>	16
2.7. Introductions of <i>Clarias batrachus</i>	17
2.8. Summary information (no. of records) available for <i>Clarias batrachus</i>	19
2.9. Morphology of <i>Clarias batrachus</i>	19
2.10. Genetic information for <i>Clarias batrachus</i>	20
2.11. FAO aquaculture production data for <i>Clarias batrachus</i>	21
2.12. Weight proportions and chemical composition of <i>Clarias batrachus</i>	21
2.13. Gill area of <i>Clarias batrachus</i>	22
2.14. General information on the reproduction of <i>Clarias batrachus</i>	23
2.15. Ecology of <i>Clarias batrachus</i>	24
2.16. Food items for <i>Clarias batrachus</i>	24
2.17. Maximum weight/length/age of <i>Clarias batrachus</i>	25
2.18. Length-Weight relationships of <i>Clarias batrachus</i>	25
2.19. Diseases reported for <i>Clarias batrachus</i>	25
2.20. References used for <i>Clarias batrachus</i>	33
III. <i>Cirrhinus microlepis</i>.....	
3.1. Summary information on the family Cyprinidae.....	41
3.2. Information on the genus <i>Cirrhinus</i> and its synonyms.....	41
3.3. General information on <i>Cirrhinus microlepis</i>	42
3.4. Synonyms, misidentifications, etc. used for <i>Cirrhinus microlepis</i>	43
3.5. Common names for <i>Cirrhinus microlepis</i>	43
3.6. Distribution of <i>Cirrhinus microlepis</i>	43
3.7. Summary information (no. of records) available for <i>Cirrhinus microlepis</i>	44
3.8. Morphology of <i>Cirrhinus microlepis</i>	44
3.9. General Information on the reproduction of <i>Cirrhinus microlepis</i>	45
3.10. Ecology of <i>Cirrhinus microlepis</i>	46
3.11. Food items for <i>Cirrhinus microlepis</i>	46
3.12. Length-Weight relationships of <i>Cirrhinus microlepis</i>	46
3.13. References used for <i>Cirrhinus microlepis</i>	50

IV. <i>Leptobarbus hoevenii</i>	
4.1. Summary information on the family Cyprinidae.....	51
4.2. Information on the genus <i>Leptobarbus</i> and its synonyms.....	51
4.3. General information on <i>Leptobarbus hoevenii</i>	51
4.4. Synonyms, misidentifications, etc. used for <i>Leptobarbus hoevenii</i>	52
4.5. Common names for <i>Leptobarbus hoevenii</i>	52
4.6. Distribution of <i>Leptobarbus hoevenii</i>	53
4.7. Introductions of <i>Leptobarbus hoevenii</i>	54
4.8. Summary information (no. of records) available for <i>Leptobarbus hoevenii</i>	54
4.9. Morphology of <i>Leptobarbus hoevenii</i>	54
4.10. Genetic information for <i>Leptobarbus hoevenii</i>	55
4.11. FAO aquaculture production data for <i>Leptobarbus hoevenii</i>	55
4.12. General information on the reproduction of <i>Leptobarbus hoevenii</i>	56
4.13. Ecology of <i>Leptobarbus hoevenii</i>	56
4.14. Food items for <i>Leptobarbus hoevenii</i>	57
4.15. FAO annual catch data (in tonnes) for <i>Leptobarbus hoevenii</i>	57
4.16. References used for <i>Leptobarbus hoevenii</i>	58
V. <i>Thynnichthys thynnoides</i>	
5.1. Summary information on the family Cyprinidae.....	63
5.2. Information on the genus <i>Thynnichthys</i> and its synonyms.....	63
5.3. General information on <i>Thynnichthys thynnoides</i>	63
5.4. Synonyms, misidentifications, etc. used for <i>Thynnichthys thynnoides</i>	64
5.5. Common names for <i>Thynnichthys thynnoides</i>	64
5.6. Distribution of <i>Thynnichthys thynnoides</i>	65
5.7. Summary information (no. of records) available for <i>Thynnichthys thynnoides</i>	65
5.8. Morphology of <i>Thynnichthys thynnoides</i>	66
5.9. Ecology of <i>Thynnichthys thynnoides</i>	66
5.10. Food items for <i>Thynnichthys thynnoides</i>	67
5.11. References used for <i>Thynnichthys thynnoides</i>	68
VI. <i>Trichogaster microlepis</i>	
6.1. Summary information on the family Osphronemidae.....	73
6.2. Information on the genus <i>Trichogaster</i> and its synonyms.....	73
6.3. General information on <i>Trichogaster microlepis</i>	74
6.4. Synonyms, misidentifications, etc. used for <i>Trichogaster microlepis</i>	74
6.5. Common names for <i>Trichogaster microlepis</i>	74
6.6. Distribution of <i>Trichogaster microlepis</i>	75
6.7. Introductions of <i>Trichogaster microlepis</i>	75
6.8. Summary information (no. of records) available for <i>Trichogaster microlepis</i>	75
6.9. Morphology of <i>Trichogaster microlepis</i>	76
6.10. Genetic information for <i>Trichogaster microlepis</i>	76
6.11. General information on the reproduction of <i>Trichogaster microlepis</i>	77
6.12. Ecology of <i>Trichogaster microlepis</i>	77
6.13. Food items for <i>Trichogaster microlepis</i>	77
6.14. Diseases reported for <i>Trichogaster microlepis</i>	77
6.15. References used for <i>Trichogaster microlepis</i>	79
VII. <i>Trichogaster pectoralis</i>	
7.1. Summary information on the family Osphronemidae.....	83
7.2. Information on the genus <i>Trichogaster</i> and its synonyms.....	83
7.3. General information on <i>Trichogaster pectoralis</i>	84
7.4. Synonyms, misidentifications, etc. used for <i>Trichogaster pectoralis</i>	84
7.5. Common names for <i>Trichogaster pectoralis</i>	85
7.6. Distribution of <i>Trichogaster pectoralis</i>	85
7.7. Introductions of <i>Trichogaster pectoralis</i>	86
7.8. Summary information (no. of records) available for <i>Trichogaster pectoralis</i>	87
7.9. Morphology of <i>Trichogaster pectoralis</i>	88
7.10. Genetic information for <i>Trichogaster pectoralis</i>	88
7.11. FAO aquaculture production data for <i>Trichogaster pectoralis</i>	89
7.12. General information on the reproduction of <i>Trichogaster pectoralis</i>	89
7.13. Ecology of <i>Trichogaster pectoralis</i>	90
7.14. Diet composition of <i>Trichogaster pectoralis</i>	90
7.15. Diseases reported for <i>Trichogaster pectoralis</i>	91
7.16. FAO annual catch data (in tonnes) for <i>Trichogaster pectoralis</i>	91
7.17. References used for <i>Trichogaster pectoralis</i>	93

VIII. <i>Anabas testudineus</i>.....	
8.1. Summary information on the family Anabantidae.....	99
8.2. Information on the genus <i>Anabas</i> and its synonyms	99
8.3. General information on <i>Anabas testudineus</i>	99
8.4. Synonyms, misidentifications, etc. used for <i>Anabas testudineus</i>	100
8.5. Common names for <i>Anabas testudineus</i>	101
8.6. Distribution of <i>Anabas testudineus</i>	101
8.7. Introductions of <i>Anabas testudineus</i>	102
8.8. Summary information (no. of records) available for <i>Anabas testudineus</i>	103
8.9. Morphology of <i>Anabas testudineus</i>	103
8.10. Genetic information for <i>Anabas testudineus</i>	105
8.11. FAO aquaculture production data for <i>Anabas testudineus</i>	106
8.12. General information on the reproduction of <i>Anabas testudineus</i>	106
8.13. Available information on eggs of <i>Anabas testudineus</i>	107
8.14. Ecology of <i>Anabas testudineus</i>	107
8.15. Food items for <i>Anabas testudineus</i>	108
8.16. Maximum weight/length/age of <i>Anabas testudineus</i>	108
8.17. Diseases reported for <i>Anabas testudineus</i>	108
8.18. Ecotoxicology of <i>Anabas testudineus</i>	110
8.19. References used for <i>Anabas testudineus</i>	111
IX. <i>Boesemania microlepis</i>.....	
9.1. Summary information on the family Sciaenidae.....	119
9.2. Information on the genus <i>Boesemania</i> and its synonyms.....	119
9.3. General information on <i>Boesemania microlepis</i>	119
9.4. Synonyms, misidentifications, etc. used for <i>Boesemania microlepis</i>	120
9.5. Common names for <i>Boesemania microlepis</i>	120
9.6. Distribution of <i>Boesemania microlepis</i>	121
9.7. Summary information (no. of records) available for <i>Boesemania microlepis</i>	121
9.8. General information on the reproduction of <i>Boesemania microlepis</i>	122
9.9. Ecology of <i>Boesemania microlepis</i>	122
9.10. Food items for <i>Boesemania microlepis</i>	123
9.11. References used for <i>Boesemania microlepis</i>	124
X. <i>Oxyeleotris marmorata</i>.....	
10.1. Summary information on the family Eleotridae.....	129
10.2. Information on the genus <i>Oxyeleotris</i> and its synonyms.....	129
10.3. General information on <i>Oxyeleotris marmorata</i>	129
10.4. Synonyms, misidentifications, etc. used for <i>Oxyeleotris marmorata</i>	130
10.5. Common names for <i>Oxyeleotris marmorata</i>	130
10.6. Distribution of <i>Oxyeleotris marmorata</i>	131
10.7. Introductions of <i>Oxyeleotris marmorata</i>	131
10.8. Summary information (no. of records) available for <i>Oxyeleotris marmorata</i>	131
10.9. Morphology of <i>Oxyeleotris marmorata</i>	132
10.10. Genetic information for <i>Oxyeleotris marmorata</i>	133
10.11. FAO aquaculture production data for <i>Oxyeleotris marmorata</i>	133
10.12. General information on the reproduction of <i>Oxyeleotris marmorata</i>	134
10.13. Ecology of <i>Oxyeleotris marmorata</i>	134
10.14. Food items for <i>Oxyeleotris marmorata</i>	135
10.15. Maximum weight/length/age of <i>Oxyeleotris marmorata</i>	135
10.16. Length-Weight relationships of <i>Oxyeleotris marmorata</i>	135
10.17. Diseases reported for <i>Oxyeleotris marmorata</i>	135
10.18. References used for <i>Oxyeleotris marmorata</i>	136
Acknowledgements.....	139



Introduction

This document results from the extraction and the editing by the authors of the information available in FishBase 2004.

FishBase is a biological database on fishes developed by the WorldFish Center (formerly ICLARM, the International Center for Living Aquatic Resources Management) in collaboration with the Food and Agriculture Organization of the United Nations (FAO) and with the support of the European Commission (EC).

These synopses present a standardized printout of the information on the above-mentioned species incorporated in FishBase as of 11 May 2004 and are inspired by the format suggested for such documents by H. Rosa Jr. (1965, FAO Fish. Syn. (1) Rev 1, 84 p.)

We cannot guarantee the total accuracy of the information herein; also we are aware that it is incomplete and readers are invited to send complementary information and/or corrections, preferably in the form of reprints or reports to the FishBase Project, WorldFish Center, MC P.O. Box 2631, Makati, Metro Manila, 0718, Philippines.

Some hints on how to use the synopses

The following definitions are meant to help you better understand the way this synopsis presents information and documents its sources.

Please refer to the FishBase book for more details and do not hesitate to contact FishBase staff if you have suggestions or information that would improve the format or the contents of this synopsis.

- SpecCode : Numeric FishBase code, assigned to a species and used for internal purposes only.
- StockCode : Numeric FishBase code, assigned to the species in general, a wild population, or a cultured strain. Since, to date, only a few species have been separated into stocks, the StockCode usually refers to the species in general.
- MainRef. : Numeric FishBase code corresponding to the reference used as a source for most of the information within a table.
- Ref. : Numeric FishBase code corresponding to the reference associated with a specific entry or set of entries; when left empty, the source of information is the MainRef. Note that the references listed at the end of this synopsis are arranged according to their numeric codes, and not alphabetically.
- Empty fields : Imply information that is currently not available to the FishBase project and/or information which is available but which has not been entered as of 31-Mar-04. Note that the character 0 (zero) is used as a valid numerical value, and does not indicate that no information is available.
- Choice fields : Much of the information in this synopsis was entered via multiple choice fields; the available alternatives must be considered when evaluating the wisdom of a given choice.
- Remarks or Comment fields : The free text included in such fields may have been taken verbatim from the source in "Ref.", in which case this should be regarded as a direct citation (but lacking quotation marks); alternatively, the text may have been modified/adapted from one or several sources. In the latter case, additional "Ref." numbers may be incorporated in the text.

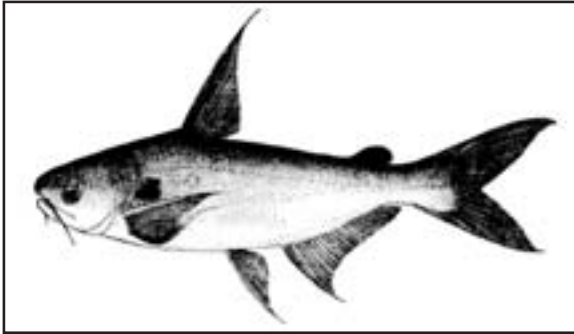


PANGASIUS LARNAUDII

(Bocourt, 1866)

Spot pangasius

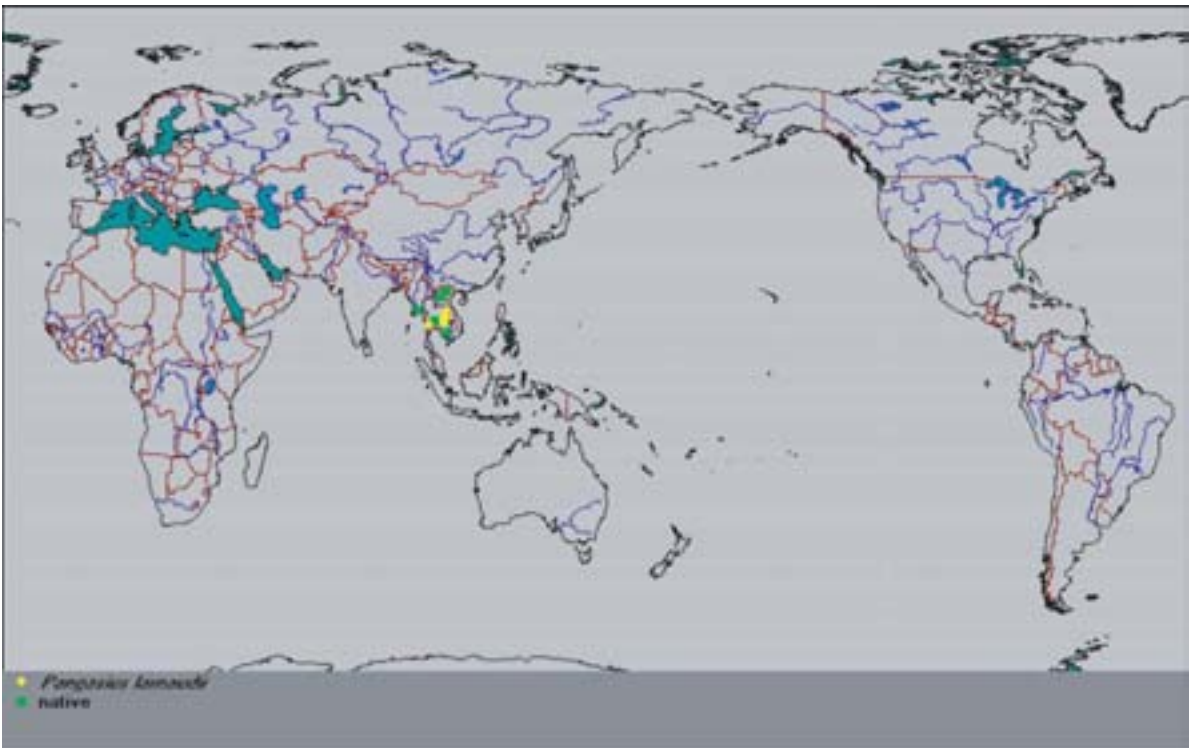
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Picture by [FAO](#)



Picture by [Warren, T.](#)



1.1. Summary information on the family Pangasiidae

Family	: Pangasiidae (Shark catfishes)	
Order	: Siluriformes	MainRef. : 007463
Class	: Actinopterygii (Ray-finned fishes)	FamCode : 134
Number of genera	: 2	
Number of species	: 21	
Occurs in	: O Marine ☑ Brackish ☑ Freshwater	
Aquarium fishes	: some	
First fossil record	: Lower Tertiary Eocene	Ref. : 004830
Species currently in FishBase:	Genera: 5 Species: 30 (Including subspecies)	Complete: Yes

Remarks:

Distribution: Southern Asia (Pakistan to Borneo). Barbels: usually two pairs: 1 pair of chin barbels. No nasal barbels. Compressed body. With small adipose fin, separate from caudal fin. Dorsal fin close to head region; 1 or 2 spines, 5-7 soft rays. Anal fin: 26-46 rays. Vertebrae: 39-52. Maximum length about 3 m. Maximum weight 300 kg (Pangasius gigas).

Etymology : The Vietnamese name of a fish

1.2. Information on the genus *Pangasius* and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

<i>Neopangasius</i>	Status : synonym	Gender : masculine
Popta, 1904, p. 180, CAS Ref: 3547		
Type by monotypy.		
Type species	: <i>Neopangasius nieuwenhuisii</i>	Popta, 1904
Current genus	: <i>Pangasius</i>	
<i>Pangasianodon</i>	Status : valid	Gender : masculine
Chevey, 1931, p. 538, CAS Ref: 830		
Type by monotypy.		
Type species	: <i>Pangasianodon gigas</i>	Chevey, 1931
Current genus	: <i>Pangasius</i>	
<i>Pangasius</i>	Status : valid	Gender : masculine
Valenciennes in Cuvier & Valenciennes, 1840, p. 45, CAS Ref: 1008		
Type by monotypy.		
Type species	: <i>Pangasius buchanani</i>	Valenciennes, 1840
Current genus	: <i>Pangasius</i>	
<i>Pseudolais</i>	Status : synonym	Gender : feminine
Vaillant, 1902, p. 51, CAS Ref: 4490		
Type by monotypy.		
Type species	: <i>Pseudolais tetranema</i>	Vaillant, 1902
Current genus	: <i>Pangasius</i>	
<i>Pseudopangasius</i>	Status : synonym	Gender : masculine
Bleeker, 1862, p. 399, CAS Ref: 391		
Type by original designation (also monotypic).		
Type species	: <i>Pangasius polyuranodon</i>	Bleeker, 1852
Current genus	: <i>Pangasius</i>	

Pteropangasius

Status : valid

Gender : masculine

Fowler, 1937, p. 142, CAS Ref: 1425

Type by original designation (also monotypic).

Type species : *Pangasius cultratus*

Smith, 1931

Current genus : *Pangasius***1.3. General information on *Pangasius larnaudii***

Class : Actinopterygii (Ray-finned fishes)

MainRef. 007432

Order : Siluriformes

Family : Pangasiidae (Shark catfishes)

Species : *Pangasius larnaudii*

Author : Bocourt, 1866

Spelling Eschmeyer, pers. comm.

Environment

Freshwater : Yes Habitat : Benthopelagic

Brackish : No

Saltwater : No

Importance

Importance to fisheries : Commercial

Ref. 037772

Main catching method :

Other methods : Seines Gillnets Castnets Traps Spears
 Trawls Dredges Liftnets Hooks+Lines Other

Used for aquaculture : Commercial

Ref. 004537

Used as bait : Never/rarely

Aquarium fish : Never/rarely

Game fish : No

Dangerous fish : Harmless

Electrobiology : No special ability

Size and age

Maximum length (cm) (male/unsexed) : 130 SL (female) :

Ref. 030857

Remarks:

Occurs in medium to large-sized rivers (Ref. 12975). Inhabits deep pools in the river (Ref. 37770). Found in rapids and riffle (Ref. 37771). Enters flooded forest (Ref. 9497). Artificially reared fry of 3.5 mm at 12 hrs., 8.4 mm at 4 days, 8.8 mm at 8 days and 23 mm at 18 days. Larval teeth present in 12 hr and 4 day larvae. Feeds on shrimps, small fishes, gastropods and plants (Ref. 6459). Migrates into floodplains and spawns at the beginning of the flood season (Ref. 12693).

1.4. Synonyms, misidentifications, etc. used for *Pangasius larnaudii*

Synonym	Author	Status	Ref.
<i>Pangasius burgini</i>	Fowler, 1937	junior synonym	007432
<i>Pangasius larnaudei</i>	Bocourt, 1866	misspelling	007432
<i>Pangasius larnaudi</i>	Bocourt, 1866	original combination	001632
<i>Pangasius larnaudiei</i>	Bocourt, 1866	misspelling	007432
<i>Pangasius larnaudieri</i>	Bocourt, 1866	misspelling	007432
<i>Pangasius larnaudii</i>	Bocourt, 1866	original combination	007432
<i>Pangasius taeniura</i>	Fowler, 1935	junior synonym	007432
<i>Pangasius taeniurus</i>	Fowler, 1935	junior synonym	007432

1.5. Common names for *Pangasius larnaudii*

Name	Language	Country	Ref.
Po	Khmer	Cambodia	040380
Trey po	Khmer	Cambodia	012693
Trey Po Thmau Trâchiek	Khmer	Cambodia	036654
Beung	Laotian	Lao People's Dem. Rep.	040382
Pa hou mat	Laotian	Lao People's Dem. Rep.	004792
Pa pboong	Laotian	Lao People's Dem. Rep.	009497
Pa peung	Laotian	Lao People's Dem. Rep.	037767
Pba beung	Laotian	Lao People's Dem. Rep.	037771
Pla chai por	Thai	Thailand	042982
Pla hou mat	Thai	Thailand	006459
Pla the pho	Thai	Thailand	006459
Sang kaward	Thai	Thailand	009648
Tepo	Thai	Thailand	009648
Spot pangasius	English	USA (contiguous states)	004537
Cá vo dêm	Vietnamese	Viet Nam	036625

1.6. Distribution of *Pangasius larnaudii*

Asia: Mekong and Chao Phraya Basins.

MainRef.: 007432

Latitudinal range: 20° N- 10° N Temperature range: - °C

Status of threat: NL.

Country	Status	Ref.
Cambodia	native	012693
Occurs in the Mekong Basin (Ref. 12693, 27732). Found below the Khone Falls to the Tonle Sap River and the Tonle Sap Lake (Ref. 37772). Reared in ponds as well as in weirs around the Tonle Sap Lake (Ref. 36686). May be put on ice around the Tonle Sap Lake for shipment to Thailand (Ref. 12693). Also Ref. 36654, 33813.		
Lao People's Dem. Rep.	native	027732
Occurs in the Mekong tributary, the lower Xe Bangfai Basin (Ref. 27732). Found in the Khone Falls (Ref. 37772). Collected from Tha Ngon in the Mekong Basin (Ref. 4792) and from Ban Hang Khone, a village on an island in the middle of the mainstream Mekong River just below the Great Khone Waterfalls in Khong District, Champasak Province (Ref. 37767). Enters flooded forest in Ban Hang Khone, Don Khone, just below the great waterfalls at Lee Pee (Ref. 9497). Undertakes upstream migration during the wet season in May-July through Hoo SomYai at the Great Fault Line on the Mekong River, Champasak Province (Ref. 37771). Also Ref. 9497, 30857, 37771, 43281, 44002.		

- Myanmar** **native** **041485**
Upstream migration during May to September in Khone Falls, downstream migration at Chieng Khan, Loei province from May to September (Ref. 41485).
- Thailand** **native** **026336**
Occurs in the Mekong and Chao Phraya Basins (Ref. 27732) and Maeklong Basin (Ref. 26336). Not found in the markets of Bangkok a century ago because it was expensive and reserved for consumption by important people; it was raised in water courses closed off by bamboo grills (Ref. 7432). Also Ref 1632, 6459, 9648, 41485.
- Viet Nam** **native** **027732**
Occurs in the Mekong Basin (Ref. 27732). Below the Khone Falls from Dong Thap Province to the Khone Falls, it migrates upstream at the start of the dry the season, triggered by the receding water levels (Ref. 37770). Also Ref. 36625, 37770.

1.7. Summary information (no. of records) available for *Pangasius larnaudii*

Level: species in general **StockCode: 07432** **MainRef.: 007432**

Asia: Mekong and Chao Phraya Basins.

Ecology	1	Max. sizes	0	Strains	0
Food Items	7	FAO catches	15502	Diseases	0
Food consumption	0	Genetics	1	Ciguatera	0
Diet composition	0	Allele frequency	0	Ecotoxicology	0
Ration	0	Heritability	0	Metabolism	0
Predators	0	Reproduction	1	Gill area	0
Morphology	1	Spawning	1	Swimming type	0
Processing	0	Eggs	0	Swimming speed	0
Growth/mortality	0	Egg dev't.	0	Vision	0
Maturity	0	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	0
L/W relat.	1	Aquaculture	0	Occurrence	31

Total = 1

1.8. Morphology of *Pangasius larnaudii*

Level : species in general **StockCode : 012326** **Main Ref.: 027732**

Diagnostic Characters

A large black spot above the base of the pectoral fin and a black longitudinal stripe along each caudal lobe (Ref. 27732). Dorsal and pectoral fins with a strong spine and a long, filamentous ray (Ref. 4792). With 13-17 gill rakers in first arch (Ref. 12693)

Descriptive Characters

Striking features : none
Operculum : present

Teeth Presence

Vomerine : present
Palatine : present

Pigmentation on trunk and tail

Horizontal stripes : absent
Vertical stripes : absent
Diagonal stripes : absent
Curved stripes : absent

Spots : one spot only
Caudal fin anal : one spot on stripe

Meristic Characters

Gill rakers : on lower limb total: 13-17

Dorsal fins

Number of fins : 1

Caudal fin

Shape of fin : forked
Attributes : more or less normal

Anal fin

Number of fins soft rays total: 28-32

Paired fins

Pectoral attributes : more or less normal
Pelvics attributes : more or less normal
Position : abdominal, behind origin of D1

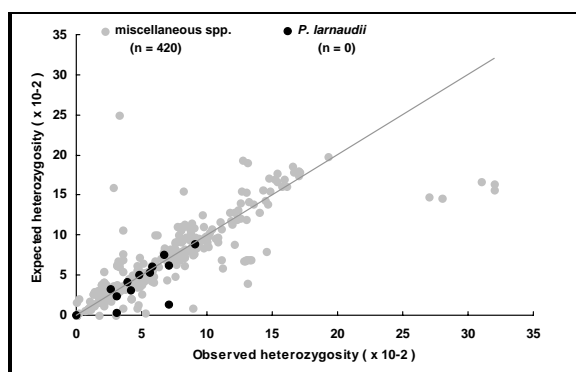
1.9. Genetic information for *Pangasius larnaudii*

Level : species in general

MainRef.: 009461

Locality : Unspecified
Chromosome number (haploid) : 30
Chromosome number (diploid) : 60
Genetic marker(s) present : No

Expected vs observed heterozygosity of *Pangasius larnaudii*



1.10. General information on the reproduction of *Pangasius larnaudii*

Level : species in general

StockCode : 012326

MainRef : 041485

Mode and type of reproduction

Mode : dioecism
Fertilization : external
Spawning frequency : one clear seasonal peak per year
Batch spawner : no
Reproductive guild : nonguarders Open water/substratum egg scatterers

Spawning Information for *Pangasius larnaudii*

Locality : Laos, Mekong River at Hoo Som Yai on the Great Fault Line, Champassack Season (% of mature females; 111= presence of mature females):

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
								111	111		

Stockcode: 012326

Main Ref.: 037771

1.11. Ecology of *Pangasius larnaudii*

Level : species in general

StockCode: 012326, 012000

Main Ref.: 009497

Habitats

Streams	: Yes	Lake: Yes	Cave: No	
Estuaries/lagoons/brackish seas:	No			
Intertidal	: No	Soft : No	Rocky : No	Mangroves/marshes/swamps: No
Marine	: No	Oceanic : No	Neritic : No	Coral reefs: No
Tropicalsoft bottom	: No	Hard bottom: No	Seagrass beds: No	Macrophyte: No

Feeding

Feeding type : mainly animals (troph. 2.8 and up)

Ref.: 009497

Feeding habit : hunting macrofauna (predator)

Trophic level(s):

Estimation method

Original sample

Troph s.e

Unfished population

troph s.e

Remarks

From indiv. food item:

3.3 0.53

- -

Trophic level estimate

Additional remarks

Feeds heavily on fruits and enters the flooded forest in high water (Ref. 9497). Also feeds on fish, crustaceans and mollusks (Ref. 9459).

1.12. Food items for *Pangasius larnaudii*

Level: species in general

StockCode: 012326

Food item

Ref.

detritus

detritus	debris	unidentified	037771
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nekton

finfish	bony fish	unidentified	033813
		unidentified fish	049196

plants

other plants	terrestrial plants	unidentified fruits	009497
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zoobenthos

benth. crust.	n.a./other benth.	unidentified crustaceans	049196
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crustaceans

	shrimps/prawns	unidentified	006459
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mollusks	gastropods	unidentified	006459
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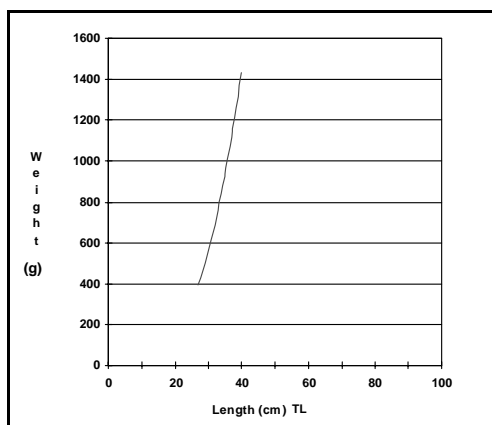
Total: 7

1.13. Length-Weight relationships of *Pangasius larnaudii*

($W = a * L^b$ with Length in cm and Weight in g)

Locality	Laos, Mekong River at Hoo Som Yai on the Great Fault Line	StockCode	: 012326
Length range	: 34 - 75 TL	Sample size	: 194
a	: 0.0034	Correlation coefficient	: 0.9643
b	: 3.279	Ref.:	037771
		Sex	: unsexed

L-W relationship(s) of *Pangasius larnaudii*



This graph is meant to provide a general impression of the relationship between body length and weight in this species. See the L-W tables for details.

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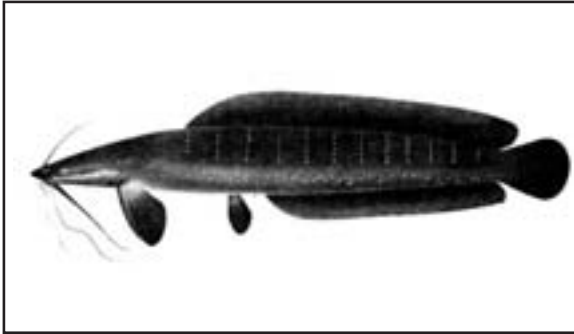


CLARIAS BATRACHUS

(Linnaeus, 1758)

Walking catfish

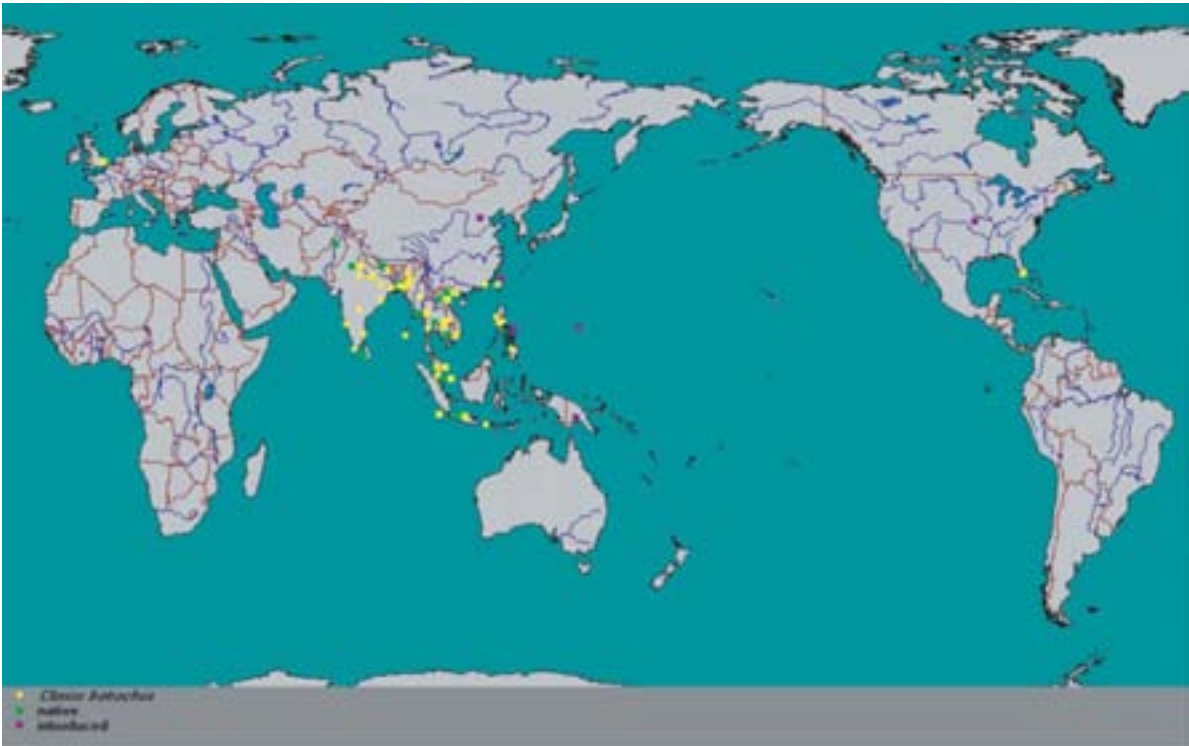
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Picture by **FAO**



Picture by **Baird I.G**



2.1. Summary information on the family Clariidae

Family	: Clariidae (Airbreathing catfishes)	MainRef.: 007463
Order	: Siluriformes	FamCode: 139
Class	: Actinopterygii (Ray-finned fishes)	
Number of genera	: 13	
Number of species	: 100	
Occurs in	: O Marine O Brackish ☑ Freshwater	

Aquarium fishes: some

Species currently in FishBase: Genera: 15 Species: 104 (Including subspecies) Complete: Yes

Remarks:

Distribution: Africa, Syria and southern and western Asia (Philippines to Java). Dorsal fin extending over much of body length. Dorsal fin rays usually over 30 without a leading spine. Dorsal fin discontinuous or united to caudal fin. Rounded caudal fin. Wide gill openings. Barbels: 4 pairs. Airbreathing is accomplished with a labyrinthic organ arising from the gill arches ('labyrinth catfishes'). Some species are capable of travelling over short distances on land ('walking catfishes'). Some are burrowers with small eyes and the pectoral and pelvic fins small or lacking.
Etymology: Clariidae: Latin, clarias, -a, -um = shining

2.2. Information on the genus *Clarias* and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

<i>Anguilloclarias</i> Teugels, 1982, p. 13, CAS Type by original designation. Type species : <i>Clarias theodorae</i> Current genus : <i>Clarias</i>	Status: synonym Ref: 6670	Gender: masculine
<i>Brevicephaloides</i> Teugels, 1982, p. 14, CAS Type by original designation. Type species : <i>Clarias camerunensis</i> Current genus : <i>Clarias</i>	Status: synonym Ref: 6670	Gender: masculine
<i>Clarias</i> Scopoli (exGronow), 1777, p. 455, CAS Type by subsequent designation. Type species : <i>Silurus anguillaris</i> Current genus : <i>Clarias</i>	Status: valid Ref: 3990	Gender: masculine
<i>Clarias</i> Gronow, 1763, p. 100, CAS Type of species : Current genus : <i>Clarias</i>	Status: on official index Ref: 1910	Gender : masculine
<i>Clarioides</i> David in David & Poll. 1937.p. 231, CAS Type of species : <i>clarias angolensis</i>	Status: not valid Ref.: 1043	Gender : masculine
	Steindachner, 1866	

Cossyphus McClelland, 1844, p. 403, CAS Type by monotypy. Type species : <i>Cossyphus ater</i> Current genus : <i>Clarias</i>	Status: preoccupied Ref: 2927	Gender: masculine McClelland, 1844
Dinotopteroides Fowler, 1930, p. 41, CAS Type by original designation (also monotypic) Type species : <i>Dinotopteroides prentissgrayi</i> Current genus : <i>Claria</i>	Status: valid subgenus Ref.: 1406	Gender: masculine Fowler , 1930
Heterobranchoides David, 1935, p. 82, 99, CAS Type species : <i>Current genus</i>	Status: synonym Ref: 5559	Gender: masculine
Macropteronotus Lacepède, 1803, p. 84, CAS Type by monotypy. Type species : <i>Macropteronotus charmuth</i> Current genus : <i>Clarias</i>	Status: synonym Ref: 4930	Gender: masculine Lacepède, 1803
Phagoru McClelland, 1844, p. 225, CAS Type by monotypy. Type species : <i>Cossyphus ater</i> Current genus : <i>Clarias</i>	Status: synonym Ref: 2928	Gender: masculine McClelland, 1844
Platycephaloides Teugels, 1982, p. 11, CAS Type by original designation. Type species : <i>Clarias platycephalus</i> Current genus : <i>Clarias</i>	Status: synonym Ref: 6670	Gender: masculine Boulenger, 1902
Prophagorus Smith, 1939, p. 236, CAS Type by original designation (also monotypic). Type species : <i>Clarias nieuhofii</i> Current genus : <i>Clarias</i>	Status: synonym Ref: 4055	Gender: masculine Valenciennes, 1840

2.3. General information on *Clarias batrachus*

Classification

Class	: Actinopterygii (Ray-finned fishes)	MainRef. 001479
Order	: Siluriformes	
Family	: Clariidae (Airbreathing catfishes)	
Species	: <i>Clarias batrachus</i>	
Author	: (Linnaeus, 1758)	Author Ref. 001652

Environment


Freshwater	: Yes	Habitat	: Demersal
Brackish	: Yes	Migrations	: Potamodromous
Saltwater	: No	Depth range	: 1

Importance

Importance to fisheries	: Commercial				
Other methods	: <input checked="" type="checkbox"/> Seines	<input checked="" type="checkbox"/> Gillnets	<input checked="" type="checkbox"/> Castnets	<input type="checkbox"/> Traps	<input type="checkbox"/> Spears
	<input type="checkbox"/> Trawls	<input type="checkbox"/> Dredges	<input type="checkbox"/> Liftnets	<input checked="" type="checkbox"/> Hooks+Lines	<input type="checkbox"/> Other
Used for aquaculture	: Commercial				Ref.007306
Used as bait	: Never/rarely				
Aquarium fish	: Commercial	based mainly on capture			Ref.001672
Game fish	: No				
Dangerous fish	: Potential pest				Ref.004690
Electrobiology	: No special ability				

Size and age

Maximum length (cm) (male/unsexed)	: 47 TL	(female):	Ref. 040637
Common length (cm) (male/unsexed)	: 26.25 TL	(female):	Ref. 012193
Maximum weight (g) (male/unsexed)	: 1,190.00	(female):	Ref. 040637

 Remarks:	<p><i>Inhabits swamps, ponds, ditches, rice paddies, and pools left in low spots after rivers have been in flood (Ref. 2854). Usually confined to stagnant, muddy water (Ref. 1479). Found in medium to large-sized rivers, flooded fields and stagnant water bodies including sluggish flowing canals (Ref. 12975). Undertakes lateral migrations from the Mekong mainstream, or other permanent water bodies, to flooded areas during the flood season and returns to the permanent water bodies at the onset of the dry season (Ref. 37770). Can live out of water for quite some time and move short distances over land (Ref. 4833). Can walk and leave the water to migrate to other water bodies using its auxiliary breathing organs. The Lao use this fish as lap pa or ponne pa. Feeds on insect larvae, earthworms, shells, shrimps, small fish, aquatic plants and debris (Ref. 6459). An important food fish (Ref. 4833). Marketed live, fresh and frozen (Ref. 9987).</i></p>
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2.4. Synonyms, misidentifications, etc. used for *Clarias batrachus*

Synonym	Author	Status	Ref.
<i>Clarias assamensis</i>	Day, 1877	junior synonym	004833
<i>Silurus batrachus</i>	Linnaeus, 1758	original combination	041236
<i>Clarias batrachus</i>	Linnaeus, 1758	new combination	041236
<i>Macropteronotus jagur</i>	Hamilton, 1822	junior synonym	041236
<i>Clarias jagur</i>	Hamilton, 1822	junior synonym	041236
<i>Macropteronotus magur</i>	Hamilton, 1822	questionable	001479
<i>Clarias magur</i>	Hamilton, 1822	questionable	004833
<i>Clarias punctatus</i>	Valenciennes, 1840	junior synonym	041236

2.5. Common names for *Clarias batrachus*

Name	Language	Country	Ref.
Trey andaing roueng	Khmer	Cambodia	012693
Trey andeng	Khmer	Cambodia	002686
Trey andèng	Khmer	Cambodia	036654
Magur	English	India	004833
Ikan lele	Malay	Malaysia	002686
Keli	Malay	Malaysia	004789
Ikan keling	Malay	Indonesia	006107
Ikan lele	Malay	Indonesia	040977
Leleh	Malay	Indonesia	006107

Pa douk	Laotian	Lao People's Dem. Rep.	002686
Nga-khoo	Burmese	Myanmar	002686
Toyman's spotted catfish	English	Myanmar	005736
Hito	Tagalog	Philippines	002854
Hitong batukan	Tagalog	Philippines	002854
Pantat	Tagalog	Philippines	002854
Pla duk	Thai	Thailand	042982
Pla duk dam	Thai	Thailand	002686
Pla duk dan	Thai	Thailand	042982
Pla duk nam jued	Thai	Thailand	042982
Walking catfish	English	United Kingdom	012693
Clarias catfish	English	USA (contiguous states)	004537
Walking catfish	English	USA (contiguous states)	000276

2.6. Distribution of *Clarias batrachus*

Asia: Mekong and Chao Phraya Basins, Malay Peninsula, Sumatra, Java, Borneo. MainRef.: 027732
Reported from Sri Lanka; popular for aquaculture in its native range but not regarded as such in other Southeast Asian countries. Trade restricted in Germany (Ref. 1739). Several countries report adverse ecological impact after introduction.

Latitudinal range: 29° N - 7° S

Temperature range: 20 - 25 °C

Ref.: 1672

Status of threat: NL.

Country	Status	Ref.
Bangladesh	native	001479
Also Ref. 4833, 39989, 41236, 43638.		
Cambodia	native	027732
Occurs in the Mekong Basin (Ref. 27732), Tonle Sap and Great Lake (Ref. 33813). Much more common in flood-plain lakes than in the Mekong mainstream (Ref. 37770). Also Ref. 36654, 37772.		
China	introduced	001739
Established in ponds in Kwantung and Yunnan provinces (Ref. 1739). Known from the Mekong Basin in Yunnan (Ref. 27732). Also Ref. 36654.		
Guam	introduced	001739
India	native	004833
Occurs in freshwater plains of India (Ref. 45255). Found in Chilka Lake (Ref. 29108); Maharashtra (Ref. 43634). Also Ref. 1739, 41236, 43638.		
Indonesia	native	002847
Occurs in Sumatra, Java and Borneo (Ref. 27732). First translocated to the Lake Sentani region, but occurs now in the Vogelkop Peninsula on the Prafi Plain near Manokwari and in the Sorong district, Irian Jaya (Ref. 2847). Also introduced to Sulawesi (Ref. 7050). Found in Great Sunda Islands (Ref. 36654). Also Ref. 39637, 41236, 43638.		
Lao People's Dem. Rep.	native	043281
Occurs in the Mekong Basin (Ref. 43281). Found in the middle Xe Bangfai, and the middle Nam Theun (Ref. 27732, 2686), Pak Beng to the Mun-Chin River (Ref. 37772) and Ban Hang Khone, a village on an island in the middle of the mainstream Mekong River just below the Great Khone Waterfalls in Khong District, Champasak Province (Ref. 37767). Also collected from Tha Ngon, Tha Bo and Hatsalao in the Mekong Basin (Ref. 4792). Found in paddies, swamps and canals at Vientiane, Savannakhet and Pakse (Ref. 4792). In Khammouan Province, movement into small streams is triggered by the first heavy rains at the end of the dry season (Ref. 37770). Spends the dry season living around rocks in the main river (Ref. 37770). Also Ref. 30857.		
Malaysia	native	027732
Occurs in the Malay Peninsula.		
Myanmar	native	004833
Also Ref. 2686, 41236, 43638.		

Nepal	native	009496
Found in Bheri, Janakpur, Gandaki, Koshi, Lumbini and Narayani zones at 76-120 m altitude. Also Ref. 41236, 43638.		
Pakistan	native	036654
Also Ref. 41236, 43638.		
Papua New Guinea	introduced	002847
Known from the Lake Sentani region, Vogelkop Peninsula on the Prafi Plain near Manokwari, in the Sorong district (Ref. 2847) and in Western Province (Ref. 50786). Also Ref. 9420.		
Philippines	introduced	012157
Completely dominated natural populations in lakes and rivers and the indigenous <i>Clarias macrocephalus</i> which can hardly be found in the markets today. Occurs in swamps, ponds, ditches, rice paddies, and pools left in low spots after rivers have flooded (Ref. 2854). Specimens were collected from Ambacan River at Makinhas and Butigan, Leyte in 1993 (Ref. 7223). Known from Lake Mainit, Mindanao (Ref. 4867). A cheap food fish in Laguna de Bay and not a preferred fish because of its tough flesh. Museum specimens collected in 1984 from east bay, LRS-83120 (Ref. 13460). Also found in Lake Buluan (Ref. 13492) and Lake Taal (Ref. 13446). Used in the aquarium trade (Ref. 12157). Also Ref. 1739, 7050, 12550, 36654, 43638.		
Singapore	native	041236
Also Ref. 43638.		
Sri Lanka	native	006028
Occurrence needs verification; possibly a misidentification of <i>C. brachysoma</i> . Also Ref. 1739, 4833.		
Taiwan	introduced	001739
First successful larviculture in Taiwan not known (Ref. 40297).		
Thailand	native	026336
Occurs in the Chao Phraya, Mekong, MaeKlong, Salween, Peninsular and Southeast Thailand river systems (Ref. 26336). Recorded from Chiangmai (Chiang Mai), Me Poon, Pitsanulok, Bangkok, and Tale Sap (Ref. 1632). Highly priced food fish. Consumed fresh (Ref. 6459). Also Ref. 9648, 27732, 37773, 39637.		
USA (contiguous states)	introduced	001739
Established in peninsular Florida. Abundant in southern and central Florida (Ref. 5723). Also Ref. 9987.		
Viet Nam	native	027732
Occurs in the Mekong Basin (Ref. 27732). Also Ref. 2682, 36625, 46452.		

2.7. Introductions of *Clarias batrachus*

Level: species in general

Asia: Mekong and Chao Phraya Basins, Malay Peninsula, Sumatra, Java, Borneo. Reported from Sri Lanka; popular for aquaculture in its native range but not regarded as such in other Southeast Asian countries. Trade restricted in Germany (Ref. 1739). Several countries report adverse ecological impact after introduction.

Year	: 1978	Established	: probably no	Ref.	013686
Introduced	: to China Main from Thailand				
Reason	: aquaculture				
Comments	: Established in ponds in Kwantung and Yunnan provinces; useful and widely used for small pond culture.				

Year	: 1972	Established	: yes	Ref.	001739
Introduced	: Thailand to Taiwan				
Reason	: aquaculture				
Comments	: Has achieved considerable popularity as a culture organism. Has hybridized with local <i>Clarias fuscus</i> and has spread all over the island to the extent that <i>C. fuscus</i> faces local extinction.				

Year	: unknown	Established : yes	
Introduced	: to Guam from Unknown		
Reason	: unknown		
Comments	: Established species.		
Year	: 1970	Established : no	Ref. 001739
Introduced	: to Hong Kong from Thailand		
Reason	: aquaculture		
Comments	: Intolerant of cold and not as popular as the local <i>Clarias fuscus</i> .		
Year	: 1930	Established : yes	Ref. 001739
Introduced	: to Indonesia from Java		
Reason	: aquaculture		
Comments	: Widespread but undesirable; elimination was also attempted. Established feral populations (Ref. 9421). First introduced to the Lake Sentani region, but occurs now in the Vogelkop Peninsula on the Prafi Plain near Manokwari and in the Sorong District (Ref. 2847).		
Year	: unknown	Established : yes	Ref. 001739
Introduced	: to Papua N. Guin. from Unknown		
Reason	: unknown		
Comments	: First introduced in Lake Sentani region and later also found in the Vogelkop Peninsula on the Prafi Plain near Manokwari and in the Sorong district (Ref. 2847). Has been encountered by villagers on the middle Bjnsbach around 1995 (Ref. 0786).		
Year	: 1972	Established : yes	Ref. 006096
Introduced	: to Philippines from Thailand		
Reason	: aquaculture		
Comments	: The intensive dispersal of the species in Luzon in the 1970s led to the displacement of the native catfish in irrigation systems, lakes and rivers (Ref. 48328). Has completely dominated natural populations in lakes and rivers and the indigenous <i>Clarias macrocephalus</i> can hardly be found in the markets today. Grows better than local species but not as acceptable. (Ref. 1739). The species has been successfully established in Luzon, Mindoro, Negros, Panay and some parts of Mindanao (Ref. 48328).		
Year	: unknown	Established : probably no	Ref. 001739
Introduced	: to UK from Southeast Asia		
Reason	: ornamental		
Comments	: Accidentally released from aquaria and breeds in heated effluent from a power station. Rarely found (Ref. 6375).		
Year	: 1960 - 1969	Established : yes	Ref. 013686
Introduced	: to USA from Thailand		
Reason	: ornamental		
Comments	: Introduced in the 1960s. Accidentally released from aquaria. Dominant in some swamp areas in Florida and regarded as a pest. This species became well established.		
Year	: 1960 - 1969	Established : yes	Ref. 013686
Introduced	: to USA from Java, Indonesia		
Reason	: ornamental		
Comments	: Introduced in the 1960s. Accidentally released from aquaria. Dominant in some swamp areas in Florida and regarded as a pest. This species became well established in the southern half of Peninsular Florida by 1978 (Ref.: 6029)		

2.8. Summary information (no. of records) available for *Clarias batrachus*

Level: species in general

StockCode: 027732

MainRef.: 027732

Ecology	1	Max. sizes	2	Strains	0
Food items	9	FAO catches	15502	Diseases	61
Food consumption	0	Genetics	14	Ciguatera	0
Diet composition	1	Allele frequency	0	Ecotoxicology	3
Ration	0	Heritability	0	Metabolism	9
Predators	0	Reproduction	1	Gill area	1
Morphology	1	Spawning	6	Swimming type	1
Processing	1	Eggs	0	Swimming speed	0
Growth/mortality	0	Egg dev't.	0	Vision	0
Maturity	0	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	10
L/W relat.	1	Aquaculture	0	Occurrence	251

2.9. Morphology of *Clarias batrachus*

Level : species in general

StockCode : 003250

Main Ref. 002847

Diagnostic Characters

Body compressed posteriorly. Upper jaw a little projecting. Spine of pectoral fins rough on its outer edge and serrated on its inner edge (Ref. 4792). Occipital process more or less triangular, its length about 2 times its width (Ref. 27732); distance between dorsal and occipital process 4-5.5 times of distance from tip of snout to end of occipital process (Ref. 43281).

Descriptive Characters

Striking features : none
 Body shape lateral : elongated dorsal head profile: more or less straight
 Operculum present : Yes
 Type of eyes : more or less normal

Teeth Presence

upper jaw : present

Pigmentation on trunk and tail

Horizontal stripes : absent
 Vertical stripes : absent
 Diagonal stripes : absent
 Curved stripes : absent
 Spots : no spots
 Dorsal fin (D1) : no spots or stripes
 Caudal fin : no spots or stripes
 Anal fin (A1) : no spots or stripes

Meristic Characters

Lateral Lines

Interrupted : No
 Scales on lateral line : -
 Pored lateral line scales : -
 Scales in lateral series : -
 Scale rows above lateral line : -
 Scale rows below lateral line : -
 Scales around caudal peduncle : -

Barbels

Gill clefts (sharks/rays only) Spiracle :
 Gill rakers on lower limb total : 23-23
 on upper limb : -
 Vertebrae preanal total : -

Dorsal fins

Dorsal attributes : no striking attributes
 Number of fins : - spines total : 00- soft-rays total : 6076
 Adipose fin : absent finlets dorsal : 0-0 finlets ventral : 0-0

Caudal fin

Shape of fin : more or less truncate
 Attributes : more or less normal

Anal fin

Number of fins : - spines total : -00 soft-rays total : 4758

Paired fins

Pectoral attributes : more or less normal
 spines : 1 soft-rays : 811
 Pelvics attributes : more or less normal
 position : abdominal behind origin of D1
 spines : soft-rays : 66

2.10. Genetic information for *Clarias batrachus***Main Ref.: 008943**

Locality : Unspecified
 Chromosome number (haploid) : 25
 Chromosome number (diploid) : 0
 Genetic marker(s) present : No
 DNA content (picogram, haploid) : 1.2
 Chromosome arm no. : 88
 Sex-determining mechanism : Chromosomes

Ref.: 002209

Ref: 027239

Remarks: $2n = 52$ (Ref. 27272). Two NORs are present and these are situated at the terminal end of the short arms of chromosome 2 (Ref. 8941). $CF = 16m + 8sm + 14st$ and 12a. $AN = 74$ (Ref. 8947 and 27239). $n = 27$ (Ref. 2209). $2n = 56$ and DNA content of haploid 0.92 (Ref. 12384). $2n = 52$ (Ref. 8973). NORs present on the 11th pair of chromosomes.

Main Ref.: 030184

Locality : China
 Chromosome number (haploid) : 50
 Chromosome number (diploid) : 100
 Genetic marker(s) present : No
 Chromosome arm no. : 110

Remarks: $CF = 4m + 6sm + 78A$, microchromosomes = 12.

Main Ref.: 030184

Locality : Delhi, India
 Chromosome number (haploid) : 26
 Chromosome number (diploid) : 52
 Genetic marker(s) present : No
 Chromosome arm no. : 52

Ref.: 029199

Ref.: 029199

Ref.: 029199

Locality : Unspecified
 Chromosome number (haploid) : 26
 Chromosome number (diploid) : 52
 Genetic marker(s) present : No
 Chromosome arm no. : 58

2.11. FAO aquaculture production data for *Clarias batrachus*

Country (Area)		1984	1985	1986	1987	1988	1989	1990
		1991	1992	1993	1994	1995	1996	1997
		1998	1999	2000	2001			
Cambodia (4)	(t)	60	110	110	110	110	200	235
	(US\$'000)	90	165	120	165	272	340	423
	(t)	250	310	270	280	320	330	420
	(US\$'000)	500	620	540	560	624	644	798
	(t)	460	510	500	540			
	(US\$'000)	874	918	900	972			
Guam (6)	(t)	0	4	6	8	3	10	26
	(US\$'000)	0	10	10	10	9	35	10
	(t)	16	14	16	16	16	18	18
	(US\$'000)	64	56	64	64	64	72	72
	(t)	18	20	20	20			
	(US\$'000)	72	80	80	80			
Singapore (4)	(t)	0	0	0	0	0	0	0
	(US\$'000)	0	0	0	0	0	0	0
	(t)	0	0	0	0	0	0	0
	(US\$'000)	0	0	0	0	0	0	0
	(t)	0	18	15	5			
	(US\$'000)	0	37	44	8			
Total: 3	(mt)	60	114	86	98	173	210	261
	(US\$'000)	90	175	135	155	281	375	514
	(mt)	266	324	286	296	336	348	438
	(US\$'000)	564	676	604	624	688	716	870
(mt)	478	548	535	565				
(US\$'000)	946	1,035	1,024	1,060				

2.12. Weight proportions and chemical composition of *Clarias batrachus*

Level : species in general

Stockcode: 003250

Locality : Not specified

Main Ref.: 009987

Chemical composition in percent

Body parts	Moisture	Protein	Fat	Ash
Meat/Fillet	76.5-	19.0-	3.0-	—

Comment: Based on 100 g edible weight; contains 103 kcal. Can be fried, broiled and baked

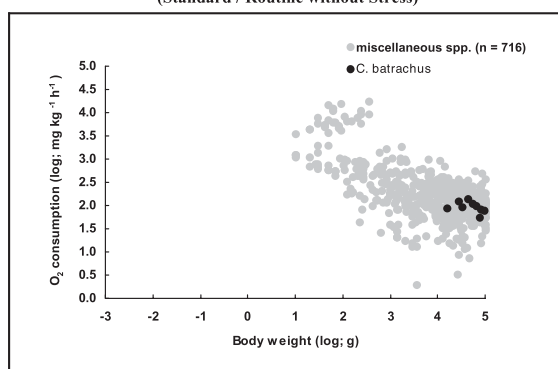
2.13. Gill area of *Clarias batrachus*

Gill area	:	146 (cm ²)
Body weight	:	51.5 (g)
Gill area / weight	:	2.83 (cm ² /g)

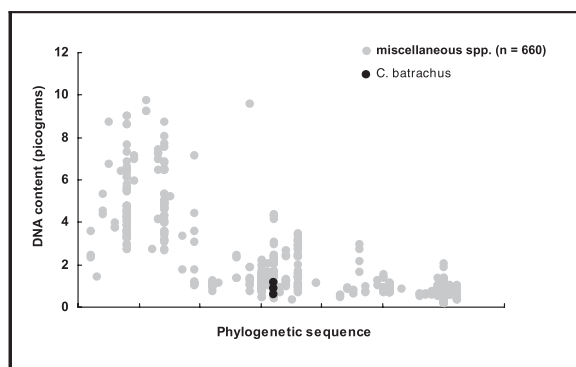
Main Ref. 002302

Data Ref. 002330

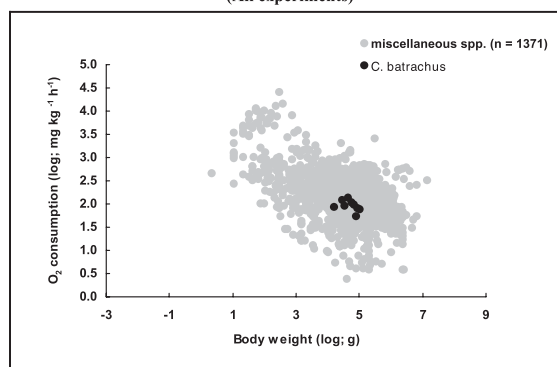
Relative oxygen consumption of *Clarias batrachus*
(Standard / Routine without Stress)



DNA content vs. phylogenetic sequence of *Clarias batrachus*



Relative oxygen consumption of *Clarias batrachus*
(All experiments)



2.14. General information on the reproduction of *Clarias batrachus*

Level : species in general

StockCode : 003250

MainRef: 006868

Mode and Type of Reproduction

Mode : dioecism

Fertilization : external

Spawning frequency : one clear seasonal peak per year

Batch spawner : no

Reproductive guild: guarders, nesters

The pair manifests the 'spawning embrace' which is widely observed in other catfish species (Ref. 33313). The pair gently nudges each other in the genital region and flicks their dorsal fins; male wraps his body around the female. Then the female releases a stream of adhesive eggs into the nest (Ref. 44091). In Southeast Asia, spawning period is during the rainy season, when rivers rise and fish are able to excavate nests in submerged mud banks and dikes of flooded rice fields (Ref. 40977).

Spawning Information for *Clarias batrachus*

Locality : Mekong mainstream

Stockcode: 003250

Season (% of mature females; 111= presence of mature females):

Main Ref.: 037770

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		111	111	111	111	111				111	

Comment: *Based on the occurrence of eggs during March-July and in October.*

Locality : Bangladesh

Stockcode: 003250

Season (% of mature females; 111= presence of mature females):

Main Ref.: 001479

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				111	111	111					

Fecundity:	min	2,340 (n)	Female size	(g)	20.50 (cm)
	max	13,400 (n)		(g)	30.20 (cm)

Ref.: 001479

Comment: *Spawns in shallow waters in inundated paddy fields.*

Locality : India

Stockcode: 003250

Season (% of mature females; 111= presence of mature females):

Main Ref.: 004833

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					111	111					

Fecundity:	min	(n)	Female size	(g)	(cm)
	max	(n)		(g)	(cm)

Locality : Viet Nam, Mekong Delta

Stockcode: 003250

Season (% of mature females; 111= presence of mature females):

MainRef.: 037770

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
111	111	111	111	111	111	111	111	111	111	111	111

Comment: *Based on the occurrence of eggs throughout the year.*

Locality : Viet Nam, Mekong Basin at at Tien Giang province

Stockcode: 003250

Season (% of mature females; 111= presence of mature females):

Main Ref.: 037770

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					111	111					

Comment: *Spawning occurs in the paddy field.*

Locality : Thailand

Stockcode: 003250

Season (% of mature females; 111= presence of mature females):

Main Ref.: 006459

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				111	111	111	111	111	111		

Fecundity:	min	5,000 (n)	Female size	300 (g)	(cm)	Ref.: 001479
	max	13,400 (n)		800 (g)	(cm)	

Comment: Eggs hatch within 20 hours at 25° - 32 ° C.**2.15. Ecology of *Clarias batrachus*****Level : species in general****StockCode : 003250, 003054****Main Ref.: 013497****Habitats**

Streams : No	Lakes : Yes	Caves : No	(exclusively) : No
Estuaries/lagoons/brackish seas : No			
Intertidal : No	Soft: No	Rocky : No	Mangroves/marshes/swamps : No
Marine : No	Oceanic: No	Neritic : No	Coral reefs: No
Tropical soft bottom: No	Hard bottom: No	Seagrass beds : No	Macrophyte : No

Feeding

Feeding type : mainly animals (troph. 2.8 and up)

Feeding habit : hunting macrofauna (predator)

Ref 012975

Trophic level(s) :	Original		Unfished		Remarks
	sample	s.e.	population	s.e.	
Estimation method	Troph	s.e.	Troph	s.e.	
From diet composition	3.3	0.50	3.3	0.50	Troph of recruits/juven.
From indivi. food item	3.2	0.44	-	-	Troph of level estimate

Additional Remarks

Feeds mainly insects (Ref. 13479)

2.16. Food items for *Clarias batrachus***Level: species in general****StockCode : 003250****Food item****Ref.****detritus**

detritus	debris	<i>unidentified</i>	006459
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nekton

finfish	bony fish	<i>unidentified</i>	006459
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	n.a./other finfish	<i>unidentified</i>	012975
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plants

other plants	benthic algae/weeds	<i>unidentified</i>	006459
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zoobenthos

benth. crust.	shrimps/prawns	<i>unidentified</i>	006459
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insects	insects	<i>unidentified</i>	006459
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mollusks	n.a./other mollusks	<i>unidentified shells</i>	006459
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		<i>unidentified</i>	012975
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worms	n.a./other annelids	<i>unidentified</i>	006459
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2.17. Maximum weight/length/age of *Clarias batrachus*

Locality : India, Maharashtra

Max weight (g) : 350 total weight

Max length (cm) :

Same specimen for WL : No

StockCode : 003250

Ref. : 043634

Sex : unsexed

Locality : Nepal, None specified

Max weight (g):

Max length (cm) : 17.5

Max age (yrs):

Same specimen for WL : No

Same specimen for LT : No

StockCode : 00325

Ref. : 009496

Sex : unsexed

2.18. Length-Weight relationships of *Clarias batrachus*

($W = a * L^b$ with Length in cm and Weight in g.)

Locality : India, Bankura, West Bengal (aquaria)

Length range : -

a : 0.024

b : 2.5

StockCode: 003250

Main Ref: 009969

Ref.: 009969

Sex: unsexed

2.19. Diseases reported for *Clarias batrachus*

StockCode: 003250

Parasitic infestations (protozoa, worms, etc.): Lytocestus disease

Causative agent : Lytocestus birmanicus

Occurrence : Barisal, Bangladesh, 1981

eggs

fry

female

in the wild

larvae

juveniles

males

in culture

Main Ref.: 042533

Ref.: 026129

Remarks: *Infestation commonly occurs in stomach and intestine. Besides 1981(Ahmed), the infestation also occurred in 1984 and 1985 (Ahmed et al.) in the locality of Dhaka. Ahmed and Ezaz also reported the infestation in 1997 but sited no specific locality.*

Parasitic infestations (protozoa, worms, etc.): Boviena disease

Causative agent : *Boviena serialis*

Occurrence : Barisal and Dhaka, Bangladesh, 1981

Ref.: 026129

Remarks: *Infestation commonly occurs in the intestine. Besides 1981 (Ahmed), the infestation also occurred in 1984 and 1985 (Ahmed et al.) in the locality of Dhaka. Another infestation was recorded in 1997 (Ahmed and Ezaz) but without a specific locality.*

Parasitic infestations (protozoa, worms, etc.): Palaeorchis disease

Causative agent : *Palaeorchis* sp.

Occurrence : Barisal and Dhaka, Bangladesh, 1983

eggs

fry

females

in the wild

larvae

juveniles

males

in culture

Ref.: 042533

Remarks: *Infestation commonly occurs in the stomach and intestine.*

Parasitic infestations (protozoa, worms, etc.): Pseudocaryophyllaeus infestation 2 Ref.: 042533

Causative agent : *Pseudocaryophyllaeus indica*

Occurrence : Barisal and Dhaka, Bangladesh, 1981

Remarks: *Infestation commonly occurs in the intestine. Besides 1981 (Ahmed), the infestation was also recorded in 1984 (Ahmed et al.) in Barisal and Dhaka, 1985 (Ahmed et al.) in Dhaka and in 1997 (Ahmed and Ezaz) with no specific locality mentioned.*

Parasitic infestations (protozoa, worms, etc.): Pseudolytocestus infestation Ref.: 042533

Causative agent : *Pseudolytocestus clariae*

Occurrence : Barisal, Chittagong, Dhaka, and Sylhet, Bangladesh, 1984

O eggso ✓ fry ✓ females O in the wild

O larvae ✓ juveniles ✓ males O in culture

Remarks: *Infestation commonly occurs in the intestine. Besides 1984 (Ahmed et al.), the infestation was also recorded in 1985 (Ahmed et al.) in Dhaka, and in 1974 (Anon.) and 1997 (Ahmed and Ezaz) with no specific locality mentioned.*

Parasitic infestations (protozoa, worms, etc.): Lytocestus infestation 1 Ref.: 042533

Causative agent : *Lytocestus indicus*

Occurrence : Barisal, Chittagong, Dhaka, Rajshani, Sylhet, Bangladesh, 1977

Remarks: *Infestation commonly occurs in the stomach and intestine. Besides 1977 (Ahmed and Sanaullah), the infestation also occurred in 1981 (Ahmed) in Dhaka and Barisal, 1983 (Rashid et al.), 1984 (Rashid and Haque) and 1985 (Rashid et al.; Ahmed et al.) in the locality of Dhaka, 1984 (Ahmed et al.) in the localities of Barisal, Chittagong, Dhaka, Rajshani, Sylhet and 1997 (Chandra et al.). There are reports of the infestation in 1976, 1977, 1978, 1979 (Ahmed and Sanaullah) and 1997 (Ahmed and Ezaz) with no specific locality cited.*

Parasitic infestations (protozoa, worms, etc.): Lytocestus infestation 3 Ref.: 042533

Causative agent : *Lytocestus parvulus*

Occurrence : Barisal, Chittagong, Dhaka, Sylhet, Bangladesh, 1984

Remarks: *Infestation occurs most commonly in the intestine. Besides 1984 (Ahmed et al.), the infestation also occurred in 1981 (Ahmed) in Barisal and Dhaka, 1983, 1985 (Rashid et al.; Ahmed et al.), 1984 (Rashid and Haque) in the locality of Dhaka and earlier in 1977 (Ahmed and Sanaullah) in Dhaka and Rajshani. There are reports of the infestation in 1976, 1977 (Ahmed and Sanaullah), 1978 (Sanaullah and Ahmed), 1979 (Ahmed and Sanaullah) and 1997 (Ahmed and Ezaz) with no specific locality cited.*

Parasitic infestations (protozoa, worms, etc.): Procamallanus infestation 1 Ref. : 026129

Causative agent : *Procamallanus clarius*

Remarks: *Infestation commonly occurs in the stomach and intestine. Besides 1968 (Rahman and Ali), the infestation also occurred in 1974 (Anon.) in Chittagong, 1983 (Rashid et al.) in Dhaka, 1984 (Rashid and Haque) in Dhaka, 1990 (Rashid) also in the locality of Dhaka, and in 1968 (Ali) and 1997 (Ahmed and Ezaz) with no specific locality mentioned.*

Parasitic infestations (protozoa, worms, etc.): *Orientocreadium* infestation Ref.: 026129
Causative agent : *Orientocreadium batrachoides*
Occurrence : Dhaka, Bangladesh, 1983

Remarks: *Infestation commonly occurs in the intestine. Besides 1983 (Rashid et al.), the infestation also occurred in 1984 (Rashid et al.; Rashid and Haque) in the locality of Dhaka and 1997 (Ahmed and Ezaz) in which the specific locality is not mentioned.*

Parasitic infestations (protozoa, worms, etc.): *Dactylogyrus* gill flukes diseases Ref.: 000060
Helminthose (gills)
Causative agent : *Dactylogyrus* sp.
Occurrence : Dhaka, Bangladesh, 1993

Remarks: *Infestation occurs most commonly in the gills and skin.*

Parasitic infestations (protozoa, worms, etc.): Trichodinosis Ref.: 000193
Trichodinella sp.; *Trichodina* infestation
Causative agent : *Trichodina* sp.
Occurrence : Dhaka, Bangladesh, 1993

Remarks: *Infestation commonly occurs in the gills and skin.*

Parasitic infestations (protozoa, worms, etc.): *Clinostomum* infestation Ref.: 005435
(metacercaria)
Causative agent : *Clinostomum* sp.
Occurrence : Dhaka, Bangladesh, 1993

Remarks: *Infestation commonly occurs in the body cavity and muscle.*

Parasitic infestations (protozoa, worms, etc.): *Gnathostoma* infestation Ref.: 026129
Causative agent : *Gnathostoma spinigerum*
Occurrence : Dhaka, Bangladesh, 1972

Remarks: *Infestation commonly occurs in the viscera, stomach, intestine, body cavity and muscles. Besides 1972 (Bashirullah), the infestation also occurred in 1977 (Ahmed and Sanaullah) in the localities of Chittagong, Dhaka and Sylhet, 1978 (Sanaullah) in Chittagong and Dhaka, and in 1976 (Ahmed and Sanaullah) and 1997 (Ahmed and Ezaz) with no specific locality mentioned.*

Parasitic infestations (protozoa, worms, etc.): Sporozoa infection (*Myxobolus* sp.) Ref.: 041805
Causative agent : *Myxobolus* sp.
Occurrence : Dhaka, Bangladesh, 1993

Remarks: *Infestation commonly occurs in the gills and skin.*

Parasitic infestations (protozoa, worms, etc.): *Procamallanus* disease Ref.: 026129
Causative agent : *Procamallanus* sp.
Occurrence : Dhaka, Bangladesh, 1993

Remarks: *Infestation commonly occurs in the body cavity and intestine.*

- Parasitic infestations (protozoa, worms, etc.): Procammallanus disease 2 Ref.: 042533
Spirocamallanus sp.
Causative agent : *Procammallanus* sp.
Occurrence : Dhaka, Bangladesh, 1983
- Remarks:** *Infestation commonly occurs in the stomach and intestine. Besides 1983 (Rashid et al.) the infestation was also recorded in 1984 (Rashid and Haque) and 1990 (Rashid)*
- Parasitic infestations (protozoa, worms, etc.): Capingentoides infestation Ref.: 042533
Causative agent : *Capingentoides batrachii*
Occurrence : Dhaka, Bangladesh, 1981
- Remarks:** *Common infestation. The infestation was recorded in 1984 (Ahmed et al.) in the localities of Dhaka, Chittagong and Sylhet, 1985 (Ahmed et al.) in Dhaka, and 1997 (Ahmed and Ezaz) without a specific locality mentioned. This parasite species was listed as a species inquirenda.*
- Parasitic infestations (protozoa, worms, etc.): Monobothrioides disease Ref.: 042533
Causative agent : *Monobothrioides* sp.
Occurrence : Dhaka, Bangladesh, 1983
- Remarks:** *Infestation commonly occurs in the intestine. Besides 1983 (Rashid et al.), the infestation was also recorded in 1985 (Rashid et al.) and 1984 (Rashid and Haque) in the locality of Dhaka.*
- Parasitic infestations (protozoa, worms, etc.): Ascaridia disease Ref.: 042533
Causative agent : *Ascaridia* sp.
Occurrence : Dhaka, Bangladesh, 1983
- Remarks:** *Infestation commonly occurs in the viscera, digestive tract and body cavity. Besides 1983 (Rashid et al.), the infestation was also recorded in 1984 (Rashid and Haque) and 1990 (Rashid) in the locality of Dhaka.*
- Parasitic infestations (protozoa, worms, etc.): Acanthogyrus infestation Ref.: 005387
Causative agent : *Acanthogyrus* sp.
Occurrence : Dhaka and Rajshani, Bangladesh, 1977
- Remarks:** *Infestation commonly occurs in the intestine. Besides 1977 (Ahmed and Sanaullah), the infestation also occurred in 1978 (Sanaullah and Ahmed) in the locality of Rajshani and 1976 (Ahmed and Sanaullah) with no specific locality mentioned.*
- Parasitic infestations (protozoa, worms, etc.): Procammallanus infestation 5 Ref.: 042533
Spirocamallanus mysti
Causative agent : *Procammallanus mysti*
Occurrence : Dhaka and Rajshani, Bangladesh, 1977
- Remarks:** *Infestation commonly occurs in the stomach, intestine, and liver. Besides 1977 (Ahmed and Sanaullah), the infestation also occurred in 1978 (Sanaullah and Ahmed) in the localities of Dhaka and Rajshani, and 1976 (Ahmed and Sanaullah) with no specific locality mentioned.*
- Parasitic infestations (protozoa, worms, etc.): Djombangia infestation Ref.: 042533
Causative agent : *Djombangia penetrans*
Occurrence : Dhaka, Chittagong, Rajshani, and Sylhet, Bangladesh, 1977
- Remarks:** *Infestation occurs most commonly in the stomach and intestine. Besides 1977 (Ahmed and Sanaullah), the infestation also occurred in 1978 (Ahmed and Sanaullah) in the localities of Dhaka, Chittagong, Rajshani, and Sylhet, 1981 (Ahmed) in Dhaka and Barisal, 1983 (Rashid et al.), 1984 (Rashid and Haque) and 1985 (Rashid et al.; Ahmed et al.) in Dhaka, and 1984 (Ahmed et al.) in the localities of Barisal, Chittagong,*

Rajshani, and Sylhet. There are records in 1976 (Ahmed and Sanaulah) and 1997 (Ahmed and Ezaz) but did not indicate specific collection localities for individual host or parasite species.

Parasitic infestations (protozoa, worms, etc.): Gauhatian infestation Ref.: 026129
Causative agent : *Gauhatian batrachii*
Occurrence : Luzon, Philippines, 1988

Remarks: *Infestation commonly occurs in the stomach and intestine.*

Parasitic infestations (protozoa, worms, etc.): *Cristaria* infestation Ref.: 026129
Causative agent : *Cristaria plicata*
Occurrence : Luzon, Philippines, 1986

Remarks: *Infestation commonly occurs in the gills and skin. Besides 1986 (Velasquez), there are also records from 1988 (Velasquez).*

Parasitic infestations (protozoa, worms, etc.): *Procamallanus* infestation 1 Ref.: 026129
Causative agent : *Procamallanus clarius*
Occurrence : Luzon, Philippines, 1986

Remarks: *Infestation commonly occurs in the stomach and intestine. This record occurred in 1986 and 1988 (Velasquez; Lopez). The disease also occurred in 1987 (Natividad).*

Parasitic infestations (protozoa, worms, etc.): *Gnathostoma* infestation Ref.: 026129
Causative agent : *Gnathostoma spinigerum*
Occurrence : Luzon, Philippines, 1938

Remarks: *Infestation commonly occurs in the musculature and visceral linings.*

Parasitic infestations (protozoa, worms, etc.): Boviana disease Ref.: 026129
Causative agent : *Boviana serialis*
Occurrence : Luzon, Philippines, 1978

Remarks: *Infestation commonly occurs in the intestine. Besides 1978 (Velasquez), the disease also occurred in 1986 and 1988 (Lopez).*

Parasitic infestations (protozoa, worms, etc.): *Dactylogyrus* gill flukes disease Ref.: 000060,
Helminthose (gills) 026129
Causative agent : *Dactylogyrus* sp.
Occurrence : Luzon, Philippines, 1981

Remarks: *Infestation commonly occurs.*

Parasitic infestations (protozoa, worms, etc.): *Opegaster* infestation Ref.: 026129
Causative agent : *Opegaster minima*
Occurrence : Luzon, Philippines, 1944

Remarks: *Infestation commonly occurs in the intestine. Besides 1944 (Tubangui and Masiluñgan), the disease also occurred in 1986 and 1988 (Lopez).*

Parasitic infestations (protozoa, worms, etc.): *Orientocreadium* infestation Ref.: 026129
Causative agent : *Orientocreadium batrachoides*
Occurrence : Luzon, Philippines, 1931

Remarks: *Infestation occurs most commonly in the intestine. Besides 1931 (Tubangui), the disease also occurred in 1944 (Tubangui and Masiluñgan).*

- Parasitic infestations (protozoa, worms, etc.): Neodiplostomum disease Ref.: 026129
 Causative agent : *Neodiplostomum sp.*
 Occurrence : Luzon, Philippines, 1939
Remarks: *Infestation commonly occurs in the scales and skin.*
- Parasitic infestations (protozoa, worms, etc.): Clinostomoides infestation Ref.: 026129
 Causative agent : *Clinostomoides brieni*
 Occurrence : Luzon, Philippines, 1960
Remarks: *Infestation occurs most commonly in the gill cavity, gills, gall bladder, periocular tissues, branchiostegal musculature and the pericardium. Besides 1960 (Velasquez) the disease also occurred in 1988 (Velasquez).*
- Parasitic infestations (protozoa, worms, etc.): Haplorchis infestation 1 Ref.: 026129
 Causative agent : *Haplorchis yokogawai*
 Occurrence : Luzon, Philippines, 1937
Remarks: *Infestation occurs most commonly in the musculature. Besides 1937 (Africa), the disease also occurred in 1938 (Africa), 1937 (Africa et al.), 1938, 1939, 1940 (Vazquez-Colet and Africa).*
- Parasitic infestations (protozoa, worms, etc.): Sporozoa infection (*Myxobolus sp.*) Ref.: 026129,
 Causative agent : *Myxobolus sp.* 041805
 Occurrence : Luzon, Philippines, 1975
Remarks: *Infestation commonly occurs in the gills, mesenteries and skin.*
- Parasitic infestations (protozoa, worms, etc.): Sporozoa infection (*Hennegya sp.*) Ref.: 026129,
 Henneguya Infection 041805
 Causative agent : *Hennegya sp.*
 Occurrence : Luzon, Philippines, 1975
Remarks: *Infestation commonly occurs in the fins.*
- Parasitic infestations (protozoa, worms, etc.): Philometra disease Ref.: 026129, 000194
 Causative agent : *Philometra sp.*
Remarks: *Infestation occurs most commonly in the musculature and palate. Besides 1986 (Lopez), the disease also occurred in 1988 (Lopez).*
- Parasitic infestations (protozoa, worms, etc.): Skin flukes Ref.: 026129, 000060
 Helminthose (skin and eventually gills afflicted)
 Causative agent : *Gyrodactilus sp.*
 Occurrence : Luzon, Philippines, 1975
Remarks: *Infestation commonly occurs in the gills and skin.*
- Parasitic infestations (protozoa, worms, etc.): Phyllodistomum infestation Ref.: 026129
 Causative agent : *Phyllodistomum sp.*
 Occurrence : Luzon, Philippines, 1986
Remarks: *Common infestation. The disease occurred in 1988 (Lopez).*
- Bacterial diseases: Bacterial infections (general) Ref.: 041805
 Causative agent : N.A.
 Occurrence : not specified

- Parasitic infestations (protozoa, worms, etc.): Anchor worm disease Ref.: 042533, 000060
Lernaecosis
Causative agent : *Lernaea cyprinacea*
Occurrence : not specified, Bangladesh, 1990
- Remarks:** *Infestation commonly occurs in the skin, above gill clefts, under accessory respiratory organs, abdominal muscles and liver.*
- Parasitic infestations (protozoa, worms, etc.): Lytocestus disease (*Lytocestus sp.*) Ref.: 042533
Causative agent : *Lytocestus sp.*
Occurrence : not specified, Bangladesh, 1968
- Remarks:** *Infestation commonly occurs in the intestine. Besides 1968 (Ali), the infestation was also recorded in 1974 (Anon.) but no specific locality was sited.*
- Parasitic infestations (protozoa, worms, etc.): Dactylogyrus infestation 1 Ref.: 042533
Causative agent : *Dactylogyrus vastator*
Occurrence : not specified, Bangladesh, 1999
- Remarks:** *Infestation occurs most commonly in the gills.*
- Parasitic infestations (protozoa, worms, etc.): Posthodiplostomum infestation 2 Ref.: 042533
Causative agent : *Posthodiplostomum minimum*
Occurrence : not specified, Bangladesh, 1997
- Remarks:** *Infestation commonly occurs in the muscles and viscera.*
- Parasitic infestations (protozoa, worms, etc.): Phyllodistomum infestation 3 Ref.: 042533
Causative agent : *Phyllodistomum folium*
Occurrence : not specified, Bangladesh, 1997
- Remarks:** *Infestation commonly occurs in the intestine, urinary bladder, body cavity, and mesenteries.*
- Parasitic infestations (protozoa, worms, etc.): Masenia infestation Ref.: 042533
Causative agent : *Masenia dayali*
Occurrence : not specified, Bangladesh, 1997
- Remarks:** *Infestation commonly occurs in the intestine.*
- Parasitic infestations (protozoa, worms, etc.): Procamallanus infestation 6 Ref.: 042533
Procamallanus spiculogubernaculus
Causative agent : *Procamallanus spiculogubernaculus*
Occurrence : not specified, Bangladesh, 1997
- Remarks:** *Infestation commonly occurs in the stomach and intestine.*
- Fungal diseases: Fungal infection (general) Ref.: 048502
Secondary Fungal infection
Causative agent : N.A.
Occurrence : not specified
- Parasitic infestations (protozoa, worms, etc.): Hemiclepsis infestation Ref.: 042533
Causative agent : *Hemiclepsis marginata*
Occurrence : not specified, Bangladesh, 1974
- Remarks:** *Infestation commonly occurs in the skin.*

Parasitic infestations (protozoa, worms, etc.): Yellow grub Ref.: 042533, 000195
Causative agent : *Clinostomum complanatum*
Occurrence : not specified, Bangladesh, 1997

Remarks: *Infestation commonly occurs in the skin, fins, gills, and muscles.*

Parasitic infestations (protozoa, worms, etc.): Gyrocotyle disease Ref.: 042533
Causative agent : *Gyrocotyle sp.*
Occurrence : not specified, Bangladesh, 1968

Remarks: *Infestation occurs most commonly in the intestine. Besides 1968 (Ali), the infestation was also reported to have occurred in 1974 (Anon.) but also did not indicate specific collection localities.*

Parasitic infestations (protozoa, worms, etc.): Echinocephalus disease Ref.: 042533
Causative agent : *Echinocephalus sp.*
Occurrence : not specified, Bangladesh, 1968

Remarks: *Infestation commonly occurs in the intestine. Besides 1968 (Ali), the infestation was also recorded in 1974 (Anon.) with no specific locality mentioned.*

Parasitic infestations (protozoa, worms, etc.): Enteric Septicaemia of catfish Ref.: 048850
Causative agent : *Edwardsiella ictaluri*
Occurrence : not specified, 1987
O eggs O fry O females ☑ in the wild
O larvae O juveniles O males ☑ in culture

Remarks: *The infection was recorded by Kasornchandra et al. (1987).*

Bacterial diseases : Aeromonosis Ref.: 048848, 000060
Infectious Ascites; Haemorrhagic Septicaemia; Red Fin disease
Causative agent : *Aeromonas hydrophila*
Occurrence : not specified, 1971
O eggs O fry O females ☑ in the wild
O larvae O juveniles O males ☑ in culture

Remarks: *The infection were recorded in 1971 (Bullock et al.), 1978 (Egusa) and later in 1986 (Saitanu).*

Parasitic infestations (protozoa, worms, etc.): Pallisentis infestation Ref.: 042533
Causative agent : *Pallisentis gaboos*
Occurrence : not specified, Bangladesh, 1997

Remarks: *Infestation commonly occurs in the body cavity, mesenteries and intestine.*

Parasitic infestations (protozoa, worms, etc.): Lytocestus infestation 2 Ref.: 042533
Causative agent : *Lytocestus lativitellarium*
Occurrence : not specified, Bangladesh, 1997

Remarks: *Infestation occurs most commonly in the intestine.*

Parasitic infestations : (protozoa, worms, etc.): Acanthogyrus infestation Ref: 042533, 005435
Causative agent : *Acanthogyrus tilapiae*
Occurrence : not specified, Bangladesh, 1997

Remarks: *Infestation commonly occurs in the intestine.*

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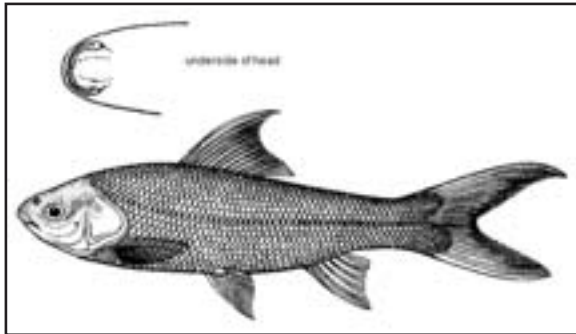
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CIRRHINUS MICROLEPIS

(Sauvage, 1878)

Small scale mud carp

ត្រីព្រួល



Picture by [FAO](#)



Picture by [Roberts, T.R.](#)



3.1. Summary information on the family Cyprinidae

Family : Cyprinidae (Minnows or carps) MainRef.: 007463
Order : Cypriniformes FamCode: 122
Class : Actinopterygii (Ray-finned fishes)
Number of genera : 210
Number of species : 2010
Occurs in : Marine
 Brackish
 Freshwater
Aquarium fishes : many

Species currently in FishBase: Genera: 331 Species: 2408 (Including subspecies) Complete: Yes

Remarks:

Distribution: North America (Northern Canada to Southern Mexico), Africa, and Eurasia. Pharynx with 1-3 rows of teeth, each row with a maximum of 8 teeth. Usually thin lips, plicae or papillae absent; mouth sometimes suckerlike (Garra and Labeo). With or without barbels. Premaxilla usually borders the upper jaw making the maxilla entirely or almost entirely excluded from the gape. Usually protrusible upper jaw. Dorsal fin with spinelike rays in some. Primitive number of chromosomes 2n=50, some with 48; polyploidy exists. Maximum length at least 2.5 m to probably 3 m in Catlocarpio siamensis; many species less than 5 cm. mainly non-guarders, but in some species males build nests and/or protect the eggs. Etymology: Greek, kyprinos = goldfish. 1828 (Ref. 45335).

3.2. Information on the genus *Cirrhinus* and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

Cirrhinichthys Status: synonym Gender: masculine
Bleeker, 1863, p. 202, CAS Ref: 397
Type by original designation (also monotypic).
Type species : *Cirrhina dussumieri* Valenciennes, 1842
Current genus : *Cirrhinus*

Cirrhinus Status: valid Gender: masculine
Oken (ex Cuvier), 1817, p. 1183, CAS Ref: 3303
Type by monotypy.
Type species : *Cyprinus cirrhosus* Bloch, 1795
Current genus : *Cirrhinus*

Henicorhynchus Status: synonym Gender: masculine
Smith, 1945, p. 256, CAS Ref: 4056
Type by original designation (also monotypic).
Type species : *Henicorhynchus lobatus* Smith, 1945
Current genus : *Cirrhinus*

Isocephalus Status: synonym Gender: masculine
Heckel, 1843, p. 1029, CAS Ref: 2067
Type by subsequent designation.
Type species : *Cyprinus cirrhosus* Bloch, 1795
Current genus : *Cirrhinus*

Mrigala

Status: synonym

Gender: feminine

Bleeker, 1860, p. 427, CAS Ref: 370

Type by subsequent monotypy.

Type species : *Cirrhina bengalensis*

Bleeker, 1853

Current genus : *Cirrhinus***3.3. General information on *Cirrhinus microlepis*****Classification**

Class : Actinopterygii (Ray-finned fishes)

MainRef. 033488

Order : Cypriniformes

Family : Cyprinidae (Minnows or carps)

Species : *Cirrhinus microlepis*

Author : Sauvage, 1878

Environment

Freshwater : Yes

Habitat : Benthopelagic

Brackish : No

Saltwater : No

Importance

Importance to fisheries : Commercial

Ref. 012693

Main catching method :

Other methods : Seines Gillnets Castnets Traps Spears
 Trawls Dredges Liftnets Hooks+Lines Other

Used for aquaculture : Never/rarely

Used as bait : Never/rarely

Aquarium fish : Never/rarely

Game fish : No

Dangerous fish : Harmless

Electrobiology : No special ability

Maximum length (cm) (male/unsexed) : 65 SL

Ref. 030857

Maximum weight (g) (male/unsexed) : 5,000.00

Ref. 010431

Remarks:

Inhabits large rivers and lowland floodplains (Ref. 12693). Occurs in riffle and deep slow reaches (Ref. 37769). Moves out into the flooded forest where it feeds on leafy plant matter, phytoplankton and insects (Ref. 12693). Migration pattern is markedly different above and below the Khone Falls in the Mekong Basin. Below the falls, it makes an upstream migration from Phnom Penh to the Khone Falls between November and February, consisting mainly of sub-adults of sizes 10 to 50 cm. From April to July, it migrates in the opposite direction, from Khone Falls and downstream, consisting mainly of sub-adults up to about 50 cm (Ref. 37770). Above the Khone Falls, from Klong Kaem District, Ubolratchatani in Thailand, it migrates upstream in February; at Khemmaratch further upstream in Ubolratchatani, it moves upstream in March-April; and at Mukdahan, it goes upstream in May. However, it migrates downstream at Klong Kaem in June-July (Ref. 37770). Only downstream migrations are reported in the Mekong Delta in Viet Nam, consisting mainly of juveniles (2-20 cm), with the smallest fish mainly in June-July and fish between 10 and 20cm mainly from September to November (Ref. 37770). From Xayabouri in Laos to Chiang Saen in Thailand, upstream migrations take place from March to August. This appears to be two distinct migrations: one of sub-adults measuring 15-50 cm during March-April and another one of larger fishes of sizes 40 to 90 cm during June-July (Ref. 37770). Not known to persist in impoundments. Individuals caught with dais or

traps are often immediately kept alive in fish cages for future sale. Marketed fresh and sometimes dried and salted (Ref. 12693). Known to reach up to 15 kg in Thailand (Jean-Francois, pers. comm. 11/02).

3.4. Synonyms, misidentifications, etc. used for *Cirrhinus microlepis*

Name	Author	Status	Ref.
<i>Cirrhina aurata</i>	Sauvage, 1878	junior synonym	033488
<i>Cirrhinus auratus</i>	Sauvage, 1878	junior synonym	012693
<i>Labeo aurovittatus</i>	Sauvage, 1878	junior synonym	033488
<i>Cirrhinus microlepis</i>	Sauvage, 1878	original combination	033488
<i>Cirrhina microlepis</i>	Sauvage, 1878	original combination	033488
<i>Cirrhinus microlepis</i>	Sauvage, 1878	misspelling	040966
<i>Labeo pruol</i>	Tirant, 1885	junior synonym	033488

3.5. Common names for *Cirrhinus microlepis*

Name	Language	Country	Ref.
Kralang	Khmer	Cambodia	036651
Pruol	Khmer	Cambodia	036651
Trey kanlang	Khmer	Cambodia	036654
Trey krawlang	Khmer	Cambodia	012693
Trey pruol	Khmer	Cambodia	012693
Pa pawn	Laotian	Lao People's Dem. Rep.	009497
Pa phone	Laotian	Lao People's Dem. Rep.	004792
Pawn	Laotian	Lao People's Dem. Rep.	040382
Pba pawn	Laotian	Lao People's Dem. Rep.	037769
Small scale mud carp	English	Thailand	041767

3.6. Distribution of *Cirrhinus microlepis*

Asia: Chao Phraya and Mekong Basins in Thailand, Laos, Cambodia and Viet Nam. MainRef.: 27732
 Latitudinal range: 19° N-9° N Temperature range: - °C Ref.:
 Status of threat: NL.

Country **Status** **Ref.**
Cambodia **native** **012693**

Found in the Mekong River. Known from below the Khone Falls to the Tonle Sap River and the Great Lake (Ref. 37772). Occurs in large numbers in the Tonle Sap in December, with catch steadily declining as the fishing season progresses (Ref. 12693). It is an important species in the dai fisheries in the Tonle Sap River when it migrates downstream the Tonle Sap and into the Mekong during December to February (Ref. 37770). Also Ref. 10431, 27732, 36654, 33813, 43281, 45353.

Lao People's Dem. Rep. **native** **043281**

Occurs in the Mekong Basin. A migratory species known from above Pak Beng to the Khone Falls (Ref. 37772). Found in the Lower Xe Bangfai (Ref. 27732) and Ban Hang Khone at Don Khone, 3 km below the fall line of the great waterfalls of the Mekong Basin at Lee Pee (Ref. 9497). Inhabits riffle, deep slow reaches of the Mekong Basin at Muang Khong (Ref. 37769). Undertakes non-reproductive upstream migration in December-March and downstream migration in June-July at Hat Village, Muang Khong District (Ref. 37769). Observed also to undergo

migration at the fishing village of Ban Wernsonkham on Don Hat (Hat Island) above the Lee Pee Waterfalls (Ref. 10431). Also migrates downstream during the wet season in July-August through Hoo Som Yai at the Great Fault Line on the Mekong River, Champassack Province (Ref. 37771). Moves into flooded forest on Don Khone and Don Saddam to forage (Ref. 37772). From Xayabouri in Laos to Chiang Saen in Thailand, it undertakes upstream migrations from March to August. One of the most important fishes at the Khone Falls during the dry season from January to March, when it migrates upstream. Has been artificially induced to spawn in Pakse in Champassak Province (Ref. 37770). Also Ref. 4792, 10431, 30857, 36654, 37767.

Thailand **native** **033488**

Found in the Chao Phraya and Mekong Basins (Ref. 26336, 33488). From Xayabouri in Laos to Chiang Saen in Thailand, it undertakes upstream migrations from March to August. From Klong Kaem District, Ubolratchatani, this species migrates upstream in February; at Khemmaratch further upstream in Ubolratchatani, it moves upstream in March-April; at Mukdahan, it goes upstream in May. However, it migrates downstream at Klong Kaem in June-July (Ref. 37770). Fish caught in dams are known to reach up to 15 kg in (Jean-Francois, pers. comm. 11/02). Also Ref. 12041, 26336, 27732, 37772, 43281.

Viet Nam **native** **036625**

Known from the Mekong Basin (Ref. 33488). Undertakes downstream migration in the Mekong Delta, consisting mainly juveniles of sizes between 2 and 20 cm, with the smallest fish mainly in June-July, while sizes from 10-20 cm in September to November (Ref. 37770). Also Ref. 27732.

3.7. Summary information (no. of records) available for *Cirrhinus microlepis*

Asia: Chao Phraya and Mekong Basins in Thailand, Laos, Cambodia and Viet Nam.

Ecology	1	Max. sizes	0	Strains	0
Food items	4	FAO catches	15502	Diseases	0
Food consumption	0	Genetics	0	Ciguatera	0
Diet composition	0	Allele frequency	0	Ecotoxicology	0
Ration	0	Heritability	0	Metabolism	0
Predators	0	Reproduction	1	Gill area	0
Morphology	1	Spawning	3	Swimming type	0
Processing	0	Eggs	0	Swimming speed	0
Growth/mortality	0	Egg dev't.	0	Vision	0
Maturity	0	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	0
L/W relat.	1	Aquaculture	0	Occurrence	

3.8. Morphology of *Cirrhinus microlepis*

Diagnostic Characters

Distinguished from other species of the genus in the area by its count of lateral line scales: 53-60 (Ref. 27732). A large species with very small scales, no barbels, and distinctive coloration. Juveniles silvery with red caudal fin, larger fish with head and body violaceous, rosy, or bluish and caudal fin dusky (Ref. 33488)

Descriptive Characters

Operculum present : no

Meristic Characters

Lateral Lines

Interrupted : no

Scales on lateral line 53-60

Scales in lateral series 56-60

Gill rakers on lower limb total : 102 - 102

on upper limb -

Vertebrae: preanal: 27 - 27 total: 4040

Dorsal fins

Number of fins : 1 spines total: 0 soft-rays total: 15-16

Caudal fin

Shape of fin : forked

Attributes : more or less normal

Paired fins

Pectoral attributes : more or less normal

spines : soft-rays:

Pelvics attributes : more or less normal

position : abdominal behind origin of D1

Body proportions (based on picture)

3.9. General Information on the reproduction of *Cirrhinus microlepis*

Level : species in general

StockCode: 021234

Mode and Type of Reproduction

Mode : dioecism

Fertilization : external

Spawning frequency

Batch spawner : no reproductive guild : non guarders

Open water/substratum egg scatterers

Reproductive behavior assumed only. Replace ASAP (RF).

Spawning Information for *Cirrhinus microlepis*

Locality : Laos, Xayabouri, Mekong Basin

Stockcode: 021234

Season (% of mature females; 111 = presence of mature females):

Main Ref.: 037770

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						111	111				

Comment: Based on mature fishes bearing eggs.

Locality : Laos, Mekong basin at Kinnak market close to Muang Khong

Stockcode 021234

Season (% of mature females; 111 = presence of mature females):

Main Ref.: 037769

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					111	111					

Comment: Samples were purchased from the Kinnak market close to Muang Khong District (Ref. 37769). Large fish in spawning condition migrate downstream in February and again late in the rainy season, July (Ref. 9497).

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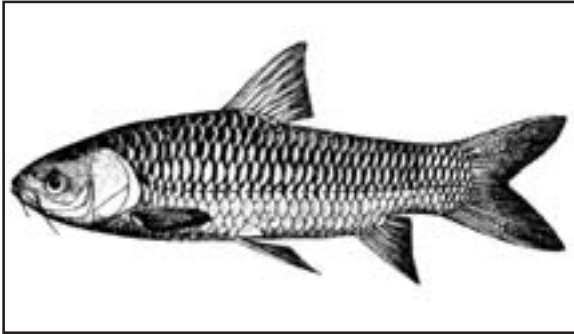
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LEPTOBARBUS HOEVENII

(Bleeker, 1891)

Mad barb

ត្រីព្រឺបូង



Picture by [FAO](#)



Picture by [Baird, I.G](#)



Leptobarbus hoeveni
Native

4.1. Summary information on the family Cyprinidae

Family : Cyprinidae (Minnows or carps)
Order : Cypriniformes
Class : Actinopterygii (Ray-finned fishes)

MainRef.: 007463
FamCode: 122

Number of genera : 210
Number of species : 2010
Occurs in : Marine
 Brackish
 Freshwater
Aquarium fishes : many

Species currently in FishBase: Genera: 331 Species: 2408 (Including subspecies) Complete: Yes



*Distribution: North America (Northern Canada to Southern Mexico), Africa, and Eurasia. Pharynx with 1-3 rows of teeth, each row with a maximum of 8 teeth. Usually thin lips, plicae or papillae absent; mouth sometimes suckerlike (Garra and Labeo). With or without barbels. Premaxilla usually borders the upper jaw making the maxilla entirely or almost entirely excluded from the gape. Usually protrusible upper jaw. Dorsal fin with spinelike rays in some. Primitive number of chromosomes 2n=50, some with 48; polyploidy exists. Maximum length at least 2.5 m to probably 3 m in *Catlocarpio siamensis*; many species less than 5 cm. Mainly non-guarders, but in some species males build nests and/or protect the eggs. Etymology: Greek, kyprinos = goldfish. (Ref. 45335).*

4.2. Information on the genus *Leptobarbus* and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

Filirasbora Status: synonym Gender: feminine
Fowler, 1937, p. 172, CAS Ref: 1425
Type by original designation (also monotypic).
Type species : *Filirasbora rubripinna* Fowler, 1937
Current genus : *Leptobarbus*

Leptobarbus Status: valid Gender : masculine
Bleeker, 1860, p. 435, CAS Ref: 370
Type by subsequent monotypy.
Type species : *Barbus hoevenii* Bleeker, 1851
Current genus : *Leptobarbus*

4.3. General information on *Leptobarbus hoevenii*

Classification

Class : Actinopterygii (Ray-finned fishes) MainRef. 002091
Order : Cypriniformes
Family : Cyprinidae (Minnows or carps)
Subfamily :
Species : *Leptobarbus hoevenii*
Author : (Bleeker, 1851).

Environment

Freshwater : Yes Habitat : Benthopelagic
 Brackish : No Migrations : Potamodromous
 Saltwater : No Depth range : 3

Importance

Landing statistics : From 1,000 to 10,000 tonnes Ref. 004931

Importance to fisheries : Commercial Food fish.

Main catching method :

Other methods : Seines Gillnets Castnets Traps Spears
 Trawls Dredges Liftnet Hooks+Line Other

Used for aquaculture : Commercial Ref. 012108

Aquarium fish : Commercial based mainly on breeding Ref. 001672

Game fish : No

Dangerous fish : Other Ref. 043281

Electrobiology : No special ability

Maximum length (cm) (male/unsexed) : 100 SL (female): Ref. 030857

Common length (cm) (male/unsexed) : 50 SL (female): Ref. 012693

Maximum weight (g) (male/unsexed) : 10,000.00 (female): Ref. 009497

Remarks:

Found most often in freely flowing rivers and streams and seasonally on floodplains. Although reported to be non-migratory, it definitely does participate in local trophic migrations to and from inundated forests (Ref. 12693). Swims in shoals and is only fished in the Mekong especially during upstream (Jan.-Feb.) and downstream migration (Jun.-Jul.). Eats parenchyma and seeds of chaulmoogra tree (Hydnocarpus) falling into the streams; reported to become intoxicated and behaves in a peculiar manner and is believed to be toxic. Northern Laotians refrain from eating this fish but those in the South do. Cambodians and Vietnamese prize it highly (Ref. 2091). Eating flesh of the fish can cause nausea in humans (Ref. 12693).

4.4. Synonyms, misidentifications, etc. used for *Leptobarbus hoevenii*

Synonym	Author	Status	Ref.
<i>Leptobarbus hoeveni</i>	Bleeker, 1851	misspelling	002091
<i>Leptobarbus hoevenii</i>	Bleeker, 1851	new combination	002091
<i>Barbus hoevenii</i>	Bleeker, 1851	original combination	002091
<i>Leptobarbus rubripinna</i>	Fowler, 1937	junior synonym	012693
<i>Filirasbora rubripinna</i>	Fowler, 1937	junior synonym	002091
<i>Leptobarbus rubripinnus</i>	Fowler, 1937	junior synonym	002091

4.5. Common names for *Leptobarbus hoevenii*

Name	Language	Country	Ref.
Pralung	Khmer	Cambodia	040380
Pror loun	Khmer	Cambodia	036651
Trey chralang	Khmer	Cambodia	036654
Trey chrawlag	Khmer	Cambodia	012693
Trey knuoch	Khmer	Cambodia	036654
Trey prâloun	Khmer	Cambodia	002686

Trey pralung	Khmer	Cambodia	036654
Trey prolong	Khmer	Cambodia	036662
Trey prurlung	Khmer	Cambodia	012693
Jelawat	Malay	Indonesia	006107
Pa phong	Laotian	Lao People's Dem. Rep.	037767
Pa phong long	Laotian	Lao People's Dem. Rep.	002686
Pa pohng	Laotian	Lao People's Dem. Rep.	009497
River carp	English	Malaysia	004789
Jelawat	Malay	Malaysia	004789
Golden shark	English	Philippines	012157
Golden shark	English	Taiwan	040297
Pink tailed barb	English	Thailand	006459
Pla ai ba	Thai	Thailand	002686
Pla ai baa	Thai	Thailand	042982
Plaba	Thai	Thailand	002686
Pla baa	Thai	Thailand	042982
Pla hang deng	Thai	Thailand	002686
Hoven's carp	English	United Kingdom	003691
Mad barb	English	United Kingdom	012693
Mad barb	English	USA (contiguous states)	004537
Cá chài	Vietnamese	Viet Nam	002686

4.6. Distribution of *Leptobarbus hoevenii*

Asia: Thailand to Sumatra and Borneo.

MainRef.: 002091

Latitudinal range: 23° N - 3° S Temperature range: 23 - 26 °C Ref.: 2060

Status of threat: NL.

Country	Status	Ref.
Cambodia	native	012693
A migratory species occurring in the Mekong Basin (Ref. 37772). Found around the Tonle Sap River and Great Lake (Ref. 36651), Mae Khong at Phum Rey Shsach (Ref. 36654). Also Ref. 3902, 36662, 33813, 43281.		
Indonesia	native	002091
Known from Sumatra and Lake Tundai, South Borneo (Ref. 42107). Museum: Kapuas, CAS 49215 (Ref. 2091). Important food fish kept in cages or caught in open waters. Its flesh is expensive (Ref. 7050).		
Lao People's Dem. Rep.	native	043281
Known from the Mekong River. A migratory species occurring at the Khone Falls (Ref. 37772). Found in Ban Hang Khone, a village on an island in the middle of the mainstream Mekong River just below the Great Khone Waterfalls in Khong District, Champasak Province (Ref. 37767). Inedible; eating this fish reportedly induces nausea & vomiting. The poison comes from Hydnocarpus fruits (mak gabao & mak ngoon) on which it feeds. Dorsal musculature eaten as lap (raw meat) marinated in vinegar & pepper (Ref. 9497). According to Ban Hang Khone fishermen, this species enters the flooded forest in July-September, feeds heavily on fallen fruit and attains a maximum weight of about 10 kg (Ref. 9497). Also Ref. 4792, 30857, 36654.		
Malaysia	native	004789
Taiwan	introduced	001739
First successful larviculture in Taiwan occurred in 1984 (Ref. 40297).		
Thailand	native	026336
Occurs in Maeklong, Chao Phraya, Mekong, Peninsular and Southeast Thailand river systems (Ref. 26336). Main culture location is Bangkok (Ref. 6459). Also Ref. 1632, 2091, 7050, 9648, 26580, 36654, 43281.		
Viet Nam	native	036625
Found in Mekong Delta (Ref. 36625). Also Ref. 2682, 36654, 43281.		

4.7. Introductions of *Leptobarbus hoevenii*

Level: species in general

Asia: Thailand to Sumatra and Borneo.

Year : 1979 Established: no Ref. 001739
Introduced : to Taiwan from Indonesia
Reason : research
Comments : Currently being cultured experimentally at Lukang branch of Taiwan Fisheries Research Institute.

Year : 1980 - 1989 Established: unknown Ref. 012157
Introduced : to Philippines from Unknown
Reason : ornamental
Comments : Introduced in the 1980's.

Year : unknown Established: probably no Ref. 038466
Introduced : to Singapore from Unknown
Reason : aquaculture

4.8. Summary information (no. of records) available for *Leptobarbus hoevenii*

Ecology	1	Max. sizes	0	Strains	0
Food items	5	FAO catches	15502	Diseases	0
Food consumption	0	Genetics	1	Ciguatera	0
Diet composition	0	Allele frequency	0	Ecotoxicology	0
Ration	0	Heritability	0	Metabolism	0
Predators	0	Reproduction	1	Gill area	0
Morphology	1	Spawning	0	Swimming type	0
Processing	0	Eggs	0	Swimming speed	0
Growth/mortality	0	Egg dev't.	0	Vision	0
Maturity	0	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	3
L/W relat.	0	Aquaculture	0	Occurrence	54

4.9. Morphology of *Leptobarbus hoevenii*

Descriptive Characters

Striking features : none
Body shape lateral : elongated Dorsal head profile: more or less straight
Operculum present : yes
Type of eyes : more or less normal
Position/type of mouth : terminal

Pigmentation on trunk and tail

Horizontal stripes : present, lateral
Vertical stripes : absent
Diagonal stripes : absent
Curved stripes : absent
Spots : no spots
Dorsal fin (D1) : no spots or stripes
Caudal fin : no spots or stripes
Anal fin (A1) : no spots or stripes

Meristic Characters

Lateral Lines : 1 Interrupted: no
 Scales on lateral line : 32-38
 Scale rows above lateral line : 4-4
 Barbels : 0
 Gill clefts (sharks/rays only) Spiracle :
 Gill rakers on lower limb total : 16- 19
 on upper limb -
 Vertebrae preanal total : -

Dorsal fins

Dorsal attributes : no striking attributes
 Number of fins : - spines total : soft-rays total: 9-9
 Adipose fin : absent finlets dorsal : 0-0 finlets ventral: 0-0

Caudal fin

Shape of fin : forked
 Attributes : more or less normal

Anal fin

Number of fins : spines total : soft-rays total: 8-8

Paired fins

Pectoral attributes : more or less normal
 spines : soft-rays :
 Pelvics attributes : more or less normal
 position : abdominal behind origin of D1

4.10. Genetic information for *Leptobarbus hoevenii*

Main Ref.: 034850

Locality : Southeast Asia

Chromosome number (haploid) : 25 Ref.:034850

Chromosome number (diploid) : 50 Ref.:034850

Genetic marker(s) present : No

DNA content (picogram, haploid)

Chromosome arm no. : 94 Ref.:034850

Sex-determining mechanism : chromosomes

Remarks: $CF = 10m + 34sm - st + 6a$.**4.11. FAO aquaculture production data for *Leptobarbus hoevenii***

Country (Area)	1984	1985	1986	1987	1988	1989	1990
	1991	1992	1993	1994	1995	1996	1997
	1998	1999	2000	2001			
Cambodia (4) (t)	40	80	80	80	120	150	170
(US\$'000)	80	160	132	154	300	375	425
(t)	180	230	200	205	230	240	310
(US\$'000)	468	598	520	533	587	612	775
(t)	340	390	380	410			
(US\$'000)	850	936	912	984			

Malaysia (4)	(t)	1	1,253	196	253	253	246	53
	(US\$'000)	8	5,265	827	151	817	718	181
	(t)	256	481	477	499	539	406	377
	(US\$'000)	1,054	1,458	2,231	1,507	1,519	1,228	1,031
	(t)	446	654	529	701			
	(US\$'000)	879	1,148	965	1,253			
Singapore (4)	(t)	0	0	0	0	0	0	0
	(US\$'000)	0	0	0	0	0	0	0
	(t)	0	0	0	0	0	0	0
	(US\$'000)	0	0	0	0	0	0	0
	(t)	0	0	6	0			
	(US\$'000)	0	0	70	0			
Total: 3	(mt)	41	1,333	256	105	335	396	226
	(US\$'000)	88	5,425	959	305	1,117	1,093	606
	(mt)	436	711	677	704	769	646	687
	(US\$'000)	1,522	2,056	2,751	2,040	2,106	1,840	1,806
	(mt)	786	1,044	915	1,111			
	(US\$'000)	1,729	2,084	1,946	2,237			

4.12. General information on the reproduction of *Leptobarbus hoevenii*

Level : species in general,

StockCode : 005026

Mode and Type of Reproduction

Mode : dioecism

Fertilization : external

Batch spawner : no

Reproductive guild : nonguarders

Open water/substratum egg scatterers

4.13. Ecology of *Leptobarbus hoevenii*

Level : species in general

StockCode : 005026, 004797

Main Ref.: 009497

Habitats

Streams: Yes

Lakes: Yes

Caves: No

Estuaries/lagoons/brackish sea: No

Intertidal: No

Soft: No

Rocky: No

Mangroves/marshes/swamps : No

Marine: No

Oceanic: N

Neritic: No

Coral reefs : No Tropical soft bottom: No

Hard bottom : No

Seagrass beds: No

Macrophyte : No

Feeding

Feeding Type : mainly animals (troph. 2.8 and up)

Feeding Habit : hunting macrofauna (predator)

Trophic level(s) : Original sample

Unfished population

Remarks

Estimation method Troph s.e.

Troph s.e.

From diet composition :

From indiv. food items : 2.9 0.32

Additional remarks

Feeds on the seeds of terrestrial plants (Ref. 9497) and on insects and zooplankton (Ref. 33813). Adults consume more plant matter (Ref. 12693).

4.14. Food items for *Leptobarbus hoevenii*

Level: species in general

StockCode: 005026

Food item				Ref.
plants				
other plants	terrestrial plants	fruit trees	<i>Hydnocarpus anthelminthica</i>	009497
		unidentified	<i>Quassia harmandina</i>	009497
zoobenthos				
insects				
	insects	unidentified	<i>unidentified terrestrial insects</i>	012693
worms				
	n.a./other annelids	Tubificidae	<i>unidentified tubificid worms</i>	012693
zooplankton				
other plank.	n.a./other plank.	unidentified	<i>unidentified</i>	012693
invertebrates				
	invertebrates			

4.15. FAO annual catch data (in tonnes) for *Leptobarbus hoevenii*

Country											
1950	1951	1952	1953	1954	1955	1956	1957	1958	1959		
1960	1961	1962	1963	1964	1965	1966	1967	1968	1969		
1970	1971	1972	1973	1974	1975	1976	1977	1978	1979		
1980	1981	1982	1983	1984	1985	1986	1987	1988	1989		
1990	1991	1992	1993	1994	1995	1996	1997	1998	1999		
2000	2001										
Indonesia				FAO Area : 4							
3,400	3,400	3,900	4,500	4,200	4,800	5,500	6,000	5,000	6,600		
6,500	7,200	7,500	7,50	7,600	7,500	9,000	9,400	8,100	8,000		
8,100	8,200	8,400	7,400	5,962	6,948	5,637	5,319	6,633	5,004		
5,136	5,096	5,016	5,387	5,688	6,394	7,761	6,308	5,077	4,905		
4,348	4,937	3,702	4,606	5,376	5,454	6,892	5,836	3,241	4,608		
3,149	3,260										

4.16. References used for *Leptobarbus hoevenii*

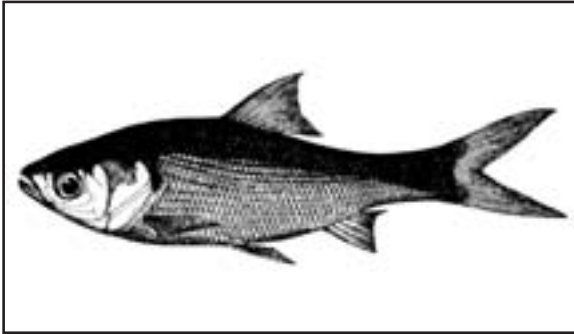
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- 043281 Kottelat, M. 2001. Fishes of Laos. WHT Publications Ltd., Colombo 5, Sri Lanka. 198 p.
- 047438 Anon. 2003. Fish collection of the Royal Ontario Museum. Royal Ontario Museum.

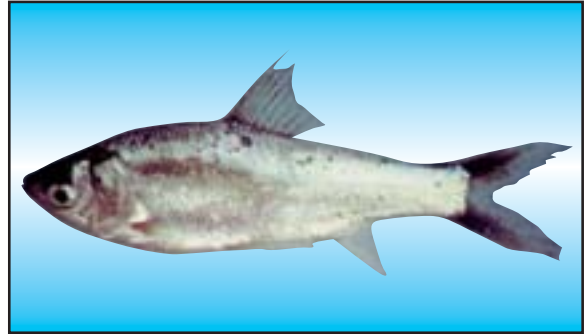
THYNNICHTHYS THYNNOIDES

(Bleeker, 1852)

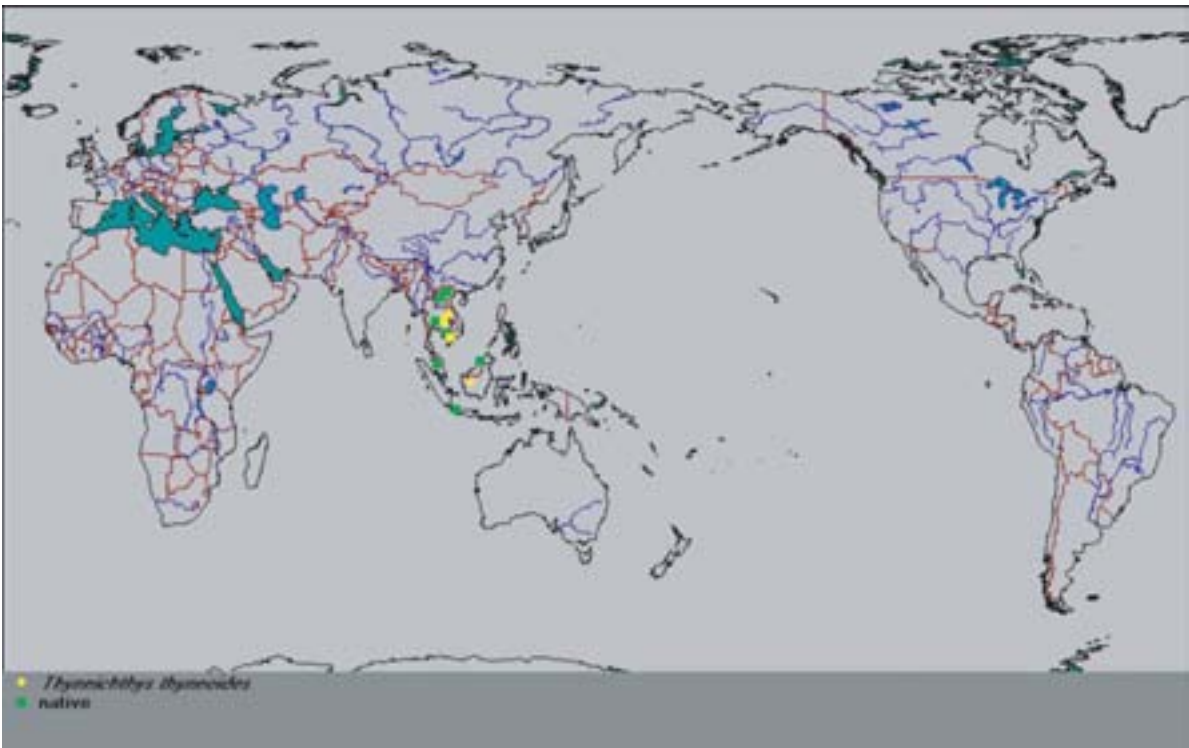
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Picture by [FAO](#)



Picture by [Baird, I.G.](#)



5.1. Summary information on the family Cyprinidae

Family	: Cyprinidae (Minnows or carps)	
Order	: Cypriniformes	MainRef. : 007463
Class	: Actinopterygii (Ray-finned fishes)	FamCode: 122
Number of genera	: 210	
Number of species	: 2010	
Occurs in	: O Marine Ø Brackish Ø Freshwater	
Aquarium fishes	: many	
First fossil record	: Lower Tertiary Eocene	Ref.: 004879
Species currently in FishBase	: Genera: 331 Species: 2408 (Including subspecies)	Complete: Yes



*Distribution: North America (Northern Canada to Southern Mexico), Africa, and Eurasia. Pharynx with 1-3 rows of teeth, each row with a maximum of 8 teeth. Usually thin lips, plicae or papillae absent; mouth sometimes suckerlike (Garra and Labeo). With or without barbels. Premaxilla usually borders the upper jaw making the maxilla entirely or almost entirely excluded from the gape. Usually protrusible upper jaw. Dorsal fin with spinelike rays in some. Primitive number of chromosomes $2n=50$, some with 48; polyploidy exists. Maximum length at least 2.5 m to probably 3 m in *Catlocarpio siamensis*; many species less than 5 cm. Mainly non-guarders, but in some species males build nests and/or protect the eggs. Etymology: Greek, *kyprinos* = goldfish. 1828 (Ref. 45335).*

5.2. Information on the genus *Thynnichthys* and its synonyms

After Eschmeyer, March 2003 (Ref. 4626)

<i>Thynnichthyina</i>	Status : synonym	Gender : feminine
Fowler, 1937, p. 177, CAS Ref: 1425		
Type by original designation (also monotypic).		
Type species : <i>Thynnichthys thai</i>	Fowler, 1937	
Current genus : <i>Thynnichthys</i>		
<i>Thynnichthys</i>	Status : preoccupied	Gender : masculine
Giglioli, 1880, p. 25, CAS Ref: 1617		
Type by subsequent designation.		
Type species : <i>Thynnus thunina</i>	Cuvier, 1829	
Current genus : <i>Euthynnus</i>		
<i>Thynnichthys</i>	Status : valid	Gender : masculine
Bleeker, 1860, p. 433, CAS Ref: 370		
Type by subsequent designation.		
Type species : <i>Leuciscus thynnoides</i>	Bleeker, 1852	
Current genus : <i>Thynnichthys</i>		

5.3. General information on *Thynnichthys thynnoides*

Classification

Class	: Actinopterygii (Ray-finned fishes)	MainRef. : 012693
Order	: Cypriniformes	

Pla i gun la mok	Thai	Thailand	042982
Pla kled tee	Thai	Thailand	009648
Pla kled thee	Thai	Thailand	042982
Pla ling	Thai	Thailand	042982
Pla nang jan	Thai	Thailand	
Pla nang jun	Thai	Thailand	042982
Pla nang kled	Thai	Thailand	009648
Pla naun jan	Thai	Thailand	
Pla naun jun	Thai	Thailand	042982
Pla prom	Thai	Thailand	042982
Cá linh cá	Vietnamese	Viet Nam	036625

5.6. Distribution of *Thynnichthys thynnoides*

Asia: Mekong and Chao Phraya Basins, Malay Peninsula, Sumatra, Borneo (Ref. 43281). Reported from the Maeklong river (Ref. 26336). MainRef.: 043281

Country	Status	Ref.
Brunei Darussalam	Native	007050
Cambodia	Native	012693
Known from the Mekong River (Ref. 12693, 26580). Found around the Tonle Sap River, Tonle Sap Lake (Ref. 36651), Prek Phnan (Ref. 36654), Sangke River, Battambang province (Ref. 41486). Also Ref. 7050, 36662, 33813, 45353.		
Indonesia	native	002091
Known from Sumatra (Palembang, Djambi. Kampar R., Gunung Sahilan, Kwantan R. and Danau Sialong Lotong) and Borneo (Kapuas, Lake Tundai (Ref. 42107). Also Ref. 26580.		
Lao People's Dem. Rep.	native	043281
Known from the Mekong River (Ref. 43281). Found in Ban Hang Khone at Don Khone, 3 km below the fall line of the great waterfalls of the Mekong Basin at Lee Pee (Ref. 9497). Collected from Tha Ngon, Vientiane, Tha Bo, Khouai Deng (Ref. 4792). Museum: Mekong at Ban Hang Khone, just below Khone Falls, CAS 96961 (Ref. 5515). Also Ref. 4792, 30857, 36654, 37767, 37769.		
Malaysia	native	002091
Known from Perak and Parang.		
Thailand	native	026336
Occurs in Mekong River and its tributaries (Ref. 9648, 26336), Maeklong, Chao Phraya and Peninsular Thailand river systems (Ref. 26336). Also Ref. 26580, 36654.		
Viet Nam	native	036625
Found in the Mekong Delta (Ref. 36625). Also Ref. 7050, 36654, 43281.		

Total native = 7

Total introduced = 0

5.7. Summary information (no. of records) available for *Thynnichthys thynnoides*

Level: species in general

StockCode: 043281

MainRef.: 043281

Asia: Mekong and Chao Phraya Basins, Malay Peninsula, Sumatra, Borneo (Ref. 43281). Reported from the Maeklong River (Ref. 26336)

Ecology	1	Max. sizes	0	Strains	0
Food items	4	FAO catches	15502	Diseases	0
Food consumption	0	Genetics	0	Ciguatera	0
Diet composition	0	Allele frequency	0	Ecotoxicology	0
Ration	0	Heritability	0	Metabolism	0
Predators	0	Reproduction	0	Gill area	0

Morphology	1	Spawning	0	Swimming type	0
Processing	0	Eggs	0	Swimming speed	0
Growth/mortality	0	Egg dev't.	0	Vision	0
Maturity	0	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	0
L/W relat.	0	Aquaculture	0	Occurrence	41

Total = 1

5.8. Morphology of *Thynnichthys thynnoides*

Level : species in general

StockCode : 014994

Main Ref. : 043281

Diagnostic Characters

No Lips; plain silvery body (Ref. 43281).

Descriptive Characters

Operculum present : no

Meristic Characters

Scales on lateral line : 57-60

Scale rows above lateral line : 13-13

Dorsal fins

Number of fins : 1

Paired fins

Pectoral attributes : more or less normal

Pelvics attributes : more or less normal
position: abdominal

5.9. Ecology of *Thynnichthys thynnoides*

Level : species in general

StockCode: 014994, 016209

Main Ref.: 033813

Habitats

Streams : Yes Lake: Yes Cave: No

Estuaries/lagoons/brackish seas: No

Intertidal : No Soft : No Rocky : No Mangroves/marches/swamps: No

Marine : No Oceanic : No Neritic : No Coral reefs: No

Tropicalsoft bottom : No Hard bottom: No Seagrass beds: No Macrophyte: No

Feeding

Feeding Type : plants/detritus+animals (troph. 2 - 2.19)

Ref: 033813

Trophic level(s):

Estimation method

From indiv. food item:

Original sample

Troph s.e

2.3 0.18

Unfished population

troph s.e

- -

Remarks

Trophic level estimate

5.10. Food items for *Thynnichthys thynnoides*

Level: species in general

StockCode: 014994

Food item

Ref.

plants

other plants	benthic algae/weeds	unidentified	012693
	periphyton	unidentified	033813
phytoplankton	n.a./other	unidentified	033813
	phytoplankton		

zooplankton

other plank.	n.a./other plank.	unidentified	033813
invertebrates	invertebrates		

Total: 4

5.11. References used for *Thynnichthys thynnoides*

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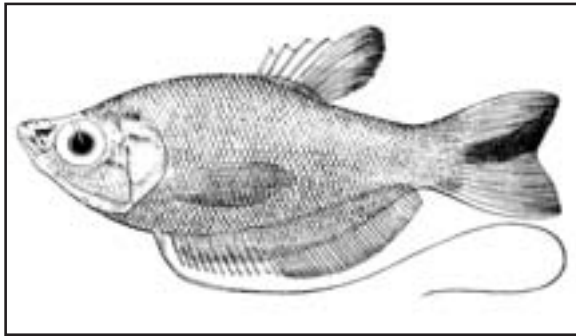
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TRICHOGASTER MICROLEPIS

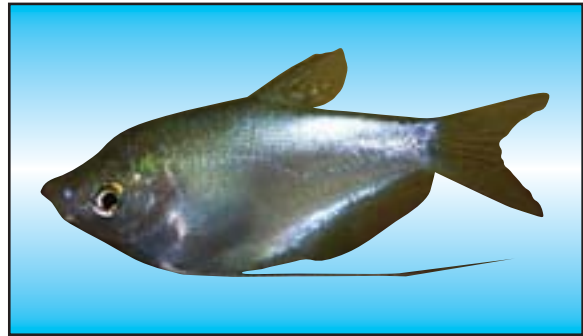
(Günther, 1868)

Moonlight gourami

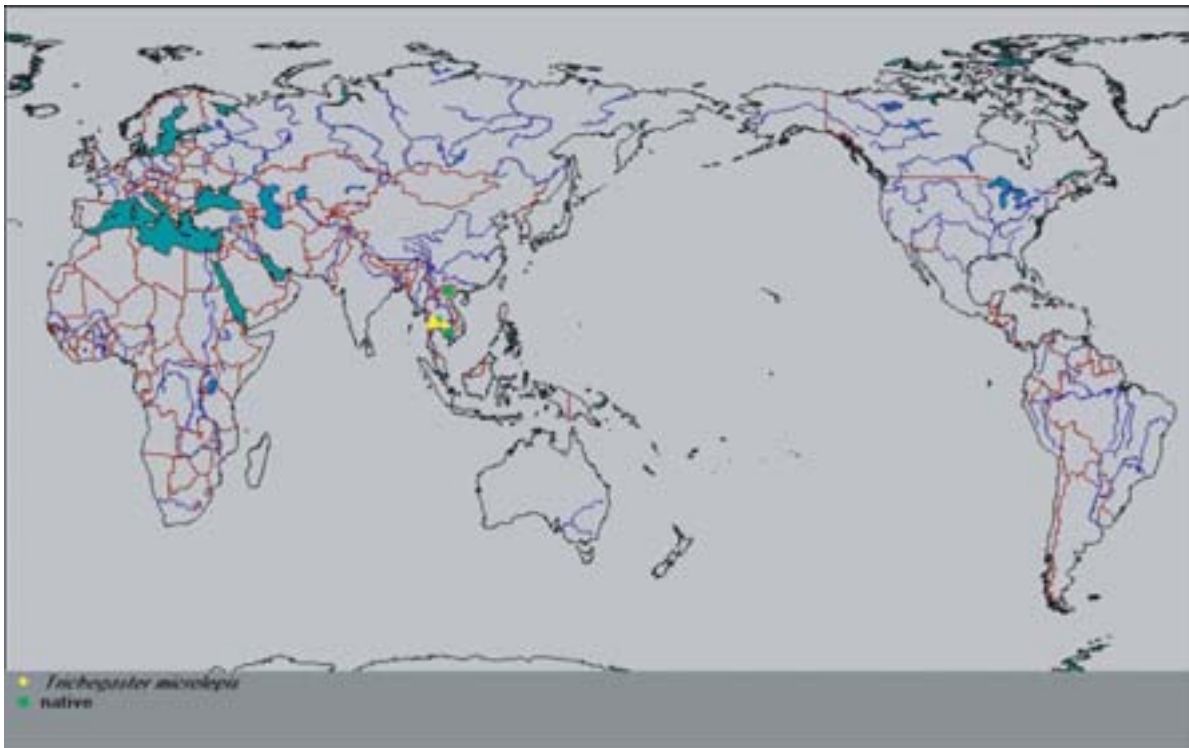
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Picture by [FAO](#)



Picture by [JJPhoto](#)



6.1. Summary information on the family Osphronemidae

Family : Osphronemidae (Gouramies)
Order : Perciformes
Class : Actinopterygii (Ray-finned fishes)
Number of genera : 13
Number of species : 49
Occurs in : Marine
 : Brackish
 : Freshwater
Aquarium fishes : some
First fossil record : Lower Tertiary Eocene
Species currently in FishBase: Genera: 14 Species: 91 (Including subspecies) Complete : Yes

MainRef. : 007463
FamCode : 429

Ref: 004830

Remarks:

Distribution: Pakistan and India to Malay Archipelago and Korea. Teeth absent on prevomer and palatine. Protractile upper jaw. Lateral line single, complete and continuous in Osphroneminae; vestigial in other subfamilies, when present. Maximum dorsal soft rays 10; in Osphroneminae dorsal fin spines 11-13; soft rays 11-13, anal fin spines 9-12; soft rays 16-22, all scales ctenoid, about 80 cm maximum length. Pelvic fins with an elongate ray in many species. Some species are oral brooders and others build bubble nests. Other family name = Polyacanthidae. Four subfamilies recognized: Belontiinae (combtail gouramies), Macropodinae (Siamese fighting fishes, paradise fishes), Osphroneminae (giant gouramies) and Trichogastrinae (gouramies) (Eschmeyer CoF 2003, Ref. 46206). Family Belontiidae in Ref. 36739. Etymology: Greek, osphra, -as = smell + Greek, nema = filament (Ref. 45335).

6.2. Information on the genus *Trichogaster* and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

Colisa Status: synonym Gender: feminine
Cuvier in Cuvier & Valenciennes, 1831, p. 359, CAS Ref: 4881
Type by absolute tautonymy of senior objective synonym.
Type species : *Colisa vulgaris* Cuvier, 1831
Current genus : *Trichogaster*

Deschauenseeia Status: synonym Gender: feminine
Fowler, 1934, p. 147, CAS Ref: 1417
Type by original designation (also monotypic).
Type species : *Deschauenseeia chryseus* Fowler, 1934
Current genus : *Trichogaster*

Trichogaster Status: valid Gender: feminine
Bloch & Schneider, 1801, p. 164, CAS Ref: 471
Type by subsequent designation.
Type species : *Trichogaster fasciatus* Bloch & Schneider, 1801
Current genus : *Trichogaster*

Trichopodus Status: synonym Gender: masculine
Lacepède, 1801, p. 125, CAS Ref: 2710
Type by subsequent designation.
Type species : *Labrus trichopterus* Pallas, 1770
Current genus : *Trichogaster*

6.3. General information on *Trichogaster microlepis*

Classification

Class	: Actinopterygii (Ray-finned fishes)	MainRef. 012693
Order	: Perciformes	
Family	: Osphronemidae (Gouramies)	
Subfamily	: Trichogastrinae	
Species	: <i>Trichogaster microlepis</i>	
Author	: (Günther, 1861)	

Environment

Freshwater	: Yes	Habitat	: Demersal
Brackish	: No		
Saltwater	: No		

Importance

Importance to fisheries	: Minor commercial			
Main catching method	:			
Other methods	: <input checked="" type="checkbox"/> Seines	<input type="checkbox"/> Gillnets	<input checked="" type="checkbox"/> Castnets	<input type="checkbox"/> Traps
	<input type="checkbox"/> Trawls	<input type="checkbox"/> Dredges	<input type="checkbox"/> Liftnets	<input type="checkbox"/> Hooks+Lines
			<input type="checkbox"/> Spears	<input type="checkbox"/> Other
Used for aquaculture	: Never/rarely			
Used as bait	: Never/rarely			
Aquarium fish	: Commercial	based mainly on breeding	Ref. 001672	
Game fish	: No			
Dangerous fish	: Harmless			
Electrobiology	: No special ability			
Size and age				
Maximum length (cm) (male/unsexed)	: 13 SL		Ref. 043281	



Found in ponds and swamps (Ref. 43281). Occurs in shallow sluggish or standing water habitats with a lot of aquatic vegetation. Common in the floodplain of the Lower Mekong. Feeds on zooplankton, crustaceans and aquatic insects. Marketed fresh (Ref. 12693).

6.4. Synonyms, misidentifications, etc. used for *Trichogaster microlepis*

Synonym	Author	Status	Ref.
<i>Trichogaster microlepis</i>	Günther, 1861	new combination	012693
<i>Osphromenus microlepis</i>	Günther, 1861	original combination	012965

6.5. Common names for *Trichogaster microlepis*

Name	Language	Country	Ref.
Kamphleanh	Khmer	Cambodia	036651
Trey kamphlaenh	Khmer	Cambodia	041486
Trey kâmphleanh phluk	Khmer	Cambodia	036654
Trey Kanphleanh Phluk	Khmer	Cambodia	036654
Trey kawmpheanh phluk	Khmer	Cambodia	012693
Pla kra di nang	Thai	Thailand	009648
Moonlight gourami	English	United Kingdom	001739
Moonbeam gourami	English	USA (contiguous states)	004537
Moonlight gourami	English	USA (contiguous states)	004537
Cá sac diep	Vietnamese	Viet Nam	036625

6.6. Distribution of *Trichogaster microlepis*

Asia: originally occurring in the Mekong in Cambodia and Viet Nam and Chao Phraya Basins (Ref. 43281). Introduced in the Mekong Basin in Thailand and expected in Laos (Ref. 43281). A popular aquarium species which appeared in Colombia because of escapes from aquarium rearing facilities (Ref. 1739).

Latitudinal range: ° - ° Temperature range: 26 - 30 °C Ref.: 1672
 Status of threat : NL.

Country	Status	Ref.
Cambodia	native	012693
Occurs in the Mekong Basin (Ref. 12693). Found around the Tonle Sap Lake and River (Ref. 36651). Known from Réam, Kompong Réat, Stung Sang (Ref. 36654) and Sangke River, Battambang province (Ref. 41486). Occurs in shallow and sluggish waters (Ref. 36686). Also Ref. 36662, 45353.		
Colombia	introduced	001739
Singapore	introduced	038466
Thailand	native	043281
Naturally found in the Chao Phraya Basin (Ref. 43281). Introduced in the Mekong Basin (Ref. 43281). Recorded also from the Maeklong Basin (Ref. 26336). Reared in captivity for the ornamental fish trade (Ref. 6459). Also Ref. 9648, 1739, 36654.		
Viet Nam	native	043281
Occurs in the Mekong Basin (Ref. 43281). Also Ref. 36654.		

Total native = 3 Total introduced = 2

6.7. Introductions of *Trichogaster microlepis*

Asia: originally occurring in the Mekong in Cambodia and Viet Nam and Chao Phraya Basins (Ref. 43281). Introduced in the Mekong Basin in Thailand and expected in Laos (Ref. 43281). A popular aquarium species which appeared in Colombia because of escapes from aquarium rearing facilities (Ref. 1739).

Year : unknown Established : yes Ref. 001739
 Introduced : to Colombia from Unknown
 Reason : ornamental
 Comments : Established in the Magdalena and Orinoco watersheds. Widespread in fish rearing facilities and has presumably escaped into local waters. Also Ref. 13364.

Year : unknown Established : probably yes Ref. 038466
 Introduced : to Singapore from Unknown
 Reason : unknown
 Total = 12 Established: yes = 1 probably yes = 1

6.8. Summary information (no. of records) available for *Trichogaster microlepis*

Level: species in general StockCode: 043281 MainRef.: 043281

Ecology	1	Max. sizes	0	Strains	0
Food items	3	FAO catches	15502	Diseases	4
Food consumption	0	Genetics	1	Ciguatera	0
Diet composition	0	Allele frequency	0	Ecotoxicology	0
Ration	0	Heritability	0	Metabolism	0

Predators	0	Reproduction	1	Gill area	0
Morphology	1	Spawning	0	Swimming type	0
Processing	0	Eggs	0	Swimming speed	0
Growth/mortality	0	Egg dev't.	0	Vision	0
Maturity	0	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	2
L/W relat.	0	Aquaculture	0	Occurrence	37

6.9. Morphology of *Trichogaster microlepis*

Level : species in general

StockCode : 004953

Main Ref: 043281

Diagnostic Characters

Body plain silvery (Ref. 43281)

Descriptive Characters

Striking features : striking fins
 Body shape lateral : short and / or deep Dorsal head profile : clearly concave
 Operculum present : no
 Type of eyes : more or less normal
 Position/type of mouth : terminal

Pigmentation on trunk and tail

Horizontal stripes : absent
 Vertical stripes : absent
 Diagonal stripes : absent
 Curved stripes : absent
 Spots : no spots

Meristic Characters

Dorsal fins

Number of fins : 1 Spine total: 3-4
 Adipose fin : absent

Caudal fin

Shape of fin : more or less truncate
 Attributes : more or less normal

Paired fins

Pelvic attribution : more or less normal
 Pelvic attribution : reduced to filaments
 Position : thoracic before origin of D1

6.10. Genetic information for *Trichogaster microlepis*

MainRef.: 03437

Locality : Unspecified
 Chromosome number (haploid) : 23
 Chromosome number (diploid) : 46 Ref: 034766
 Genetic marker(s) present : No
 DNA content (picogram, haploid)
 Chromosome arm no : 46 Ref: 034766

Bacterial diseases: Pop-eye disease

Exophthalmus:

Occurrence:

<input type="radio"/> eggs	<input type="radio"/> fry	<input checked="" type="radio"/> females	<input type="radio"/> in the wild
<input type="radio"/> larvae	<input type="radio"/> juveniles	<input checked="" type="radio"/> males	<input checked="" type="radio"/> in culture

Parasitic infestations (protozoa, worms, etc.)

Helminthoses (gills)

Causative agent : *Dactylogyrus* sp.

Occurrence : not specified

<input type="radio"/> eggs	<input type="radio"/> fry	<input checked="" type="radio"/> females	<input type="radio"/> in the wild
<input type="radio"/> larvae	<input type="radio"/> juveniles	<input checked="" type="radio"/> males	<input checked="" type="radio"/> in culture

Parasitic infestations (protozoa, worms, etc.)

Helminthoses (gills)

Causative agent : *Dactylogyrus* sp.

Occurrence : not specified

<input type="radio"/> eggs	<input type="radio"/> fry	<input checked="" type="radio"/> females	<input type="radio"/> in the wild
<input type="radio"/> larvae	<input type="radio"/> juveniles	<input checked="" type="radio"/> males	<input checked="" type="radio"/> in culture

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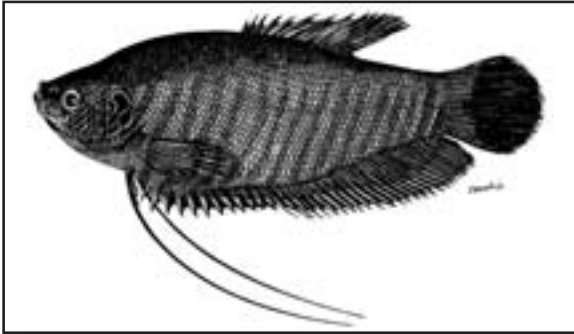
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TRICHOGASTER PECTORALIS

(Regan, 1910)

Snakeskin gourami

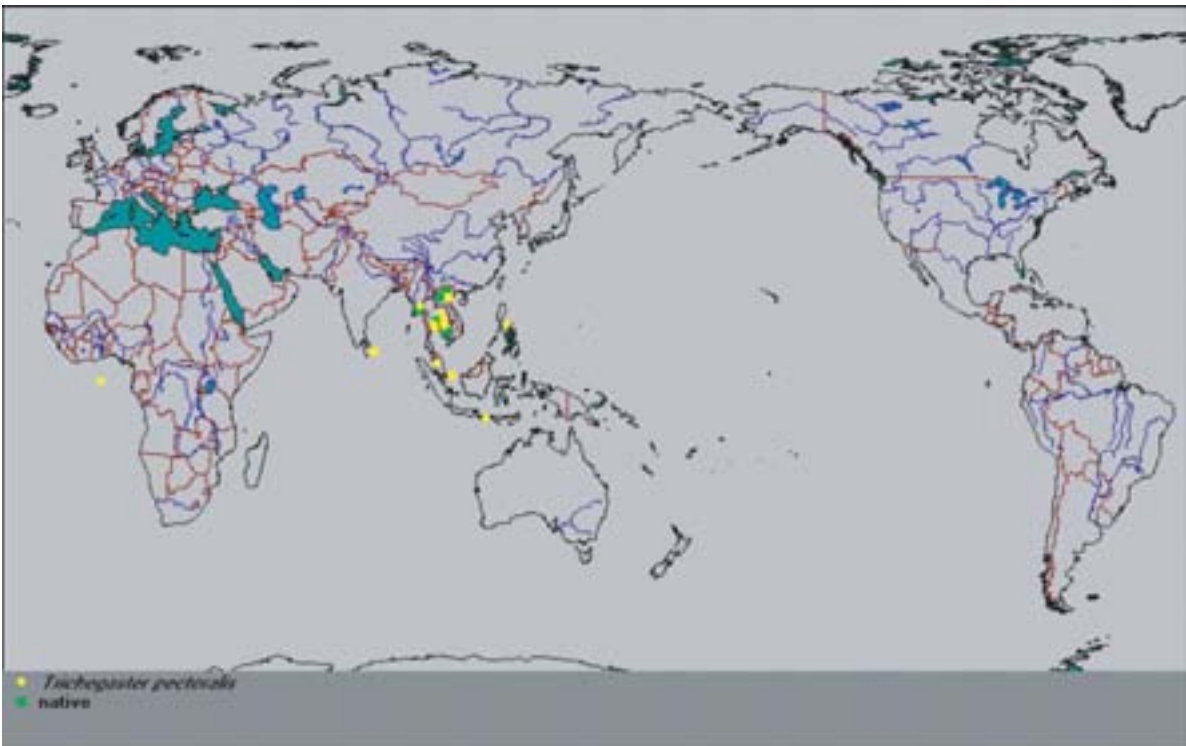
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Picture by [Escudero P.T](#)



Picture by [Baird, I.G.](#)



7.1. Summary information on the family Osphronemidae

Family : Osphronemidae (Gouramies)
Order : Perciformes MainRef. : 007463
Class : Actinopterygii (Ray-finned fishes) FamCode : 429
Number of genera: 13 Number of species: 49
Occurs in : Marine
 Brackish
 Freshwater
Aquarium fishes : some
First fossil record : Lower Tertiary Eocene Ref.: 004830
Species currently in FishBase: Genera: 14 Species: 91 (Including subspecies) Complete: Yes

Remarks:

Distribution: Pakistan and India to Malay Archipelago and Korea. Teeth absent on prevomer and palatine. Protractile upper jaw. Lateral line single, complete and continuous in Osphroneminae; vestigial in other subfamilies, when present. Maximum dorsal soft rays 10; in Osphroneminae dorsal fin spines 11-13; soft rays 11-13, anal fin spines 9-12; soft rays 16-22, all scales ctenoid, about 80 cm maximum length. Pelvic fins with an elongated ray in many species. Some species are oral brooders and others build bubble nests. Other family name = Polyacanthidae. Four subfamilies recognized: Belontiinae (combtail gouramies), Macropodinae (Siamese fighting fishes, paradisefishes), Osphroneminae (giant gouramies) and Trichogastrinae (gouramies) (Eschmeyer CoF 2003, Ref. 46206). Family Belontiidae in Ref. 36739. Etymology: Greek, ospira, -as = smell + Greek, nema = filament (Ref. 45335).

7.2. Information on the genus *Trichogaster* and its synonyms

After Eschmeyer March 2003 (Ref. 46206)

Colisa Status: synonym Gender: feminine
Cuvier in Cuvier & Valenciennes, 1831, p. 359, CAS Ref: 4881
Type by absolute tautonymy of senior objective synonym.
Type species : *Colisa vulgaris* Cuvier, 1831
Current genus : *Trichogaster*

Deschauenseeia Status: synonym Gender: feminine
Fowler, 1934, p. 147, CAS Ref: 1417
Type by original designation (also monotypic).
Type species : *Deschauenseeia chryseus* Fowler, 1934
Current genus : *Trichogaster*

Trichogaster Status: valid Gender: feminine
Bloch & Schneider, 1801, p. 164, CAS Ref: 471
Type by subsequent designation.
Type species : *Trichogaster fasciatus* Bloch & Schneider, 1801
Current genus : *Trichogaster*

Trichopodus Status: synonym Gender: masculine
Lacepède, 1801, p. 125, CAS Ref: 2710
Type by subsequent designation.
Type species : *Labrus trichopterus* Pallas, 1770
Current genus : *Trichogaster*

7.3. General information on *Trichogaster pectoralis*

Classification

Class : Actinopterygii (Ray-finned fishes) MainRef. 012693
 Order : Perciformes
 Family : Osphronemidae (Gouramies)
 Subfamily : Trichogastrinae
 Species : *Trichogaster pectoralis*
 Author : (Regan, 1910)

Environment

Freshwater : Yes Habitat : Benthopelagic
 Brackish : No
 Saltwater : No Depth range : 4

Importance

Landing statistics : from 10,000 to 50,000 tonnes Ref. 004931
 Importance to fisheries : Commercial
 Main catching method :
 Other methods : Seines Gillnets Castnets Traps Spears
 Trawls Dredges Liftnets Hooks+Lines Other

Used for aquaculture : Commercial Ref. 012108
 Used as bait : Never/rarely
 Aquarium fish : Commercial, based mainly on breeding Ref. 001672
 Game fish : No
 Dangerous fish : Potential pest
 Electrobiology : No special ability

Size and age

Maximum length (cm) (male/unsexed) : 25 TL Ref. 006028
 Common length (cm) (male/unsexed) : 15 TL Ref. 002686
 Maximum weight (g) (male/unsexed) : 500.00 Ref. 006028

Remarks:

Found in shallow sluggish or standing-water habitats with a lot of aquatic vegetation. Occurs in flooded forests of the Lower Mekong and gradually moves back to rivers and the Tonle Sap Lake as floodwaters recede (Ref. 12693). Generally feeds on aquatic plants. Can breathe air directly, as well as absorb oxygen from water through its gills (Ref. 9987). The flesh is of good quality; may be grilled or used for fish soup. In Thailand there is a trade of dried pla solid for the benefit of people in areas where it is not caught (Ref 2686). Cultured both for food and for export as aquarium fish (Ref. 9987). Marketed fresh (Ref. 12693).

7.4. Synonyms, misidentifications, etc. used for *Trichogaster pectoralis*

Synonym	Author	Status	Ref.
<i>Trichopodus pectoralis</i>	Regan, 1910	original combination	004792
<i>Trichogaster pectoralis</i>	Regan, 1910	new combination	012693

7.5. Common names for *Trichogaster pectoralis*

Name	Language	Country	Ref.
Siamese gourami	English	Bangladesh	044085
Kanthor	Khmer	Cambodia	036651
Trey kantho	Khmer	Cambodia	002686
Trey kanthor	Khmer	Cambodia	036654
Trey kawnthor	Khmer	Cambodia	012693
Sepat siam	Malay	Indonesia	002686
Sepat siem, Siem	Malay	Indonesia	006107
Pa sa lit	Laotian	Lao People's Dem. Rep.	002686
Snakeskin gouramy	English	Malaysia	004789
Sepat siam	Malay	Malaysia	002686
Bubble nest builder	English	Myanmar	005736
Snakeskin gourami	English	Philippines	012157
Siamese gourami	English	Thailand	006459
Pla bai mai	Thai	Thailand	002686
Pla salid	Thai	Thailand	002686
Pla sa-lid	Thai	Thailand	042982
Snakeskin gourami	English	United Kingdom	003691
Snakeskin gourami	English	USA (contiguous states)	004537
Cá sac ran	Vietnamese	Viet Nam	036625
Cá sat rang	Vietnamese	Viet Nam	002686

7.6. Distribution of *Trichogaster pectoralis*

Asia: Mekong Basin in Laos, Thailand, Cambodia and Viet Nam; also Chao Phraya Basin (Ref. 43281). Introduced elsewhere and at least one country reports adverse ecological impact after introduction (Ref. 1739). MainRef.: 043281

Latitudinal range: 20° N - 22° S
Status of threat: NL.

Temperature range: 23 - 28 °C

Ref.: 1672

Country	Status	Ref.
Cambodia	native	012693
Naturally occurring in the Mekong Basin (Ref. 12693). Found around the Tonle Sap Lake and River (Ref. 36651) and Stung Sen (Ref. 36654). Known from the flooded forests of the Lower Mekong and gradually moves back to rivers and the Tonle Sap Lake as floodwaters recede (Ref. 12693, 36686). Also Ref. 3902, 33813, 37772, 43281.		
Colombia	introduced	001739
Indonesia	introduced	007050
Introduced to Sumatra, Borneo, Java and Sulawesi (Ref. 7050). See also Ref. 8984 for nominal catches. Also Ref. 1739, 9987, 2847.		
Lao People's Dem. Rep.	native	043281
Occurs in the Mekong Basin (Ref. 43281). Found in the Khone Falls (Ref. 37772). Also Ref. 2686, 4792, 30857, 36654.		
Malaysia	reintroduced	001739
Formed an important fishery in the country (Ref. 1739 and 6095).		
Myanmar	native	005736
This species is native to the Chao Phraya in Thailand and Mekong Basin in Laos, Thailand, Cambodia and Viet Nam and has been introduced elsewhere (Ref. 43281). Thus, status of occurrence in Myanmar needs confirmation.		

New Caledonia	introduced	001739
Papua New Guinea	introduced	002847
	Introduced to the Western Highlands, Central and Gulf Districts. Also Ref. 1739.	
Philippines	introduced	006096
	Common in Lake Bombon (=Taal) (Ref. 12165). Known from Lake Mainit, Mindanao (Ref. 4867). A fine food fish found in Laguna de Bay. Museum specimens collected in 1983 from the east bay, LRS-83129 and from various localities in 1984, LRS-84126 (Ref. 13460). Also introduced to Lake Buluan (Ref. 13492). Used in the aquarium trade (Ref. 12157). Also Ref. 1739.	
Singapore	introduced	006299
Sri Lanka	introduced	006028
	Found throughout Sri Lanka, particularly in the dry zone tanks, but not in the central hills. Also Ref. 4833.	
Thailand	native	043281
	Naturally found in Mekong and Chao Phraya Basins (Ref. 43281). Recorded from Maeklong and Southeast Thailand river systems (Ref. 26336). Naturally absent from Peninsular, Northern, and Western Thailand. Flesh of good quality; usually prepared by air drying. Reared in captivity for the ornamental fish trade (Ref. 6459). Also Ref. 2686, 7306, 9648, 9987, 36654.	
Viet Nam	native	036625
	Naturally found in the Mekong Basin (Ref. 43281). Also Ref. 36654.	

7.7. Introductions of *Trichogaster pectoralis*

Asia: Mekong Basin in Laos, Thailand, Cambodia and Viet Nam; also Chao Phraya Basin (Ref. 43281). Introduced elsewhere and at least one country reports adverse ecological impact after introduction (Ref. 1739).

Year : 1952 Established: unknown Ref. 044085
 Introduced : to Bangladesh from Singapore
 Reason : unknown

Year : 1951 Established: yes Ref. 013686
 Introduced : to Sri Lanka from Malaysia
 Reason : aquaculture
 Comments : Also introduced to fill ecological niche. Found in lagoons and marshes. Economically insignificant (Ref. 13364).
 Introduced : to Colombia from Unknown
 Reason : ornamental
 Comments : Established in the Magdalena and Orinoco watersheds. Widespread in fish rearing facilities and has presumably escaped into local waters. Also Ref. 13364.

Year : unknown Established: no Ref. 001739
 Introduced : to Hong Kong from Unknown
 Reason : aquaculture
 Comments : Assumed to be introduced for aquaculture. Also Ref. 13364.

Year : unknown Established: no Ref. 001739
 Introduced : to India from Unknown
 Reason : aquaculture
 Comments : Assumed to be introduced for aquaculture. Also Ref. 13364.

Year : 1934 Established: yes Ref. 001739
 Introduced : to Indonesia from Malaysia
 Reason : aquaculture
 Comments : Introduced by the Inland Fisheries Department which later became widely cultured in ponds and is established in open waters in Java, Borneo and Celebes. Present in the Ajamaru Lakes, Irian Jaya in the 1950s, but its current status is uncertain (Ref. 2847). Also Ref. 13364.

- Year : unknown Established: no Ref. 001739
 Introduced : to Japan from Unknown
 Reason : aquaculture
 Comments : Assumed to be introduced for aquaculture. Also Ref. 13364.
- Year : 1921 Established: yes Ref. 001739
 Introduced : to Malaysia from Thailand
 Reason : aquaculture
 Comments : Introduced in the Krian rice-bowl area, northwestern Peninsular Malaysia. Has colonized swamps, canals and rice paddies where it yields 94-202 kg/ha but has been badly affected by double cropping of rice and wide use of pesticides. Has also displaced to some extent the native *T. trichopterus*.
- Year : unknown Established: yes Ref. 001739
 Introduced : to New Caledonia from Unknown
 Reason : aquaculture
 Comments : Assumed to be introduced for aquaculture. Species became established. Also Ref. 13364.
- Year : 1957 Established: no Ref. 013686
 Introduced : to Pakistan from Malaysia
 Reason : aquaculture
 Comments : It is not cultured any longer.
- Year : 1957 Established: yes Ref. 001739
 Introduced : to Papua New Guinea from Malaysia
 Reason : aquaculture
 Comments : Distribution is very limited in the Central and Gulf provinces. Presently of no value although the species has potential in sewage ponds (Ref. 6367). Also Ref.13364.
- Year : 1938 Established: yes Ref. 006096
 Introduced : to Philippines from Thailand
 Reason : aquaculture
 Comments : Has populated rivers and reservoirs and is regarded as a useful addition to the fauna of swampy areas. Introduced by Dr. Eduardo Quisumbing (Ref. 4735). Used in the aquarium trade elsewhere and at least one country reports adverse ecological impact after introduction (Ref. 1739).
- Year : 1938 Established : yes Ref. 006096
 Introduced : to Philippines from Thailand
 Reason : ornamental
 Comments : Also Ref. 13364 and 38466.

7.8. Summary information (no. of records) available for *Trichogaster pectoralis*

Level: species in general

StockCode: 043281

MainRef.: 043281

Asia: Mekong Basin in Laos, Thailand, Cambodia and Viet Nam; also Chao Phraya Basin (Ref. 43281). Introduced elsewhere and at least one country reports adverse ecological impact after introduction (Ref. 1739).

Ecology	1	Max. sizes	0	Strains	0
Food items	0	FAO catches	15502	Diseases	4
Food consumption	0	Genetics	1	Ciguatera	0
Diet composition	1	Allele frequency	0	Ecotoxicology	0
Ration	0	Heritability	0	Metabolism	0

Predators	0	Reproduction	1	Gill area	0
Morphology	1	Spawning	1	Swimming type	0
Processing	0	Eggs	0	Swimming speed	0
Growth/mortality	0	Egg dev't.	0	Vision	0
Maturity	0	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	13
L/W relat.	0	Aquaculture	0	Occurrence	56

7.9. Morphology of *Trichogaster pectoralis*

Meristic Characters

Lateral Lines

Interrupted : no

Scales on lateral line 52 -57

Scales in lateral series 55-63

Barbels 0

Gill rakers on lower limb total : 66-70

Vertebrae preanal -

Dorsal fins

Dorsal attributes : other

Number of fins : - spines total : 78-soft-rays total : 10-11

Adipose fin : absent finlets dorsal : 0-0 finlets ventral : 0-0

Caudal fin

Shape of fin : more or less truncate

Attributes : more or less normal

Anal fin

Number of fins : - spines total : -912 soft-rays total : 3338

Paired fins

Pectoral attributes : more or less normal

spines : soft-rays : 910

Pelvics attributes : other (see diagnosis)

7.10. Genetic information for *Trichogaster pectoralis*

MainRef.: 034370

Locality:

Chromosome number (haploid) : 23

Chromosome number (diploid) : 46

Genetic marker(s) present : No

Chromosome arm no : 46

Ref: 034766

Ref: 034766

7.11. FAO aquaculture production data for *Trichogaster pectoralis*

Country (Area)		1984	1985	1986	1987	1988	1989	1990
		1991	1992	1993	1994	1995	1996	1997
		1998	1999	2000	2001			
Indonesia (4)	(t)	1,281	1,410	1,410	1,410	2,000	2,000	2,464
	(US\$'000)	1,922	2,115	2,115	3,503	4,000	4,000	4,928
	(t)	2,039	2,760	1,821	2,626	3,397	3,115	3,177
	(US\$'000)	4,282	5,796	4,006	5,777	7,134	6,542	6,672
	(t)	3,211	3,762	3,478	2,808			
	(US\$'000)	6,743	7,900	7,304	5,897			
Malaysia (4)	(t)	6	13	107	0	0	0	0
	(US\$'000)	4	10	131	0	0	0	0
	(t)	0	0	0	0	0	0	0
	(US\$'000)	0	0	0	0	0	0	0
	(t)	0	0	0	0			
	(US\$'000)	0	0	0	0			
Thailand (4)	(t)	11,780	16,578	16,578	14,269	14,901	13,196	12,800
	(US\$'000)	6,080	8,091	9,252	8,362	8,091	7,943	8,091
	(t)	13,300	12,958	15,449	16,993	16,714	14,200	17,230
	(US\$'000)	10,946	11,443	17,463	19,339	24,621	20,178	23,037
	(t)	17,214	21,989	21,577	19,690			
	(US\$'000)	15,878	28,962	28,755	26,385			
Total: 3	(mt)	13,067	18,001	17,651	16,215	16,901	15,196	15,264
	(US\$'000)	8,006	10,216	11,505	11,865	12,807	11,943	14,942
	(mt)	15,339	15,718	17,270	19,619	20,111	17,315	20,407
	(US\$'000)	15,228	17,239	21,469	25,116	31,755	26,719	29,709
	(mt)	20,425	25,751	25,055	22,498			
	(US\$'000)	22,621	36,862	36,059	32,281			

7.12. General information on the reproduction of *Trichogaster pectoralis*

Level: species in general

StockCode : 000515

MainRef.: 006459

Mode and Type of Reproduction

Mode : dioecism

Fertilization : external

Batch spawner : no

Reproductive guild : guarders, nesters

Male creates a bubble-nest at the surface. After fertilization, the male, with the use of its mouth, collects the eggs and pushes them up into the bubble-nest (Ref. 6459). Male guards the eggs until hatching (Ref. 9987); both parents care for the young (Ref. 6028).

Spawning Information for *Trichogaster pectoralis*

Locality : Thailand

Stockcode: 000515

Season (% of mature females; 111 = presence of mature females)

Main Ref.: 006459

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

111 111 111 111 111

Fecundity: min 1,000 (n) Female size: .00 (g) (cm) Ref. 006459

max 10,000 (n) 200 (g) (cm)

7.13. Ecology of *Trichogaster pectoralis*

Level : species in general **StockCode : 000515, 000499** **Main Ref.: 013497**
Habitats **Ref: 013497**
Streams : No Lake: Yes Cave: No
Estuaries/lagoons/brackish seas: No
Intertidal : No Soft : No Rocky : No Mangroves/marchs/swamps: No
Marine : No Oceanic: No Neritic : No Coral reefs: No
Tropicalsoft bottom: No Hard bottom: No Seagrass beds: No Macrophyte: No

Feeding
Feeding Type : plants/detritus+animals (troph. 2.8 and up) Ref: 033813
Feding Habil : selective plankton feeding

Trophic level(s):	Original sample	Unfished population	Remarks
Estimation method	Troph s.e	troph s.e	
From diet composition:	3.2 0.36	3.1 0.29 troph of adults	Ref: 013497
From indiv. food item:	3.4 045	Trophic level estimate	

Additional remarks
Feeds mainly on planktonic invertebrates (Ref. 13497).

7.14. Diet composition of *Trichogaster pectoralis*

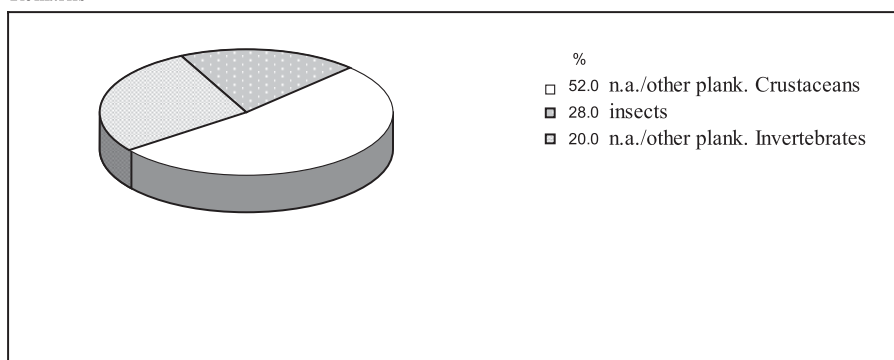
StockCode : 000515 **MainRef.: 013497**

Locality : Bukit Merah Reservoir, between September 1979 and August 1980
Stage of fish sampled: adults Number: 28

Food group (%)

52.0	n.a./other plank. Crustaceans, Copepoda, Cladocera, Decapoda, juv./adults
28.0	insects, both aquatic and terrestrial forms of Diptera, Odonata, etc., adults
20.0	n.a./other plank. Invertebrates, Paramecium , Rotifera, parasitic Nematoda, juv./adults
<hr/>	
100.0	Total

Remarks



Total = 1

7.15. Diseases reported for *Trichogaster pectoralis*

StockCode: 000515

MainRef.: 026129

Parasitic infestations (protozoa, worms, etc.), Trichodinosis

Ref.: 000193

Trichodinella sp. Trichodina infestation

Causative agent : *Trichodina* sp.

Occurrence : Luzon, Philippines, 1981

Prevalence : common

Remarks: *Infestation occurs most commonly in the gills and skin. Besides 1981 (Guerrero and Paycana), the infestation also occurred in 1982 (by the same author).*

MainRef.: 041805

Bacterial diseases Bacterial infections (general)

Ref.: 041805

Causative agent : N.A.

Occurrence : not specified

eggs fry females in the wild
 larvae juveniles males in culture

Remarks: *Parasitic infestations (protozoa, worms, etc.), Dactylogyrus gill flukes disease*

Ref.: 000060

Helminthose (gills)

Causative agent : *Dactylogyrus* sp.

Occurrence : not specified

eggs fry females in the wild
 larvae juveniles males in culture

Parasitic infestations (protozoa, worms, etc.), Costia disease

Ref.: 000193

Costiasis; Turbidity of the skin; Ichthyobodo necatrix

Causative agent : *Dactylogyrus* sp.

Occurrence : not specified

eggs fry females in the wild
 larvae juveniles males in culture

7.16. FAO annual catch data (in tonnes) for *Trichogaster pectoralis*

Country	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	2000	2001								
Indonesia	FAO Area : 4									
	10,036	10,217	11,498	13,379	12,558	14,337	16,515	17,892	14,668	19,743
	19,317	21,491	22,463	20,934	22,804	22,373	26,940	28,106	24,271	23,735
	23,197	23,258	23,717	20,698	21,611	18,755	23,123	22,897	19,641	22,897
	20,399	21,691	26,959	25,803	24,671	23,182	20,454	22,972	24,512	24,332
	25,444	23,399	24,670	26,911	23,587	24,904	30,408	21,375	20,936	23,265
	20,875	21,260								

Thailand		FAO Area : 4								
	0	0	0	10	10	20	30	30	30	30
	70	160	260	330	530	640	748	850	1,000	1,050
	2,500	2,200	1,620	1,60	2,200	2,664	6,317	3,818	3,818	9,342
	10,008	6,956	161	10,039	7,066	6,478	6,892	5,920	2,699	704
	815	500	542	751	200	186	385	353	1,486	511
	700	730								
Total: 2										
	10,036	10,217	11,498	13,389	12,568	14,357	16,545	17,922	14,698	19,773
	19,387	21,651	22,723	21,264	23,334	23,013	27,688	28,956	25,271	24,785
	25,697	25,458	25,337	22,298	23,811	21,419	29,440	26,715	22,460	30,630
	30,407	28,647	27,120	35,842	31,737	29,660	27,346	28,892	27,211	25,036
	26,259	23,899	25,212	27,662	23,787	25,090	30,793	21,728	22,422	23,776
	21,575	21,990								

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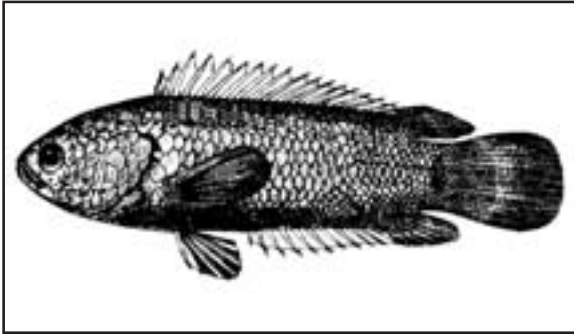
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ANABAS TESTUDINEUS

(Bloch, 1792)

Climbing perch

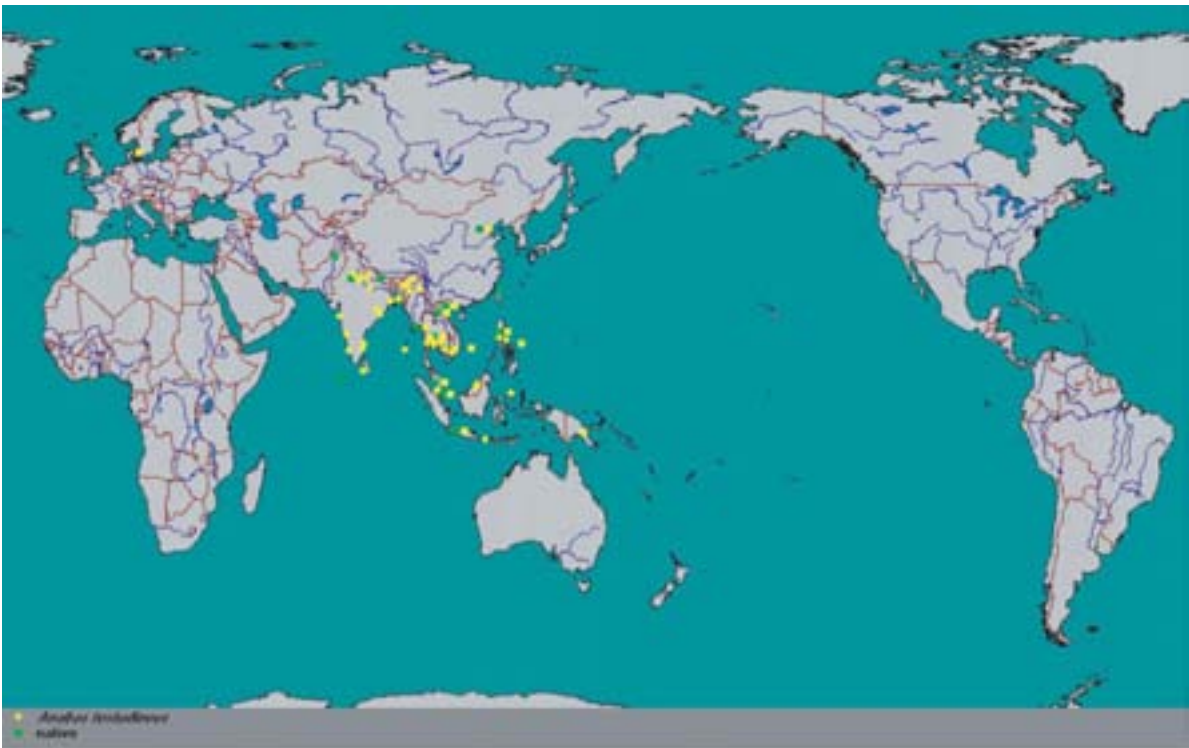
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Picture by [FAO](#)



Picture by [Warren, T.](#)



8.1. Summary information on the family Anabantidae

Family : Anabantidae (Climbing gouramies)
Order : Perciformes
Class : Actinopterygii (Ray-finned fishes)
Number of genera : 3
Number of species : 30
Occurs in Marine
 Brackish
 Freshwater
Aquarium fishes : some

MainRef.: 007463
FamCode : 426

Species currently in FishBase: Genera: 5 Species: 37 (Including subspecies) Complete: Yes



Distribution: Africa and India to Philippines. Rarely brackish. Fixed conical teeth on jaws, prevomer, and parasphenoid. Relatively large mouth. Upper jaw slightly protractile. The genus Sandelia has only cycloid scales, few gill rakers, and generally a carnivorous diet.
Etymology: Greek, anabas = aoristo of anabainein = to climb (Ref. 45335).

8.2. Information on the genus *Anabas* and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

Anabas Status : valid Gender : masculine
Cloquet (ex Cuvier), 1816, p. 35, CAS Ref: 12560
Type by monotypy.
Type species : *Perca scandens* Daldorff, 1797
Current genus : *Anabas*

Coius Status : valid Gender : masculine
Hamilton, 1822, p. 85, 369, CAS Ref: 2031
Type by subsequent designation.
Type species : *Coius coboius* Hamilton, 1822
Current genus : *Anabas*

8.3. General information on *Anabas testudineus*

Classification

Class : Actinopterygii (Ray-finned fishes) MainRef. 004833
Order : Perciformes
Family : Anabantidae (Climbing gouramies)
Species : *Anabas testudineus*
Author : (Bloch, 1792)
Date Eschmeyer, pers. comm.

Environment

Freshwater : Yes Habitat : Demersal
Brackish : Yes
Saltwater : No Depth range : 0

Importance

Landing statistics	: From 10,000 to 50,000 tonnes	Ref. 004931
Importance to fisheries	: Commercial	
Main catching method	:	
Other methods	: <input checked="" type="checkbox"/> Seines <input checked="" type="checkbox"/> Gillnets <input type="checkbox"/> Castnets <input type="checkbox"/> Traps <input type="checkbox"/> Spears <input type="checkbox"/> Trawls <input type="checkbox"/> Dredges <input type="checkbox"/> Liftnets <input type="checkbox"/> Hooks+Lines <input type="checkbox"/> Other	
Used for aquaculture	: Commercial	Ref. 012108
Used as bait	: Never/rarely	
Aquarium fish	: Commercial based mainly on breeding	Ref. 007020
Game fish	: No	
Dangerous fish	: Harmless	
Electrobiology	: No special ability	
Maximum length (cm) (male/unsexed)	: 25 TL	Ref. 004833
Common length (cm) (male/unsexed)	: 12.5 TL	Ref. 002686

Remarks:

Found mostly in canals, lakes, ponds, swamps and estuaries (Ref. 41236). Occurs in medium to large rivers, brooks, flooded fields and stagnant water bodies including sluggish flowing canals (Ref. 12975). Often found in areas with dense vegetation (Ref. 12693). Can tolerate extremely unfavorable water conditions and is associated mainly with turbid, stagnant waters (Ref. 6028). Remains buried under the mud during dry season (Ref. 1479). Feeds on macrophytic vegetation, shrimps and fish fry (Ref. 6028). Reported to undertake lateral migration from the Mekong mainstream, or other permanent water bodies, to flooded areas during the flood season and return to the permanent water bodies at the onset of the dry season (Ref. 37770). During the dry season, it stays in pools associated with submerged woods and shrubs (Ref. 37770). Possesses an accessory air-breathing organ (Ref. 2847). Able to survive for several days or weeks out of water if the air breathing organs can be kept moist (Ref. 1479). Fish famous for its ability to walk; important food fish in Southeast Asia, considered a tasty food fish (Ref. 6565) but not of the finest quality since it is bony (Ref. 2686). Usually sold live in markets where it is kept alive for several days by keeping it moist (Ref. 12693).

8.4. Synonyms, misidentifications, etc. used for *Anabas testudineus*

Synonym	Author	Status	Ref.
<i>Anabas elongatus</i>	Reuvens, 1895	junior synonym	001672
<i>Anabas macrocephalus</i>	Bleeker, 1854	junior synonym	002073
<i>Anabas microcephalus</i>	Bleeker, 1857	junior synonym	001672
<i>Perca scandens</i>	Daldorff, 1797	junior synonym	002091
<i>Lutjanus scandens</i>	Daldorff, 1797	junior synonym	001672
<i>Sparus scandens</i>	Daldorff, 1797	junior synonym	001672
<i>Anabas scandens</i>	Daldorff, 1797	junior synonym	002091
<i>Amphiprion scansor</i>	Bloch & Schneider, 1801	junior synonym	001672
<i>Anabas spinosus</i>	Gray, 1834	junior synonym	001672
<i>Anabas testudinens</i>	Bloch, 1792	misspelling	004833
<i>Amphiprion testudineus</i>	Bloch, 1792	new combination	001672
<i>Antias testudineus</i>	Bloch, 1792	new combination	001672
<i>Anthias testudineus</i>	Bloch, 1792	original combination	002091
<i>Anabas testudineus</i>	Bloch, 1792	new combination	004833
<i>Sparus testudineus</i>	Bloch, 1792	new combination	001672
<i>Anabas testudineus lacustri</i>	Das, 1966	junior synonym	004833
<i>Anabas testudineus ricei</i>	Das, 1966	junior synonym	004833
<i>Anabas testudineus riveri</i>	Das, 1966	junior synonym	004833

<i>Lutjanus testudo</i>	Lacepède, 1802	other	001672
<i>Anabas trifoliatus</i>	Kaup, 1860	junior synonym	001672
<i>Anabas variegatus</i>	Bleeker, 1851	junior synonym	001672

8.5. Common names for *Anabas testudineus*

Name	Language	Country	Ref.
Koi	Bengali	Bangladesh	001479
Climbing perch	English	Bangladesh	039989
Kranh	Khmer	Cambodia	036651
Trey kranh	Khmer	Cambodia	002686
Trey kranh srài	Khmer	Cambodia	012693
Koi	Assamese	India	047932
Koi	Bengali	India	047932
Climbing perch	English	India	004833
Khakoi	Khasi	India	047932
Kallemutti	Malayalam	India	043640
Karippidi	Malayalam	India	043640
Karooppu	Malayalam	India	043640
Betik	Javanese	Indonesia	006107
Krucilan	Javanese	Indonesia	006107
Bale belang	Makassarese	Indonesia	006107
Betok	Malay	Indonesia	002686
Pa kheng	Laotian	Lao People's Dem. Rep.	002686
Climbing perch	English	Malaysia	004789
Pepuyu	Malay	Malaysia	002686
Puyu	Malay	Malaysia	004789
Nga-bye-ma	Burmese	Myanmar	002686
Nga-pri	Burmese	Myanmar	007100
Climbing perch	English	Myanmar	005736
Kabai	Nepali	Nepal	009496
Climbing perch	English	Papua New Guinea	006993
Atas	Bikol	Philippines	002857
Puyo	Bikol	Philippines	002857
Arraro	Ilokano	Philippines	002857
Pla mor	Thai	Thailand	002686
Pla mor Thai	Thai	Thailand	042982
Climbing perch	English	United Kingdom	001739
Climbing perch	English	USA (contiguous states)	003814
Cá ro dong Cá	Vietnamese	Viet Nam	036625
Rô đông	Vietnamese	Viet Nam	002686

8.6. Distribution of *Anabas testudineus*

Asia: India to Wallace line including China. May have been distributed in more areas than were commonly reported. MainRef. 004833

Latitudinal range: 28° N - 10° S

Temperature range: 22 - 30 °C

Ref.: 1672

Status of threat: NL.

Country

Bangladesh

Also Ref. 4833, 39989, 41236, 43638.

Status

native

Ref.

001479

Cambodia

native

012693

Occurs in the Mekong Basin (Ref. 27732). Found around the Tonle Sap Great Lake and River (Ref. 36651). Known from Réam, Stung Sen, Angkor (Ref. 36654) and Sangke River,

	Battambang province (Ref. 41486). Occurs in sluggish or still standing waters (Ref. 36686). Also Ref. 3902, 33813, 36662, 41236, 45353.	
China	native	027732
	Occurs in the Mekong Basin in Yunnan (Ref. 27732). Also Ref. 1739, 36654, 41236.	
India	native	004833
	Known throughout India (Ref. 43640). Recorded from Western Ghats Rivers, Maharashtra (Ref. 43634) and Chilka Lake (Ref. 29108). Also Ref. 36654, 41236, 45255.	
Indonesia	native	007050
	Known from Sulawesi (Ref. 2847) and Lake Tundai, South Borneo (Ref. 42107). Translocated to Irian Jaya, possibly in the Merauke area (Ref. 2847). Also Ref. 27732.	
Lao People's Dem. Rep.	native	043281
	Occurs in the Mekong Basin. Found in the Lower and Middle Xe Bangfai, and the Middle Nam Theun (Ref. 27732) and Ban Hang Khone, a village on an island in the middle of the main-stream Mekong River just below the Great Khone Waterfalls in Khong District, Champasak Province (Ref. 37767). Also Ref. 4792, 30857.	
Malaysia	native	004835
Maldives	native	001739
Myanmar	native	005736
	Also Ref. 4833, 41236, 43638.	
Nepal	native	009496
	Found in Terai region at 76-135 m altitude. Also Ref. 41236, 43638.	
Pakistan	native	004833
Papua New Guinea	introduced	002847
	Established in Sepik area (Ref. 6993) and in the extreme southwest corner of the country (Ref. 50786). Also Ref. 9420.	
Philippines	native	000280
	Status to be confirmed. Recorded as introduced (Ref. 6565). May be a native fish due to museum records dating back to 1901 (USNM, 00126367) (Ref. 38732). Found in slow streams, ditches, ponds, and lakes, but not in the mountains (Ref. 2854). Reported from Laguna de Bay; museum specimens collected in 1984 from the south bay, LRS-84128 (Ref. 13460) and Sta. Maria River, in Laguna; Lake Buhi, Camarines Sur; Lake Naujan, Mindoro; San Fernando, La Union; Rosales, La Union; Tacloban, Leyte; Lake Buluan and the rivers of Cotabato (Rio Grande and Fort Pikit) (Ref. 00280). A specimen was caught in 1989 with hook and line from Lake Manguao, Palawan (Ref. 13489). Known from Lake Buluan (Ref. 13492) and Lake Lanao (Ref. 13446). Considered a tasty but bony food fish (Ref. 6565). Used in the aquarium trade (Ref. 12157). Also Ref. 4835, 4833, 7050, 12744, 43638.	
Singapore	native	004833
Sri Lanka	native	006028
	Widespread throughout the country except in the central hills. Also Ref. 4833, 27732, 41236, 43281, 43638.	
Taiwan	native	027732
	Also Ref. 7050, 43281.	
Thailand	native	026336
	Found in Mekong, Chao Phraya, MaeKlong, Peninsular and Southeast Thailand river systems (Ref. 26336). Also Ref. 1632, 7306, 9648, 27732, 41236.	
USA (contiguous states)	introduced	003814
	Formerly established in Florida, but has since disappeared.	
Viet Nam	native	044416
	Found in Hanoi, Northern Viet Nam (Ref. 44416). Occurs in the Mekong Basin (Ref. 27732). Also Ref. 2682, 36625, 37770.	

8.7. Introductions of *Anabas testudineus*

Asia: India to Wallace line including China. May have been distributed in more areas than were commonly reported.

Year : 1976 - 1979 Established: yes Ref. 006349
 Introduced : to Papua New Guinea from Indonesia
 Reason : diffusion from neighboring countries
 Comments : Introduction may have occurred after the mid-1970s (Ref. 13364). Introduced to Irian Jaya, possibly in the Merauke area and has now spread to the Morehead River in Papua New Guinea (Ref. 2847). Has been reported to occur in Bensbach River from Merauke area in West Papua. Records at Balamuk village indicate that it was first encountered in the Weam area of the Bensbach in 1985, possibly entering the river via drainage ditches associated with the building of the Trans-Irian Highway, which in 1982 crossed the international border in two locations near the upper part of Fly River (Ref.50786).

Year : unknown Established : yes Ref. 006565
 Introduced : to Philippines from Malaysia
 Reason : aquaculture
 Comments : Used in rice-fish culture but not considered a first class food fish because they are rather bony. Introduced by Hindu and Malay fishermen (Ref. 6565). May be a native fish due to museum record dating back to 1901 (USNM 00126367) (Ref. 38732)

Year : unknown Established: no Ref. 001739
 Introduced : to USA from Southeast Asia
 Reason : ornamental
 Comments : Introduced through accidental release from aquaria (Ref. 4709). Reported to be established in South Florida but no specimens were known to have been collected (Ref. 6029). Also Ref. 13364.

8.8. Summary information (no. of records) available for *Anabas testudineus*

Ecology	1	Max. sizes	2	Strains	0
Food items	20	FAO catches	15502	Diseases	17
Food consumption	0	Genetics	7	Ciguatera	0
Diet composition	0	Allele frequency	0	Ecotoxicology	2
Ration	0	Heritability	0	Metabolism	86
Predators	0	Reproduction	1	Gill area	5
Morphology	1	Spawning	4	Swimming type	1
Processing	0	Eggs	1	Swimming speed	0
Growth/mortality	0	Egg dev't	0	Vision	0
Maturity	0	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	3
L/W relat.	0	Aquaculture	0	Occurrence	308

8.9. Morphology of *Anabas testudineus*

Diagnostic Characters

Color in life dark to pale greenish, very pale below, back dusky to olive; head with longitudinal stripes ventrally; posterior margin of opercle with a dark spot; iris golden reddish. Body form variable, affected by age and amount of food consumed. Scaled head with 4-5 rows between eye & rear margin of pre-operculum. Scales large & regularly arranged, ciliate.

Descriptive Characters

Striking features : none Cross section: compressed
 Body shape lateral : short and / or deep Dorsal head profile: more or less straight
 Operculum present : Yes
 Type of eyes : more or less normal
 Position/type of mouth : terminal more or less normal

Teeth Presence

lower jaw: present conical
upper jaw: present conical
vomerine: present conical
palatine: absent
Comment: Teeth small and fixed.

Pigmentation on trunk and tail

Horizontal stripes : absent dorsal and ventral ending before ventral contour
Vertical stripes : absent
Diagonal stripes : absent
Curved stripes : absent
Spots : one spot only lateral mainly on tail
Dorsal fin (D1) : more than one spot or stripe no colored margin
Caudal fin : no spots or stripes no colored margin
Anal fin (A1) : no spots or stripes no colored margin

Meristic Characters

Lateral Lines : 1
Interrupted : yes
Scales on lateral line : 26-32
Scales in lateral series : 21 -29
Scale rows above lateral line : 3-4
Scale rows below lateral line : 811
Scales around caudal peduncle : -
Barbels : 0

Dorsal fins

Dorsal attributes : extending over most of the back length
Number of fins : - spines total : 1620- soft-rays total : 710
Adipose fin : absent finlets dorsal : -0000 finlets ventral : 0-0

Caudal fin

Shape of fin : more or less truncate

Anal fin

Number of fins : - spines total : -911 soft-rays total : 811

Paired fins

Pectoral attributes : more or less normal
spines : 0 soft-rays : 1416
Pelvics attributes : more or less normal
position : thoracic behind origin of D1
spines : 1 soft-rays : 55

Body proportions (based on picture)

Standard length (SL) (cm)
Preorbital length (% HL) Maximum depth (% SL) 30.8

8.10. Genetic information for *Anabas testudineus*

Locality : Unspecified
Chromosome number (haploid) : 23
Chromosome number (diploid) : 46
Genetic marker(s) present : No
Chromosome arm no. : 50

Main Ref.: 008973

Locality : Kalyani, Western Bengal, India
Chromosome number (haploid) : 23
Chromosome number (diploid) : 46
Genetic marker(s) present : No
Sex-determining mechanism : 46

Main Ref.: 028174

Ref.:034344

Ref.:034344

Remarks: Sex chromosomes not distinguishable. No banding technique used. $CF= 4st+2t+22T$
($2n=28$) (calculated from Ref. 028174)

Locality : Unspecified
Chromosome number (haploid) : 24
Chromosome number (diploid) : 48
Genetic marker(s) present : No
Chromosome arm no. : 48

Main Ref.: 030184

Ref.: 030184

Ref.: 030184

Ref.: 030184

Locality : Unspecified
Chromosome number (haploid) : 23
Chromosome number (diploid) : 46
Genetic marker(s) present : No
Chromosome arm no. : 50

Main Ref.: 030184

Remarks: $CF = 4st + 20A + 22t$.

Locality : Porto Novo, India
Chromosome number (haploid) : 23
Chromosome number (diploid) : 46
Genetic marker(s) present: : No
Chromosome arm no. : 50

Main Ref.: 030184

Ref.: 029628

Ref.: 029628

Ref.: 029628

Locality : Unspecified
Chromosome number (haploid) : 24
Chromosome number (diploid) : 48
Genetic marker(s) present : No
Chromosome arm no. : 48

Main Ref.: 030184

Ref.: 034738

Ref.: 034738

Remarks: Also in Ref. 034370.

Main Ref.: 034370

Locality : Unspecified
Chromosome number (haploid) : 24
Chromosome number (diploid) : 48
Genetic marker(s) present : No
Chromosome arm no. : 48

Ref.: 034738

Ref.: 034738

8.11. FAO aquaculture production data for *Anabas testudineus*

Country (Area)		1984	1985	1986	1987	1988	1989	1990
		1991	1992	1993	1994	1995	1996	1997
		1998	1999	2000	2001			
India (4)	(t)	32,000	35,000	35,000	35,000	35,000	35,000	35,000
	(US\$'000)	64,000	76,545	79,632	84,315	81,468	75,392	76,545
	(t)	34,912	50,323	50,000	50,000	55,000	55,000	60,000
	(US\$'000)	56,557	70,653	70,950	54,400	57,970	57,750	60,000
	(t)	65,000	65,000	0	0			
	(US\$'000)	65,000	65,000	0	0			
Thailand (4)	(t)	930	925	835	724	791	1,014	145
	(US\$'000)	744	773	635	563	712	933	125
	(t)	828	826	1,768	1,944	949	1,189	910
	(US\$'000)	779	890	1,936	2,144	1,448	1,347	1,080
	(t)	763	760	470	720			
	(US\$'000)	1,513	883	541	828			
	(mt)	32,930	35,925	36,835	37,224	37,291	39,014	39,405
Total: 2	(US\$'000)	64,744	77,318	80,267	84,878	82,180	76,325	78,678
	(mt)	35,740	51,149	51,768	51,944	55,949	56,189	60,910
	(US\$'000)	57,336	71,544	72,886	56,544	59,418	59,097	61,080
	(mt)	65,763	65,760	470	720			
	(US\$'000)	66,513	65,883	541	828			

8.12. General information on the reproduction of *Anabas testudineus*

Level : species in general

StockCode: 000511

MainRef: 007471

Mode and Type of Reproduction

Mode : dioecism

Fertilization : external

Spawning frequency

Batch spawner : no

Reproductive guild : guarders, clutch tenders

Guards eggs at the surface of hypoxic water (Ref.: 7471)

Spawning Information for *Anabas testudineus*

Locality : Mekong Mainstream

Stockcode: 000511

Season (% of mature females; 111= presence of mature females):

Main Ref.: 037770

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111 111 111 111 111 111 111

Comment: Eggs occur during March to October.

Locality: Bangladesh

Stockcode: 000511

Season (% of mature females; 111= presence of mature females):

MainRef.: 001479

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111 111 111

Fecundity: min 39,687 (n) Female size: (g) 11.00 (cm)
 max 86,108 (n) (g) 27.90 (cm)

Comment: Hatching takes place in 18 hours at a temperature of 28.5°C. Egg diameter 0.7 mm.

Locality : Viet Nam, Mekong Mainstream at Dong Thap province

Stockcode: 000511

Season (% of mature females; 111= presence of mature females):

Main Ref.: 037770

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 111 111 111

Comment: Spawning takes place in irrigated ricefields.

Locality :Thailand, Mekong Mainstream at Chiang Khong province

Stockcode: 000511

Season (% of mature females; 111= presence of mature females):

Main Ref.: 037770

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 111 111 111

Comment: Spawning takes place in rain fed paddy.

8.13. Available information on eggs of *Anabas testudineus*

Level : species in general

StockCode: 00511

Water parameters with reported egg occurrences

Main Ref.: 041595

Descriptive characters

Place of development : buoyant (pelagic)

Shape of egg : spherical

Attributes : smooth

Meristic and metric (mm) characters

	max	Ref.	mod	Ref.	mod	Ref.
Oil globules	1	041595	1	041595	1	041595
Oil diameter (mm)						
Egg diameter (mm)	1	041595	1	041595	1	041595
Reference diameter (RD)						

8.14. Ecology of *Anabas testudineus*

Level : species in general

StockCode: 000511, 000495

Main Ref.: 012693

Habitats

Ref.: 012693

Streams : Yes Lakes : No Caves : No (Exclusively: No)

Estuaries/lagoons/brackish seas : No

Intertidal : No Soft: No Rocky : No Mangroves/marshes/swamps: No

Marine : No Oceanic: No Neritic : No Coral reefs: No

Tropical soft bottom: No Hard bottom: No Seagrass beds : No Macrophyte : No

Feeding

Feeding Type : mainly animals (troph. 2.8 and up)

Ref. 012693

Feeding Habit : hunting macrofauna (predator)

Ref. 012975

Trophic level(s)

Original sample

Unfished population

Remarks

Estimation method Troph s.e.

Troph s.e.

From diet composition

From indiv. food items 2.6 0.28

- -

8.15. Food items for *Anabas testudineus*

Level: species in general

StockCode: 000511

Food item

nekton

finfish	bony fish	unidentified	unidentified	012693
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plants

other plants	benthic algae/weeds	unidentified	unidentified	006028	
phytoplankton	blue-green algae	Characeae	Charasp.	048780	
		Desmidiaceae	Closteriu	048780	
		Oscillatoriaceae	Lyngbyasp.	048780	
		Oscillatoriaceae	Oscillatoriasp.	048780	
		Zygnemataceae	Spirogyrasp.	048780	
		Zygnemataceae	Zygnemasp.	048780	
		diatoms	Euglenaceae	Euglenasp.	048780
			Hookeriaceae	Chaetophorasp.	048780
			Oedogoniaceae	Oedogonium	048780
		green algae	Ulotrichaceae	Ulothrixsp.	048780
			Volvocaceae	Volvoxsp.	048780

zoobenthos

benth. crust.	ostracods	Cyprididae	Cyprissp.	048780
	shrimps/prawns	unidentified	unidentified	006028
insects	insects	unidentified	unidentified	048780
mollusks	n.a./other mollusks	unidentified	unidentified mollusks	048780

zooplankton

fish (early stages)	fish eggs/larvae	unidentified	unidentified	006028
plank. crust.	cladocerans	Cyclopidae	Cyclopssp.	048780
		Daphniidae	Daphniasp.	048780

8.16. Maximum weight/length/age of *Anabas testudineus*

Locality: India, Tamil Nadu

StockCode: 000511

Max length	(cm): 10.5	Same specimen for WL: No
Max age	(yrs): No	Same specimen for LT: No

Ref.: 043637
Sex : unsexed

Locality: Nepal, None specified

StockCode: 000511

Max length	(cm): 12.5	Same specimens for WL: No
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Ref.: 009496
Sex: unsexed

8.17. Diseases reported for *Anabas testudineus*

StockCode: 000511

Main Ref.: 042533

Parasitic infestations (protozoa, worms, etc.): Tripartiella disease

Ref. : 026129

Causative agent : *Tripartiella* sp.

Occurrence : Chittagong, Bangladesh, 1993

Remarks: *Location of infestation not specified. Infection of Tripartiella sp. is doubtful, G. Asmat (pers.comm. 07/03).*

Parasitic infestations (protozoa, worms, etc.): Dactylogyrus gill flukes disease Ref.: 000060

Helminthose (gills)

Causative agent : *Dactylogyrus* sp.

Occurrence : Chittagong and Raj Shani, Bangladesh, 1993

Remarks: *Infestation commonly occurs in the gills and skin.*

Parasitic infestations (protozoa, worms, etc.): *Contraecaecum* disease Ref.: 000026

Nematode

Causative agent : *Contraecaecum* sp.

Occurrence : Dhaka, Bangladesh, 1997

Remarks : *Infestation commonly occurs in the intestine, stomach, pyloric caeca, body cavity and viscera.*

Parasitic infestations (protozoa, worms, etc.): *Paragendria* infestation 2 Ref. : 042533

Causative agent : *Paragendria wallagonia*

Occurrence : Dhaka, Bangladesh, 1997

Remarks: *Infestation commonly occurs in the intestine.*

Parasitic infestations (protozoa, worms, etc.): *Gnathostoma* infestation Ref.: 026129

Causative agent : *Gnathostoma spinigerum*

Occurrence : Dhaka, Bangladesh, 1997

Remarks: *Infestation commonly occurs in the intestine, stomach, muscles, body cavity and viscera.*

Parasitic infestations (protozoa, worms, etc.): *Allocreadium* infestation 6 Ref. : 042533

Causative agent : *Allocreadium minutum*

Occurrence : Dhaka, Bangladesh, 1993

Remarks: *Infestation commonly occurs in the intestine.*

Parasitic infestations (protozoa, worms, etc.): *Neopecoelina* infestation Ref.: 042533

Causative agent : *Neopecoelina saharanpuriensis*

Occurrence : Dhaka, Bangladesh, 1997

Remarks: *Infestation commonly occurs in the stomach, stomach wall, intestine and intestinal wall.*

Parasitic infestations (protozoa, worms, etc.): *Camallanus* infestation 1 Ref.: 026129

Camallanus (*Zeylanema*) *anabantis*

Causative agent : *Camallanus anabantis*

Occurrence : Dhaka and/or Sylhet, Bangladesh, 1973

Remarks: *Infestation commonly occurs in the intestine. Besides 1973 (Bashirullah), the infestation also occurred in 1978 (Ahmed and Begum) in the localities of Barisal and Dhaka, 1997 (Akther et al.) in Dhaka, and 1981 (Ahmed) with no specific locality cited.*

Parasitic infestations (protozoa, worms, etc.): *Camallanus* infestation 8 Ref.: 042533

Camallanus (*Zeylanema*) *pearsei*

Causative agent : *Camallanus pearsei*

Occurrence : Dhaka and/or Sylhet, Bangladesh, 1973

Remarks: *Infestation commonly occurs in the intestine. Besides 1973 (Bashirullah), the infestation also occurred in 1978 (Ahmed and Begum) in the localities of Barisal and Dhaka, 1997 (Akther et al.) in Dhaka, and 1981 (Ahmed) with no specific locality cited.*

Parasitic infestations (protozoa, worms, etc.): *Stellantchasmus* infestation Ref.: 026129

Causative agent : *Stellantchasmus falcatus*

Occurrence : Luzon, Philippines, 1939

Remarks: *Infestation occurs most commonly in the musculature and body cavity.*

- Parasitic infestations (protozoa, worms, etc.): Camallanus infestation 1 Ref.: 026129
 Camallanus (Zeylanema) anabantis
 Causative agent : *Camallanus anabantis*
 Occurrence : Luzon, Philippines, 1966
Remarks: *Infestation occurs most commonly in the intestine. Besides 1966 (Velasquez), the infestation also occurred in 1980 by the same author.*
- Parasitic infestations (protozoa, worms, etc.): Centrocestus infestation 2 Ref.: 026129
 Causative agent : *Centrocestus caninus*
 Occurrence : Luzon, Philippines, 1939
Remarks: *Infestation occurs most commonly in the gills.*
- Parasitic infestations (protozoa, worms, etc.) , Procerovum infestation 2 Ref.: 026129
 Causative agent : *Procerovum varium*
 Occurrence : Luzon, Philippines, 1966
Remarks: *Infestation occurs most commonly in the musculature and base of fins.*
- Parasitic infestations (protozoa, worms, etc.): Gnathostoma infestation Ref.: 026129
 Causative agent : *Gnathostoma spinigerum*
 Occurrence : Luzon, Philippines, 1938
Remarks: *Infestation occurs most commonly in the musculature and visceral linings. Besides 1938 (Refuerzo and Garcia), the infestation was also reported in 1974 (Velasquez). Refuerzo and Garcia experimentally exposed host fish to infected copepods. But they are uncertain whether infections of these larvae were the result of natural or experimental infection.*
- Parasitic infestations (protozoa, worms, etc.): Procerovum infestation 1 Ref.: 026129
 Causative agent : *Procerovum calderoni*
 Occurrence : Luzon, Philippines, 1939
Remarks: *Common infestation (Vazquez-Colet and Africa). The infestation was also reported in 1940 (Vazquez-Colet and Africa), 1966 (Velasquez) in Luzon, and in 1973 (Velasquez) in Luzon and Mindanao*
- Parasitic infestations (protozoa, worms, etc.): Lernaea infestation Ref.: 026129
 Causative agent : *Lernaea lophiara*
 Occurrence : Luzon, Philippines, 1988
Remarks: *The head of the parasite is embedded in the musculature with the body protruding externally. This report involves an experimental infection.*
- Parasitic infestations (protozoa, worms, etc.): Anchor worm disease Ref.: 000060
 Lernaeosis
 Causative agent : *Lernaea cyprinacea*
 Occurrence : Luzon (Laguna de Bay), Philippines, 1988
Remarks: *The parasite's head is commonly embedded in the eye or nostril of a host with the body protruding externally.*

8.18. Ecotoxicology of *Anabas testudineus*

Chemical	LC50 (mg/l)	Exposure Stage (h)	Ref.
Malathion	28	28	008721
Malathion	11.8	96	008721

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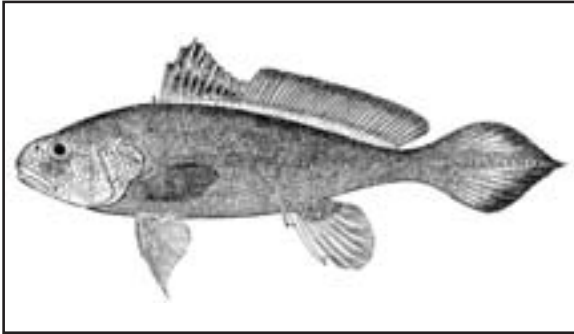


BOESEMANIA MICROLEPIS

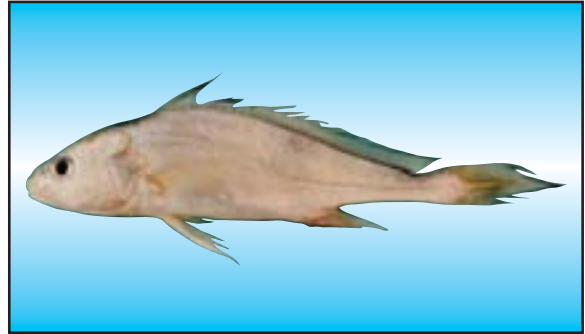
(Bleeker, 1858)

Boeseman croaker

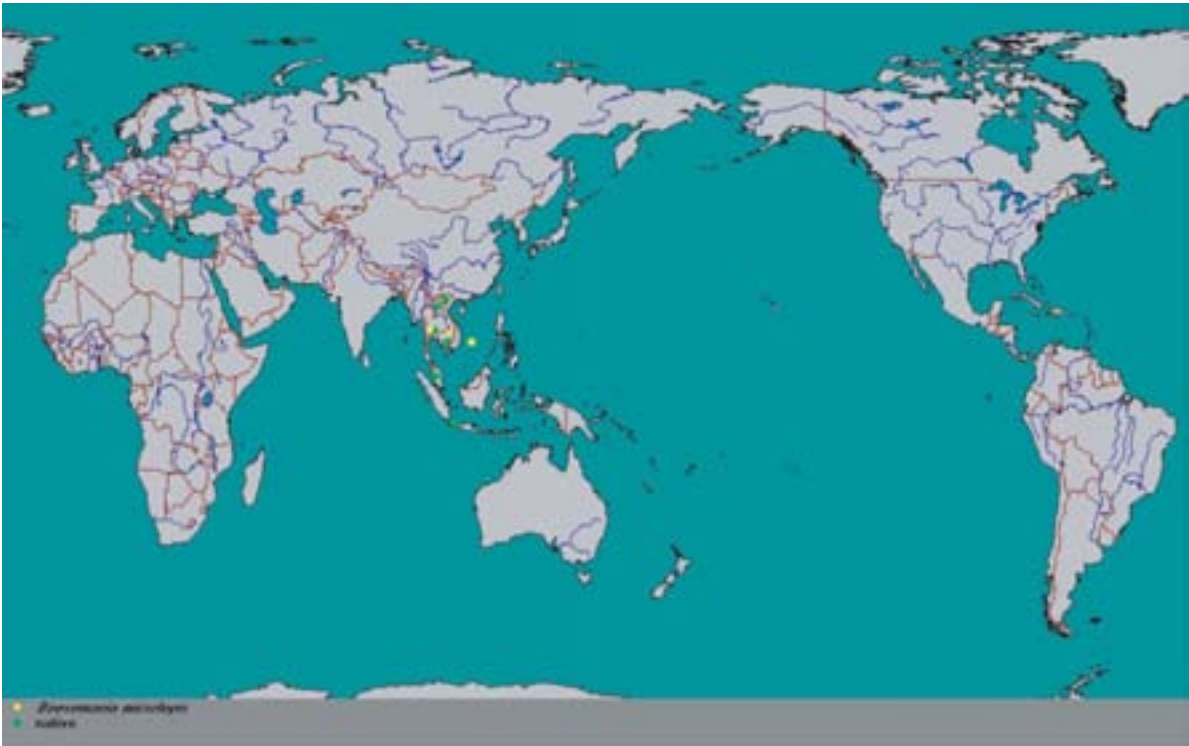
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Picture by [FAO](#)



Picture by [Warren, T.](#)



9.1. Summary information on the family Sciaenidae

Family : Sciaenidae (Drums or croakers) MainRef.: 007463
Order : Perciformes FamCode: 331
Class : Actinopterygii (Ray-finned fishes)

Number of genera : 70
Number of species : 270
Occurs in : Marine
 Brackish
 Freshwater

Aquarium fishes : some

Species currently in FishBase: Genera: 71 Species: 275 (Including subspecies) Complete: No



Drums or croakers are distributed in the Atlantic, Indian and Pacific oceans. Dorsal fin long, having a deep notch between the spinous and soft-rayed parts, but the parts rarely separate. Spinous part with 6-13 spines; the soft-rayed part with 1 spine and usually 20-35 soft rays. Anal fin having 1 or 2 usually weak spines; soft rays 6-13. Lateral line reaching end of caudal fin. Slightly emarginate to rounded caudal fin. Opercle with the upper bony edge forked. Gill opening with a bony flap above it. Some species with 1 barbel or a patch of small barbels on chin. Large cavernous canals in head. Snout and lower jaw with conspicuous pores. Vomer and palatine toothless. Swim bladder usually having many branches and used as a resonating chamber. Exceptionally large otoliths. Vertebrae 24-29. Bottom dwelling carnivores, feeding on benthic invertebrates and small fishes. Juveniles are popular aquarium fishes, but difficult to maintain.

Etymology: Greek, skiaina = a kind of fish (Ref. 45335).

9.2. Information on the genus *Boesemanina* and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

Boesemanina Status: valid Gender: feminine
Trewavas, 1977, p. 309, CAS Ref: 4459
Type by original designation (also monotypic).
Type species : *Johnius microlepis* Bleeker, 1859
Current genus : *Boesemanina*

9.3. General information on *Boesemanina microlepis*

Classification

Class : Actinopterygii (Ray-finned fishes) MainRef. 009772
Order : Perciformes
Family : Sciaenidae (Drums or croakers)
Species : *Boesemanina microlepis*
Author : (Bleeker, 1858)

Environment

Freshwater : Yes Habitat: Benthopelagic
Brackish : Yes
Saltwater : No

Importance

Importance to fisheries : Highly commercial Ref. 043946
Main catching method : Gillnets
Other methods : Seines Gillnets Castnets Traps Spears
 Trawls Dredges Liftnets Hooks+Lines Other

Used for aquaculture : Never/rarely
Used as bait : Never/rarely
Aquarium fish : Never/rarely
Game fish : No
Dangerous fish : Harmless
Electrobiology : No special ability

Size and age

Maximum length (cm) (male/unsexed) : 100 SL (female):
Common length (cm) (male/unsexed) : 20 SL (female):
Maximum weight (g) (male/unsexed) : 7,000.00 (female):



Occurs in flowing waters of large rivers. Found in the deep-water pools of the Mekong River even during the dry-season (Ref. 43946). Appears to be sedentary with no clear-cut migratory habits (Ref. 43946). Feeds on crustaceans and small fishes (Ref. 12693). Loud continuous croaking was observed during the dry season in the deep water areas of the Mekong River which could be linked with spawning behavior (Ref. 43946). Marketed fresh (Ref. 12693). Most desirable and highly priced food fishes in the Mekong region (Ref. 43946).

9.4. Synonyms, misidentifications, etc. used for *Boesemania microlepis*

Synonym	Author	Status	Ref.
<i>Otolithoides aeneocorpus</i>	Fowler, 1935	junior synonym	005369
<i>Pseudosciaena microlepis</i>	Bleeker, 1858	new combination	007050
<i>Johnius microlepis</i>	Bleeker, 1858	original combination	026282
<i>Boesemania microlepis</i>	Bleeker, 1858	new combination	009772
<i>Nibeas soldado</i>	nonLacepède, 1802	misidentification	009772

Total = 5

9.5. Common names for *Boesemania microlepis*

Name	Language	Country	Ref.
Prama	Khmer	Cambodia	036651
Trey pama	Khmer	Cambodia	036654
Trey promah	Khmer	Cambodia	012693
Terusan	Malay	Indonesia	006107
Pa gooawng	Laotian	Lao People's Dem. Rep.	009497
Pa kouang	Laotian	Lao People's Dem. Rep.	037767
Pba gooawng	Laotian	Lao People's Dem. Rep.	012369
Pla hang kew	Thai	Thailand	043946
Pla ma	Thai	Thailand	043946
Boeseman croaker	English	United Kingdom	009772
Smallscale croaker	English	United Kingdom	012693
Ca suu	Vietnamese	Viet Nam	043946

9.6. Distribution of *Boesemania microlepis*

Asia: Thailand to Viet Nam and Sumatra.

Main Ref.: 009772

Latitudinal range: °-° Temperature range: - °C Ref.:

Status of threat: NL.

Country	Status	Ref.
Cambodia	native	009772
Known from the Mekong Basin (Ref. 37772). Found around the Tonle Sap River and the Great Lake (Ref.36651), Sékong at Stung Treng (Ref. 36654). Occurs in flowing waters (Ref. 36686). Also Ref. 37772.		
Indonesia	native	007050
Known from Sumatra (Ref. 7050, 36654).		
Lao People's Dem. Rep.	native	043281
Known from the Mekong Basin (Ref. 43281). Occurs in the Khone Falls (Ref. 37772) and Ban Hang Khone at Don Khone, 3 km below the fall line of the great waterfalls of the Mekong Basin at Lee Pee. Reported to migrate upstream during the dry season in January/March in Southern Laos (Ref. 37769). Regarded by Ban Hang Khone fishermen as non-migratory. The present catch in Ban Hang Khone is reportedly only about 10% of what it was in 1970 (Ref. 9497). Becoming locally rare (Ref. 43281). Museum: Mekong at Ban Hang Khone, just below Khone Falls, CAS 94880 (Ref. 5515). Also Ref. 12369, 36654, 37767.		
Malaysia	native	043946
Found in river tributaries of peninsular Malaysia (Ref. 43946).		
Thailand	native	026336
Known from the Mekong, Chao Phraya, Maeklong Basins (Ref. 26336); Nan, Tachin and Bang Pakong Rivers (Ref. 43946). Museum: Mekong River mainstream at Bung Kla, ca. 140 km nw of Nakhon Phanom, CAS 95034 (Ref. 5515). Also Ref. 9772.		
Viet Nam	native	009772
Known from the Mekong Basin (Ref. 43281). Also Ref. 36654.		

9.7. Summary information (no. of records) available for *Boesemania microlepis*

Asia: Thailand to Viet Nam and Sumatra.

Ecology	1	Max. sizes	0	Strains	0
Food items	4	FAO catches	15502	Diseases	0
Food consumption	0	Genetics	0	Ciguatera	0
Diet composition	0	Allele frequency	0	Ecotoxicology	0
Ration	0	Heritability	0	Metabolism	0
Predators	0	Reproduction	0	Gill area	0
Morphology	0	Spawning	7	Swimming type	0
Processing	0	Eggs	0	Swimming speed	0
Growth/mortality	0	Egg dev't.	0	Vision	0
Maturity	0	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	0
L/W relat.	1	Aquaculture	0	Occurrence	22

Total = 1

9.8. General Information on the Reproduction of *Boesemania microlepis*

Locality : Laos, Veun Tholathi

Stockcode: 014571

Season (% of mature females; 111= presence of mature females) :

Main Ref.:043946

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111 111

Comment: This vast spawning ground is included in the areas being protected within the Fish Conservation Zones (FCZ) since 1994 and has since benefited from this scheme (Ref. 43946).

Locality : Laos, Veun Te/Veun Va

Stockcode: 014571

Season (% of mature females; 111= presence of mature females):

MainRef. : 043946

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111 111

Locality : Laos, Veun Phou That

Stockcode: 014571

Season (% of mature females; 111= presence of mature females) :

Main Ref.:043946

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111 111

Locality : Laos, Veun Louk

Stockcode: 014571

Season (% of mature females; 111= presence of mature females) :

Main Ref.:043946

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111 111

Locality : Laos, Veun Hat Phou

Stockcode: 014571

Season (% of mature females; 111= presence of mature females) :

Main Ref.:043946

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111 111

Locality : Laos, Khoum Pa Tong/Peo Ta

Stockcode: 014571

Season (% of mature females; 111= presence of mature females) :

Main Ref.:043946

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111 111

Comment: Also included in the Fish Conservation Zone scheme in 1995 but not successful enough like the other areas that have been protected (Ref. : 43946)

Locality : Laos, Ban Hang Khone

Stockcode: 014571

Season (% of mature females; 111= presence of mature females) :

Main Ref.: 012369

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111

Comment: Large fish in spawning condition were caught in February and March and were thought to spawn in Boong Pba Gooawng and Boong Pba Jook, just in front of Ban Hang Khone. Fish vocalized at mid-afternoon every day in February-March, producing a deep "oot-oot" sound.

9.9. Ecology of *Boesemania microlepis*

Level: species in general

Stockcode: 04571, 015224

Main Ref. 033813

Habitats:

Stream: Yes

Caves: No (Exclusively: No)

Estuaries /logoons /brackish seas: No

Intertidal: No

Soft: No

Rocky: No

Mangoves/marshes/swamps: No

Marine: No

Oceanic: No

Neritic: No

Coral reefs: No

Tropical soft bottom: No

Hard bottom: No

Seagrass beds: No

Macrophyte: No

Feeding

Feeding type: mainly animals (troph. 2.8 and up)

Ref.: 033813

Feeding habitat: hunting macrofaun (predator)

Trophic level(s):	Original sample	Unfished population	Remarks
Estimation method	Troph s.e.	Troph s.e	
From diet composition:			
From indiv. food item:	3.7 0.59	- -	Trophic level estimate

9.10. Food items for *Boesemania microlepis*

Level: species in general

StockCode: 014571

Food item**Nekton**

Finfish	bonyfish	unidentified	033813
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Zoobenthos

benth. crust	n.a/other benth	unidentified	033813
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	crustaceans		
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	shrimps/prawns	unidentified shrimp	043946
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insect	insect	unidentified	043946
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9.11. References used for *Boesemania microlepis*

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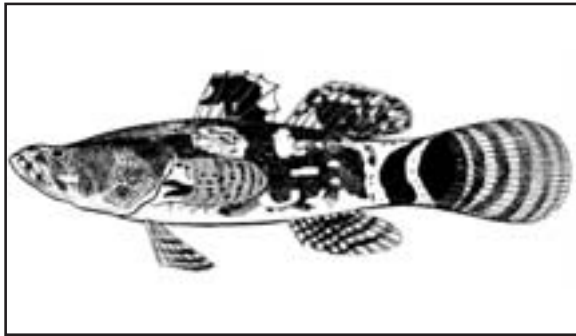
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OXYELEOTRIS MARMORATA

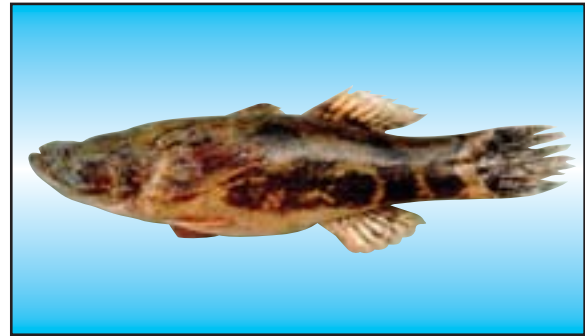
(Bleeker, 1852)

Marble goby

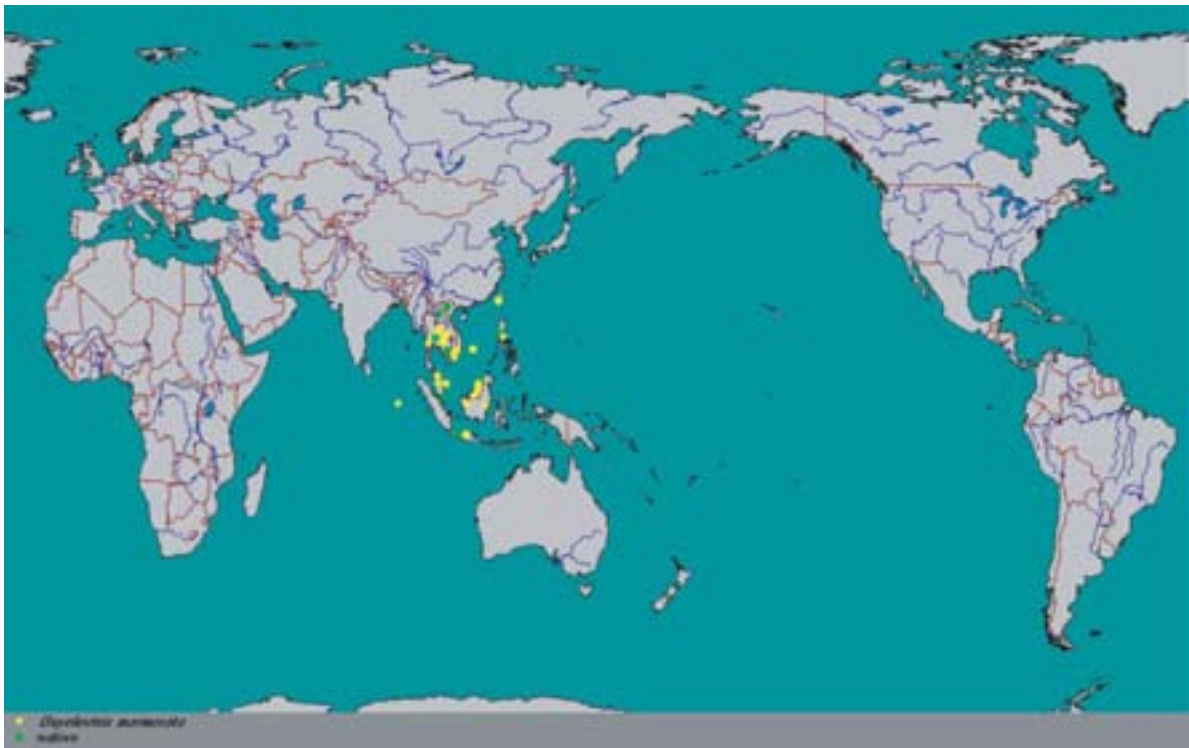
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Picture by [FAO](#)



Picture by [Warren, T.](#)



10.1. Summary information on the family Eleotridae

Family : Eleotridae (Sleepers)
Order : Perciformes
Class : Actinopterygii (Ray-finned fishes)
Number of genera : 35
Number of species : 150
Occurs in : Marine
 Brackish
 Freshwater
Aquarium fishes: some

MainRef. 007463
FamCode: 404

Species currently in FishBase: Genera: 39 Species: 158 (Including subspecies) Complete: No



Distribution: most tropical and subtropical areas; rare in temperate areas. Separate pelvic fins, or fused to various extents. Mouth never subterminal. Cycloid or ctenoid scales. Dorsal fin 2-8 flexible spines. Vertebrae 25-28. Branchiostegal rays 6. Maximum length about 60 cm (reported for Dormitator maculatus)
Etymology: Greek, eleotris = the name of a Nile fish

10.2. Information on the genus *Oxyeleotris* and its synonyms

After Eschmeyer March 2003 (Ref. 46206)

Gigantogobius Status: synonym Gender: masculine
Fowler, 1905, p. 511, CAS Ref: 1370
Type by original designation (also monotypic).
Type species : *Gigantogobius jordani* Fowler, 1905
Current genus : *Oxyeleotris*

Oxyeleotris Status: valid Gender: feminine
Bleeker, 1874, p. 302, CAS Ref: 437
Type by original designation (also monotypic).
Type species : *Eleotris marmorata* Bleeker, 1852
Current genus : *Oxyeleotris*

10.3. General information on *Oxyeleotris marmorata*

Classification

Class : Actinopterygii (Ray-finned fishes) MainRef. 007050
Order : Perciformes
Family : Eleotridae (Sleepers)
Species : *Oxyeleotris marmorata*
Author : (Bleeker, 1852) Date Eschmeyer, pers. comm.

Environment

Freshwater : Yes Habitat : Demersal
Brackish : Yes
Saltwater : No Depth range : 10

Importance

Importance to fisheries : Commercial Ref. 006459
Other methods : Seines Gillnets Castnets Traps Spears
 Trawls Dredges Liftnets Hooks+Lines Other

Used for aquaculture	: Commercial	Ref. 012108
Used as bait	: Never/rarely	
Aquarium fish	: Commercial based mainly on capture	Ref. 001672
Game fish	: No	
Dangerous fish	: Harmless	
Electrobiology	: No special ability	

Size and age

Longevity (y) (captive)	: 20.42	Ref. 000273
Maximum length (cm) (male/unsexed)	: 65SL	Ref. 043281
Common length (cm) (male/unsexed)	: 30TL	Ref.012693



Found in rivers, swamps, reservoirs and canals. Enters flooded forest (Ref. 9497). Feeds on small fishes, shrimps, aquatic insects, mollusks and crabs (Ref. 6459). Considered a delicacy over much of eastern Asia. Exported fishes command a high price (Ref. 12693). Maybe the largest species of the goby-like fishes.

10.4. Synonyms, misidentifications, etc. used for *Oxyeleotris marmorata*

Synonym	Author	Status	Ref.
<i>Gigantogobius jordani</i>	Fowler, 1905	questionable	003178
<i>Oxyeleotris marmorata</i>	Bleeker, 1852	new combination	007050
<i>Eleotris marmorata</i>	Bleeker, 1852	original combination	003178
<i>Oxyeleotris marmoratus</i>	Bleeker, 1852	misspelling	007050
<i>Bostrichthys marmoratus</i>	Bleeker, 1852	new combination	005193
<i>Callieleotris platycephalus</i>	Fowler, 1934	junior synonym	003178

10.5. Common names for *Oxyeleotris marmorata*

Name	Language	Country	Ref.
Trey Damrei	Khmer	Cambodia	003902
Trey Damrey	Khmer	Cambodia	012693
Bakutut	Malay	Indonesia	006107
Ikan bakut	Malay	Indonesia	009217
Ikan belutu	Malay	Indonesia	009217
Pa boo	Laotian	Lao People's Dem. Rep.	009497
Pa bou	Laotian	Lao People's Dem. Rep.	037767
Goby	English	Malaysia	004789
Belantuk	Malay	Malaysia	009217
Soon hock	Cantonese	Singapore	009222
Marble goby	English	Singapore	009217
Marble sleeper	English	Singapore	009217
Marble goby	English	Taiwan	040297
Pla boo jak	Thai	Thailand	042982
Pla boo sai	Thai	Thailand	042982
Marble goby	English	United Kingdom	003691
Marbled sleeper	English	United Kingdom	012693
Cá Bong Cá	Vietnamese	Viet Nam	003178
Bong tuong	Vietnamese	Viet Nam	036625

10.6. Distribution of *Oxyeleotris marmorata*

Asia: Mekong and Chao Phraya Basins, Malay Peninsula, Indochina, Philippines and Indonesia.
Record from Fiji needs confirmation. MainRef.: 043281

Latitudinal range: 23° N - 18° S

Temperature range: 22 - 28 °C

Ref.: 13371

Status of threat: NL.

Country	Status	Ref.
Brunei Darussalam	native	007050
Cambodia	native	012693
Occurs in the Mekong Basin. Often marketed fresh in Northern Cambodia, less commonly so near Phnom Penh (Ref. 12693). Known in Tonlé Sap, Stung O Krien, Kirikum, Stung Sen (Ref. 36654) and Great Lake (Ref. 33813). Occurs in sluggish and still standing waters (Ref. 36686). Also Ref. 3902, 36662, 37772.		
Fiji Islands	questionable	003178
Occurrence uncertain (Ref.43281).		
Indonesia	native	007050
Recorded from Sumatra, Kalimantan, Sulawesi, and Moluccas (Ref. 7050). Also Ref. 3178, 36654, 43281.		
Lao People's Dem. Rep.	native	043281
Known from the Mekong Basin. Occurs in the Khone Falls (Ref. 37772). Found in Ban Hang Khone, a village on an island in the middle of the mainstream Mekong River just below the Great Khone Waterfalls in Khong District, Champasak Province (Ref. 37767). Enters flooded forest on Don Khone, just below the great waterfalls (Ref. 9497). Also Ref. 7050, 30857.		
Malaysia	native	004789
Philippines	native	000280
Reported from Laguna de Bay; rivers in Balabac, Tawi Tawi and Mindanao (Ref.280). Also Ref. 12157.		
Singapore	native	003178
Taiwan	introduced	005193
Introduced from Cambodia in 1975. First successful larviculture in Taiwan occurred in 1973 (Ref. 40297). Also Ref. 47843.		
Thailand	native	026336
Known from the Mekong, Chao Phraya, Maeklong, Peninsular and Southeast Thailand river systems (Ref. 26336). Also Ref. 3178, 6459, 7306, 36654, 43281.		
Viet Nam	native	036625
Found in Mekong Delta (Ref. 36625).		

10.7. Introductions of *Oxyeleotris marmorata*

Asia: Mekong and Chao Phraya Basins, Malay Peninsula, Indochina, Philippines and Indonesia.
Record from Fiji needs confirmation.

Year	: 1975	Established: unknown	Ref.005193
Introduced	: to Taiwan from Cambodia		
Reason	: aquaculture		
Comments	: Total = 01	Established: yes = 0	probably yes = 0

10.8. Summary information (no. of records) available for *Oxyeleotris marmorata*

Level: species in general **StockCode: 043281** **MainRef. 043281**
Asia: Mekong and Chao Phraya Basins, Malay Peninsula, Indochina, Philippines and Indonesia.
Record from Fiji needs confirmation.

Ecology	1	Max. sizes	2	Strains	0
Food items	5	FAO catches	15502	Diseases	1
Food consumption	0	Genetics	2	Ciguatera	0
Diet composition	1	Allele frequency	0	Ecotoxicology	0
Ration	0	Heritability	0	Metabolism	0
Predators	0	Reproduction	0	Gill area	0
Morphology	1	Spawning	2	Swimming type	0
Processing	0	Eggs	0	Swimming speed	0
Growth/mortality	0	Egg dev't.	0	Vision	0
Maturity	0	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	1
L/W relat.	1	Aquaculture	0	Occurrence	92

10.9. Morphology of *Oxyeleotris marmorata*

Level: species in general

StockCode: 005633

Main Ref. 004792

Diagnostic Characters

With 60-65 predorsal scales without ocellus on caudal peduncle (Ref. 43281).

Descriptive Characters

Striking features : none
 Body shape lateral : elongated Dorsal head profile: more or less straight
 Operculum present : yes
 Type of eyes : more or less normal
 Position/type of mouth : terminal more or less normal

Teeth Presence

lower jaw : present
 upper jaw : present

Pigmentation on trunk and tail

Horizontal stripes : absent
 Vertical stripes : absent
 Diagonal stripes : absent
 Curved stripes : absent
 Spots : more than one spot dorsal and ventral on trunk and tail
 Dorsal fin (D1) : more than one spot or stripe no colored margin
 Caudal fin : more than one spot or stripe no colored margin
 Anal fin (A1) : more than one spot or stripe no colored margin

Meristic Characters

Lateral lines: interrupted: no
 Scales on lateral line: 80-90

Barbels 0

Gill rakers on lower limb total : 12- 12

Dorsal fins

Dorsal attributes : no striking attributes
 Number of fins : - spines total : 77- soft-rays total : 99
 Adipose fin : absent finlets dorsal: 0-0 finlets ventral : 0-0

Caudal fin

Shape of fin : more or less truncate
 Attributes : more or less normal

Anal fin

Number of fins : spines total : -11 soft-rays total : 88
 Paired fins

Pectoral attributes : more or less normal
 Pelvics attributes : more or less normal
 position : abdominal before origin of D1
 Body proportions
 (Based on picture)

10.10. Genetic information for *Oxyeleotris marmorata*

Main Ref.: 009219

Locality : Unspecified
 Chromosome number (haploid) : 23
 Chromosome number (diploid) : 46
 Genetic marker(s) present : No
 Chromosome arm no. : 50

Ref.: 008939

Remarks: AN = 50 (Ref. 8973). No heteromorphic pairs could be referred to as sex chromosomes. Also Ref. 9217 and 9218.

MainRef: 030184

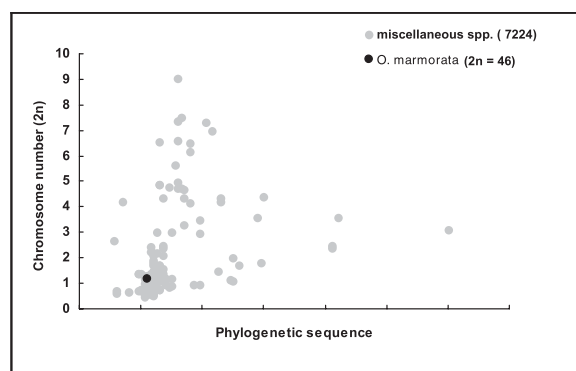
Locality : Thailand
 Chromosome number (haploid) : 23
 Chromosome number (diploid) : 46
 Genetic marker(s) present : No
 Chromosome arm no. : 50

Ref.: 030145

Ref.: 030145

Ref: 030145

Chromosome number of (2n) *Oxyeleotris marmorata*



10.11. FAO aquaculture production data for *Oxyeleotris marmorata*

Country (Area)		1984	1985	1986	1987	1988	1989	1990
		1991	1992	1993	1994	1995	1996	1997
		1998	1999	2000	2001			
Malaysia (4)	(t)	0	0	0	0	0	72	419
	(US\$'000)	0	0	0	0	0	265	2,330
	(t)	14	115	37	25	33	26	39
	(US\$'000)	126	1,023	305	231	336	342	535
	(t)	125	203	180	129			
	(US\$'000)	1,077	1,888	1,669	1,360			

Trophic level(s) :	Original sample	Unfished population	Remark
Estimation method	Troph s.e	Troph s.e	
From diet composition	4.1 0.67	4.1 0.67	Troph of recruits/juv. Ref.: 013497
From indiv. food items	3.9 0.67	- -	Troph level estimate

10.14. Food items for *Oxyeleotris marmorata*

Level : species in general

StockCode : 005633

Food item			Ref.
nekton			
finfish	bony fish	unidentified	009497
zoobenthos			
benth. crust.	crabs	unidentified	009497
	shrimps/prawns	unidentified	009497
insects	insects	unidentified aquatic	006459
mollusks	n.a./other mollusks	unidentified	006459

10.15. Maximum weight/length/age of *Oxyeleotris marmorata*

Locality : Indonesia, Cirata Reservoir, Cianjur, West Java

StockCode: 005633

Max weight (g) : 102.19 total weight
 Max length (cm): 19.47 TL Same specimen for WL: Yes
 Same specimen for LT : Yes

Ref. : 009217
 Sex : unsexed

Locality : Indonesia, Parung Ponds, Bogor, West Java

StockCode : 005633

Max weight (g) : 204.5 total weight
 Max length (cm): 23.69 TL Same specimen for WL: Yes
 Same specimen for LT : Yes

Ref. : 009217
 Sex : unsexed

10.16. Length-Weight relationships of *Oxyeleotris marmorata*

($W = a * L^b$ with Length in cm and Weight in g)

Length range : 19.47 - 23.69 TL Sample size:

StockCode: 005633
 Main Ref.: 009217

a : 0.0146

Correlation coefficient : b : 3

Sex: unsexed

Comment: Estimated using data in Ref.

10.17. Diseases reported for *Oxyeleotris marmorata*

StockCode: 005633

MainRef. : 048850

Bacterial diseases, Edwardsiellosis

Ref.: 000193

Emphysematous Putrefactive Disease of Catfish (EPDC): *Edwardsiella septicaemia*

Causative agent : *Edwardsiella tarda*

Occurrence : Not specified, 1988

<input type="checkbox"/> eggs	<input type="checkbox"/> fry	<input type="checkbox"/> females	<input checked="" type="checkbox"/> in the wild
<input type="checkbox"/> larvae	<input type="checkbox"/> juveniles	<input type="checkbox"/> males	<input checked="" type="checkbox"/> in culture

Remarks: The disease was reported by Supamataya (1998).

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About IFRéDI

The Inland Fisheries Research and Development Institute (IFReDI) was established in October 2002 by virtue of Declaration No. 357 of the Ministry of Agriculture, Forestry and Fisheries as a research and development institute under the supervision of the Department of Fisheries (DoF).

Vision

Sustainable development of Cambodia's inland aquatic resources for the country's food, security, and economic prosperity.

Mission

To provide scientific information and technical support for the sustainable development and management of inland living aquatic resources in Cambodia, based on biological and socioeconomic research.

Goals

- . Scientific research collection, analysis and dissemination of biological and socioeconomic data;
- . Development and upgrading of national capacity for the rational management of inland fisheries;
- . Maximization of the income of fishermen and farmers;
- . Sustainable utilization of the fishery resources.



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BIOLOGICAL REVIEWS OF IMPORTANT CAMBODIAN FISH SPECIES, BASED ON FISHBASE 2004.

Volume 2: *Pangasius larnaudii*; *Clarias batrachus*;
Cirrhinus microlepis; *Leptobarbus hoevenii*;
Thynnichthys thynnoides; *Trichogaster microlepis*;
Trichogaster pectoralis; *Anabas testudineus*;
Boesemania microlepis; *Oxyeleotris marmorata*.

This document is a review of all the information published worldwide about ten fish species that contribute significantly to Cambodian fishery resources.

Catfishes	<i>Pangasius larnaudii</i> ; <i>Clarias batrachus</i> ;
Cyprinids	<i>Cirrhinus microlepis</i> ; <i>Leptobarbus hoevenii</i> ; <i>Thynnichthys thynnoides</i> ;
Gouramis	<i>Trichogaster microlepis</i> ; <i>Trichogaster pectoralis</i> ;
Perch	<i>Anabas testudineus</i> ;
Croaker	<i>Boesemania microlepis</i> ;
Goby	<i>Oxyeleotris marmorata</i> .

These ten reviews result from the extraction and the editing by the authors of the information available in FishBase 2004, a biological database on fishes developed by the WorldFish Center in collaboration with the FAO. www.fishbase.org

In each review summary information is given on the family, the genus and the species. For each species are detailed synonyms, common names and misidentifications; morphology; maximum weight/length/age; distribution and ecology. Whenever available, introductions, diseases and FAO production data are also detailed as well as the biological features of the species (length-weight relationships, growth and mortality, diet, reproduction, genetic information). Each review is concluded by a comprehensive list of bibliographic references.

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