BIOOGICAL REVIEWS OF IMPORTANT CAMBODIAN FISH SPECIES, BASE ON FISH BASE 2004.

Volume 1: *Channa striata, Channa micropeltes; Barbonymus altus; Barbonymus gonionotus; Cyclocheilichthys apogon; Cyclocheilichthys enoplos; Henicorhynchus lineatus; Henicorhynchus siamensis; Pangasius hypophthalmus; Pangasius djambal*

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

Snakeheads	Channa striata, C. micropeltes;
Cyprinids	Barbonymus altus; Barbonymus gonionotus; Cyclocheilichthys apogon; Cyclocheilichthys enoplos; Henicorhynchus lineatus; Henicorhynchus siamensis;
Catfishes	Pangasius hypophthalmus; Pangasius djambal.

These ten reviews results 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.

In each review summary information if 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.

ISBN 983 - 2346 - 48 - 7
9 789832 346487

Inland Fisheries Research and Development Institute (IFReDI)

For Sustainable Development of Inland Fisheries in Cambodia

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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 successfull when undertaken in partnership with governments and nongovernment institutions and with the participation of the users of the research results.

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2005

Published by the WorldFish Center, P.O. Box 500 GPO, 10670 Penang, Malaysia and the Inland Fisheries Research and Development Institute, Phnom Penh, Cambodia.

Chheng Phen, Touch Bun Thang, Eric Baran and Leng Sy Vann. 2005. Biological reviews of important Cambodian fish species, based on FishBase 2004. Volume 1: Channa striata, Channa micropeltes; Barbonymus altus; Barbonymus gonionotus; Cyclocheilichthys apogon; Cyclocheilichthys enoplos; Henicorhynchus lineatus; Henicorhynchus siamensis; Pangasius hypophthalmus; Pangasius djambal
WorldFish Center and Inland Fisheries Research and Development Institute, Phnom Penh, Cambodia. 127 p.

Perpustakaan Negara Malaysia. Cataloguing-in-Publication Data

Biological reviews of important fish species, based on FishBase 2004:
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Pangasius hypophthalmus; Pangasius djambal / Cheng, P./ [et al.].
ISBN 983-2346-48-7
1. Fishes--Cambodia--Encyclopedias. I. Cheng, P.
597.09596

Cover photos: Escudero P.T., Baird I.G., Warren T., Roberts T., Chavalit Vidthayanon

ISBN 983-2346-48-7

WorldFish Center Contribution No. 1766

The WorldFish Center is one of the 15 international research centers of the Consultative Group on International Agricultural Research (CGIAR) that has initiated the public awareness campaign, Future Harvest.

Contents

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 thereferences 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.

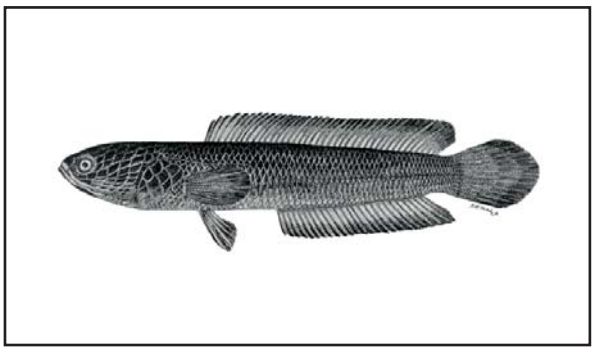
Remarks or Comment fields : The free text included in such fields may have been taken verbatim from the source in "Ref.", in which case this should be regarded as a direct citation (but lacking quotation marks); alternatively, the text may have been modified/adapted from one or several sources. In the latter case, additional "Ref." numbers may be incorporated in the text.

CHANNA STRIATA

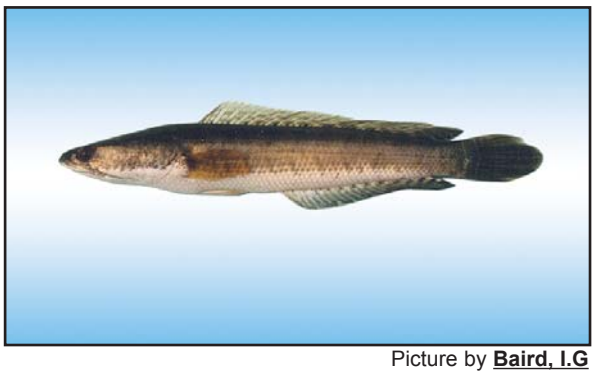
(Bloch, 1793)

Snakehead murrel or striped snakehead

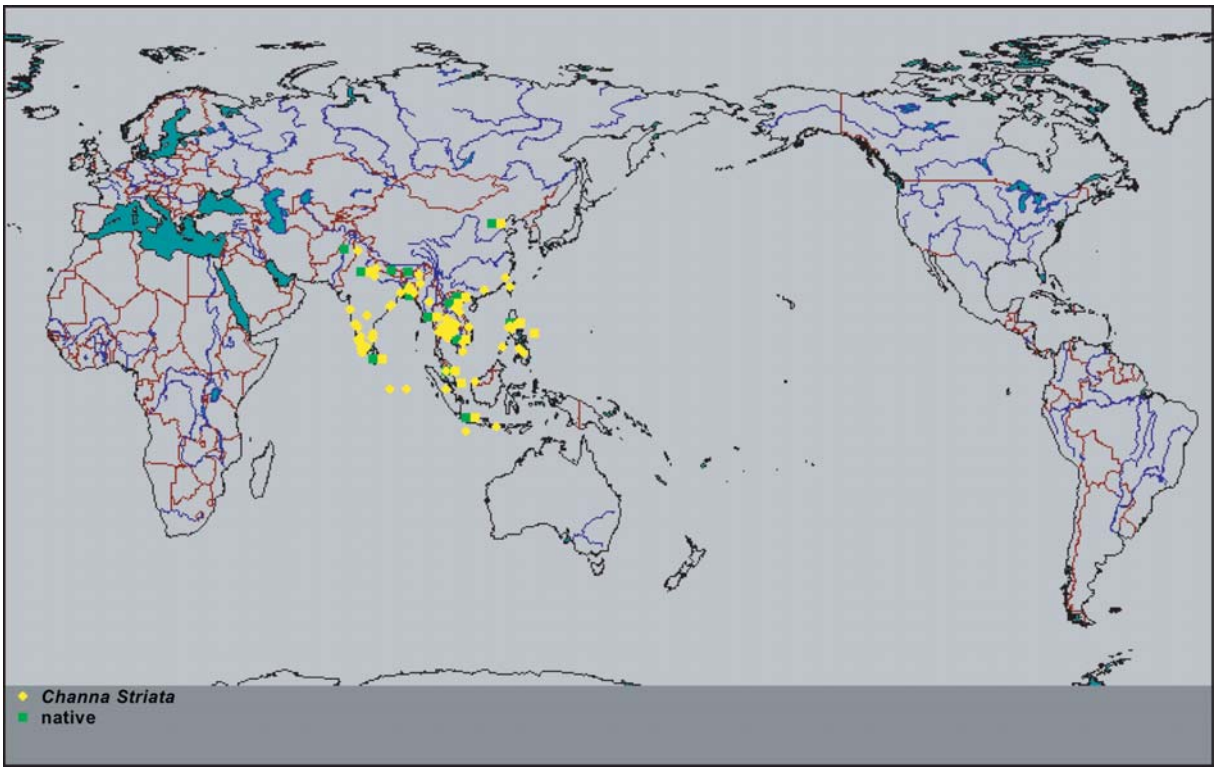
ត្រីរស់



Picture by **Escudero P.T**



Picture by **Baird, I.G**



1.1. Summary information on the family *Channidae*

MainRef.: 007463

Family : Channidae (Snakeheads)
Order : Perciformes
Class : Actinopterygii (ray-finned fishes)
Number of genera : 2
Number of species : 21
Occurs in : O Marine
O Brackish
☑ Freshwater
Aquarium fishes : some
Species currently in FishBase: Genera: 2 Species: 31 (Including subspecies) Complete: Yes

Remarks:

Distribution: tropical Africa (three species) and southern Asia. Elongate body; lower jaw protruding. Dorsal and anal fin bases long. Pelvic fins may be lacking in some; with 6 rays when present. No spines in fins. Scales ctenoid or cycloid. Air-breathing through suprabronchial organ. About 1.2 m maximum length. Important in aquaculture and commonly used in rice-fish farming. Some species are widely introduced. Number of species: 26
(Ref. 36343).Etymology: Greek, channe, -es = anchovy (Ref. 45335).

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

After Eschmeyer, March 2003 (Ref. 46206)

Bostrychoides Status: synonym Gender: masculine
Lacepède, 1801, p. 144, CAS Ref: 2710
Type by monotypy.
Type species: Bostrychoides oculatus Lacepède, 1801
Current genus: Channa

Channa Status: valid Gender: feminine
Scopoli (exGronow), 1777, p. 459, CAS Ref: 3990
Type by subsequent monotypy.
Type species: Channa orientalis Bloch & Schneider, 1801
Current genus: Channa

Channa Status: not available Gender: feminine
Gronow, 1763, p. 135, CAS Ref: 1910
Current genus: Channa

Ophicephalus Status: synonym Gender: masculine
Bloch, 1793, p. 137, CAS Ref: 4868
Type by subsequent designation.
Type species: Ophicephalus striatus Bloch, 1793
Current genus: Channa

Philypnoides Status: synonym Gender: masculine
Bleeker, 1849, p. 19, CAS Ref: 319
Type by monotypy.
Type species: Philypnoides surakartensis Bleeker, 1849
Current genus: Channa

Psiloides Status: other Gender : masculine
Fischer, 1813,p. 74, 111, CAS Ref: 1331
Type by being a replacement name.
Type species: Bostrychoides oculatus Lacepède, 1801
Current genus: Channa

Pterops Status: synonym Gender: masculine
Rafinesque, 1815, p. 84, 91, CAS Ref: 3584
Type by being a replacement name.
Type species: Bostrychoides oculatus Lacepède, 1801
Current genus: Channa

1.3. General information on *Channa striata*

Classification

Class	: Actinopterygii (Ray-finned fishes)	MainRef. 006028
Order	: Perciformes	
Family	: Channidae (Snakeheads)	
Subfamily	:	
Species	: Channa striata	
Author	: (Bloch, 1793)	Author Ref. 001571

Environment

Freshwater	: Yes	Habitat	: Benthopelagic
Brackish	: Yes	Migrations	:
Saltwater	: No	Depth range	: 1 to10 m

Importance

Landing statistics	: From 10,000 to 50,000 tonnes	Ref. 004931
Main source of landing	:	
Importance to fisheries	: Highly commercial	
Main catching method	:	

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

Used for aquaculture	: Commercial	Ref.	012108
Used as bait	: Never/rarely	Ref.	
Aquarium fish	: Public aquariums	Ref.	004537
Game fish	: No	Ref.	
Dangerous fish	: Potential pest	Ref.	
Electrobiology	: No special ability	Ref.	

Size and age

Maximum length	(cm)	(male/unsexed) : 100 SL	(female) :		Ref. 002686
Common length	(cm)	(male/unsexed) : 61 TL	(female) :		Ref. 044091
Maximum weight	(g)	(male/unsexed) : 3,000.00	(female) :		Ref. 040637

Remarks:

Inhabits ponds, streams and rivers, preferring stagnant and muddy water of plains (Ref. 41236). Found mainly in swamps, but also occurs in the lowland rivers. More common in relatively deep (1-2 m), still water. Very common in freshwater plains (Ref. 4515). Occurs in medium to large rivers, brooks, flooded fields and stagnant waters including sluggish flowing canals (Ref. 12975). Survives dry season by burrowing in bottom mud of lakes, canals and swamps as long as skin and air-breathing apparatus remain moist (Ref. 2686) and subsists on the stored fat (Ref. 1479). Feeds on fish, frogs, snakes, insects, earthworms, tadpoles (Ref. 1479) and crustaceans (Ref. 2847). Undertakes lateral migration 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).

During winter and dry season, its flesh around coelomic cavity is heavily infested by a larval trematode Isoparorchis hypselobargi. Other parasites infecting this fish include *Pallisentis ophicephali* in the intestine and *Neocamallanus ophicepahli* in the pyloric caecae (Ref. 1479). Processed into pra-hoc, mam-ruot, and mam-ca-loc (varieties of fish paste) in Kampuchea (Ref.4929). Perhaps the main food fish in Thailand, Indochina and Malaysia (Ref. 2686). Firm white flesh almost bone-free, heavy dark skin good for soup and usually sold separately (Ref. 2686). In Hawaiian waters the largest specimen taken reportedly exceeded 150 cm (Ref. 44091).

1.4. Synonyms, misidentifications, etc. used for *Channa striata*

Synonym	*Author*	*Status*	*Ref.*
Ophiocephalus philippinus	Peters, 1869	junior synonym	033021
Ophicephalus planiceps	Cuvier, 1831	junior synonym	041236
Channa striata	Bloch, 1793	new combination	027732
Ophiocephalus striatus	Bloch, 1793	original combination	006028
Ophicephalus striatus	Bloch, 1793	original combination	001479
Channa striatus	Bloch, 1793	misspelling	027732
Ophiocephalus vagus	Peters, 1869	junior synonym	002854

1.5. Common names for *Channa striata*

Striped snakehead	English	Australia	002847
Stripped snakehead	English	Bangladesh	047891
Ptuok	Khmer	Cambodia	036651
Ros	Khmer	Cambodia	036651
Trey phtuok	Khmer	Cambodia	012693
Trey ras	Khmer	Cambodia	036654
Trey raws	Khmer	Cambodia	012693
Trey ros (or ras)	Khmer	Cambodia	002686
Chevron snakehead	English	Hawaii (USA)	044091
Pongee	English	Hawaii (USA)	044091
Pa kaw	Laotian	Lao People's Dem. Rep.	009497
Pakho	Laotian	Lao People's Dem. Rep.	002686
Nga-yan	Burmese	Myanmar	002686
Nga-yau-auk	Burmese	Myanmar	007100
Striped snake head murrel	English	Myanmar	005736
Snakehead	English	Thailand	006459
Pla chon	Thai	Thailand	006459
Chevron snakehead	English	United Kingdom	012693
Snakehead murrel	English	United Kingdom	001739
Chevron snakehead	English	USA (contiguous states)	004537
Striped snakehead	English	USA (contiguous states)	004537
Cálòc	Vietnamese	Viet Nam	036625
Cá lót (lóc)	Vietnamese	Viet Nam	
Cá träu	Vietnamese	Viet Nam	

1.6. Distribution of *Channa striata*

MainRef.: 004833

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Latitudinal range: 35° N - 18° S Temperature range: 23 - 27 °C Ref.: 1672

Status of threat: NL.

Country	Status	Ref.
Bangladesh	***native***	***001479***

Very abundant in beels, haors, ponds, ditches and swamps throughout the country. Also Ref. 4854,4833, 27732, 39989,41236,43640.

Bhutan	***native***	***009418***

Occurs in natural waters (Ref. 9418). Found in Gaylegphug River (Ref. 40882).

Cambodia	***native***	***012693***

Occurs in the Mekong basin (Ref. 27732). Found around the Tonle Sap River, the Tonle Sap Great Lake (Ref. 36651, 36686), Ratanakiri, Boum Long, Kompong Chnang, Réam, Beng Kebal Damrey, Sihanoukville and Angkor (Ref. 36654). Much more common in flood-plain lakes and smaller streams than in the Mekong mainstream (Ref. 37770). Also Ref. 3902, 27732, 33813, 36662, 37772, 45353.

China	***native***	***027732***

Occurs in the Mekong basin in Yunnan (Ref. 27732). Also Ref. 4833, 35840, 36654, 43640.

Hawaii (USA)	***introduced***	***005360***

Brought to Hawaii by Asian immigrants in the 1800s; found only on the island of O'ahu, where it is abundant in the Wahiawa Reservoir and several smaller reservoirs on the north side of the island; considered to be one of the best eating fish among freshwater fishermen (Ref. 44091)

India	***native***	***004833***

Occurs throughout India (Ref. 45255). Also Ref. 27732, 29108, 36654, 41236,43634, 43640, 44148, 44149.

Indonesia	***native***	***007050***

Known from Sulawesi, Lesser Sundas, Moluccas (Refs. 7050; 27732). Previously unknown from Irian Jaya, New Guinea, but was collected in streams near Bintuni on the Vogelkop Peninsula 1989 (Ref. 2847). An introduced species (Ref. 1739). Also Ref. 4537, 43640.

Korea, Republic of	***introduced***	***001739***
Lao People's Dem. Rep.	***native***	***027732***

Known from the Mekong basin. Found in the middle Xe Bangfai and the middle Nam Theun Rivers (Ref.27732) and Ban Hang Khone, about 3 km below the fall line of the great waterfalls of the Mekong River system at Lee Pee (Ref. 9497). Recorded from the Khone Falls (Ref. 37772). Migrates into the flooded forest on Don Khone and Don Saddam to forage (Ref. 37772). Also Ref. 4792, 2686, 30857, 37767, 37772, 43281.

Madagascar	***introduced***	***013686***

Also Ref. 13333.

Malaysia	***native***	***004835***
Mauritius	***introduced***	***001739***
Myanmar	***native***	***005736***

Also Ref. 4833,41236,43640.

Nepal	***native***	***009496***

Occurs in Koshi, Gandaki and Karnali Rivers (Ref. 6351). Recorded from Kosi and Narayani zones at 76-120 m altitude. Also Ref. 4833, 41236, 43640.

New Caledonia	***introduced***	***001739***
Pakistan	***native***	***012076***

Occurs throughout the plains of Pakistan. Recorded from the river Nulli-ni, near Kota Meer Muhammad. Also Ref. 4854, 4833, 41236, 43640.

Papua New Guinea	***introduced***	***002847***

Two specimens observed by G. Hitchcock in August 2000 at Balamuk and Wando villagers (Ref. 50786).

Philippines	***native***	***012165***

Status to be confirmed. Recorded as introduced (Ref. 6565). Collected from Lagu creek and Layog River at Balinsasayao, Leyte in 1993 (Ref. 7223); museum specimens from various

localities, LRS-83116 (Ref. 13460); known from Laguna de Bay; Lake Mainit (Ref. 4867); Lake Lanao, Lanao del Sur; Lake Sebu in Cotabato; Lake Balinsasayao in Negros Oriental, near Dumaguete (Ref. 2854); and Lake Buluan (Ref. 13492). Fairly common in Lake Bombon (=Taal) (Ref. 12165). Caught in Lake Manguao by gill net and by hook and line (Ref. 13489). An important food fish. Previously cultured in the past (Ref. 7306, 12548). Also Ref. 2847, 12547, 12744, 36654, 41236.

Sri Lanka ***native*** ***006028***

Occurs throughout the lowlands. More common in areas such as Tissamaharama and Wirawila. Also known from brackish water in the canals leading to Negombo lagoon and from the Vadamarachchi lagoon in Jaffna. Also Ref. 4833, 41236, 43640.

Thailand ***native*** ***001632***

Known from the river systems of Peninsular and Southeast Thailand, Salween, Maeklong, Chao Phraya and Mekong (Ref. 26336). Found throughout the length and breadth of the coastal plains and central plains, eastern plateau and piedment districts. Very popular fish as it is a daily food for both the rich and the poor. Preserved by sun drying (Ref. 6459). Also Ref. 7306, 27732, 37772, 37773, 43640.

USA (contiguous states) ***introduced*** ***045309***

Established in Oahu, Hawaii since the late 1800s. It has not been introduced to other Hawaiian waters, it is just confined to reservoirs on Oahu. The species is now being cultured as a food fish in Oahu.

Viet Nam ***native*** ***044416***

Known from northern Vietnam (Ref. 44416). Also found in the Mekong basin (Ref. 36625). Also Ref. 27732.

Total native = 15, Total introduced = 7

1.7. Introductions of *Channa striata*

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: 1959	Established : no	Ref. 001739
Introduced	: to Fiji	from Unknown	
Reason	: aquaculture		
Comments	: Also introduced for subsistence (Ref. 6366). Released in streams of Viti Levu. Species did not become established.		

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: unknown	Established : unknown	Ref. 009420
Introduced	: to Guam	from Unknown	
Reason	: unknown		

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: Pre 18th century	Established : yes	Ref. 001739
Introduced	: to Indonesia	from Southern China	
Reason	: unknown		
Comments	: Well established. Collected in streams near Bintuni on the Vogelkop Peninsula, Irian Jaya in1989.		

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: unknown	Established : unknown	Ref. 001739
Introduced	: to Indonesia	from Unknown	
Reason	: unknown		

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: 1975 - 1976	Established: yes	Ref. 013686
Introduced	: to Madagascar	from Far East	
Reason	: ornamental		
Comments	: The Ophicephalus is a carnivorous and very prolific species. During the reproduction it is extremely voracious and eats any kind offish. For this reason local farmers are asking for its eradication, but the control is quite difficult as the consumers do not like its flesh. What's more the fisheries production is decreasing in lakes where the Ophicephalus is present.		

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: unknown	Established : yes	Ref. 013686
Introduced	: to Mauritius	from Unknown	
Reason	: angling/sport		
Comments	: Known to occur in some reservoirs (e.g. Valetta and La Nicoliere)		

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: unknown	Established : yes	Ref. 001739
Introduced	: to New Caledonia	from Unknown	
Reason	: unknown		

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: unknown	Established : yes	Ref. 006349
Introduced	: to Papua New Guinea	from Unknown	
Reason	: unknown		
Comments	: Has been observed in Bensbach River in August 2000 at Balamuk and Wando villages. Regarded as a particularly voracious predator of native fishes (Ref. 50786).		

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: 1908	Established : yes	Ref. 006565
Introduced	: to Philippines	from Malaysia	
Reason	: aquaculture		
Comments	: Used widely in rice-fish culture. Marketed alive.		

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: 19th century	Established : yes	Ref. 045309
Introduced	: to USA	from Southern China	
Reason	: unknown		
Comments	: Established in Oahu, Hawaii since the late 1800s. It has not been introduced to other Hawaiian waters; it is just confined to reservoirs on Oahu. The species is now being cultured as a food fish in Oahu.		

Asia: Pakistan to Thailand and south China. Several countries report adverse ecological impact after introduction.

Year	: 1900-1924	Established : yes	Ref. 001972
Introduced	: to Hawaii	from China	
Reason	: accidental (alone or together with other species)		
Comments	: Introduced in the 1900s from China (Ref. 1972). Accidentally introduced and found to be established in reservoirs on Oahu Island. Commonly transported live by long dis tance seafarers in ancient times (Ref. 1739).		

1.8. Summary information (no. of records) available for *Channa striata*

Ecology	1	Max. sizes	5	Strains	0
Food items	4	FAO catches	15502	Diseases	54
Food consumption	0	Genetics	6	Ciguatera	0
Diet composition	1	Allele frequency	0	Ecotoxicology	0
Ration	0	Heritability	0	Metabolism	11
Predators	0	Reproduction	1	Gill area	1
Morphology	1	Spawning	9	Swimming type	1
Processing	1	Eggs	0	Swimming speed	0
Growth/mortality	3	Egg dev't.	0	Vision	0
Maturity	1	Larvae	0	Brains	0
Recruitment	0	Larval dynamics	0	Introductions	11
L/W relat.	2	Aquaculture	0	Occurrence	424

1.9. Morphology of *Channa striata*

Diagnostic Characters
Body sub-cylindrical; head depressed; caudal fin rounded (Ref. 2847). The dorsal surface and sides are dark and mottled with a combination of black and ochre, and white on the belly; a large head reminiscent of a snake's head; deeply-gaping, fully toothed mouth; very large scales (Ref. 44091).

Descriptive Characters

Striking features	: none	Cross section	: other (see Diagnosis)
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	: 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	: present	dorsal and ventral reaching ventral contour
Curved stripes	: absent	
Spots	: no spot	
Dorsal fin (D1)	: no spot on stripes	
Caudal fin, anal	: no spot on stripes	
Anal fin (A1)	: no spot on stripes	

Meristic Characters
Lateral Lines

Interrupted	: yes
Scales on lateral line	: 53-55
Barbels	: 0

Dorsal fins

Dorsal attributes	: no striking attributes		
Number of fins	: 1	spines total : 0-0	soft-rays total: 38-43
Adipose fin	: absent	finlets dorsa : 0-0	finlets ventral: 0-0

Anal fin

Number of fins	: 1	spines total : 0-0	soft-rays total: 23-27

Paired fins

Pectoral attributes	: more or less normal	
spines	:	soft-rays: 15- 17
Pelvics attributes	: more or less normal	
position	: abdominal	
spines	:	soft-rays: 6 -6

1.10. Genetic information for *Channa striata*

Locality	: Unspecified	
Chromosome number (haploid)	: 20	Main Ref.: 004854
Chromosome number (diploid)	: 40	Ref: 008982
Genetic marker(s) present	: No	
DNA content (picogram, haploid)	: 0.75	Ref.: 004854
Chromosome arm no.	: 54	Ref: 008982

Remarks:
M = 8, ST = 6 and T = 26

Locality	: Kalyani, Western Bengal, india	
Chromosome number (haploid)	: 20	Main Ref.: 008945
Chromosome number (diploid)	: 40	Ref: 008945
Genetic marker(s) present	: No	
Chromosome arm no.	: 50	Ref: 008945

Remarks:
Sex chromosomes not distinguishable. No banding technique used. Also in ref. 030184.

Locality	: Delhi, India	
Chromosome number (haploid)	: 20	Ref: 029199
Chromosome number (diploid)	: 40	Ref: 029199
Genetic marker(s) present	: No	
Chromosome arm no.	: 50	Ref: 029199

Remarks:
Also in Ref. 034370.

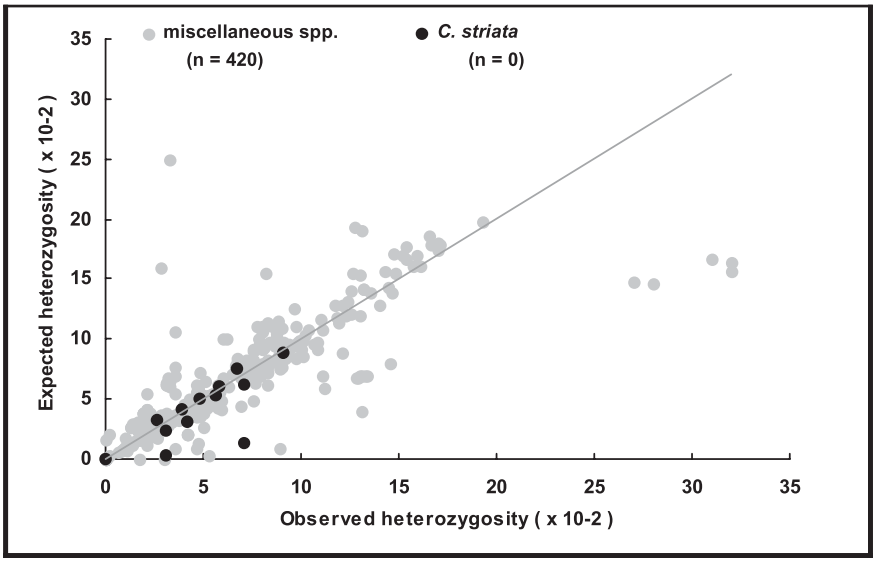
Locality	: Assam, Meghalaya, India	
Chromosome number (haploid)	: 20	Ref: 029199
Chromosome number (diploid)	: 40	Ref: 029199
Genetic marker(s) present	: No	
Chromosome arm no.	: 54	Ref: 029199

Locality	: Kalyani, Western Bengal, India	
Chromosome number (haploid)	: 20	Main Ref.: 004845
Chromosome number (diploid)	: 40	Ref: 004845
Genetic marker(s) present	: No	
Chromosome arm no	: 50	Ref: 004845

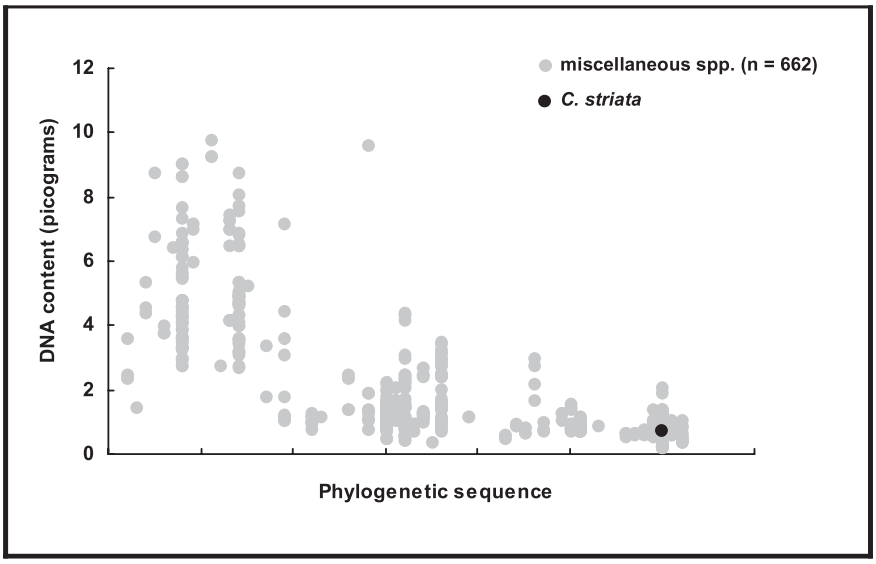
Remarks:
DNA/2n: 0.73 pg(Ref. 034370).

Locality	: Kalyani, Western Bengal, india	
Chromosome number (haploid)	: 20	Main Ref.: 029199
Chromosome number (diploid)	: 40	Ref: 029199
Genetic marker(s) present	: No	
Chromosome arm no.	: 50	Ref: 029199

Expected vs observed heterozygosity of Channa striata



DNA content vs. phylogenetic sequence of Channa striata



1.11. FAO aquaculture production data for *Channa striata*

Country (Area)		**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**
		1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**
		1998	**1999**	**2000**	**2001**			
Philippines (4)	(t)	226	253	191	133	134	132	5
	(US$'000)	257	288	219	131	142	147	9
	(t)	0	0	378	707	2,427	2,076	2,144
	(US$'000)	0	0	688	1,456	3,598	2,856	3,158
	(t)	1,343	1,352	1,290	1,439			
	(US$'000)	3,398	3,218	3,496	4,475			
Thailand (4)	(t)	4,863	7,364	5,986	3,294	4,040	3,732	3,800
	(US$'000)	6,877	8,490	7,792	4,380	5,634	5,398	5,946
	(t)	5,560	4,714	5,909	6,500	5,790	7,750	6,921
	(US$'000)	8,934	6,492	11,216	12,422	12,304	16,104	14,640
	(t)	5,336	4,005	4,447	5,300			
	(US$'000)	7,442	6,585	7,214	8,480			
	(mt)	5,089	7,617	6,177	3,427	4,174	3,864	3,805
Total: 2	(US$'000)	7,135	8,778	8,010	4,511	5,5445	5,544	5,954
	(mt)	5,560	4,714	6,287	7,207	8,217	9,826	9,065
	(US$'000)	8,934	6,492	11,904	13,877	15,901	18,961	17,798
	(mt)	6,679	5,357	5,737	6,739			
	(US$'000)	10,839	9,803	10,710	12,955			

1.12. Weight proportions and chemical composition of *Channa striata*

Level : species in general
Locality : Not stated.

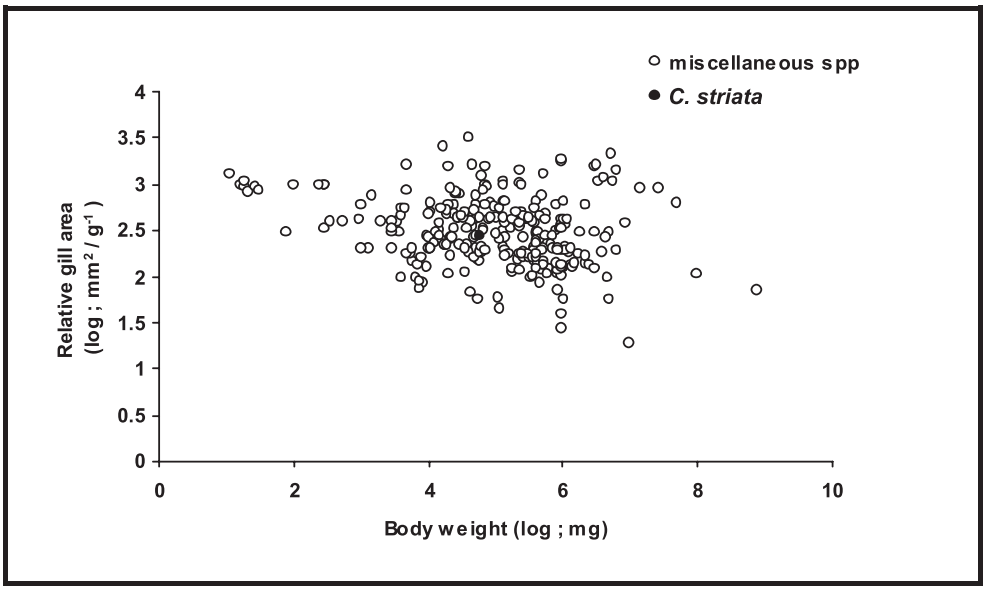
Stockcode: 000357
MainRef.: 027117

Gill area of *Channa striata*

Gill area : 163 (cm²)
Blood/water distance :
Body weight : 59.9 (g)
Gill area/weight : 2.72 (cm²/g)

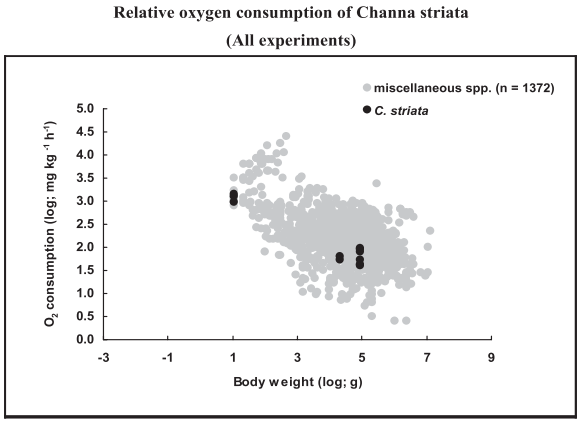
MainRef. 002302
DataRef. 002321

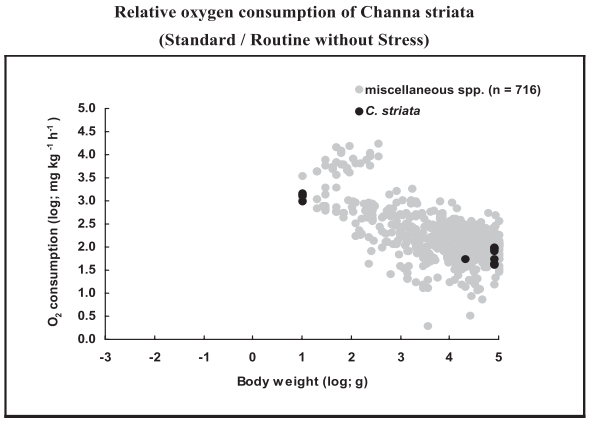
Relative gill area of Channa Striata



1.13. Oxygen consumption of *Channa striata*

(mg/kg/h)	at 20°C	Weight (g)	Temp. °C	Activity level	Applied stress	MainRef.
1493	777.3	0.01	28	routine	none specified	002120
1310	682.1	0.01	28	routine	none specified	002120
981	510.8	0.01	28	routine	none specified	002120
68.1	30.2	20	30	routine	other stress	002120
55.6	24.6	20	30	routine	none specified	002120
101	44.8	82	30	routine	none specified	002120
92.3	40.9	82	30	routine	none specified	002120
85.7	38.0	82	30	routine	none specified	002120
57	25.3	82	30	routine	none specified	002120
44.3	19.6	82	30	routine	none specified	002120
42.3	18.8	82	30	routine	none specified	002120





1.14. General information on the reproduction of *Channa striata*

Level : species in general **StockCode : 000357 MainRef : 001479**

Mode and Type of Reproduction

Mode : dioecism
Fertilisation : external
Reproductivity : guarders, clutch tenders

Breeds in ditches, ponds and flooded paddy fields. Young shoal at the surface and are guarded by parents, hiding below the surface water. In captivity, as soon as the male bends its body close to the female during mating, milt is released following the release of the eggs (Ref. 45162).

Spawning Information for *Channa striata*

Locality : Mekong Mainstream **Stockcode : 000357**
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 : Eggs were observed from January-December, except in August. In Cambodia, eggs were encountered in May-June and November-December. In Sambor, Cambodia, fish guard their fry during June-July

Locality : India, Karnataka State **Stockcode: 000357**
Season (% of mature females; 111 = presence of mature females): MainRef.: 032692
DataRef.:039630

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

Locality : Nepal **Stockcode: 000357**
Season (% of mature females; 111 = presence of mature females): MainRef.: 006351

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

Locality : Viet Nam, Mekong Basin in Dong Thap Province **Stockcode: 000357**
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

Comment: Spawns in an irrigated paddy field.

Locality : Thailand, Mekong Mainstream at Khammaratch **Stockcode: 000357**
Season (% of mature females; 111 = presence of mature females): MainRef.: 037770

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

Comment: Spawns in an area with sluggish water. Observed to guard its young for about a month.

Locality : Thailand, Mekong Mainstream at Chiang Rai Province Stockcode: 000357
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					

Comment: Spawns in rice fields and a natural swamp. Guards the newly hatched fry.

Locality : Thailand **Stockcode: 000357**
Season (% of mature females; 111 = presence of mature females): MainRef.: 044091

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

Fecundity: min. 40,000 (n) Female size: 1200 (g) 43.60 (cm) Ref: 006459

Locality : Hawaii, Not specified **Stockcode: 000357**
Season (% of mature females; 111 = presence of mature females): MainRef.: 044091

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

Comment: Spawning occurs during the spring; the female deposits her eggs in a nest constructed by the male in shoreline vegetation; eggs hatch in about 3 days, with both parents guarding the young for several weeks (Ref. 44091).

Maturity data for *Channa striata*

Locality : Philippines, **StockCode: 000357**
Sex : unsexed Main Ref.: 002854
Length at first maturity (cm) : Lm: 25
Age at first maturity (years) : tm : 1.5
Comment : cultured in an aquarium

1.15. Ecology of *Channa striata*

Level : species in general **StockCode: 000357 000343** **Main Ref.: 033813**
Habitats **Ref: 013497**
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
Tropical soft bottom: No Hard bottom : No Seagrass beds: No Macrophyte: No

Feeding

Feeding type	: plants/detritus+animals (troph. 2.8 and up)	Ref: 013497
Feeding habit	: hunting macrofauna (predator)	Ref: 009497

Trophic level(s):	**Original sample**		**Unfished population**		**Remarks**	**Ref: 013497**
Estimation method:	Troph	s.e	Troph	s.e		
From diet composition:	3.7	0.60	3.7	0.60	Troph of recruits/juv.	
From indiv. food item:	3.5	0.42			Trophic level estimate	

Additional remarks
Feeds on smaller herbivorous fishes; enters the flooded forest in high water.

1.16. Food items for *Channa striata*

Level : species in general **StockCode: 000357**

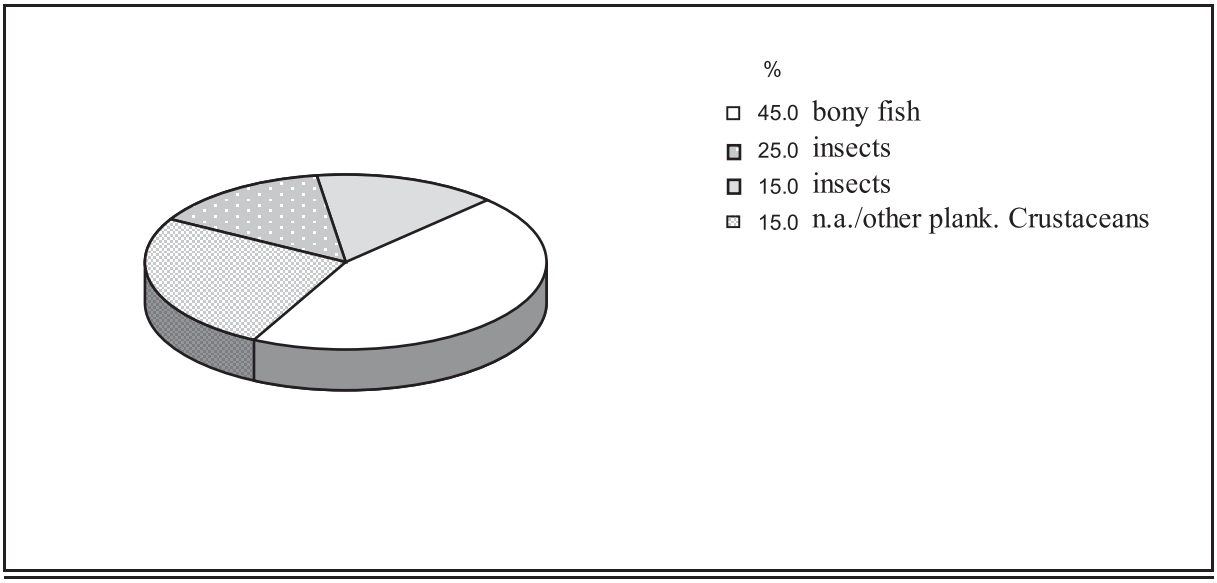
Food item				**Ref.**
nekton				
finfish	n.a./other finfish	unidentified	unidentified	012693
zoobenthos				
benth. crust.	n.a./other benth. crustaceans	unidentified	unidentified	012975
zooplankton				
plank. crust.	cladocerans	unidentified	unidentified	028089
	plank. copepods	unidentified	unidentified	028089

1.17. Diet composition of *Channa striata*

Level : species in general **StockCode : 000357** **MainRef : 013497**
Locality : Bukit Merah Reservoir, between September 1979 and August 1980
Stage of fish sampled : recruits/juv. **Number** : 15
Food group (%)

45.0	bony fish, juv./adults
25.0	insects, both aquatic and terrestrial forms of Diptera, Odonata, etc., adults
15.0	insects, mainly Chironomidae, some Chaoboridae, Dysticidae, unid. larvae & nymphs, larvae
15.0	n.a./other plank. Crustaceans, Copepodae, Cladocera, Decapoda, juv./adults
100.0	Total

Remarks



Total = 1

1.18. Maximum weight/length/age of *Channa striata*

Locality		**India, Krishna and Godavari Rivers, Karnataka**	**StockCode : 000357**
Max weight	(g):	2500 total weight	Ref.: 043636
Max length	(cm) :	Same specimen for WL :	No Sex : unsexed
Max age	(yrs)No:	Same specimen for LT :	No
Locality		**India, Maharashtra**	**StockCode : 000357**
Max weight	(g):	1000 total weight	Ref.: 043634
Max length	(cm) :	Same specimen for WL :	No Sex : unsexed
Max age	(yrs)No:	Same specimen for LT :	No
Locality		**India, Tamil Nadu**	**StockCode : 000357**
Max length	(cm) :	19.5 Same specimen for WL : No	Sex : unsexed
Max age	(yrs)No:	Same specimen for LT :	No
Locality		**India, Western Ghats Rivers, Karnataka**	**StockCode : 000357**
Max length	(cm) :	45 Same specimen for WL :	No Sex : unsexed
Max age	(yrs) :	Same specimen for LT :	No
Locality		**Nepal, Rivers of terai and mid hills.**	**StockCode : 000357**
Max length	(cm) :	91.5 Same specimen for WL : No	Sex : unsexed
Max age	(yrs) :	Same specimen for LT :	No
Comment:			

Total = 5

1.19. Length-Weight relationships of *Channa striata*

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

Locality :					**StockCode : 000357**
Length range :	57 - 57		TL	Sample size : 1	Main Ref. : 040637
a	0.0162			Correlation coefficient :	Ref.:
b	3				Sex : unsexed

Comment: L-W relationship calculated from data in Ref. 40637.

Locality : China Main,					**StockCode : 000357**
Length range :	-		SL	Sample size :	Main Ref.: 041847
a	0.0279			Correlation coefficient : 0.985	Ref.: 041847
b	2.811				Sex : unsexed

Total = 2

1.20. Growth and mortality of *Channa striata*

Country	**L (cm)**	**W (g)**	**Kt (/year)**	**t ₀ (y)**	**Sex**	**Ref.**
Sri Lanka	52 TL		0.21		unsexed	032692
China Main	36.8SL-	736	0.441	0.11	unsexed	041847
India	56.5 TL		0.42		unsexed	032692

1.21. Diseases reported for *Channa striata*

StockCode: 000357 **MainRef. : 042533**

Parasitic infestations (protozoa, worms, etc.): Acanthogyrus infestation Ref. : 005435

Causative agent : *Acanthogyrus tilapiae*

Occurrence : Barisal, Bangladesh, 1981

Remarks : Infestation commonly occurs in the intestine. Besides 1981 (Ahmed and Rouf; Ahmed), the infestation was also recorded in 1997 (Ahmed and Ezaz) but with no specific locality cited.

Parasitic infestations (protozoa, worms, etc.): Pallisentis disease Ref. : 042533
Causative agent : *Pallisentis sp.*
Occurrence : Chittagong, Bangladesh, 1974
Remarks : Infestation commonly occurs in the body cavity, viscera, and intestine. Besides 1974 (Anonymous) the infestation was also recorded in 1978 (Ahmed and Begum) in the localities of Dhaka and Barisal and in 1968 (Ali) with no specific locality cited.

Parasitic infestations (protozoa, worms, etc.): Fish louse infestation Ref. : 000060
Causative agent : *Argulus sp.*
Occurrence : Chittagong, Bangladesh, 1968
Remarks : Infestation commonly occurs in the fins, gills and eyes. Besides infestation was also recorded in 1974 (Anonymous) in the localities of Barisal and Chittagong.

Parasitic infestations (protozoa, worms, etc.): Contracaecum disease Ref. : 042533
Causative agent : *Contracaecum sp.*
Occurrence : Chittagong, Bangladesh, 1974
Remarks : Infestation commonly occurs in the body cavity, stomach, intestine, viscera and pyloric caeca. Besides 1974 (Anonymous), the infestation was also recorded in 1968 (Ali) with no specific locality cited.

Parasitic infestations (protozoa, worms, etc.) : Neocamallanus disease Ref. : 042533
Causative agent : *Neocamallanus sp.*
Occurrence : Chittagong, Bangladesh, 1974
Remarks : Infestation commonly occurs in the pyloric caeca. Besides 1974 (Anomymous), the infestation was also recorded in 1968 (Ali) but with no specific locality cited.

Parasitic infestations (protozoa, worms, etc.) : Anchistrocephalus disease
Neocamallanus sp. Chittagong, Bangladesh, 1974 Ref. : 042533
Causative agent : *Anchistrocephalus sp.*
Occurrence : Chittagong, Bangladesh, 1974
Remarks : Infestation commonly occurs in liver and intestine. Besides 1974 (Anomymous), the infestation was also recorded in 1968 (Ali) with no specific locality cited. The record from fresh water fishes of Bangladesh may involve a misidetification.

Parasitic infestations (protozoa, worms, etc.): Phyllodistomum disease Ref.: 000235
Causative agent : *Phyllodistomum lancea*
Occurrence : Dhaka, Bangladesh, 1978
Remarks : Infestation commonly occurs in the urinary bladder. Besides 1978 (Ahmed and Begum), the infestation was also recorded in 1981 (Ahmed) but with no specific locality cited.

Parasitic infestations (protozoa, worms, etc.): Gnathostoma infestation Ref. : 026129
Causative agent : *Gnathostoma spinigerum*
Occurrence : Dhaka, Bangladesh, 1972
Remarks : Infestation commonly occurs in the body cavity, stomach, intestine, viscera and muscles. Besides 1972 (Bashirullah), the infestation was also recorded in 1973 (Bashirullah) in Dhaka and/or Sylhet and in 1981 (Ahmed) with no specific locality cited. This nematode is the cause of gnathostomosis, which is a serious disease in man.

Parasitic infestations (protozoa, worms, etc.): Euclinostomum infestation Ref. : 026129
Causative agent : *Euclinostomum multicaecum*
Occurrence : Dhaka, Bangladesh, 1982
Remarks : Infestation commonly occurs in the stomach and muscles, kidney, liver, pharyngeal wall, and the external surface of the alimentary canal.

Parasitic infestations (protozoa, worms, etc.): Isoparorchis Infestation Ref. : 042533
Causative agent : *Isoparorchis hypselobagri*
Occurrence : Dhaka, Bangladesh, 1972
Remarks : Infestation commonly occurs in the swimbladder, body cavity, muscle, liver stomach, visceral surfaces and intestine. Besides 1972 (Bashirullah), the infestation was also recorded in 1973 (Bashirullah) in Dhaka and/or Sylhet, 1974 (Anonymous) in Chittagong, 1981 (Ahmed) and 1989 (Rahman) but with no specific locality cited.

Parasitic infestations (protozoa, worms, etc.): Pallisentis infestation Ref. : 042533
Causative agent : *Pallisentis gaboes*
Occurrence : Dhaka, Bangladesh, 1978
Remarks : Infestation commonly occurs in the intestine, body cavity and mesenteries. Besides 1978 (Ahmed and Begum), the infestation was also recorded in 1981 (Ahmed and Rouf; Ahmed) in the localities Barisal and Dhaka.

Parasitic infestations (protozoa, worms, etc.) : Euclinostomum infestation Ref. : 042533
Causative agent : *Euclinostomum heterostomum*
Occurrence : Dhaka, Bangladesh, 1993
Remarks : Infestation commonly occurs in the liver.

Parasitic infestations (protozoa, worms, etc.): Camallanus infestation Ref. : 042533
Causative agent : *Camallanus intestinalus*
Occurrence : Dhaka, Bangladesh, 1974
Remarks : Infestation commonly occurs the intestine.

Parasitic infestations (protozoa, worms, etc.): Pallisentis infestation Ref. : 042533
Causative agent : *Pallisentis nagpurensis*
Occurrence : Dhaka and Barisal, Bangladesh, 1973
Remarks : Infestation commonly occurs in the intestine. Besides 1973 (Ahmed and Rouf; Ahmed), the infestation was also recorded in 1973 (Bashirullah) in the locality of Dhaka and/or Sylhet and in 1993 (Khanum et al.) with no specific locality cited.

Parasitic infestations (protozoa, worms, etc.): Procamallanus infestation Ref. : 042533
Causative agent : *Spirocamallanus mysti*
Occurrence : Dhaka and/or Sylhet, Bangladesh, 1973
Remarks : Infestation commonly occurs in the stomach, intestine and liver. Besides 1973 (Bashirullah), the infestation was also recorded in 1981 (Ahmed) but with no specific locality cited.

Parasitic infestations (protozoa, worms, etc.): Procamallanus infestation Ref. : 042533
Procamallanus (Procamallanus) spiculogubernaculus
Causative agent : *Procamallanus spiculogubernaculus*
Occurrence : Dhaka and/or Sylhet, Bangladesh, 1973
Remarks : Infestation commonly occurs in the stomach and intestine. Besides 1973 (Bashirullah), the infestation was also recorded in 1981 (Ahmed) but with no specific locality cited.

Viral diseases: Epizootic Ulcerative Syndrome Ref. : 044274
Causative agent : N.A.
Occurrence : Laguna de Bay, Philippines, 1991

Parasitic infestations (protozoa, worms, etc.): Fish louse infestation Ref. : 000060 and 026129
Causative agent : *Argulus sp.*
Occurrence : Luzon, Philippines, 1983
Remarks : Infestation occurs commonly in the skin. Besides 1983 (Quines and Paycana), the infestation also occurred in 1988 (Natividad).

Parasitic infestations (protozoa, worms, etc.): Clinostomoides infestation Ref. : 026129
Causative agent : *Clinostomoides brieni*
Occurrence : Luzon, Philippines, 1944
Remarks : Infestation occurs most commonly in the gills, gill cavity, gall bladder, periocular tissue, brachiostegal musculature and pericardium. Besides 1944 (Tubangui and Masiluñgan), the infestation also occurred in 1988 (Velasquez).

Parasitic infestations (protozoa, worms, etc.): Haplorchis infestation Ref. : 026129
Causative agent : *Haplorchis taichui*
Occurrence : Luzon, Philippines, 1939
Remarks : Infestation commonly occurs in the musculature. Besides 1939 (Vazquez-Colet and Africa), the infestation was also recorded in 1973 (Velasquez) in Luzon and Mindanao.

Parasitic infestations (protozoa, worms, etc.): Haplorchis infestation Ref. : 026129
Causative agent : *Haplorchis pumilio*
Occurrence : Luzon, Philippines, 1939
Remarks : Infestation commonly occurs in the musculature.

Parasitic infestations (protozoa, worms, etc.) : Anchor worm disease (Lernaeasp.) Ref.: 041805
Causative agent : *Lernaea sp.* 026129
Occurrence : Luzon, Philippines, 1988
Remarks : The head of the parasite is embedded in the musculature with the body protruding externally.

Parasitic infestations (protozoa, worms, etc.): Turbidity of the skin (freshwater fish) Ref.:041805
Causative agent : *Chilodonella sp.* 026129
Occurrence : Luzon, Philippines, 1990
Remarks : Infestation commonly occurs in the skin.

Parasitic infestations (protozoa, worms, etc.): Procerovum infestation Ref. : 026129
Causative agent : *Procerovum calderoni*
Occurrence : Luzon, Philippines, 1939
Remarks : Infestation commonly occurs in the musculature and base of fins. Besides 1939 (Vazquez-Colet and Africa), the infestation also occurred in 1966 (Velasquez).

Parasitic infestations (protozoa, worms, etc.): Camallanus disease Ref. : 026129
Causative agent : *Camallanus sp.*
Occurrence : Luzon, Philippines, 1982
Remarks : Infestation occurs commonly in the intestine. Besides 1982 (Hopkins and Cruz), the infestation also occurred in 1983 (Quines and Paycana) and again in 1982 (Quinesand Paycana).

Parasitic infestations (protozoa, worms, etc.): False fungal infection (Epistylis sp.) Ref. : 041805
Causative agent : *Epistylis sp.* 026129
Occurrence : Luzon, Philippines, 1990
Remarks : Infestation occurs most commonly in the skin.

Parasitic infestations (protozoa, worms, etc.): Yellow grub Ref. : 000195
Causative agent : *Clinostomum complanatum* 026129
Occurrence : Luzon, Philippines, 1933
Remarks : Infestation commonly occurs i n the perioculartiar tissues, gill cavity, brachiostegral musculature, and the pericardium. Besides 1933 (Tubangui), the infestation also occurred in 1988 (Velasquez).

Parasitic infestations (protozoa, worms, etc.): Piscicola infestation Ref. : 005435
Fish leech Infestation 026129
Causative agent : *Piscicola sp.*
Occurrence : Luzon, Philippines, 1986
Remarks : Infestation commonly occurs in the skin. Besides 1986 (Velasquez), the infestation was also recorded in 1988 by the same author.

Parasitic infestations (protozoa, worms, etc.): Clinostomum infestation Ref. : 005435
(metacercaria) : Clinostomum sp. 026129
Causative agent : NA
Occurrence : Luzon, Philippines, 1983
Remarks : Infestation occurs most commonly in the periocular tissues.

Parasitic infestations (protozoa, worms, etc.): Cercaria disease (e.), Cercariosis Ref.:000193
Causative agent : *Diplostomum sp.* 026129
Occurrence : Luzon, Philippines, 1986
Remarks : Infestation commonly occurs in the brain, intestine and musculature. Besides 1986 (Lopez), the infestation was also recorded in 1988 by the same author.

Parasitic infestations (protozoa, worms, etc.): Trichodinosis Ref. : 000193
Trichodinella sp.; Trichodina infestation 026129
Causative agent : *Trichodina sp.*
Occurrence : Luzon, Philippines, 1990
Remarks : Infestation occurs most commonly in the gills and skin.

Parasitic infestations (protozoa, worms, etc.): False fungal infection (Apiosoma sp.) Ref. : 041805
Causative agent : *Apiosoma sp.* 026129
Occurrence : Luzon, Philippines, 1975
Remarks : Infestation occurs most commonly in the gills and skin.

Parasitic infestations (protozoa, worms, etc.): Skin flukes Ref. : 000060
Helminthose (skin and eventually gills afflicted) 026129
Causative agent : *Gyrodactilus sp.*
Occurrence : Luzon, Philippines, 1975
Remarks : Infestation commonly occurs in the gills and skin.

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. Besides 1939 (Vazquez-Colet and Africa), the infestation was also recorded in 1986 and 1988 (Velasquez).

Parasitic infestations (protozoa, worms, etc.): Haplorchis Infestation Ref. : 026129
Causative agent : *Haplorchis yokogawai*
Occurrence : Luzon, Philippines, 1936
Remarks : Infestation commonly occurs in the musculature. Besides 1936 (Garcia), the infestation also occurred in 1939 (Vazquez-Colet and Africa). This parasite has been associated with human myocardial complications and heart failure due to the blockage of coronary vessels caused by the parasites eggs entering the circulatory system by the intestinal mucosa. Ingestion of metacercaria in raw or inadequately cooked fish is the caused of human infections.

Parasitic infestations (protozoa, worms, etc.): Euclinostomum infestation Ref. : 026129
Causative agent : *Euclinostomum multicaecum*
Occurrence : Luzon, Philippines, 1935
Remarks : Infestation commonly occurs in the musculature. Besides 1935 (Tubangui and Masiluñgan), the infestation also occurred in 1960 (Velasquez).

Parasitic infestations (protozoa, worms, etc.): Gnathostoma infestation Ref. : 026129
Causative agent : *Gnathostoma spinigerum*
Occurrence : Luzon, Philippines, 1936
Remarks : Infestation commonly occurs in the musculature and visceral linings.

Parasitic infestations (protozoa, worms, etc.): Neocamallanus infestation Ref. : 026129
Causative agent : *Neocamallanus ophicephali*
Occurrence : Luzon, Philippines, 1966
Remarks : Infestation commonly occurs in the stomach, pyloric caeca and instines. Besides 1966 (Velasquez), the infestation also occurred in 1980 (Velasquez), 1981 (Calhoun), 1982 (Boromthanarat), 1986 (Lopez) and 1988 (Lopez).

Parasitic infestations (protozoa, worms, etc.): Centrocestus infestation Ref. : 026129
Causative agent : *Centrocestus caninus*
Occurrence : Luzon, Philippines, 1939
Remarks : Infestation occurs most commonly in the gills.

Parasitic infestations (protozoa, worms, etc.): Fish louse infestation Ref. : 026129
Causative agent : *Argulus indicus*
Occurrence : Luzon, Philippines, 1986
Remarks : Infestation commonly occurs in the skin. Besides 1986 (Lopez), the infestation was also recorded in 1988 by the same author. Velasquez also reported the parasite in 1986 and 1988.

Parasitic infestations (protozoa, worms, etc.): Clinostomum infestation Ref. : 026129
Causative agent : *Clinostomum philippinensis*
Occurrence : Luzon, Philippines, 1960
Remarks : Infestation commonly occurs in pericardium, gill cavity and tissues under the pectoral fins. Besides 1960 (Velasquez), the infestation was also recorded in 1966 and 1988 in Luzon, and 1975 in Luzon and Mindanao by the same author.

Parasitic infestations (protozoa, worms, etc.): Anchor worm disease, lernaeosis Ref. : 000060
Causative agent : *Lernaea cyprinacea* 026129
Occurrence : Luzon, Philippines, 1988
Remarks : The parasites head is commoly embebded in the eye, nostril, and host. With the body protruding externally.

Parasitic infestations (protozoa, worms, etc.): Opegaster infestation Ref. : 026129
Causative agent : *Opegaster minima*
Occurrence : Luzon, Philippines, 1944
Remarks : Infestation commonly occurs in the intestine.

Parasitic infestations (protozoa, worms, etc.): Taphrobothrium infestation Ref. : 042533
Causative agent : *Taphrobothrium japonense*
Occurrence : not specified, Bangladesh, 1993
Remarks : (Location of infestation not specified)

Parasitic infestations (protozoa, worms, etc.) , Polyonchobothrium Disease Ref. : 042533
Causative agent : Polyonchobothrium sp.
Occurrence : not specified, Bangladesh, 1993
Remarks : (Location of infestation not specified.)

Parasitic infestations (protozoa, worms, etc.): Bothriocephalus infestation Ref. : 042533
Causative agent : *Bothriocephalus cuspidatus*
Occurrence : not specified, Bangladesh, 1993
Remarks : Infestation commonly occurs in the intestine and pyloric caeca. The parasite is a North American species, so this report from Bangladesh is probably based on a misidentification.

Parasitic infestations (protozoa, worms, etc.): Paracamallanus infestation Ref. : 042533
Causative agent : *Paracamallanus sweeti*
Occurrence : not specified, Bangladesh, 1993
Remarks : Infestation commonly occurs in the liver, esophagus, stomach and intestine.

Parasitic infestations (protozoa, worms, etc.): Allogomtiorema infestation Ref. : 042533
Causative agent : *Allogomtiorema attu*
Occurrence : not specified, Bangladesh, 1993
Remarks : Infestation commonly occurs in the stomach and intestine.

Parasitic infestations (protozoa, worms, etc.): Pallisentis infestation Ref. : 042533
Causative agent : *Pallisentis ophiocephali*
Occurrence : not specified, Bangladesh, 1967
Remarks : Infestation commonly occurs in the stomach, viscera, muscles and intestine. Besides 1967 (Rahman and Ali), the infestation was also recorded in 1974 (Anonymous) and 1989 (Rahman) both with no specific locality cited.

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 (Anonymous) but with no specific locality cited.

Parasitic infestations (protozoa, worms, etc.): Posthodiplostomum disease Ref. : 026129
Causative agent : *Posthodiplostomum sp.*
Occurrence : not specified, Philippines, 1976
Remarks : Infestation commonly occurs in the sca1es. Besides 1976 (Velasquez), the infestation was also recorded in 1977 by the same author.

Parasitic infestations (protozoa, worms, etc.): Posthodiplostomum disease Ref. : 000060
Infectious Ascites; Haeromorrhagic; Red Fin Disease
Causative agent : *Aeromonas*
Occurrence : not specified, 1971
Remarks : The infection were recorded in 1971 (Bullock et al.), 1978 (Egusa) and later 1986 (Saitanu)

Parasitic infestations (protozoa, worms, etc.): Posthodiplostomum dnfestation Ref. : 026129
Causative agent : Posthodiplostomum grayi
Occurrence : not specified, Philippines, 1943
Remarks : Infestation commonly occurs in the body cavity.

Parasitic infestations (protozoa, worms, etc.): Neocamallanus infestation Ref. : 026129
Causative agent : *Neocamallanus ophicephali*
Occurrence : Sylhet, Bangladesh, 1969
Remarks : Infestation commonly occurs in the intestine and pyloric caeca. Besides 1969 (Khan and Yaseen), the infestation was also recorded in 1973 (Bashirullah) in Dhaka and/or Sylhet, 1974 (Bashirullah) and 1976 (Ahmed) in Dhaka, and recorded in 1974 (Anonymous), 1981 (Ahmed) and 1989 (Rahman) with no specific locality cited.

1.22. FAO annual catch data (in tonnes) for *Channa striata*

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								
Philippines				FAO Area : 4						
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1,308	3,228	3,228	2,946
	7,025	7,863	7,609	25,751	11,420	12,009	12,009	7,521	6,933	7,199
	7,671	7,331	7,219	13,104	5,619	6,018	5,457	4,547	4,856	5,789
	6,386	6,698								
Thailand				FAO Area : 4						
	4,320	4,680	5,040	5,400	5,850	6,300	6,750	7,290	7,830	8,370
	9,000	9,720	10,440	11,250	12,150	13,050	14,040	15,120	16,290	17,550
	17,700	18,300	24,100	24,100	24,900	27,047	19,706	17,979	24,481	21,613
	23,182	27,046	20,134	16,424	15,531	14,478	17,556	16,267	11,760	11,168
	13,001	14,440	13,986	18,591	21,400	21,810	25,509	24,099	16,664	17,995
	20,500	21,400								
Total	4,320	4,680	5,040	5,400	5,850	6,300	6,750	7,290	7,830	8,370
	9,000	9,720	10,440	11,250	12,150	13,050	14,040	15,120	16,290	17,550
	17,700	18,300	24,100	24,100	24,900	27,047	21,014	21,207	33,209	24,559
	30,207	34,909	27,743	42,175	26,951	26,487	28,064	23,788	18,694	18,368
	20,672	21,771	21,205	31,695	27,019	27,828	30,966	28,646	21,520	23,784
	26,886	28,098								

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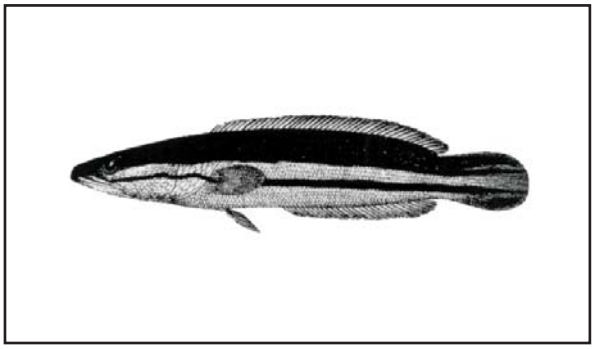
CHANNA MICROPELTES

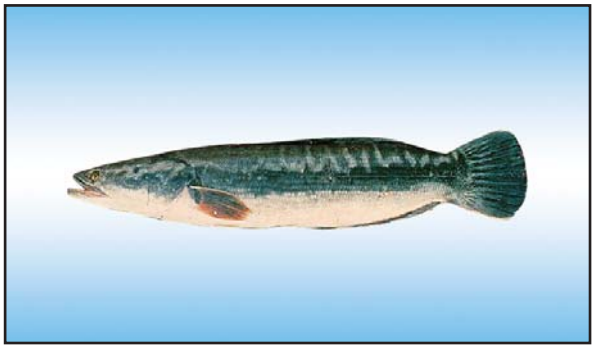
(Cuvier, 1831)

Giant snakehead

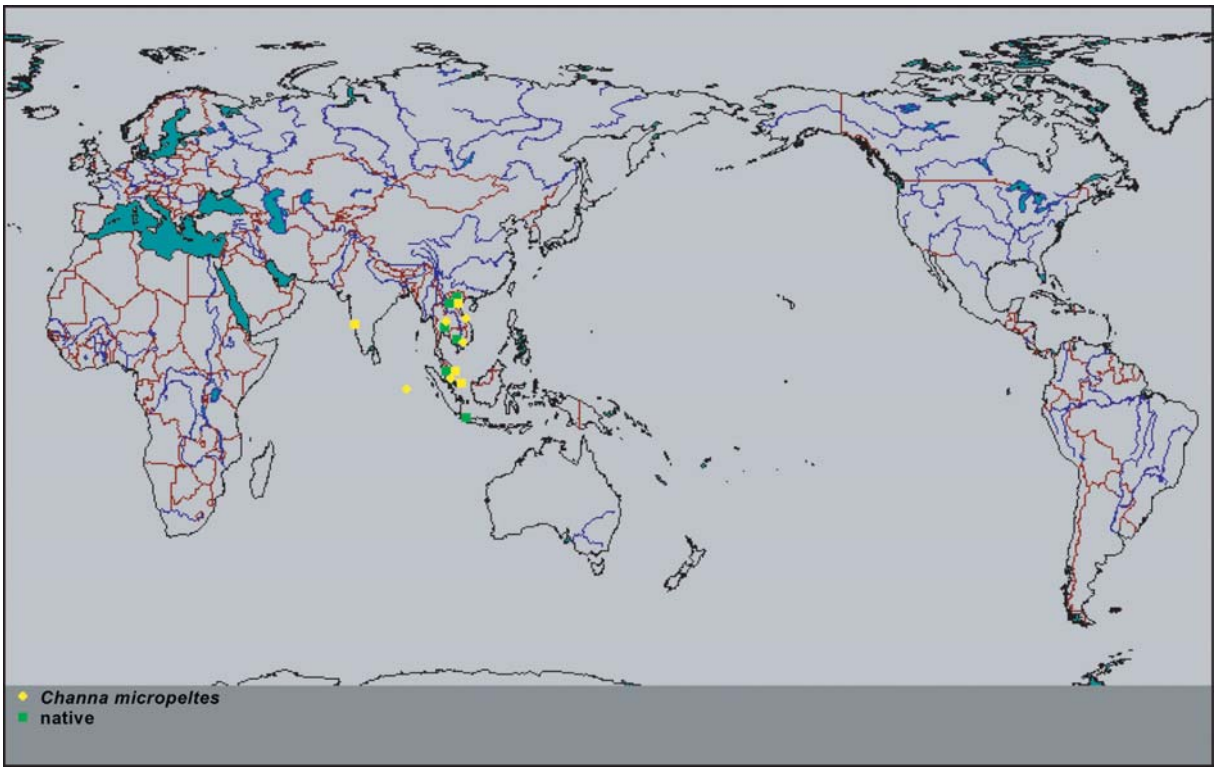
ត្រីឆ្ពោ



Picture by **FAO**



Picture by **Baird, I.G**



2.1 Summary information on the family *Channidae*

Family : Channidae (Snakeheads)
Order : Perciformes MainRef. : 007463
Class : Actinopterygii (ray-finned fishes) FamCode : 431
Number of genera : 2
Number of species : 21
Occurs in : O Marine
O Brackish
☑ Freshwater
Species currently in FishBase : Genera: 2 Species: 31 (Including subspecies) Complete : Yes

Remarks:

Distribution : tropical Africa (three species) and Southern Asia. Elongated body; lower jaw protruding. Dorsal and anal fin bases long. Pelvic fins may be lacking in some; with 6 rays when present. No spines in fins. Scales ctenoid or cycloid. Air-breathing through suprabronchial organ. About 1.2 m maximum length. Important in aquaculture and commonly used in rice-fish farming. Some species are widely introduced. Number of species: 26 (Ref. 36343).
Etymology: Greek, channe, -es = anchovy (Ref. 45335).

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

After Eschmeyer, March 2003 (Ref. 46206)

Bostrychoides Status : synonym Gender : masculine
Lacepède, 1801, p. 144, CAS Ref: 2710
Type by monotypy.
Type species : *Bostrychoides oculatus* Lacepède, 1801
Current genus : *Channa*

Channa Status : valid Gender : feminine
Scopoli (exGronow), 1777, p. 459, CAS Ref: 3990
Type by subsequent monotypy.
Type species : *Channa orientalis* Bloch& Schneider, 1801
Current genus : *Channa*

Channa Status : not available Gender : feminine
Gronow, 1763, p. 135, CAS Ref: 1910
Type species :
Current genus :

Ophicephalus Status : synonym Gender : masculine
Bloch, 1793, p. 137, CAS Ref: 4868
Type by subsequent designation.
Type species : *Ophicephalus striatus* Bloch, 1793
Current genus : *Channa*

Philypnoides Status : synonym Gender : masculine
Bleeker, 1849, p. 19, CAS Ref: 319
Type by monotypy.
Type species : *Philypnoides surakartensis* Bleeker, 1849
Current genus : *Channa*

Psiloides Status : other Gender : masculine
Fischer, 1813,p. 74, 111, CAS Ref: 1331
Type by being a replacement name.
Type species : *Bostrychoides oculatus* Lacepède, 1801
Current genus : Channa

Pterops Status : synonym Gender : masculine
Rafinesque, 1815, p. 84, 91, CAS Ref: 3584
Type by being a replacement name.
Type species : *Bostrychoides oculatus* Lacepède, 1801
Current genus : *Channa*

2.3. General information on *Channa micropeltes*

Classification

Class	: Actinopterygii (Ray-finned fishes)	MainRef. 002091
Order	: Perciformes	
Family	: Channidae (Snakeheads)	
Species	: Channa micropeltes	
Author	: (Cuvier, 1831)	Author Ref.

Environment

Freshwater	: Yes	Habitat	: Benthopelagic
Brackish	: No	Migrations	:
Saltwater	: No	Depth range	: 100

Importance

Landing statistics	: From 1,000 to 10,000 tonnes	Ref. 004931
Importance to fisheries	: Commercial	
Other methods	: ☑ Seines ☑ Gillnets O Castnets ☑ Traps O Spears O Trawls O Dredges O Liftnets O Hooks+Lines O Other	
Used for aquaculture	: Commercial	Ref. 012108
Used as bait	: Never/rarely	Ref.
Aquarium fish	: Commercial	Ref. 004537
Game fish	: Yes	Ref. 004833
Dangerous fish	: Harmless	Ref.
Electrobiology	: No special ability	Ref.

Size and age

Maximum length (cm)	(male/unsexed) : 130 SL	(female) :	Ref. 030857
Common length (cm)	(male/unsexed) :	(female) :	Ref.
Maximum weight (g)	(male/unsexed) : 20,000.00	(female) :	Ref. 004835

Remarks:

Usually associated with deep water bodies (Ref. 27732). Found in large streams and canals (Ref. 4833), with standing or slowly flowing water (Ref. 12693). Preys mainly on fish but also feeds on some crustaceans. Utilized as a food fish (Ref. 4931).

2.4. Synonyms, misidentifications, etc. used for *Channa micropeltes*

Synonym	Author	Status	Ref.
Ophicephalus bivittatus	Bleeker, 1845	junior synonym	002091
Channa diplogramme	nonDay, 1865	misidentification	027732
Ophiocephalus micropeltes	Cuvier, 1831	misspelling	040966
Ophicephalus micropeltes	Cuvier, 1831	original combination	002091
Channa micropeltes	Cuvier, 1831	new combination	002091
Ophicephalus serpentinus	Cuvier, 1831	junior synonym	002091
Ophicephalus stevensii	Bleeker, 1853	junior synonym	002091
Ophiocephalus studeri	Volz, 1903	junior synonym	002091

2.5. Common names for *Channa micropeltes*

Name	Language	Country	Ref.
Trey chhdaur	Khmer	Cambodia	012693
Trey chhdor	Khmer	Cambodia	036654
Trey diep	Khmer	Cambodia	012693
Malabar snakehead	English	India	004833
Kamal fish	Malay	Indonesia	
Pa do	Laotian	Lao People's Dem. Rep.	004792
Pa meng phou	Laotian	Lao People's Dem. Rep.	037767
Toman	Malay	Malaysia	004835
Singapore dalag	English	Philippines	012157
Snakehead fish	English	Thailand	006459
Pla ai pok	Thai	Thailand	009648
Pla cha do	Thai	Thailand	009648
Pla ma lang poo	Thai	Thailand	009648
Giant snakehead	English	United Kingdom	012693
Indonesian snakehead	English	United Kingdom	012108
Giant snakehead	English	USA (contiguous states)	004537
Red snakehead	English	USA (contiguous states)	004537
Cá bong	Vietnamese	Viet Nam	036625

2.6. Distribution of *Channa micropeltes*

Asia: Mekong and Chao Phraya Basins; the Malay Peninsula, and the islands of Sumatra and Borneo. Material from India referring to this species usually refers to a distinct species. **MainRef.: 027732**
Latitudinal range : 10° N - 1° N Temperature range : 25 - 28 °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 River, Great Lake (Ref. 36651, 36686) and Siem Reap (Ref. 36654). Also Ref. 27732, 33813, 36662, 37772.

India	misidentification	004833

Restricted to Kerala (Ref. 4833, 43640). Material from India referring to this species usually refers to a distinct species for which the earliest available name is C. diplogramme Day 1865 (Ref. 27732). Reported a decline of its population due to destructive fishing activities (Ref. 45212).

Indonesia	native	002091

Occurs in Sumatra and Borneo (Ref. 27732). Also Ref. 7050.

Lao People's Dem. Rep.	native	043281

Known from the Mekong Basin (Ref. 43281). Found in the lower Xe Bangfai, tributary of the Mekong Basin (Ref. 27732), around Pak Beng to the Khone Falls (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 Ref. 4792, 30857.

Malaysia	native	004835
Myanmar	questionable	004833
Singapore	introduced	038466
Thailand	native	026336

Occurs in the Chao Phraya and Mekong Basins (Refs. 27732, 9648), Maeklong, Peninsular and Southeast Thailand river systems (Ref. 26336). Captured from the wild for the ornamental fish trade (Ref. 6459) Also Ref. 7306, 37772, 37773, 43638.

Viet Nam	native	027732

Occurs in the Mekong Basin (Ref. 27732). Also Ref. 4835, 36625, 36654.

Total native = 6 Total introduced = 1

2.7. Introductions of *Channa micropeltes*

Asia : Mekong and Chao Phraya Basins; the Malay Peninsula, and the islands of Sumatra and Borneo. Material from India referring to this species usually refers to a distinct species.

Year	:	1989	Established : unknown	Ref.	012157
Introduced	:	to Philippines	from Unknown		
Reason	:	ornamental			

Asia : Mekong and Chao Phraya Basins; the Malay Peninsula, and the islands of Sumatra and Borneo. Material from India referreing to this species usually refers to a distinct species.

Year	:	unknown	Established : yes	Ref.	038466
Introduced	:	to Singapore	from Unknown		
Reason	:	unknown			

Asia : Mekong and Chao Phraya Basins; the Malay Peninsula, and the islands of Sumatra and Borneo. Material from India referring to this species usually refers to a distinct species.

Year	:	unknown	Established : no	Ref.	
Introduced	:	to USA	from Unknown		
Reason	:	ornamental			

Remarks:

Collected from open waters in Maine, Massachusetts and Rhode Island. This tropical/subtropical species could not become established in those temperate waters. The pathway into these New England states was likely aquarists who released their 'pets' when they grew too large for their aquaria and/or it became too costly to feed them.

2.8. Summary information (no. of records) available for *Channa micropeltes*

Level : species in general **StockCode: 027732** **MainRef.: 027732**
Asia : Mekong and Chao Phraya Basins; the Malay Peninsula, and the islands of Sumatra and Borneo. Material from India referring to this species usually refers to a distinct species.

Ecology	1	Max. sizes	1	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.	1	Aquaculture	0	Occurrence	54

2.9. Morphology of *Channa micropeltes*

Level: species in general **StockCode : 000358** **Main Ref.: 027732**
Appearance refers to : O females O males

Diagnostic Characters
A broad, dark longitudinal stripe in adults; two black longitudinal stripes with a bright orange intermediate area in juveniles (Ref. 27732)

Descriptive Characters

Body shape lateral	: elongated	Dorsal head profile: more or less straight
Operculum present	: No	
Type of eyes	: more or less normal	
Horizontal stripes	: present	
Vertical stripes	: absent	
Operculum present	: absent	
Type of eyes	: absent	
Spots	: no spots	

Meristic Characters

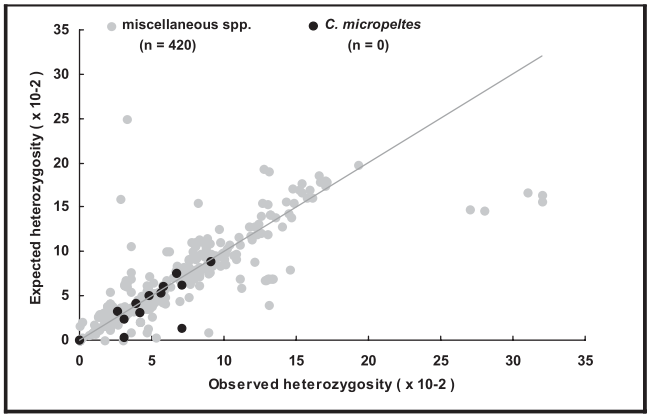
Lateral Lines	interrupted : No		
Scales on lateral line	83 -94		
Vertebrae	prenatal		
Dorsal fins			
Number of fins	: 1	spines total	: soft-rays total
Adipose fin	: absent	finlets dorsal	: finlets ventra
Caudal fin			
Shape of fin	: more or less	truncate	
Attributes	: more or less	normal	
Paired fins			
Pectoral attributes	: more or less	normal	
Pelvics attributes	: more or less	normal	
position	: abdominal	behind origin of D1	

2.10. Genetic information for *Channa micropeltes*

Level : species in general **MainRef: 012337**
Locality : Unspecified

Chromosomenumber (haploid)	: 22	Ref: 012337
Chromosome number (diploid)	: 44	Ref: 012337
Genetic marker(s) present	: No	

Expected vs observed heterozygosity of Channa micropeltes



2.11. FAO aquaculture production data for *Channa micropeltes*

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	0	0
	(US$'000)	0	0	0	0	0	0	0
	(t)	0	0	108	18	181	212	280
	(US$'000)	0	0	240	38	319	443	579
	(t)	595	1,241	1,242	1,126			
	(US$'000)	850	2,201	2,200	1,876			
Singapore (4)	(t)	0	0	0	0	0	0	0
	(US$'000)	0	0	0	0	0	0	0
	(t)	0	0	0	0	65	43	100
	(US$'000)	0	0	0	0	222	122	321
	(t)	200	380	500	613			
	(US$'000)	479	1,233	2,219	2,155			
Thailand (4)	(t)	183	630	386	325	198	295	500
	(US$'000)	166	497	331	285	164	313	548
	(t)	700	905	762	838	639	700	593
	(US$'000)	823	1,074	1,005	1,113	769	998	609
	(t)	1,398	119	80	102			
	(US$'000)	1,080	88	60	77			
	(mt)	183	630	386	325	198	295	500
Total: 3	(US$'000)	166	497	331	285	164	313	548
	(mt)	700	905	870	856	885	955	973
	(US$'000)	823	1,074	1,246	1,151	1,311	1,563	1,509
	(mt)	2,193	1,740	1,822	1,841			
	(US$'000)	2,409	3,522	4,479	4,108			

2.12. General information on the reproduction of *Channa micropeltes*

Mode and Type of Reproduction **StockCode : 000358** **MainRef : 001672**

Mode : dioecism
Fertilization : external
Batch spawner : No
Reproductive guild : guarders

Ecology of *Channa micropeltes* **StockCode: 000358 000344** **MainRef.: 012693**

Habitats

Streams : Yes 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
Tropical soft bottom: No Hard bottm: No Seagrass beds: No Macrophyte: No

Feeding

Feeding Type : Mainly animals (troh 2.8 and up) Ref: 012693
Feeding Habit : Hunting macrofauna (predation) Ref: 012975

Trophic level(s) :	**Original sample**		**Unfished population**		**Remarks**
Estimation method	Troph	s.e	troph	s.e	
From indiv. food item :	3.9	0.56	-	-	propic level estimate

2.13. Food items for *Channa micropeltes*

StockCode: 000358

Food item				Ref.
nekton				
finfish	bony fish	unidentified	unidentified	033813
		unidentified	unidentified	004796
others				
herps	n.a./other reptiles	unidentified larvae	unidentified	004796
zoobenthos				
benth. crust.	n.a./other benth. crustaceans	unidentified	unidentified	033813
worms	n.a./other annelids	Lumbricidae	unidentified	004796

2.14. Maximum weight/length/age of *Channa micropeltes*

Locality	**India, not specified**		**StockCode : 000358**
Max weigh (g): 20000	Total weight	Same specimen for WL : No	Ref. : 043641
Max length (cm): 100	TL	Same specimen for WL : No	Sex : Unsexed

2.15. Length-Weight relationships of *Channa micropeltes*

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

Locality			**StockCode : 000358**
Length range	: 70-70 TL	Sample: 1	MainRef: 040637
a	: 0.0219	Correlation coefficient :	
b	: 3		
Comment	: L-W relationship calculated from data in		Ref. 40637.

2.16. FAO annual catch data (in tonnes) for *Channa micropeltes*

Country

1950	19501	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

2,100	2,100	2,400	2,800	2,600	3,000	3,400	3,700	3,100	4,100
4,000	4,500	4,600	4,700	4,700	4,600	5,600	5,800	5,000	5,000
4,900	4,800	4,900	4,300	4,716	5,036	9,946	9,513	8,145	8,189
8,801	8,482	7,619	8,866	9,599	10,103	9,024	10,071	10,424	9,554
8,523	10,128	7,910	7,903	13,236	9,021	11,615	10,117	8,253	8,787
7,771	7,060								

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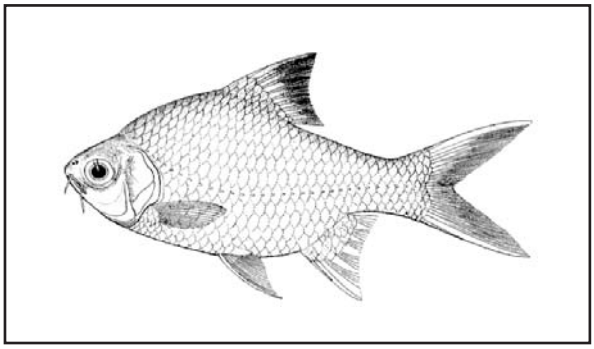
BARBONYMUS ALTUS

(Günther, 1868)

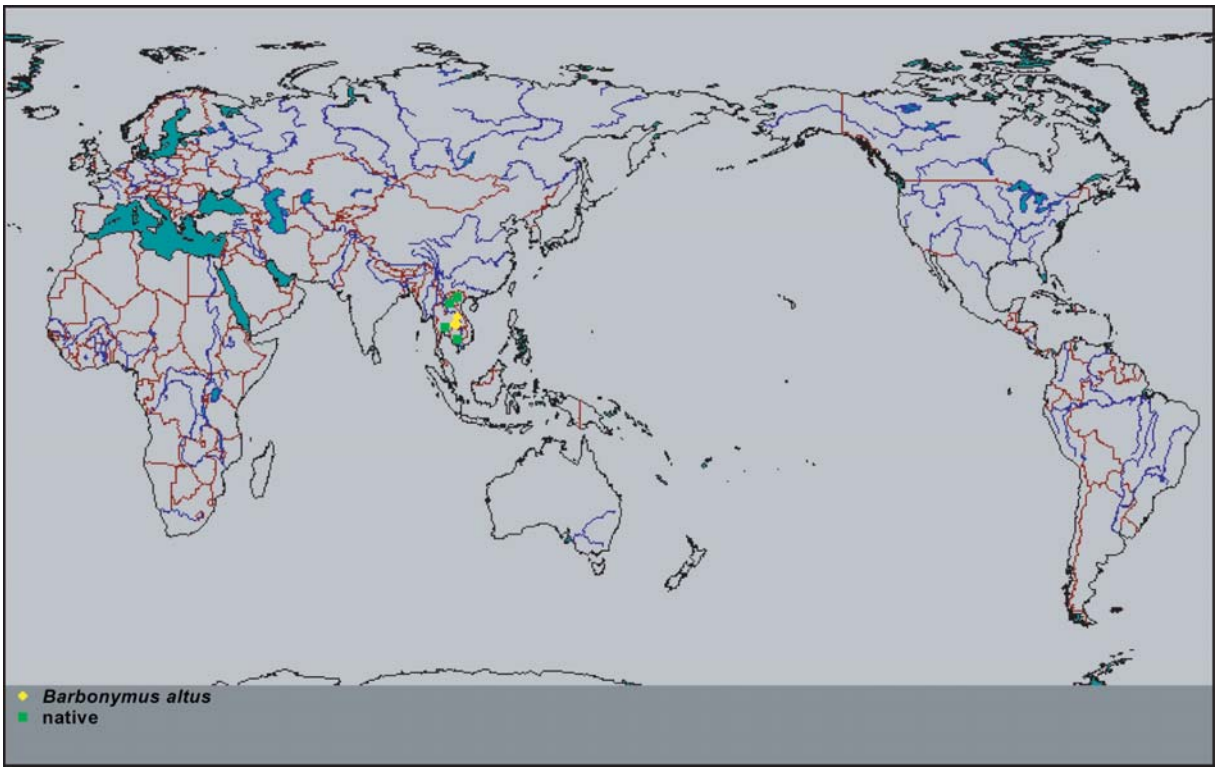
Red tailed tinfoil

ត្រីការ៉ែហក្រហម



Picture by **FAO**

Picture by **Warren, T**



3.1. 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
☑ Brackish
☑ Freshwater
Aquarium fishes : many
First fossil record : Lower Tertiary Eocene Ref. : 004879
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 Barbonymus and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

Barbonymus Status : no revision Gender: masculine
Kottelat, 1999, p. 595, CAS Ref: 24610
Type by original designation.
Type species : *Barbus schwanenfeldii* Bleeker, 1853
Current genus : Barbonymus

3.3. General information on *Barbonymus altus*

Classification

Class	: Actinopterygii (Ray-finned fishes)	MainRef.	027732
Order	: Cypriniformes		
Species	: *Barbonymus altus*		
Author	: (Günther, 1868)	Author Ref.	
	Date Eschmeyer, pers. comm.		

Environment

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

Importance

Main catching method	:				
Other methods	: ☑ Seines	☑ Gillnets	O Castnets	☑ Traps	O Spears
	O Trawls	O Dredges	O Liftnets	O Hooks+Lines	O Other
Used for aquaculture	: Commercial				Ref. 012693
Used as bait	: Never/rarely				Ref.
Aquarium fish	: Commercia based mainly on capture				Ref. 006459
Game fish	: No				Ref.
Dangerous fish	: Harmless				Ref.
Electrobiology	: No special ability				Ref.

Size and age

Maximum length (cm) (male/unsexed) : 20	SL	(female) :	Ref. 030857
Common length (cm) (male/unsexed) : 15	SL	(female) :	Ref. 012693

Remarks:

Occurs at midwater depths in large and medium-sized rivers and floodplains. Feeds on various plant and animal matter. Commonly found near villages where it feeds on organic detritus disposed of by humans (Ref. 12693). Reported to be occasionally poisonous, causing vomiting, due the fruits it eats (Ref. 12369). Colonizes inundated forests and adults migrate back to the river in October. Young of the year follow thereafter when the water levels recede. Large-sized fish are marketed fresh while smaller ones are used to make prahoc and nuoc mam (Ref. 12693). Popular fish in the aquarium trade where it is sold under the name of "tinfoil barb" (Ref. 12693). Captured from the wild for the ornamental fish trade in Thailand (Ref. 6459). Cultured in floating cages in Viet Nam (Ref. 12693).

3.4. Synonyms, misidentifications, etc. used for *Barbonymus altus*

Synonym	Author	Status	Ref.
Puntius altus	Günther, 1868	new combination	26336
Barbus altus	Günther, 1868	original combination	1632
Barbonymus altus	Günther, 1868	new combination	43281
Barbodes altus	Günther, 1868	new combination	26336
Puntius bocourti	Bleeker, 1865	other	1632
Barbodes foxi	Fowler, 1937	junior synonym	26580

3.5. Common names for *Barbonymus altus*

Name	Language	Country	Ref.
Kahe	Khmer	Cambodia	036651
Trey kahe	Khmer	Cambodia	012693
Trey kahè	Khmer	Cambodia	036654
Trey kahe khor horm	Khmer	Cambodia	012693
Trey kaho	Khmer	Cambodia	036654
Pa wien fai	Laotian	Lao People's Dem. Rep.	009497
Pba wian fai	Laotian	Lao People's Dem. Rep.	012369
Wien fai	Laotian	Lao People's Dem. Rep.	040382
Red tailed tinfoil	English	Thailand	006459
Pla kra hea tong	Thai	Thailand	042982
Pla mong ka	Thai	Thailand	042982
Pla pak	Thai	Thailand	042982
Pla ta pien tong	Thai	Thailand	009648
Cá he vàng	Vietnamese	Viet Nam	036625

3.6 Distribution of *Barbonymus altus*

MainRef.: 027732
Asia : Mekong and Chao Phraya Basins (Ref. 27732). Recorded from the Maeklong, Peninsular and Southeast Thailand river systems (Ref. 26336).
Latitudinal range : ° - ° Temperature range: 22 - 27 °C Ref.: 2059
Status of threat : NL.

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

Occurs in the Mekong Basin (Ref. 12693,27732,26580), around the Tonle Sap River, Great Lake (Ref. 36651), Stung Sang and Sékong at Stung Treng (Ref. 36654).

Lao People's Dem. Rep.	**native**	**027732**

Occurs in the Mekong and the lower Xe Bangfai (Ref. 27732). Found below the Mun-Chin River to the Knone Falls (Ref. 37772) and at Hat Village in Muang Khong District (Ref. 37769). Reported to migrate upstream during the dry season in December/January in Southern Laos (Ref. 37769). Recent decline in fisheries attributed to "lee" (large immobile wing traps used in rapids below Lee Pee). Upstream non-reproductive migration occurs in Jan-Feb lasting 1 week - 10 days and downstream migrations in May-July at night in Ban Hang Khone, just below the great waterfalls of the Mekong River (Ref. 9497). Observed to undergo migration at the fishing village of Ban Wernsonkhram on Don Hat (Hat Island) above the Lee Pee Waterfalls (Ref. 10431). This species is occasionally poisonous, causing vomiting, due to the fruits it has eaten (Ref. 12369). Museum: Mekong, CAS 96270 (near Ban Hang Khone), CAS 93464 (just below Khone falls) (Ref. 5515). Also Ref. 4792, 9497, 30857, 36654, 37767, 44002.

Thailand	**native**	**026336**

Occurs in the Mekong, Chao Phraya (Ref. 27732), Maeklong, Peninsular and Southeast Thailand river systems (Ref. 26336). Found in Bangkok, Paknam and Kemarat. Captured from the wild for the ornamental fish trade (Ref. 6459). Museum: Mekong mainstream near Chiang Sen, CAS 96265 (Ref. 5515). Also Ref. 1632, 9648, 36654

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

Found in Mekong Delta (Ref. 36625). Cultured in floating cages (Ref. 12693).

3.7. Summary information (no. of records) available for *Barbonymus altus*

Level : species in general **StockCode: 027732** **MainRef.: 027732**
Asia : Mekong and Chao Phraya Basins (Ref. 27732). Recorded from the Maeklong, Peninsular and Southeast Thailand river systems (Ref. 26336)

Level : species in general

Ecology	1	Max. sizes	0	Strains	0
Food items	4	FAO catches	15502	Diseases	0
Food consumption	0	Genetics	1	Ciguatera	0
Diet composition	0	Allele frequency	20	Ecotoxicology	0
Ration	0	Heritability	0	Metabolism	0
Predators	0	Reproduction	0	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.	0	Aquaculture	0	Occurrence	20

3.8. Morphology of *Barbonymus altus*

Level : species in general **StockCode : 008482** **MainRef.: 027732**
Appearance refers to : O females O males

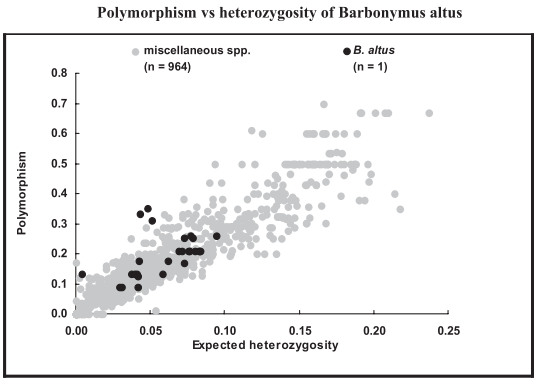
Diagnostic Characters
Broad red distal margin with no black submarginal stripe along each lobe of the caudal fin; red pelvic and anal fins; a black distal blotch on the dorsal fin; the body depth 1.8-2.2 times in standard length (Ref. 27732).

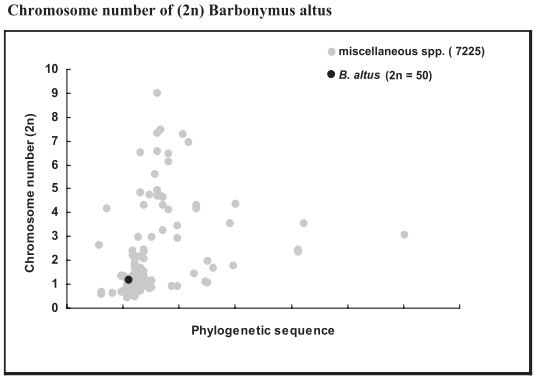
Descriptive Characters
Operculum present : No

Meristic Characters
Scales on lateral line
Dorsal fins
Number of fins : 1 -

3.9. Genetic information for *Barbonymus altus*

Level : species in general **MainRef.: 030184**
Locality : Central Thailand, Thailand Ref: 030184
Chromosome number (haploid) : 25
Chromosome number (diploid) : 50
Genetic marker(s) present : No
DNA content (picogram, haploid) :
Chromosome arm no : 84 Ref: 030184
Sex-determining mechanism





Electrophoretic data for *Barbonymus altus*

Ref.: 005950 Refers to species in general
Locality : Thailand Maeklong River, Bachiralongorn Dam Reservoir
Method : Starch gel electrophoresis
Total loci : 20 Heterozygosity (Observed) : 0.0000
Polymorphic loci : 0.0000 (Expected) : 0.0000

3.10. General information on the reproduction of *Barbonymus altus*

Locality : Laos , Mekong Basin at Hat Village, Muang Khong District **Stockcode: 008482**
Season (% of mature females; 111 = presence of mature females) Main Ref.: 037769

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Data Ref.: 037769
111											111	

3.11. Ecology of *Barbonymus altus*

Level : species in general			**StockCode : 008482 / 008171 / 009497**	
Habitats				**Ref.: 009497**
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	Seagrassbeds : No	Macrophyte : No
Feeding				
Feeding Type : mainly plants/detritus (troph. 2-2.19)				Ref: 009497
Feeding Habit : grazing on aquatic plants				Ref: 009497
From indiv. food items : 2.4 0.18			Trophic level estimate	

Additional remarks
Effects annual upstream and downstream non-reproductive and reproductive migrations.

3.12. Food items for *Barbonymus altus*

Level : species in general				**StockCode: 008482**
Food item				**Ref.**
Detritus				
Detritus	debris	unidentified	unidentified	012693
Plants				
other plants	benthic algae/weeds	unidentified	unidentified	009497
	terrestrial plants	unidentified	unidentified	012369
Zoobenthos				
other benth. invertebrates	n.a./other benth. Invertebrates	unidentified	unidentified	012693

Total = 4

3.13. References used for *Barbonymus altus*

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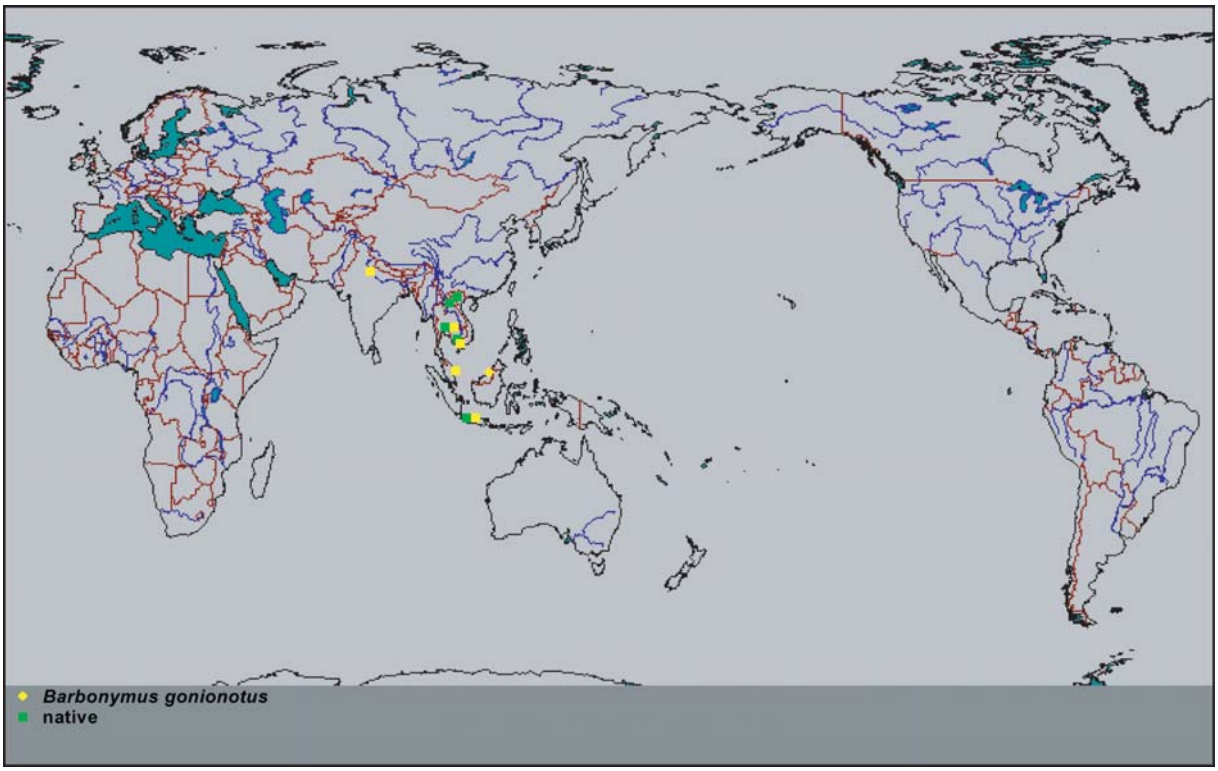
BARBONYMUS GONIONOTUS

(Bleeker, 1850)

Java barb

ត្រីឆ្ពិនប្រាក់

Picture by **Warren, T**



4.1. Summary information on the family Cyprinidae

Family	: Cyprinidae (Minnows or carps)	MainRef. : 007463
Order	: Cypriniformes	
Class	: Actinopterygii (ray-finned fishes	FamCode : 122
Number of genera	: 210	
Number of species	: 2010	
Occurs in	: O Marine	
	O Brackish	
	O Freshwater	
Aquarium fishes	: many	
First fossil record	: Lower Tertiary Eocene	Ref.: : 004879

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).

4.2. Information on the genus Barbonymus and its synonyms

After Eschmayer, March 2003 (Ref. 46206)

Barbonymus Status : no revision Gender : masculine
Kottelat, 1999, p. 595, CAS Ref: 24610
Type by original designation.
Type species : *Barbus schwanenfeldii* Bleeker, 1853
Current genus : *Barbonymus*

4.3. General information on *Barbonymus gonionotus*

Classification

Class	: Actinopterygii (Ray-finned fishes)	MainRef. : 007050
Order	: Cypriniformes	
Family	: Cyprinidae (Minnows or carps)	
Subfamily	:	
Species	: *Barbonymus gonionotus*	MainRef. : 0067050
Author	: (Bleeker, 1850)	

Environment

Freshwater	: Yes	Habitat	: Benthopelagic
Brackish	: No	Migrations	: Potamodromous
Saltwater	: No	Depth range	: 15

Importance

Landing statistics : From 1,000 to 10,000 tonnes Ref. : 004931
Importance to fisheries : Commercial
Main catching method
Other methods : ☑ Seines O Gillnets ☑ Castnets O Traps O Spears
O Trawls O Dredges O Liftnets ☑ Hooks+Lines O Other
Used for aquaculture Commercial Ref. : 012108
Used as bait Never/rarely Ref.
Aquarium fish Commercial based mainly on breeding Ref. : 006299
Game fish No Ref.
Dangerous fish Harmless Ref.
Electrobiology No special ability Ref.

Size and age

Maximum length (cm) (male/unsexed) : 40.5 TL (female) : Ref. : 008609

Remarks:

Occurs at midwater to bottom depths in rivers, streams, floodplains, and occasionally in reservoirs. Seems to prefer standing water habitats instead of flowing waters. Inhabits the flooded forest during high water period (Ref. 12693). Feeds on plant matter (e.g. leaves, weeds, Ipomea reptans and Hydrilla) and invertebrates (Ref. 4835). A migratory species but not considered to be a long-distance migrant. Regarded as local migrant which moves from the Mekong up into small streams and canals and onto flooded areas during the rainy season and back again during receding water (Ref. 37770). Some reports indicated that upstream migration of this fish is triggered by the first rains and rising water levels. When it finds a tributary, canal or stream it moves upstream and eventually onto flooded areas. When water recedes, it migrates back into canals and streams and into the Mekong again (Ref. 37770). Often used as a pituitary donor for artificial propagation in aquaculture. Escapees from culture installations have become established in rivers and form the basis for capture fisheries on several Southeast Asian islands (Ref. 1739). Useful in cropping excessive vegetation in reservoirs (Ref. 2686). Used for lap pa (in the preparation of which the numerous small bones are ground fine) or grilled or used to make sompa. Usually marketed fresh and occasionally seen in the aquarium trade (Ref. 12693). A specimen measuring 45 cm TL (2,100 g) was reportedly caught from Dan Tchang Reservoir, Thailand on 8 July 2003 (Jean-Francois Helias, pers. comm., FISHING ADVENTURES THAILAND [mailto:fishasia@ksc.th.com]).

4.4. Synonym names for *Barbonymus gonionotus*

Synonym	Author	Status	Ref.
Puntius gonionotus	Bleeker, 1850	new combination	012693
Barbus gonionotus	Bleeker, 1850	original combination	006128
Barbonymus gonionotus	Bleeker, 1850	new combination	043281
Barbodes gonionotus	Bleeker, 1850	new combination	007050
Puntius javanicus	Bleeker, 1855	junior synonym	002686
Barbus javanicus	Bleeker, 1855	junior synonym	013274
Barbus koilometopon	Bleeker, 1857	junior synonym	006128
Puntius viehoeveri	Fowler, 1943	junior synonym	012693

4.5. Common names for *Barbonymus gonionotus*

Name	Language	Country	Ref.
Chhpin	Khmer	Cambodia	036651
Trey chhpin	Khmer	Cambodia	012693
Trey chhpin brak	Khmer	Cambodia	012693
Bader putihan, Bader	Javanese	Indonesia	006107
Keputihan, Putihan	Javanese	Indonesia	006107
Tawes	Malay	Indonesia	008609
Papak	Laotian	Lao People's Dem. Rep.	004792
Pak	Laotian	Lao People's Dem. Rep.	040381
Javanese barb	English	Malaysia	005460
Javanese carp	English	Malaysia	006095
Lalawak	Malay	Malaysia	002686
Lampam jawa	Malay	Malaysia	004789
Lawak	Malay	Malaysia	002686
Silver barb	English	Philippines	012157
Tawes	Tagalog	Philippines	002858
Puntius carp	English	Thailand	006459
Pla ta pien	Thai	Thailand	042982
Pla ta pien khao	Thai	Thailand	042982
Pla ta pien khaw	Thai	Thailand	002686
Pla ta pien sai	Thai	Thailand	042982
Pla tek kheng	Thai	Thailand	042982
Tawes	English	United Kingdom	012693
Thai silver barb	English	United Kingdom	003691
Thai silver carp	English	United Kingdom	006072
Cá mè vinh	Vietnamese	Viet Nam	036625
Cá trà vinh	Vietnamese	Viet Nam	002686

4.6. Distribution of *Barbonymus gonionotus*

Asia : Mekong and Chao Phraya basins, Malay Peninsula, Sumatra and Java (Ref. MainRef.: 027732, 27732). Occurs throughout the whole stretch on the Mekong, from the Delta around the saline intrusion zone to Chiang Khong in Thailand (Ref. 37770).

Latitudinal range: 24° N - 8° S

Status of threat: NL.

Country	Status	Ref.
Bangladesh	introduced	001479

Also Ref. 6794,42329.

Cambodia native 012693

Occurs in the Mekong Basin (Ref. 12693,27732). Found around the Tonle Sap River and Great Lake (Ref. 36651). Not commonly taken in the dai nets of the Tonlé Sap, but much more likely to be caught in the large traps of the Great Lake (Ref. 12693). Also Ref. 1739, 7306, 8984, 36662, 33813, 37772.

China introduced 001739

Fiji Islands introduced 012743

Established in the Rewa River and its tributaries. Also Ref. 1739, 6366, 13364.

India introduced 001739

Indonesia native 027732
Found in Sumatra and Java (Ref. 6128). Also Ref. 12157.

Lao People's Dem. Rep. native 027732
Occurs in the Mekong and the lower Xe Bangfai (Ref. 27732). Known from above Pak Beng to the Khone Falls (Ref. 37772). Museum: Mekong at Ban Hang Khone, just below Khone Falls, CAS 96254 (Ref. 5515). Also Ref. 4792, 30857, 37768, 43281.

Malaysia introduced 001739
Present in Sungai Trengganu, Sungai Perak (Ref. 4835).

Philippines introduced 001739
Well established in rivers and lakes, where it reproduces naturally (Ref. 13686). Also Ref. 12157.

Thailand native 026336
Known from the Maeklong, Chao Phraya, Mekong, Peninsular and Southeast Thailand river systems (Ref. 26336). Also Ref. 6459, 9648, 1632, 7306.

Viet Nam native 036625
Found in Mekong Delta (Ref. 36625). Also Ref. 1739.

4.7. Introductions of *Barbonymus gonionotus*

Level : species in general
Asia : Mekong and Chao Phraya Basins, Malay Peninsula, Sumatra and Java (Ref. 27732). Occurs throughout the whole stretch on the Mekong, from the Delta around the saline intrusion zone to Chiang Khong in Thailand (Ref. 37770).
Year : 1977 Established : yes Ref.: 001479
Introduced : to Bangladesh from Thailand
Reason : aquaculture
Comments : Reintroduced from Thailand in 1986 (Ref. 44085). Experimentally cultured at the Freshwater Aquaculture Research Station in Mymensingh and at the Fish Hatchery and Training Centre in Raipur. Cultured and became established.

Year : 1968 Established : no Ref.: 001739
Introduced : to Sri Lanka from Java, Indonesia
Reason : aquaculture
Comments : Not established Also Ref. 13364.

Year : 1986 Established : yes Ref.: 001739
Introduced : to China Main from Thailand
Reason : aquaculture
Comments : Cultured experimentally in ponds and ricefields in Guangdong Province. A successful transfer which now forms the basis for a commercial fishery (Ref. 6072). Also Ref. 13364.

Year : 1968 Established : yes Ref.: 001739
Introduced : to Fiji from Malaysia
Reason : aquaculture
Comments : Reintroduced in 1984. Well established in the Rewa River basin and its tributaries where it is becoming an important food fish. Introduced also as a source of pituitary extracts for the grass carp. Also Ref. 13364.

Year : 1972 Established : yes Ref.: 006092
Introduced : Indonesia to India
Reason : aquaculture
Comments : Present to a limited extent in West Bengal. The species is not popular with Indian aquaculturists (Ref. 13364).

Year : 1963 Established : unknown Ref.: 001739
Introduced : to Indonesia from Unknown
Reason : aquaculture
Comments : Assumed to be introduced for aquaculture.

Year : 1958 Established : yes Ref.: 001739
Introduced : to Malaysia from Indonesia
Reason : aquaculture
Comments : Poly cultured in ponds. Breeds also in rivers, lakes and in tin mining pools. Widely cultured throughout the country.

Year : 1970 Established : no Ref.: 001739
Introduced : to Papua New Guinea from Malaysia
Reason : aquaculture
Comments : Reported as established in 1976 (Ref. 6993). A total of 27,750 fingerlings were stocked from 1994-1995 in Emma Creek, Usino Stream, Ramu, Bunam, Bunapas, Brahman, Aiyura and the Ganz and Guny Rivers (Ref. 37808). Also Ref. 6349 and 13364.

Year : 1956 Established : yes Ref.: 006096
Introduced : to Philippines from Indonesia
Reason : aquaculture
Comments : Introduced as a pituitary donor (Ref. 13364). Well established in rivers and lakes, where it reproduces naturally

Year : unknown Established : probably no Ref. 038466
Introduced : to Singapore from Unknown
Reason : aquaculture
Comments :
Total = 10 Established: yes = 6 probably yes = 0

4.8. Summary information available for *Barbonymus gonionotus*

Level : species in general **tockCode : 027732** **MainRef.: 027732**

Ecology	1	Max. sizes	0	Strains	0
Food items	40	FAO catches	15502	Diseases	1
Food consumption	0	Genetics	4	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	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	46

Level : species in general **StockCode: 000300** MainRef.: 004792
Appearance refers to : O females O males

Diagnostic Characters
Body is strongly compressed. The back is elevated, its dorsal profile arched, often concave above the occiput. The head is small; the snout pointed; the mouth terminal. The barbels are very minute or rudimentary, especially the upper ones, which sometimes disappear entirely. Color when fresh is silvery white, sometimes with a golden tint. The dorsal and caudal fins are gray to gray-yellow; the anal and pelvic fins light orange, their tips reddish; the pectoral fins pale to light yellow (Ref. 4792). Very few tubercles on the snout which are not visible without magnification; snout length much less than the width of the eye socket (Ref. 37768). Anal-fin with 6-7 branches rays (Ref. 12693).

Descriptive Characters

Striking features	: none	Cross section : oval
Body shape lateral	: fusiform / normal	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	: absent	
Vertical stripes	: absent	
Diagonal stripes	: absent	
Curved stripes	: absent	
Spots	: no spots	
Dorsal fin (D1)	: no spots or stripes	: no colored margin
Caudal fin	: no spots or stripes	: no colored margin
Anal fin (A1)	: no spots or stripes	: no colored margin

4.9. Morphology of *Barbonymus gonionotus*

Meristic Characters

Scales on lateral line	: 26-31
Scale rows below lateral line	: 5.5
Barbels	: 4

Dorsal fins			
Dorsal attributes	: no striking attributes	spines total : 4-4	soft-rays total: 8-8
Number of fins	: 1	finlets dorsal: 0-0	finlets ventral: 0-0
Adipose fin	: absent		
Caudal fin			
Shape of fin	: forked		
Attributes	: more or less normal		
Anal fin			
Number of fins	: 1	spines total: 4-4	soft rays total: 6-7
Paired fins			
Pectoral attributes	: more or less normal		
Spines	: 1	soft rays: 14-15	
Pelvics attributes	: more or less normal		
Position	: adominal	before origin of D1	
Spines	: 1	soft rays: 8-8	
Body proportions	: (based on picture)		
Head length (% SL)	: 24.7		
Maximum depth(% SL)	: 41.7		

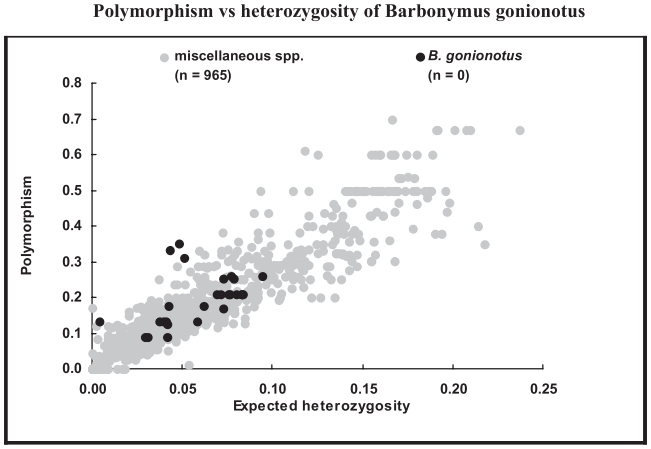
4.10. Genetic information for *Barbonymus gonionotus*

Locality : Unspecified — Main Ref.: 027780
Genetic marker(s) present
Remarks : Several subpopulations (Kedah, Perak and Selangor) of the species in Malaysia show a high level of band sharing and low variability using DNA fingerprinting (Ref. 27780).

Locality : Central Thailand, Thailand — Main Ref.: 030184
Chromosome number (haploid) : 25 — Ref.: 030168
Chromosome number (diploid) : 50 — Ref.: 030168
Genetic marker(s) present : No
Chromosome arm no. : 70 — Ref.: 030168

Locality : Central Thailand, Thailand — Main Ref.: 030184
Chromosome number (haploid) : 25 — Ref.: 030184
Chromosome number (diploid) : 50 — Ref.: 030184
Genetic marker(s) present : No
Chromosome arm no. : 70 — Ref.: 030184

Locality : Central Thailand, Thailand — Main Ref.: 034370
Chromosome number (haploid) : 25
Chromosome number (diploid) : 50 — Ref.: 034741
Genetic marker(s) present : No
Chromosome arm no. : 70 — Ref.: 034741
Remarks : Also in Ref. 034370. Listed as *Puntius gonionotus*.



4.11. Weight proportions and technical composition of *Barbonymus gonionotus*

Level : species in general — Stockcode: 000300
Locality : Not specified — MainRef.: 002686

Comment : Flesh of good quality, but has a lot of small bones. Often used in Laos for lap pa, a preparation in which the small bones are finely ground and cease to be a nuisance. The fish may be grilled or used to make sompa.

4.12. FAO aquaculture production data for *Barbonymus gonionotus*

Country		1984	1985	1986	1987	1988	1989	1990
		1991	1992	1993	1994	1995	1996	1997
		1998	1999	2000	2001			
Cambodia	(t)	620	1,150	150	150	1,150	2,123	1,150
	(US$'000)	744	1,610	1,610	1,610	3,540	1,610	5,390
	(t)	2,570	3,280	2,830	2,930	3,370	3,455	4,424
	(US$'000)	5,911	7,216	6,509	6,739	7,414	7,601	9,290
	(t)	4,845	5,500	5,390	5,790			
	(US$'000)	9,690	10,450	10,241	11,001			
Indonesia	(t)	20,355	23,120	22,877	23,120	23,120	23,120	28,048
	(US$'000)	24,426	27,744	32,028	27,744	41,600	52,500	70,120
	(t)	19,867	21,113	21,989	23,388	27,591	33,186	23,913
	(US$'000)	51,654	54,894	57,171	60,809	71,737	86,284	62,174
	(t)	23,124	28,806	31,886	26,119			
	(US$'000)	60,122	73,455	79,715	65,298			
Indonesia	(t)	0	0	0	0	0	0	0
	(US$'000)	0	0	0	0	0	0	0
	(t)	0	32	0	0	2	2	0
	(US$'000)	0	83	0	0	5	5	0
	(t)	0	0	81	132			
	(US$'000)	0	0	203	330			
Malaysia	(t)	756	1,260	970	747	1,260	1,754	1,260
	(US$'000)	1,068	1,421	1,421	1,421	2,702	1,421	2,290
	(t)	2,063	2,505	1,481	1,465	1,428	1,609	2,087
	(US$'000)	2,858	5,185	3,165	2,877	2,995	3,300	3,883
	(t)	1,807	1,788	1,673	1,013			
	(US$'000)	2,379	2,348	2,104	1,352			
Thailand	(t)	4,915	7,311	8,791	11,145	12,973	13,370	14,695
	(US$'000)	4,185	5,144	6,206	8,038	9,530	9,661	10,347
	(t)	16,275	23,839	21,939	24,133	27,432	37,615	35,100
	(US$'000)	12,119	19,794	19,860	21,995	26,140	32,832	30,154
	(t)	38,951	41,289	46,276	46,760			
	(US$'000)	26,303	32,197	40,504	42,084			
	(mt)	26,646	32,841	33,488	32,934	37,473	38,247	46,983
Total	(US$'000)	30,423	35,919	40,967	43,016	57,372	69,252	88,147
	(mt)	40,775	50,769	48,239	51,916	59,823	75,867	65,524
	(US$'000)	72,543	87,172	86,706	92,420	108,291	130,022	105,502
	(mt)	68,727	77,383	85,306	79,814			
	(US$'000)	98,494	118,451	132,768	120,064			

4.13. General information on the reproduction of *Barbonymus gonionotus*

Level : species in general **StockCode : 000300**

Mode and Type of Reproduction

Mode : dioecism
Fertilization : external
Spawning frequency
Batch spawner : no
Reproductive guild : nonguarders open water/substratum egg scatterers

Assuming same reproductive mode as *B. schwanenfeldii* (RF).

Spawning Information for *Barbonymus gonionotus*
Locality : Mekong Mainstream **Stockcode: 000300**
Season (% of mature females; 111= presence of mature females) : Main Ref.: 037770

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Data Ref.:
111	111	111	111									

Comment : Based on the presence of developed eggs during the period March to June, although some report that eggs can be found throughout the year. An opportunistic spawner.

4.14. Ecology of *Barbonymus gonionotus*

Level : species in general **StockCode: 000300 000286** **Main Ref.: 013497**
Habitats
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
Tropical soft bottom : No Hard bottm : No Seagrass beds: No Macrophyte: No

Feeding
Feeding Type : plants/detritus+animals (troph. 2.2-2.79) Ref: 012497
Feeding Habit : grazing on aquatic plants

Additional remarks
Feeds on plants, insects and detritus (Ref. 13497)

4.15. Food items for *Barbonymus gonionotus*

Level : species in general **StockCode: 000300**

Food item				**Ref.**
others	n.a./others	Bacteria	Leuconostoc	042329
		Difflugiidae	Difflugia	042329
plants				
other plants	benthic algae/weeds	Hydrocharitaceae	Hydrilla	004835
	terrestrial plants	Convolvulaceae	Ipomoea reptans	004835
phytoplankton	blue-green algae	Chroococcaceae	Chroococus	042329
		Cyanophyceae	Microcystis	027822
		Oscillatoriaceae	Oscillatoria	042329
		Phormidiaceae	Spirulina	042329
	diatoms	Eunotiaceae	Actinella	042329
		Naviculaceae	Navicula	042329
	dinoflagellates	Euglenaceae	Trachelomonas	042329
		Euglenaceae	Euglena	042329
		Euglenaceae	Phacus	042329
	green algae	Centratractaceae	Pseudotetraedron	042329
		Chlorophyceae	Sphaerocystis	027822
		Chlorophyceae	Closterium	027822
		Chlorophyceae	Oedegonium	027822
		Chlorophyceae	Pediastrum	027822
		Chlorophyceae	Pleurotaenium	027822
		Chlorophyceae	Spirogyra	027822
		Chlorophyceae	Scenedesmus	027822
		Mesotaeniaceae	Mesotaenium	042329
		Micractiniaceae	Echinosphaerella	042329
		Oocystaceae	Ankistrodesmus	042329

		Oocystaceae	Quadrigula	042329
		Ophiocytaceae	Ophiocytium	042329
		Ulotrichaceae	Ulothrix	042329
zoobenthos				
benth. crust.	ostracods	Cyprididae	Cyrpis	027822
insects	insects	Trichoceridae	Trichocerca	042329
zooplankton				
other plank. invertebrates	n.a./other plank. invertebrates	Lecanidae	Monostyla	027822
		Rotifera	Moina	027822
plank. crust.	plank. copepods	Calanoida	Diaptomus	027822
		Crustacea	Daphnia	042329
		Crustacea	Diaphanosoma	042329
		Crustacea	Nauplius	042329
		Cyclopoida	Cyclops	027822
plank. crust	Notommatidae Rotifer	Rotifers Rotifers	Cephalodella	042329
			Lecane	042329
			Brachionus	042329
			Keratella	042329

4.16. Length-Weight relationships of *Barbonymus gonionotus*

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

Locality	: Indonesia, Jatiluhur Reservoir, West Java		StockCode: 000300
Length range	: 14.5 - TL15 0	Sample size: 150	MainRef. : 008609
a	: 0.0413	Correlation coefficient: 0.995	Ref. : 008609
b	: 2.231		Sex: unsexed

4.17. Diseases reported for *Barbonymus gonionotus*

StockCode : 000300 **Main Ref.: 042533**

Parasitic infestations (protozoa, worms, etc.): Sporozoa-infection (*Myxobolus sp.*) Ref. : 041805

Causative agent : Myxobolus sp.
Occurrence : Rajshani, Bangladesh, 1993
Remarks : Infestation commonly occurs in the gills and skin.
Total = 1

4.18. FAO annual catch data (in tonnes) for *Barbonymus gonionotus*

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

8,451	8,445	9,530	11,205	10,370	11,823	13,663	14,790	11,703	16,199
15,578	17,439	18,079	16,397	17,891	17,059	20,998	21,708	17,784	16,924
15,525	15,084	14,996	10,105	12,767	8,652	12,598	12,346	12,346	16,550
19,431	22,826	21,882	17,941	17,677	20,836	21,647	18,747	22,633	19,203
15,380	14,964	16,082	15,027	19,084	18,102	19,601	19,469	20,189	17,939
17,124	17,080								

4.20. References used for *Barbonymus gonionotus*

000126 Gordina, A.D. 1990. Ichthyoplankton of the Black Sea, during the fall of 1987. J. Ichthyol. 30(6): 165-169.

001479 Rahman, A.K.A. 1989. Freshwater fishes of Bangladesh. Zoological Society of Bangladesh. Department of Zoology, University of Dhaka. 364 p.

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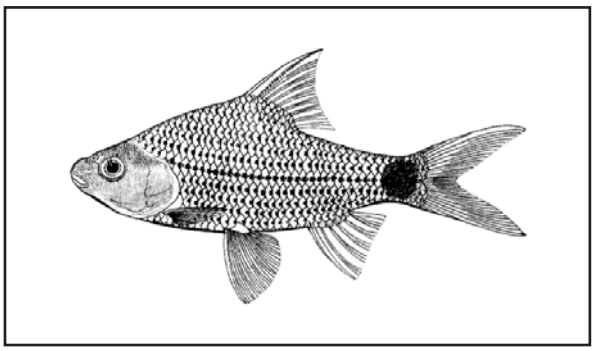
CYCLOCHEILICHTHYS APOGON

(Valenciennes, 1842)

Beardless barb

ត្រីក្រួស



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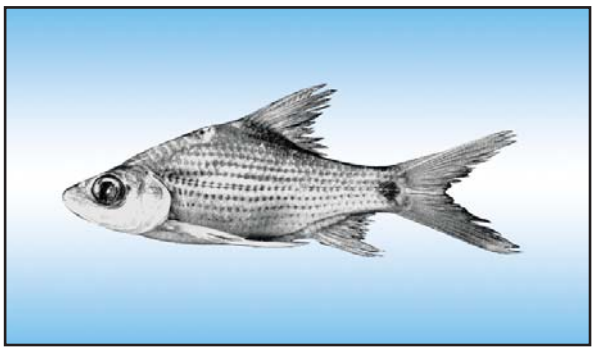

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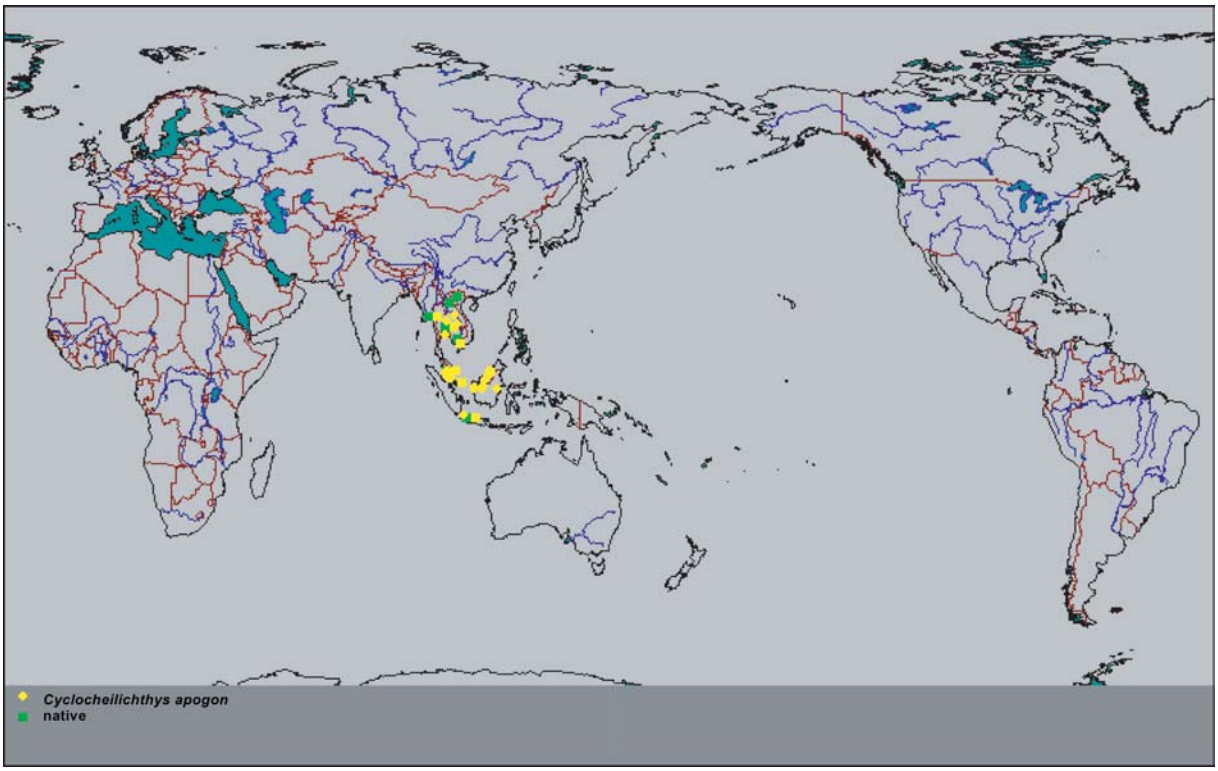


5.1. Summary information on the family Cyprinidae

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
O Brackish
☑ Freshwater
Aquarium fishes : many
First fossil record : Lower Tertiary Eocene Ref. : 004879
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).

5.2. Information on the genus Cyclocheilichthys and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

Anematichthys Status: synonym Gender: masculine
Bleeker, 1859, p. 371, CAS Ref: 371
Type by monotypy
Type species : *Barbus apogon* Valenciennes, 1842
Current genus : *Cyclocheilichthys*

Cyclocheilichthys Status: valid Gender: masculine
Bleeker, 1859, p. 371, CAS Ref: 16984
Type by monotypy.
Type species : *Systomus apogon* Valenciennes, 1842
Current genus : *Cyclocheilichthys*

Cyclocheilos Status: synonym Gender: masculine
Bleeker, 1859, p. 386, CAS Ref: 24622
Type by monotypy.
Type species : *Barbus macracanthus* Bleeker, 1853
Current genus : *Cyclocheilichthys*

Oxybarbus Status: synonym Gender: masculine
Vaillant, 1893, p. 57, CAS Ref: 4485
Type by monotypy.
Type species : *Barbus heteronema* Bleeker, 1853
Current genus : *Cyclocheilichthys*

Siaja Status: synonym Gender: feminine
Bleeker, 1859, p. 149, CAS Ref: 371
Type by absolute tautonymy.
Type species : *Cyclocheilichthys* (Siaja) siaja Bleeker, 1851
Current genus : *Cyclocheilichthys*

5.3. General information on *Cyclocheilichthys apogon*

Classification

Class	: Actinopterygii (Ray-finned fishes)	MainRef.	012693
Order	: Cypriniformes		
Family	: Cyprinidae (Minnows or carps)		
Species	: Cyclocheilichthys apogon		
Author	: (Valenciennes, 1842) Author Ref. (ex Kuhl) In Cuvier & Valenciennes.		

Environment

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

Importance

Landing statistics :				Ref.	004832
Importance to fisheries	: Commercial				
Main catching method	:				
Other methods :	☑ Seines	O Gillnets	☑ Castnets	☑ Traps	O Spears
	O Trawls	O Dredges	O Liftnets	O Hooks+Lines	☑ Other
Used for aquaculture	: Never/rarely				
Used as bait	: Never/rarely				
Aquarium fish	: Commercial based mainly on capture			Ref. 004537	
Game fish	: No				
Dangerous fish	: Harmless				
Electrobiology	: No special ability				

Size and age

Maximum length (cm) (male/unsexed)	: 25 TL	(female) :	Ref. 030857
Common length (cm) (male/unsexed)	:	(female) :	
Maximum weight (g) (male/unsexed)	:	(female) :	

Remarks:

Inhabits small streams, reservoirs, lakes (Ref. 4832), canals, ditches, and generally areas with slow-moving or standing water (Ref. 12693). Occurs in medium to large-sized rivers (Ref. 12975). Typically found around surfaces, such as plant, leaves, branches and tree roots, where it browses for small plankton and crustaceans. Moves into flooded forests and non-forested floodplains. Reported to breed late during high-water season from September to October as water levels peak and begin to decline (Ref. 12693). Found in the basin-wide tributary of the Lower Mekong (Ref. 36667).

5.4. Synonyms, misidentifications, etc. used for *Cyclocheilichthys apogon*

Synonym	Author	Status	Ref.
Systomus apogon	Valenciennes, 1842	new combination	002091
Cyclocheilichthys apogon	Valenciennes, 1842	new combination	012693
Barbus apogon	Valenciennes, 1842	original combination	004832
Systomus apogonoides	Bleeker, 1855	junior synonym	002091
Rohteichthys macrolepis	Holly, 1927	junior synonym	013275
Systomus macularius	Blyth, 1860	junior synonym	004832
Cyclocheilichthys rubripinnis	Fowler, 1934	junior synonym	002091

5.5. Common names for *Cyclocheilichthys apogon*

Name	Language	Country	Ref.
Sraka kdam	Khmer	Cambodia	036651
Trey kros	Khmer	Cambodia	012693
Trey sraka kdam	Khmer	Cambodia	036654
Trey srakardam	Khmer	Cambodia	041486
Trey srawka kdam	Khmer	Cambodia	012693
Seren	Javanese	Indonesia	006107
Redang	Malay	Indonesia	006107
Pa dok ngieu	Laotian	Lao People's Dem. Rep.	037767
Pla ngam lung	Thai	Thailand	009648
Pla nham lung	Thai	Thailand	042982
Pla sai tan	Thai	Thailand	009648
Pla ta deng	Thai	Thailand	009648
Pla ta pien sai	Thai	Thailand	042982
Pla taa dang	Thai	Thailand	042982
Playa	Thai	Thailand	042982
Beardless barb	English	United Kingdom	012693
Beardless barb	English	USA (contiguous states)	004537
Indian river barb	English	USA (contiguous states)	004537
Redeye barb	English	USA (contiguous states)	004537
Cá ba ky do	Vietnamese	Viet Nam	036625

Total = 27

5.6. Distribution of *Cyclocheilichthys apogon*

Asia : Myanmar to Indonesia. MainRef.: 004832
Latitudinal range: 30° N - 10° S Temperature range: 24 - 26 °C Ref.: 1672
Status of threat : NL.

Country	Status	Ref.
Cambodia	native	012693

Sometimes sold fresh along the Tonlé Sap and used to make prahoc (Ref. 12693). Known from Beng Kebal Damrey, Stung Treng (Ref. 36654) and Sangke River, Battambang province (Ref. 41486). Also Ref. 36651, 36662.

Indonesia	native	007050

Found in Sumatra, Lake Tundai, South Borneo (Ref. 42107), and Java. Museum: MZB 3063-66, 3068-3070; CAS 49194-95; USNM 230162-63. Also Ref. 2091, 43281.

Lao People's Dem. Rep.	native	043281

Found in the Mekong River (Ref. 30857) at Ban Hang Khone in Khong District, Champasak Province (Ref. 37767). Also Ref. 7050.

Malaysia	native	002091
Myanmar	native	004832

Also Ref. 12693, 36654, 43281.

Thailand	native	026336

Occurs in the Maeklong, Chao Phraya, Mekong, Peninsular and Southeast Thailand river systems (Ref. 26336). Widely distributed and an important element in the food supply of the people living along the large rivers (Ref. 4832). Also Ref. 9648, 26580, 36654, 43281.

Viet Nam	native	036625

Found in Mekong Delta (Ref. 36625). Also Ref. 7050, 36654.

5.7. Summary information (no. of records) available for *Cyclocheilichthys apogon*

Level: species in general **StockCode: 004832** **MainRef.: 004832**
Asia : Myanmar to Indonesia.

Ecology	1	Max. sizes	1	Strains	0
Food items	1	FAO catches	15502	Diseases	0
Food consumption	0	Genetics	1	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	0	Swimming type	0
Processing	0	Eggs	0	Swimming speed	0
Growth/mortality	2	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	129

5.8. Morphology of *Cyclocheilichthys apogon*

Level : species in general **StockCode : 010636** **Main Ref.: Main Ref.**
Appearance refers to : O females O males

Diagnostic Characters
No barbels; black blotch at caudal base; rows of black spots along scale rows (Ref. 43281).

Sex Attributes
Specialized organs : Different appearance : Different colors :

Meristic Characters

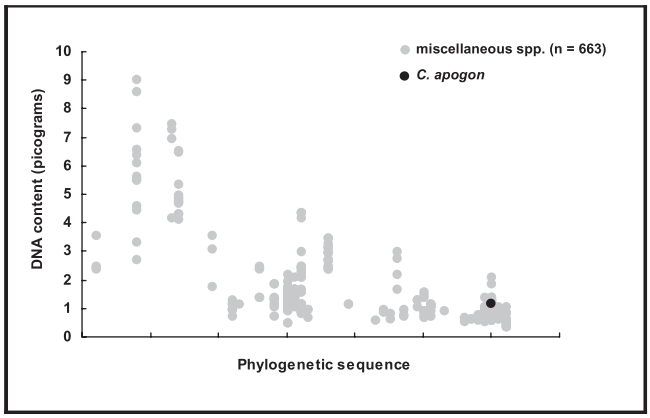
Lateral Lines		Interrupted : no
Gill clefts (sharks/rays only)		
Gill rakers	on lower limb	total : 11 - 11
	on upper limb	-
Vertebrae	preanal	
Caudal fin		
Shape of fin	: forked	
Attributes	: more or less	normal
Paired fins		
Pectoral attributes	: more or less	normal
Pelvics attributes	: more or less	normal
position	: abdominal	before origin of D1

5.9. Genetic information for *Cyclocheilichthys apogon*

Level : species in general **MainRef.: 030184**
Locality : Central Thailand, Thailand

Chromosome number (haploid)	: 25	Ref.: 030168
Chromosome number (diploid)	: 50	Ref.: 030168
Genetic marker(s) present	: no	
DNA content (picogram, haploid)		
Chromosome arm no.	: 70	Ref.: 030168

DNA content vs. phylogenetic sequence of Cyclocheilichthys apogon



5.10. Ecology of *Cyclocheilichthys apogon*

Level : species in general **StockCode : 010636 010313** **Main Ref.: 013497**
Habitats Ref.: 013497
Streams : Yes Lakes : Yes Caves : 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 Seagrassbeds : No Macrophyte : No
Feeding
Feeding Type : plants/detritus+animals (troph. 2.2-2.79) Ref.: 013497

Trophic level(s) :		**Original** sample			**Unfished** population		**Remarks**
Estimation method		Troph	s.e.		Troph	s.e.	
From diet composition	: 2.8	0.34	2.9	0.28	Troph of juv./adults.	Ref.:	013497
From indiv. food items	: 3.1	0.30	m	m	Tentative trophic level		

Additional remarks
Feeds mainly on insects (Ref. 13497).

5.11. Food items for *Cyclocheilichthys apogon*

Level : species in general **StockCode: 010636**

Food item			
zooplankton			
plank. crust.	n.a./other plank, crustaceans	unidentified	Ref.: 012693

5.12. Diet composition of *Cyclocheilichthys apogon*

Level : species in general **StockCode : 010636** **MainRef. : 013497**
Locality : Bukit Merah Reservoir, between September 1979 and August 1980
Stage of fish sampled : juv./adults **Number** : 35
Months covered by the study
O Jan. O Feb. O Mar. O April O May O June O July O Aug. O Sep. O Oct. O Nov. O Dec.

Food group (%)

63.0 insects, mainly Chironomidae, some Chaoboridae, Dysticidae, unid. larvae & nymphs, larvae
18.0 debris, n.a./others
10.0 insects, both aquatic and terrestrial forms of Diptera, Odonata, etc., adults
5.0 benthic algae/weeds, n.a./others
2.0 terrestrial plants, n.a./others
2.0 n.a./other plank. Crustaceans, Copepoda, Cladocera, Decapoda, juv./adults
100.0 Total

Maximum weight/length/age of Cyclocheilichthys apogon

Locality : Malaysia, Kejin River, Sarawak, 1980 **StockCode : 010636**
Max weight (g) : 18 total weight Ref. : 038745
Max length (cm) : 8.1 SL Same specimen for WL : Yes Sex : unsexed

Total = 1

5.13. Growth and mortality of *Cyclocheilichthys apogon*

Country	L (cm) W	(g) Kt (/year) t o (y)	Sex	Ref.
Malaysia	12.2 SL	0.367	unsexed	038745
Thailand	30 TL	0.32	unsexed	043031

5.14. References used for *Cyclocheilichthys apogon*

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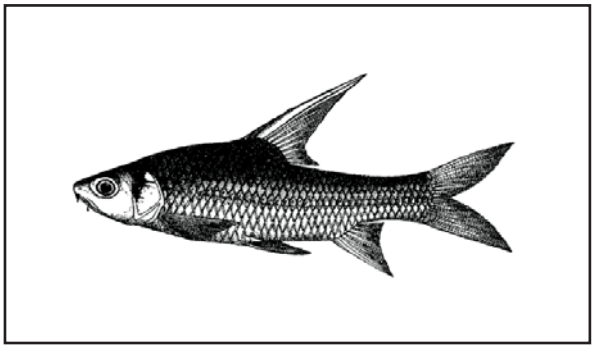
CYCLOCHEILICHTHYS ENOPLOS

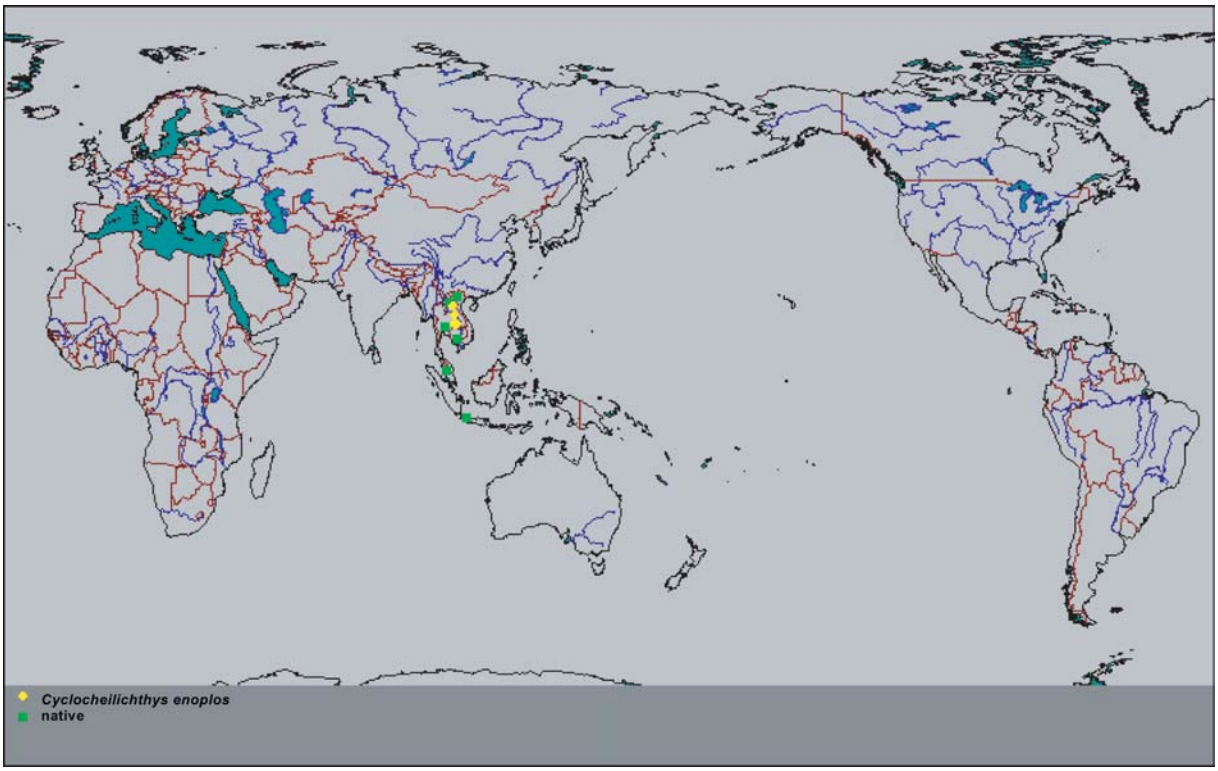
(Bleeker, 1850)

ត្រីឆ្នោក



Picture by **FAO**

Picture by **Roberts, T**



6.1. 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
☑ Brackish
☑ Freshwater
Aquarium fishes : many
First fossil record : Lower Tertiary Eocene Ref. : 004879
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).

6.2. Information on the genus Cyclocheilichthys and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

Anematichthys Status: synonym Gender: masculine
Bleeker, 1859, p. 371, CAS Ref: 371
Type by monotypy
Type species : *Barbus apogon* Valenciennes, 1842
Current genus : *Cyclocheilichthys*

Cyclocheilichthys Status: valid Gender: masculine
Bleeker, 1859, p. 371, CAS Ref: 16984
Type by monotypy.
Type species : *Systomus apogon* Valenciennes, 1842
Current genus : *Cyclocheilichthys*

Cyclocheilos Status: synonym Gender: masculine
Bleeker, 1859, p. 386, CAS Ref: 24622
Type by monotypy.
Type species : *Barbus macracanthus* Bleeker, 1853
Current genus : *Cyclocheilichthys*

Oxybarbus Status: synonym Gender: masculine
Vaillant, 1893, p. 57, CAS Ref: 4485
Type by monotypy.
Type species : *Barbus heteronema* Bleeker, 1853
Current genus : *Cyclocheilichthys*

Siaja Status: synonym Gender: feminine
Bleeker, 1859, p. 149, CAS Ref: 371
Type by absolute tautonymy.
Type species : *Cyclocheilichthys* (Siaja) siaja Bleeker, 1851
Current genus : *Cyclocheilichthys*

Total = 5

6.3. General information on *Cyclocheilichthys enoplos*

Classification
Class : Actinopterygii (Ray-finned fishes) MainRef. 012693
Order : Cypriniformes
Family : Cyprinidae (Minnows or carps)
Species : Cyclocheilichthys enoplos
Author : (Bleeker, 1850) Author Ref.
Environment
Freshwater : Yes Habitat : Benthopelagic
Brackish : No
Saltwater : No
Importance
Importance to fisheries : Commercial
Main catching method :
Other methods : ☑ Seines ☑ Gillnets ☑ Castnets ☑ Traps O Spears
O Trawls O Dredges O Liftnets O Hooks+Lines ☑ Other
Used for aquaculture : Experimental Ref. 006459
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)	: 74 SL	(female) :		Ref. 030857
Common length (cm) (male/unsexed)	: 45 SL	(female) :		Ref. 012693
Maximum weight (g) (male/unsexed)	:	(female) :		Ref.

Remarks:

Occurs at midwater to bottom levels of rivers (Ref. 12693). Feeds mainly on bivalves, roots of plants, zooplankton and green algae (Ref. 6459). Young are known to feed on zooplankton while adults also prey on insect larvae, crustaceans and fish (12693). Lives in rivers and spawns during the rainy season, probably on the floodplains or inundated riparian forests. Returns to the rivers from October to December. Does not occur in impoundments (Ref. 12693). A strongly migratory species that lives in the mainstream and larger tributaries of the Mekong (Ref. 9497). Found in the basin-wide mainstream of the Lower Mekong (Ref. 36667). In the Mekong, it undertakes an upstream migration from Phnom Penh to Khone Falls from November to February, and a downstream migration from May to August. This migration continues down to the Mekong Delta area in Viet Nam, where it continues until the peak of floods in October-November. These two migrations mainly constitute juveniles and sub-adults, although adults of 90 cm are reported very near the Khone Falls. Above the Khone Falls, upstream migrations occur from April to September which are dominated by adult fishes and these are probably spawning migrations because of the presence of mature fishes bearing eggs (Ref. 37770). These upstream migrations above the Khone Falls are reported to be triggered by the first rainfall at the end of the dry season, rising of water levels and higher turbidity (Ref. 37770). A desirable food fish, marketed fresh (Ref. 12693).

6.4. Synonyms, misidentifications, etc. used for *Cyclocheilichthys enoplos*

Synonym	Author	Status	Ref.
Cyclocheilichthys amblyceps	Fowler, 1937	junior synonym	043281
Cyclocheilichthys dumerilii	Sauvage, 1881	junior synonym	002091
Barbus enoploides	Tirant, 1885	junior synonym	002091
Cyclocheilichthys enoplos	Bleeker, 1850	new combination	043281
Capoeta enoplos	Bleeker, 1850	new combination	002091
Barbus enoplus	Bleeker, 1850	original combination	036656
Cyclocheilichthys macracanthus	Bleeker, 1853	junior synonym	002091
Barbus macracanthus	Bleeker, 1853	junior synonym	002091

6.5. Common names for *Cyclocheilichthys enoplos*

Name	Language	Country	Ref.
Chhkok	Khmer	Cambodia	040380
Trey chhkok	Khmer	Cambodia	012693
Trey chkok	Khmer	Cambodia	036654
Seren	Javanese	Indonesia	006107
Seren	Malay	Indonesia	006107
Jork	Laotian	Lao People's Dem. Rep.	040382
Pa chok	Laotian	Lao People's Dem. Rep.	037767
Pa choke	Laotian	Lao People's Dem. Rep.	037767
Pa jawk	Laotian	Lao People's Dem. Rep.	009497
Pajohk	Laotian	Lao People's Dem. Rep.	009497
Pa tiok	Laotian	Lao People's Dem. Rep.	004792
Pla ka ti	Thai	Thailand	042982
Pla kra tai	Thai	Thailand	042982
Pla nham lung	Thai	Thailand	42982
Pla ta kok	Thai	Thailand	6459
Pla takoke	Thai	Thailand	6459
Pla tiok	Thai	Thailand	6459
Takok tapien	Thai	Thailand	9648
Cá coc	Vietnamese	Viet Nam	36625

6.6. Distribution of *Cyclocheilichthys enoplos*

Asia : Thailand, Laos, Cambodia and Viet Nam to Indonesia and Malaysia. MainRef.: 043281

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

Status of threat: NL.

Country	Status	Ref.
Cambodia	native	012693

Known from the Mekong Basin. A migratory species (Ref. 37772) found around the Tonle Sap river, Great Lake (Ref. 36651) and Sekong at Stung Treng (Ref. 36654). Juveniles and sub-adults migrate out of flooded areas back into the river at receding water and start migrating upstream in the Mekong. Reported to come down the Tonle Sap River into the Mekong. Constitutes an important part of the catch in the Tonle Sap River during December to February (Ref. 37770). Its numbers have declined below Khone Falls to the Tonle Sap River and the Great Lake (Ref, 37772). Also Ref. 7050, 33813, 36662, 43281, 45353.

Indonesia native 007050

Known from Borneo (Sambas), Sumatra (Palembang) and Java (Surabaja and Ngawi). Important food fish with moderately priced flesh (Ref. 7050). Also Ref. 36654.

Lao People's Dem. Rep. native 009497

Recorded from the Mekong Basin. 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). At Ban Hang Khone its migrations formerly were exceeded in magnitude only by those of pa soi and pa dtaep (Ref. 9497). Observed to undergo migration at the fishing village of Ban Wernsonkhram on Don Hat (Hat Island) above the Lee Pee Waterfalls (Ref. 10431). Above the Khone Falls, fishes migrate upstream during April-September. Migrations are dominated by adults. These are probably spawning migrations as mature fishes bearing eggs were observed in Xayabouri Province from April to September (Ref. 37770). Also migrates upstream during dry season in December/January at Hat Village, Muang Khong District (Ref. 37769). Its numbers have declined in the Khone Falls (Ref. 37772). Also Ref. 4792, 7050, 36654, 37767.

Malaysia native 007050

Thailand native 026336

Occurs in Peninsular Thailand, Chao Phraya, Maeklong and Mekong river systems (Ref. 26336). Also Ref.1632, 7050.

Viet Nam native 036625

Found in the Mekong Delta (Ref. 36625). Also Ref. 7050, 37770, 43281.

Total native = 6 Total introduced = 0

6.7. Summary information (no. of records) available for *Cyclocheilichthys enoplos*

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

Asia : Thailand, Laos, Cambodia and Viet Nam to Indonesia and Malaysia.

Ecology	1	Max. sizes	0	Strains	0
Food Items	9	FAO catches	15502	Diseases	0
Food consumption	0	Genetics	2	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	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.	0	Aquaculture	0	Occurrence	49

6.8. Morphology of *Cyclocheilichthys enoplos*

Level : species in general **StockCode : 014269** **Main Ref: 012693**

Appearance refers to : O female O males

Diagnostic Characters

Bifurcate or even multifurcate lateral-line tubes; 4 barbels; 16-20 gill rakers on first arch (Ref. 12693); very long dorsal spine (Ref. 43281)

Sex Attributes

specialized organs : Different appearance : Different colors :

Descriptive Characters
Operculum present : No

Meristic Characters
Scales on lateral line : 35-37
Scales around caudal peduncle : 26-26
Gill rakers on lower limb:

Total = 16-20

6.9. Genetic information for *Cyclocheilichthys enoplos*

Level : species in general **Main Ref.: 010419**
Locality : Unspecified
Locality : Central Thailand, Thailand
Chromosome number (haploid) :25 Ref: 010419
Chromosome number (diploid) :50 Ref: 010419
Genetic marker(s) present : No
Chromosome arm no : 90 Ref: 010419

Leve : species in general **Main Ref.: 034370**
Locality : Central Thailand, Thailand
Chromosome number (haploid) : 25
Chromosome number (diploid) : 50 Ref: 034370
Genetic marker(s) presen : Yes Ref: 034370
Chromosome arm no : 70

Remarks : 4 NORs. NOR-phenotype: Terminal on short arm of a medium-sized acro-subtelocentric chromosome and terminal on short arm of a medium-sized submetacentric chromosome. NF = 90 (Ref. 034370).

Spawning Information for Cyclocheilichthys enoplos
Locality : Laos , Mekong Basin, Xayabouri Province, **Stockcode: 014269**
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			

Locality : Laos , Mekong Basin, Xayabouri Province, **Stockcode: 014269**
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				

Locality : Laos , Mekong Basin, Xayabouri Province, **Stockcode: 014269**
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				

6.10. Ecology of *Cyclocheilichthys enoplos*

Level : species in general **StockCode: 014269 014495** **Main Ref.: 033813**

Habitats

Streams : Yes 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
Tropical soft bottom : No Hard bottm: No Seagrass beds: No Macrophyte: No

Feeding

Feeding Type : plants/detritus+animals (troph. 2.8 and up) Ref: 033813

Trophic level(s) :	**Original sample**		**Unfished population**		**Remarks**
Estimation method	Troph	s.e	troph	s.e	
From indiv. food item :	3.2	0.43	-	-	Trophic level estimate

6.11. Food items for *Cyclocheilichthys enoplos*

Level : species in general **StockCode: 014269**

Food item				Ref.
nekton				
finfish	bony fish	unidentified	unidentified	033813
plants				
other plants	benthic algae/weeds	unidentified	unidentified	006459
	terrestrial plants	unidentified	unidentified	006459
zoobenthos				
benth. crust.	n.a./other benth. crustaceans	unidentified	unidentified	012693
insects	insects	Ephemeroptera	unidentified	012975
		Hemiptera	unidentified	012975
		unidentified	unidentified	033813
mollusks	bivalves	unidentified	unidentified	006459
zooplankton				
other plank. invertebrates	n.a./other plank. Invertebrates	unidentified	unidentified	033813

Total = 9

6.12. References used for *Cyclocheilichthys enoplos*

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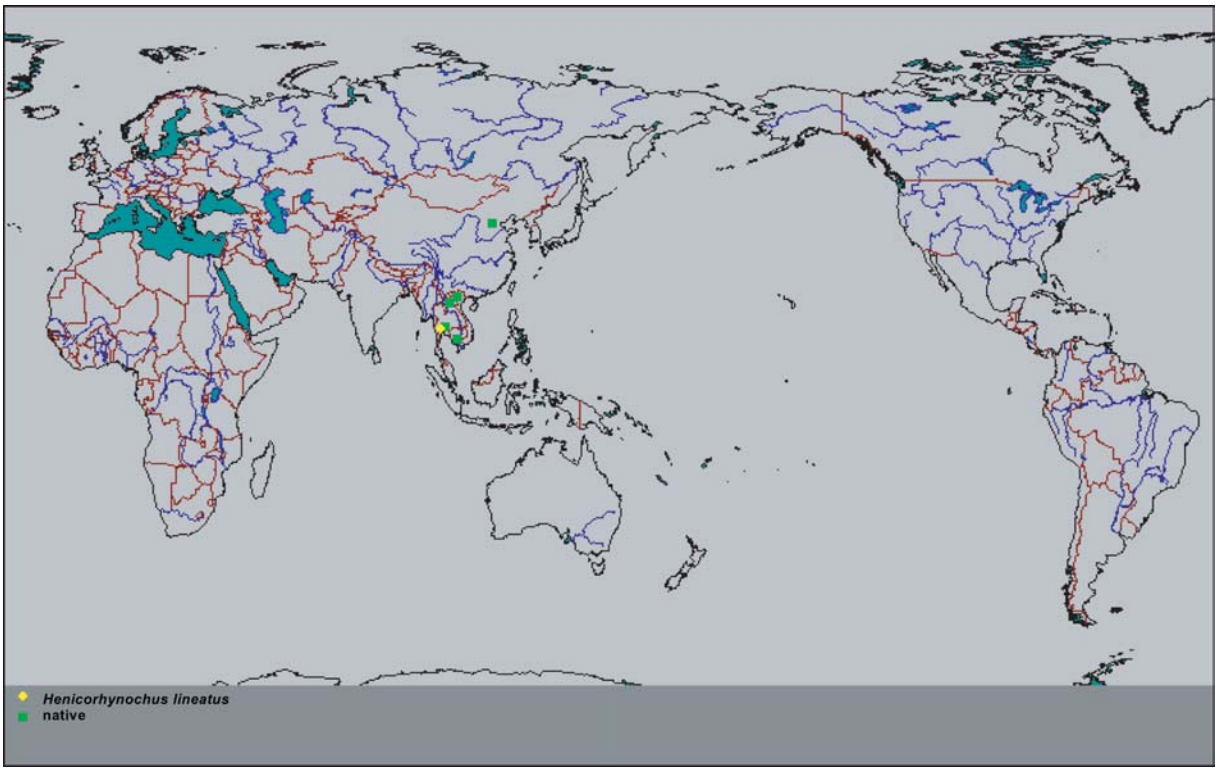
HENICORHYNCHUS LINEATUS

(Smith, 1945)

ត្រីរៀលឆ្នូត

Picture by **Baird, I**



7.1. 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
☑ Brackish
☑ Freshwater
Aquarium fishes : many
First fossil record : Lower Tertiary Eocene Ref. :004879
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 to 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).

7.2. Information on the genus Henicorhynchus and its synonyms

After Eschmeyer March 2003 (Ref. 46206)

Henicorhynchus **tatus : 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*

7.3. General information on *Henicorhynchus lineatus*

Classification
Class : Actinopterygii (Ray-finned fishes) MainRef. : 027732
Order : Cypriniformes
Family : Cyprinidae (Minnows or carps)
Subfamily :
Species : *Henicorhynchus lineatus*
Author : (Smith, 1945)

Environment
Freshwater : Yes Habitat : Benthopelagic
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) : 15 SL (female) : Ref. : 027732
Remarks : Occurs mainly in medium to large-sized rivers and enters flooded fields (Ref. 12975).

7.4. Synonyms, misidentifications, etc. used for *Henicorhynchus lineatus*

Synonym	Author	Status	Ref.
Henicorhynchus cryptopogon	non Fowler, 1935	misidentification	033488
Henicorhynchus lineatus	Smith, 1945	new combination	027732
Cirrhinus lineatus	Smith, 1945	original combination	036656

Total = 3

7.5. Common names for *Henicorhynchus lineatus*

Name	Language	Country	Ref.
Pasoi	Laotian	Lao People's Dem. Rep	010421
Pa soi lai	Laotian	Lao People's Dem. Rep	037767
Pla soi la	Thai	Thailand	009648

7.6. Distribution of *Henicorhynchus lineatus*

Asia: Mekong and Chao Phraya Basins.MainRef.: 027732

Country	Status	Ref.
Cambodia	native	033488

Occurs in the Mekong Basin (Ref. 27732). Recorded from O. Changni, small stream on road from Ann Long Mea to Ban Lung, Ratanakiri prov. (Ref. 33488). Also Ref. 43281.

China	native	038630

Occurs in the Mekong Basin in Yunnan. Also Ref. 27732, 43281.

Lao People's Dem. Rep.	native	043281

Known from the Mekong Basin. Occurs in the lower and middle Xe Bangfai (Ref. 27732). Found in Ban Hang Khone in the middle of the mainstream Mekong River just below the Great Khone Waterfalls in Khong District, Champasak Province (Ref. 37767). Museum: Mekong at Ban Hang Khone, just below Khone Falls, CAS 94791 (Ref. 5515). Also Ref. 30857.

Thailand	native	027732

Occurs in the Mekong and Chao Phraya Basin (Ref. 26336,27732). Museum: Mekong mainstream, CAS 96196 (between Pak Ing and JomPaeng, about 4-5 km downstream); CAS 91766 (from Pak Ing to Tom Paeng, 4-5 km downstream) (Ref. 5515). Also Ref. 43281.

Viet Nam	native	043281

Occurs in the Mekong Basin.

Total native = 5 Total introduced = 0

7.7. Summary information (no. of records) available for *Henicorhynchus lineatus*

Level : species in general **StockCode : 027732** **MainRef.: 027732**
Asia : Mekong and Chao Phraya Basins.

Ecology	0	Max. sizes	0	Strains	0
Food items	0	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	17

Total = 1

7.8. Morphology of *Henicorhynchus lineatus*

Level : species in general **StockCode : 042148** **Main Ref. : 027732**
Appearance refers to : O females O males

Diagnostic Characters
Distinguishable by its relatively slender body (body depth 3.5-3.8 times in SL), 5-6 faint longitudinal stripes along the sides (Ref. 27732); pair of small maxillary barbels (Ref. 43281)

Meristic Characters

Lateral Lines interrupted	: No	
Scales on lateral line	: 34-35	
Scales in lateral series	: 34-35	
Gill rakers on lower limbtotal	: 38-38	
Vertebrae preanal	: 20 - 22	total : 3233
Dorsal fins		
Adipose fin	: absentfinlets dorsal :	0-0 finlets ventral
Caudal fin		
Shape of fin	: forked	
Attributes	: more or less normal	
Paired fins		
Pectoral attributes	: more or less normal	
Pelvics attributes	: more or less normal	
Position	: abdominal behind origin of D1	

7.9. References used for *Henicorhynchus lineatus*

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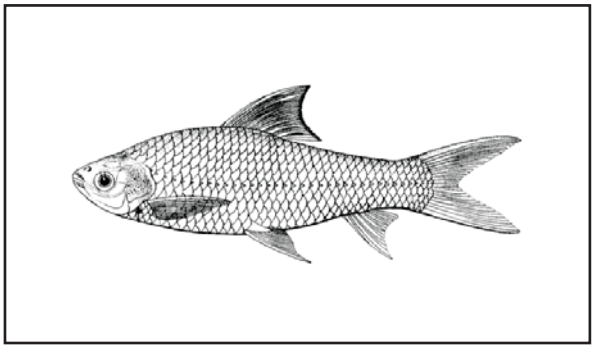
HENICORHYNCHUS SIAMENSIS

(Sauvage, 1881)

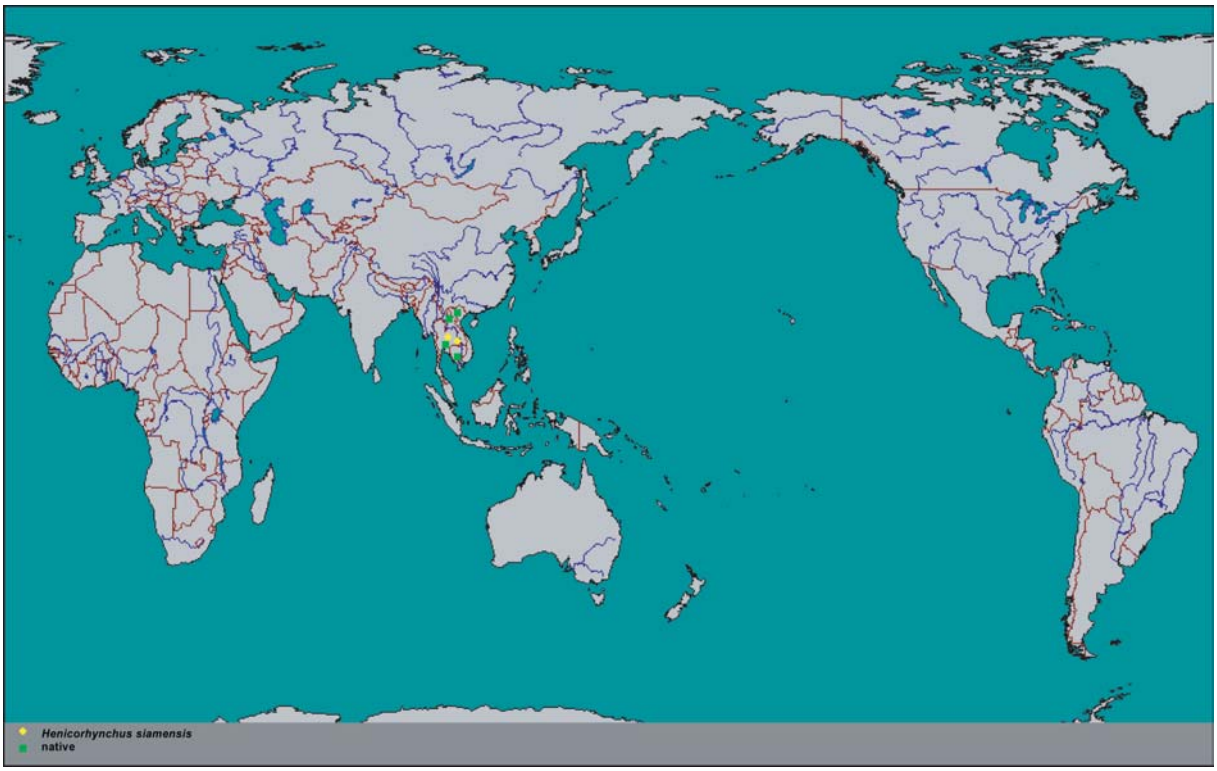
Siamese mud carp

ត្រីរៀល



Picture by **FAO**

Picture by **Warren T**



8.1. 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
☑ Brackish
☑ Freshwater
Aquarium fishes : many
First fossil record : Lower Tertiary Eocene Ref. : 004879
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 sucker like (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 spine like 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).

8.2. Information on the genus Henicorhynchus and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

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*

8.3. General information on *Henicorhynchus siamensis*

Classification
Class : Actinopterygii (Ray-finned fishes) MainRef. : 033488
Order : Cypriniformes
Family : Cyprinidae (Minnows or carps)
Species : Henicorhynchus siamensis
Author : (Sauvage, 1881)

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

Importance Ref.:012693
Importance to fisheries : Commercial

Used for aquaculture	Never/rarely
Used as bait	Never/rarely
Aquarium fish	Commercial
Game fish	No

Ref.:012693

Dangerous fish harmless
Electrobiology No special ability

Size and age
Maximum length (cm) (male/unsexed) : 20 SL (female) :

Remarks:

Often found in great abundance at midwater to bottoms depths in large and small rivers. Feeds on algae, periphyton and phytoplankton. Not known to prosper in impoundments. Well known for its annual trophic migrations out to the floodplains in wet season. Returns to rivers as water levels begin to fall in October with numbers increasing through December and then slowly declining (Ref. 12693). From just upstream Phnom Penh in Cambodia to the Khone Falls this species is reported to migrate upstream during the period October-February. At Muk Kompul in Kandal Province, it migrates upstream just before the full moon. Further upstream near Kratie, migration occurs during full moon and at Sambor, migration takes place immediately after full moon. Near the Khone Falls, upstream movements continue through March but in April fish are moving in both directions. From May to July, at the start of the rainy season, it migrates downstream from the Khone Falls to the Mekong Delta. Here, the fish are reported to move out of the Mekong into canals and flooded areas in August-September. When water recedes in November-December, fish migrate to the Mekong again. Upstream from the Khone Falls near Ubolratchatani in Thailand, this species moves upstream between February and June, consisting mainly of juveniles in February-March and of adults (15-20 cm) in April-June. Further upstream from Xayabouri in Laos to Chiang Khong in Thailand, upstream migrations take place between March to July, first by juveniles, later by adults (Ref. 37770). Used to make prahoc along the Tonlé Sap, Cambodia. Often seen in the aquarium trade (Ref. 12693).

8.4. Synonyms, misidentifications, etc. used for *Henicorhynchus siamensis*

Synonym	Author	Status	Ref.
Tylognathus brunneus	Fowler, 1934	junior synonym	033488
Tylognathus entmema	Fowler, 1934	questionable	033488
Cirrhinus jullieni	nonSauvage, 1878	misidentification	033488
Henicorhynchus lobatus	non Smith, 1945	misidentification	033488
Cirrhinus marginipinnis	Fowler, 1937	junior synonym	033488
Crossocheilus reba	Smith, 1945	other	033488
Cirrhina sauvagei	Fang, 1942	junior synonym	043281
Tylognathus siamensis	de Beaufort, 1927	junior synonym	043281
Morara siamensis	Sauvage, 1881	original combination	043281
Henicorhynchus siamensis	Sauvage, 1881	new combination	043281
Henicorhynchus siamensis	de Beaufort, 1927	junior synonym	033488
Cirrhinus siamensis	Sauvage, 1881	new combination	043281
Aspidoparia siamensis	Sauvage, 1881	new combination	033488
Crossocheilus thai	Fowler, 1944	junior synonym	043281

Total = 14

8.5. Common names for *Henicorhynchus siamensis*

Name	Language	Country	Ref.
Trey real	Khmer	Cambodia	010431
Trey riel	Khmer	Cambodia	012693
Trey riel tob	Khmer	Cambodia	012693
Pa mohk	Laotian	Lao People's Dem. Rep.	009497
Pa soi	Laotian	Lao People's Dem. Rep.	009497
Pa soi houa po	Laotian	Lao People's Dem. Rep.	037767
Siamese mud carp	English	USA (contiguous states)	004537

Total = 7

8.6. Distribution of *Henicorhynchus siamensis*

Asia : Mekong and Chao Phraya Basins. MainRef.: 033488
Status of threat : NL.

Country	Status	Ref.
Cambodia	native	012693

Found in the Mekong River (Ref. 43281). Known from Phnom Penh (Ref. 36654) and Great Lake (Ref. 33813). Just upstream Phnom Penh to the Khone Falls, this fish migrates upstream during the period from October to February. At Muk Kompul in Kandal Province, it moves upstream just before the full moon. Further upstream near Kratie, this fish undertakes migration during full moon and at Sambor, it migrates immediately after full moon (Ref. 37770). This is the most important fish in the annual dai (set-net) fishery in the Tonlé Sap. Used to make prahoc (Ref. 12693). Also Ref. 1632, 10431, 27732, 33488, 36662, 36686, 45353.

Lao People's Dem. Rep. native 027732

Occurs in the Mekong and the Lower and Middle Xe Bangfai (Ref. 27732). 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). Undertakes upstream and dowstream migrations during the wet season in June-July through Hoo Som Yai at the Great Fault Line on the Mekong River, Champassack Province (Ref. 37771). Reported to migrate upstream during the dry season in December-March in Southern Laos (Ref. 37769). From Xayabouri in Laos to Chiang Khong in Thailand, this species is reported to migrate upstream from March to July, first by juveniles, later by adults (Ref. 37770). Museum: Mekong River, CAS 93270 (Ban Hang Khone, below Lee Pee Waterfalls); CAS 94931 (Ban Hang Khone); CAS 96204, 94279 (Ban Hang Khone just below Khone falls) (Ref. 5515). Also Ref. 4792, 10431, 30857, 33488, 36654, 37770, 43281, 44002.

Thailand native 033488

Known from the Chao Phraya and the Mekong Basins (Ref. 10431, 33488,43281). From Xayabouri in Laos to Chiang Khong in Thailand, this species is reported to migrate upstream from March to July, first by juveniles, later by adults (Ref. 37770). Museum: Mekong, CAS 79183 (ca. 4 km downriver from Pak Ing, ca 25 km downriver from Chiang Khong); CAS 96188 (near Chiang Saen) (Ref. 5515). Also Ref. 1632, 12693, 27732, 36654.

Viet Nam native 027732

Known from the Mekong Basin (Ref. 43281). From May to July, at the start of the rainy season, it migrates downstream from the Khone Falls to the Mekong Delta. Here, the fish moves out of the Mekong into canals and flooded areas in August-September. When water recedes during November-December, fish migrate to the Mekong again (Ref. 37770). Also Ref. 36654.

Total native = 4 Total introduced = 0

8.7. Summary information (no. of records) available for *Henicorhynchus siamensis*

Level : species in general **StockCode: 033488** **MainRef.: 033488**
Asia : Mekong and Chao Phraya Basins.

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	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.	0	Aquaculture	0	Occurrence	67

Total = 1

8.8. Morphology of *Henicorhynchus siamensis*

Level : species in general **StockCode : 045787** **Main Ref. : 027732**
Appearance refers to : O females O males

Diagnostic Characters
Head large and broad, width 5.5-6.7 times in SL; relatively deep body, 3.2-3.4 times in SL; snout not or weakly projecting; plain silvery body (Ref. 43281)

Descriptive Characters
Operculum present : No

Meristic Characters
Lateral Lines

Interrupted	: no		
Scales on lateral line	: 5-5		
Vertebrae	: preanal		
Total : 33-34			
Dorsal fins			
Adipose fin	: absent	finlets dorsal : 0-0	finlets ventral
Caudal fin			
Shape of fin	: forked		
Attributes	: more or less	normal	
Paired fins			
Pectoral attributes	: more or less	normal	
Pelvics attributes	: more or less	normal	
position	: abdominal	behind origin of D1	

8.9. General information on the reproduction of *Henicorhynchus siamensis*

Locality : Mekong Mainstream **Stockcode : 045787**
Season (%f 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					

Comment : Based on mature eggs, spawning occurs from April to July with a main peak in May-June.

Locality : Laos , Mekong Basin at Hatsakhoun Village near Khong Island **Stockcode: 045787**
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
Comment : Based on 11 female specimens with fully developed ovaries.

Locality : Laos , Mekong Basin at Savannakhet-Mukdahan **Stockcode: 045787**
Season (% of mature females; 111 = presence of mature females): Main Ref.: 037770
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Data Ref.: 111
111 111

Locality : Laos , Mekong Basin at Sambor **Stockcode: 045787**
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
Comment : Mature females release eggs which then flow downstream.

Locality : Thailand, Mekong Basin at Savannkhet-Mukdahan **Stockcode: 045787**
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

Locality : Thailand, Mekong Basin at Loei **Stockcode: 045787**
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 : Spawns in a tributary (Loei River) in a small pool with slow current. Spawning seems to occur over a longer period and extend into August-September from Loei and upstream

Locality : Thailand, Mekong Basin at Chiang Khong **Stockcode: 045787**
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 : Fish migrate up in tributaries to spawn from May to July.

8.10. Ecology of *Henicorhynchus siamensis*

Level : species in general **StockCode : 045787, 055277** **Main Ref.: 012693**

Habitats

Streams	: Yes	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	Seagrass beds : No	Macrophyte : No

Feeding
Feeding Type : mainly plants/detritus (troph. 2-2.19)
Feeding Habit : grazing on aquatic plants

8.11. Food items for *Henicorhynchus siamensis*

Level : species in general			**StockCode : 045787**	
plants				
other plants	benthic algae/weeds	Chlorophytes	unidentified filamentous chlorophytes	037771
		unidentified	unidentified	033813
	periphyton	unidentified	unidentified	033813
phytoplankton	n.a./other phytoplankton	unidentified	unidentified	033813

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PANGASIUS HYPOPHTHALMUS

(Sauvage, 1878)

Sutchi catfish

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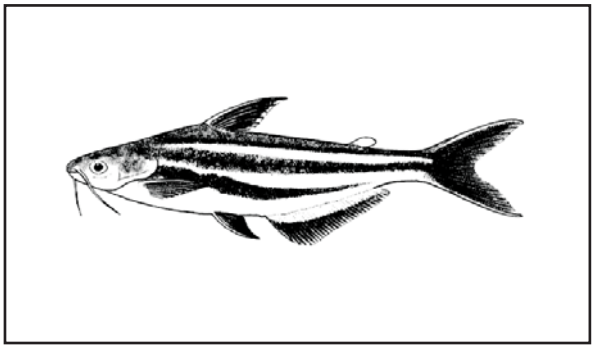
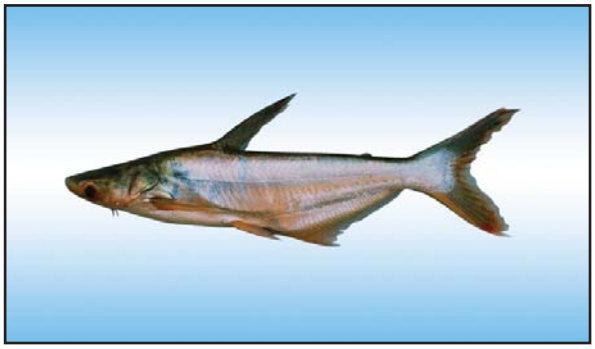
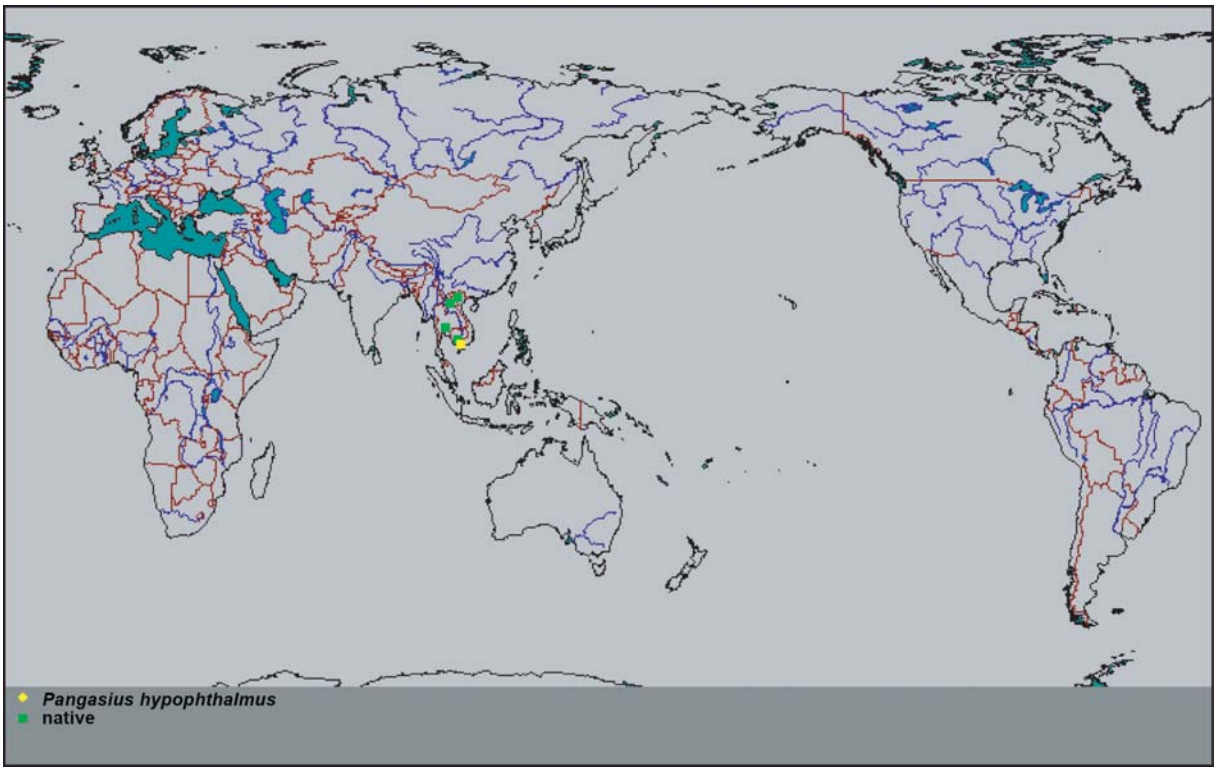


Picture by **FAO**



Picture by **Baird I**



9.1. Summary information on the family Pangasiidae

Family	: Pangasiidae (Shark catfishes)	
Order	: Siluriformes	MainRef. : 007463
Class	: Actino pterygii (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	: Tertiary	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

9.2. Information on the genus Pangasius and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

Neopangasius Status: synonym Gender: masculine
Popta, 1904, p. 180, CAS Ref: 3547
Type by monotypy.
Type species : *Neopangasius nieuwenhuisii* Popta, 1904
Current genus : Pangasius

Pangasianodon Status: valid Gender: masculine
Chevey, 1931, p. 538, CAS Ref: 830
Type by monotypy.
Type species : *Pangasianodon gigas* Chevey, 1931
Current genus : Pangasius

Pangasius Status: valid Gender: masculine
Valenciennes in Cuvier & Valenciennes, 1840, p. 45, CAS Ref: 1008
Type by monotypy.
Type species : *Pangasius buchanani* Valenciennes, 1840
Current genus : Pangasius

Pseudolais Status: synonym Gender: feminine
Vaillant, 1902, p. 51, CAS Ref: 4490
Type by monotypy.
Type species : *Pseudolais tetranema* Vaillant, 1902
Current genus : Pangasius

Pseudopangasius Status: synonym Gender: masculine
Bleeker, 1862, p. 399, CAS Ref: 391
Type by original designation (also monotypic).
Type species : *Pangasius polyuranodon* Bleeker, 1852
Current genus : Pangasius

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

9.3. General information on *Pangasius hypophthalmus*

Classification

Class	: Actinopterygii (Ray-finned fishes)	Ref: 007432
Order	: Siluriformes	
Family	: Pangasiidae (Shark catfishes)	
Subfamily	:	
Species	: *Pangasius hypophthalmus*	
Author	: (Sauvage, 1878)	

Environment

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

Importance

Main catching method
Other methods : ☑ Seines O Gillnets ☑ Castnets ☑ Traps O Spears
O Trawls O Dredges O Liftnets O Hooks+Lines ☑ Other

Used for aquaculture	Commercial	Ref. 007432
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. 007432
Maximum weight (g) (male/unsexed)	: 15,500.00	(female) :	Ref. 007432

Remarks:

Inhabits large rivers (Ref. 12693). Omnivorous (Ref. 6459), feeding on fish and crustaceans as well as on vegetable debris (Ref. 12693). A migratory species, moving upstream of the Mekong from unknown rearing areas to spawn in unknown areas in May-July and returning to the mainstream when the river waters fall seeking rearing habitats in September-December (Ref. 37772). South of the Khone Falls, upstream migration occurs from October to February, with peak in November-December. This migration is triggered by receding water and appears to be a dispersal migration following the lateral migration from flooded areas back into the Mekong at the end of the flood season. Downstream migration takes place from May to August from Stung Treng to Kandal in Cambodia and further into the Mekong Delta in Viet Nam. The presence of eggs during March to August from Stung Treng to Kandal indicates that the downstream migration is both a spawning and a trophic migration eventually bringing the fish into floodplain areas in Cambodia and Viet Nam during the flood season (Ref. 37770). Common in the Lower Mekong, where the young are collected for rearing in floating fish cages. In the Middle Mekong it is represented by large individuals that lose the dark coloration of the juveniles and subadults and become grey without stripe (Ref. 12693). One of the most important aquaculture species in Thailand (Ref. 9497).

9.4. Synonyms, misidentifications, etc. used for *Pangasius hypophthalmus*

Synonym	Author	Status	Ref.
Pangasius hypophthalmus	Sauvage, 1878	new combination	007432
Pangasianodon hypophthalmus	Sauvage, 1878	new combination	007432
Helicophagus hypophthalmus	Sauvage, 1878	original combination	007432
Pangasius pangasius	non Hamilton 1822	misidentification	007432
Pangasius pleurotaenia	non Sauvage, 1878	misidentification	007432
Pangasius sutchi	Fowler, 1937	junior synonym	007432

9.5. Common names for *Pangasius hypophthalmus*

Name	Language	Country	Ref.
Pra	Khmer	Cambodia	040380
Trey pra	Khmer	Cambodia	012693
Pa sooai	Laotian	Lao People's Dem. Rep.	009497
Pa sooai khaeo	Laotian	Lao People's Dem. Rep.	009497
Pa souay kheo	Laotian	Lao People's Dem. Rep.	037767
Stripe catfish	English	Thailand	006459
Pla sawai	Thai	Thailand	006459
Iridescent shark-catfish	English	United Kingdom	012693
Sutchi catfish	English	United Kingdom	003691
Swai	English	USA (contiguous states)	004537

9.6. Distribution of *Pangasius hypophthalmus*

Asia : Mekong, Chao Phraya, and perhaps Mekong Basins. Introduced into additional river basins for aquaculture. MainRef.: 007432
Latitudinal range: 19° N - 8° N Temperature range: 22 - 26 °C Ref.: 13371
Status of threat: NL.

Country	Status	Ref.
Bangladesh	introduced	044085

One of the most 'disastrous' alien invasive species brought to the country (Ref. 44085).

Cambodia native 007432

Known from the Mekong Basin. Found in Great Lake and Tonle Sap River (Ref. 33813, 36654 and 45353). South of the Khone Falls, this species migrates upstream from October to February, peaking in November-December and extending into April from Kandal Province to Stung Treng (Ref. 37770). Migration occurs during full moon at Kratie and Kompong Cham (Ref. 37770). Migrates downstream from May to August from Stung Treng to Kandal and further into the Mekong Delta in Viet Nam, at least to Cai Be (Ref. 37770). This downstream migration is both a spawning and a trophic migration eventually bringing the fish onto floodplain areas during the flood season (Ref. 37770). Exclusively fished by explosives in northern Cambodia (Ref. 12693). Also Ref. 37772.

Lao People's Dem. Rep. native 007432

Known from the Mekong River (Ref. 43281). A migratory species that is found around Pak Beng to the Khone Falls (Ref. 37772). 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). Undertakes upstream migration during the wet season in May-June through Hoo SomYai at the Great Fault Line on the Mekong River, Champasak Province (Ref. 37771). Considered one of the important pangasid species in the Khone Falls "lee" (wing) trap fishery during May to July each year (Ref. 37770). Also Ref. 4792, 30857, 37767.

Philippines introduced 013428
Recorded from Luzon.
Singapore introduced 038466
Has feral populations (Ref. 38466).
Taiwan introduced 001739
First successful larviculture in Taiwan occurred in 1976 (Ref. 40297).
Thailand native 026336
Known from the Mekong, Chao Phraya and Maeklong Basins (Ref. 26336). Recorded from Bangkok (Ref.1632). Migrates upstream from Sungkom District (Nong Khai Province) to Chiang Khong from May to July (Ref. 37770). Most abundant at the central part. Found in large numbers in the upper part of the Ping River. Can be cultured both in ponds and in cages (Ref. 6459). One of the most important aquaculture species where naturally occurring P. hypophthalmus are evidently extremely rare. Cultured fish (pla sawai in Thai) attain a max imum size of about 7 kg, while wild ones (called pla sooai in Issan) reportedly attain 50 kg (Ref.9497). Also Ref. 7432, 37772, 37773.
Viet Nam native 007432
Known from the Mekong Basin. Migrates downstream from May to August from Stung Treng to Kandal in Cambodia and further into the Mekong Delta in Viet Nam, at least to Cai Be. This downstream migration is both a spawning and a trophic migration eventually bringing the fish onto floodplain areas during the flood season. At An Giang and Dong Thap Provinces, larvae occur every year in June-July during their downstream drift from spawning site somewhere upstream in Cambodia. They are fished in specialized larvae dai nets just south of the Cambodian-Vietnamese border and are used as stocking materials in the cage culture industry. Fish larvae of 2 cm are reported in May-July. Generally, fish from the Mekong Delta are below 50 cm, dominated by fish below 30 cm (Ref. 37770). Also Ref. 49196.

9.7. Introductions of *Pangasius hypophthalmus*

Level : species in general
Asia : Mekong, Chao Phraya, and perhaps Mekong Basins. Introduced into additional river basins for aquaculture.
Year : 1990 Established : yes Ref. 044085
Introduced : to Bangladesh from Thailand
Reason : unknown
Comments : One of the most 'disastrous' alien invasive species brought to the country.

Year : 1978 Established : probably no Ref. 013686
Introduced : to China Main from Thailand
Reason : aquaculture
Comments : Experimentally cultured in Guangdong Province.

Year : 1969 Established : no Ref. 001739
Introduced : to Taiwan, Thailand
Reason : aquaculture
Comments : Introduced by Ling from Indonesia. Not adapted to the cooler climate of Taiwan and although it has some potential for aquaculture, it is maintained mainly as an ornamental species.

Year : Unknown Established : Unknown Ref. 009420
Introduced : to Guam from Unknown
Reason : aquaculture
Comments : Assumed to be introduced for aquaculture.

Year : 1972 Established : no Ref. 001739
Introduced : to Indonesia from Thailand
Reason : aquaculture
Comments : Artificially bred and has a good prospect for aquaculture.

Year : 1978 Established : probably yes Ref. 006096
Introduced : to Philippines from Thailand
Reason : fisheries
Comments : Reintroduced in 1982. Artificially bred in ponds and reservoirs. Recorded from Luzon.

Year : unknown Established : yes Ref. 038466
Introduced : to Singapore from Unknown
Reason : aquaculture
Comments : New helminth gill parasites from imported cultured catfish in Malaysia were recently described and it is likely that these parasites are now also present in Singapore.

Total = 27 Established : yes = 1 Probably yes = 1

9.8. Summary information (no. of records) available for *Pangasius hypophthalmus*

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

Ecology	1	Max. sizes	0	Strains	0
Food items	6	FAO catches	15502	Diseases	12
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	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	7
L/W relat.	1	Aquaculture	0	Occurrence	38

9.9. Morphology of *Pangasius hypophthalmus*

Level : species in general StockCode : 014046 Main Ref.: 012693
Appearance refers to : O females O males

Diagnostic Characters
Fins dark grey or black; 6 branched dorsal-fin rays; gill rakers normally developed; young with a black stripe along lateral line and a second long black stripe below lateral line, large adults uniformly grey (Ref. 12693). Dark stripe on the middle of anal fin; dark stripe in each caudal lobe; small gill rakers regularly interspersed with larger ones (Ref. 43281).

Descriptive Characters
Striking features : none
Body shape lateral : elongated
Operculum present : no
Type of eyes : more or less normal
Position/type of mouth : terminal

Pigmentation on trunk and tail

Horizontal stripes	
Vertical stripes	absent
Diagonal stripes	absent
Curved stripes	absent
Spots	no spots
Caudal fin	more than one spot or stripe
Anal fin (A1)	one spot or stripe

Dorsal fins

Number of fins	: 1
Adipose fin	: present

Paired fins

Pectoral attributes	: more or less normal
Pelvics attributes	: more or less normal
position	: abdominal behind origin of D1
spines	: sift rays: 8 -9

9.10. Genetic information for *Pangasius hypophthalmus*

Level : species in general MainRef.: 034370

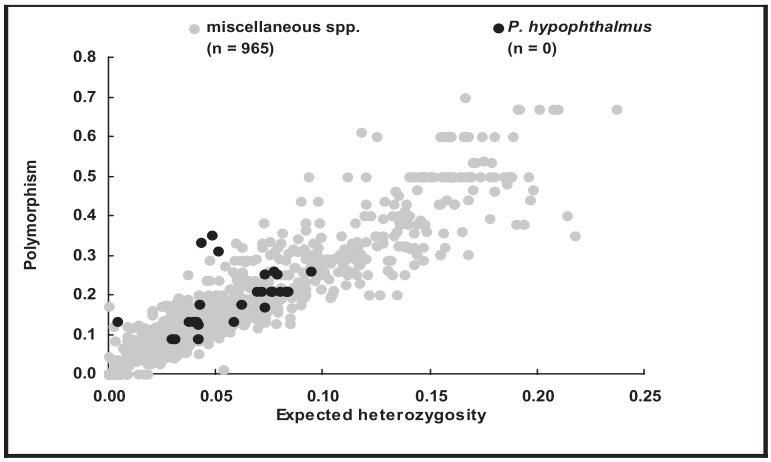
Chromosome number (haploid) : 30

Chromosome number (diploid) : 60 Ref: 034919

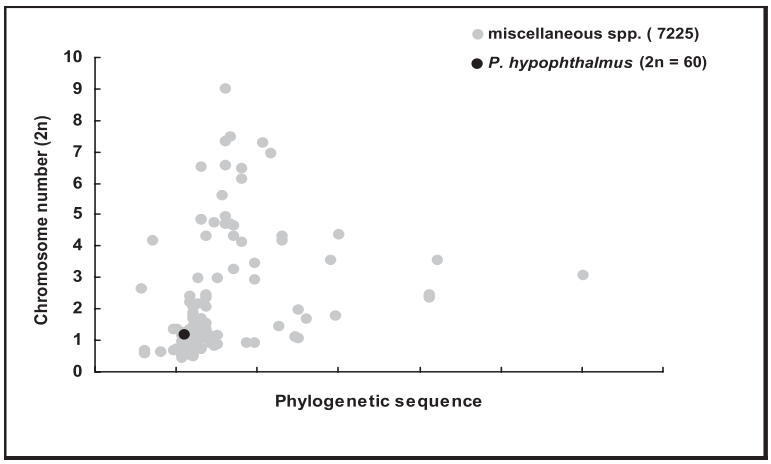
Genetic marker(s) present : No

Remarks: Hybridization expt.

Polymorphism vs heterozygosity of Pangasius hypophthalmus



Chromosome number of (2n) Pangasius hypophthalmus



9.11. General information on the reproduction of *Pangasius hypophthalmus*

Level : species in general, **StockCode : 014046**
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
Assuming same reproductive mode as P. conchophilus.

Spawning Information for *Pangasius hypophthalmus*

Locality : Cambodia, Mekong Basin from Stung Treng to Kandal Stock code: 014046
Season (% of mature females; 111 = presence of mature females):
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111
Comment : Eggs occur during March to August, with a strong peak in June-July.

Locality : Laos , Mekong Basin at Xayabouri Stock code: 014046
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 : Based on presence of eggs and milt during migration.

Locality : Thailand , Mekong Basin at Loei Stock code: 014046
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 : Based on presence of eggs and milt during migration.

9.12. Ecology of *Pangasius hypophthalmus*

Level : species in general **StockCode: 014046, 014154** **Main Ref.: 033813**
Habitats Ref: 033813
Streams : Yes 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
Tropical soft bottom : No Hard bottom: No Seagrass beds: No Macrophyte: No

Feeding
Feeding Type : plants/detritus+animals (troph. 2.8 and up) Ref: 033813
Feeding habit : hunting macrofauna (predator)

Trophic level(s) :	**Original sample**		**Unfished population**		**Remarks**
Estimation method	Troph	s.e	troph	s.e	
From indiv. food item:	3.3	0.50	-	-	Trophic level estimate

9.13. Food items for *Pangasius hypophthalmus*

Level: species in general **Stock code: 014046**

Food item				Ref.
nekton				
finfish	bony fish	unidentified	unidentified fish	049196
	n.a./other finfish	unidentified	unidentified	012693
plants				
other plants	benthic algae/weeds	unidentified	unidentified vegetable debris	012693
	periphyton	unidentified	unidentified	012693
zoobenthos				
benth. crust.	n.a./other benth. crustaceans	unidentified	unidentified	012693
insects	insects	unidentified	unidentified	033813

Total = 6

9.14. Length-Weight relationships of *Pangasius hypophthalmus*

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

Locality StockCode : 014046
Length range : 84 - 91.5 TL Sample size :2: 0.0152 Main Ref. 040637
Correlation coefficient : 3 Sex : unsexed
Comment : L-W relationship calculated from data in Ref. 40637.

9.15. Diseases reported for *Pangasius hypophthalmus*

StockCode : 014046 **Main : 026129**
Parasitic infestations (protozoa, worms, etc.), Silurodiscoides Infestation Ref. : 026129
Causative agent : Silurodiscoides sp.
Occurrence : Luzon, Philippines, 1992

O eggs	O fry	O females	O in the wild
O larvae	O juveniles	O males	O in culture

Remarks : Infestation occurs most commonly in the gills. Records are from aquarium and the genus Silurodiscoides has not yet been recorded from Philippine natural waters. This report involves an aquarium fish that is imported from Hong Kong and was examined in Quezon City (Lumanlan et. al. 1992).

Parasitic infestations (protozoa, worms, etc.), Cryptobia Infestation Ref. : 041806
Cryptobia branchialis
Causative agent : Cryptobia sp.
Occurrence : Luzon, Philippines, 1992

O eggs	O fry	O females	O in the wild
O larvae	O juveniles	O males	☑ in culture

Remarks : Infestation occurs most commonly in the gills and the skin. Records are from fishes imported for aquaculture and the aquarium fish trade (Lumanlan et al. 1992).

Parasitic infestations (protozoa, worms, etc.), Trichodinosis Ref. : 000193
Trichodinella sp : Trichodina infestation
Causative agent : Trichodina sp.
Occurrence : Luzon, Philippines, 1992

O eggs	O fry	O females	O in the wild
O larvae	O juveniles	O males	☑ in culture

Prevalence : common
Remarks : Parasitic infestations (protozoa, worms, etc.), White spot Disease Ich, Ichthyophthiriasis, similar symptoms : Cryptocaryon irritans (occurs in freshwater, Cryptocaryon is the marine counterpart). Ref. : 000193
Causative agent : Ichthyophthirius multifiliis
Occurrence : Luzon, Philippines, 1992

O eggs	O fry	O females	O in the wild
O larvae	O juveniles	O males	☑ in culture

Prevalence : common Type of culture
Remarks : Infestation occurs most commonly in the gills and the skin. The records pertain to fishes imported for aquaculture purposes and the ornamental fish trade (Lumanlan et al.1992).

StockCode : 014046 **MainRef. : 047494**
Parasitic infestations (protozoa, worms, etc.), Enteric Septicaemia of Catfish Ref. : 048850
Causative agent : Edwardsiella ictaluri
Occurrence : Mekong Delta, Viet Nam, 2001

O eggs	O fry	O females	O in the wild
O larvae	O juveniles	O males	☑ in culture

StockCode: 014046 **MainRef. : 048502**
Others, DMS Ref. : 048502
Delayed Mortality Syndrome; Environmental Shock; Brain Damage
Causative agent : N.A.
Occurrence : not specified

O eggs	O fry	☑ females	O in the wild
O larvae	O juveniles	☑ males	☑ in culture

Parasitic infestations (protozoa, worms, etc.), Sporozoa Infection (Hennegya sp.) Ref. : 041805
Henneguya Infection
Causative agent : Hennegya sp.
Occurrence : not specified

O eggs	O fry	O females	O in the wild
O larvae	O juveniles	O males	☑ in culture

Parasitic infestations (protozoa, worms, etc.), Dactylogyrus Gill Flukes Disease Ref. : 000060
Helminthose (gills)
Causative agent : Dactylogyrus sp.
Occurrence : not specified

O eggs	O fry	☑ females	O in the wild
O larvae	O juveniles	☑ males	☑ in culture

9.16. FAO aquaculture production data for *Pangasius hypophthalmus*

Country (Area)		1984	1985	1986	1987	1988	1989	1990
		1991	1992	1993	1994	1995	1996	1997
		1998	1999	2000	2001			
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	20	0	0			
	(US$'000)	0	71	0	0			
Thailand (4)	(t)	8,174	13,786	13,786	13,786	20,353	13,786	13,786
	(US$'000)	3,712	4,839	4,620	4,839	8,063	4,839	6,262
	(t)	14,518	14,183	11,990	13,189	12,000	10,300	6,860
	(US$'000)	7,112	7,779	6,028	6,676	6,228	5,914	3,611
	(t)	11,200	11,339	13,231	7,740			
	(US$'000)	4,609	5,955	6,922	4,257			
	(mt)	8,174	13,786	12,574	11,822	20,353	13,539	13,340
Total: 2	(US$'000)	3,712	4,839	4,620	4,594	8,063	4,852	6,262
	(mt)	14,518	14,183	11,990	13,189	12,000	10,300	6,860
	(US$'000)	7,112	7,779	6,028	6,676	6,228	5,914	3,611
	(mt)	11,200	11,359	13,231	7,740			
	(US$'000)	4,609	6,026	6,922	4,257			

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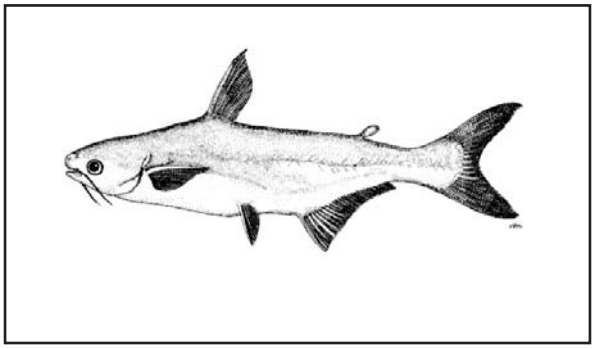
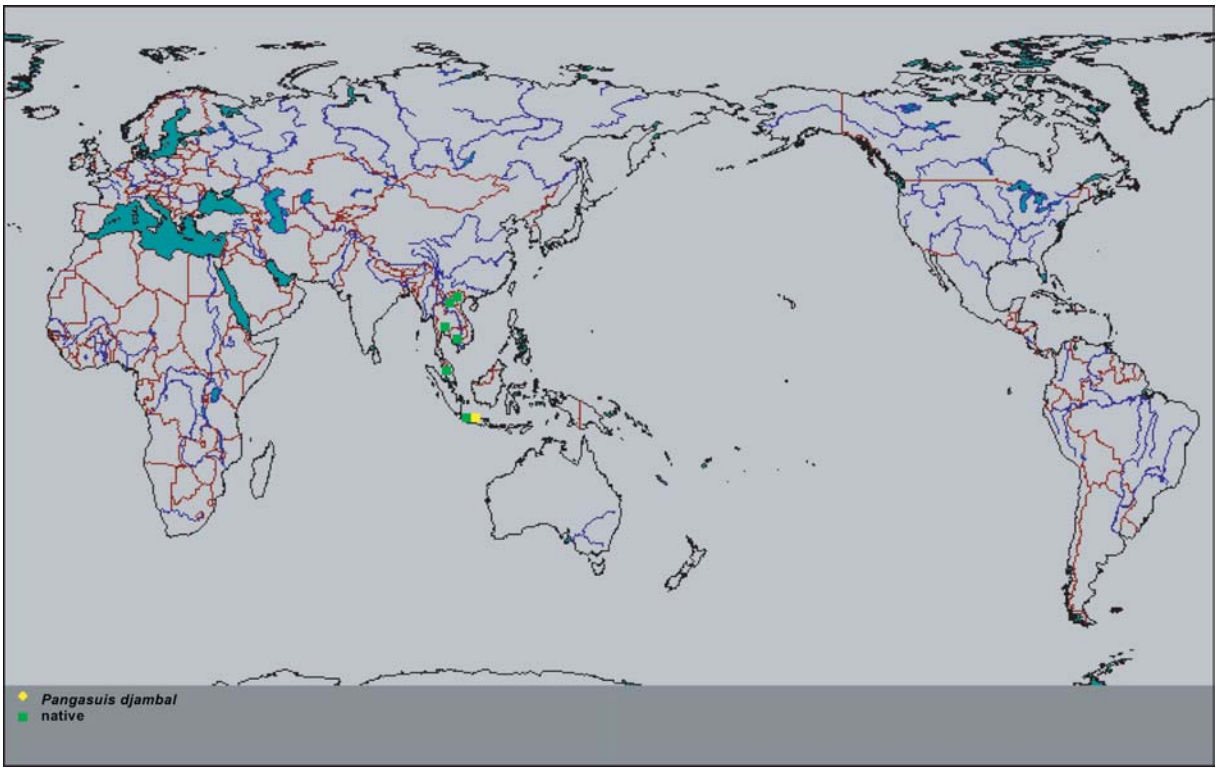
PANGASIUS DJAMBAL

(Bleeker, 1846)

ត្រីឆ្លា



Picture by **FAO**



10.1. Summary information on the family Pangasiidae

Family : Pangasiidae (Shark catfishes)
Order : Siluriformes MainRef. : 007463
Class : Actino pterygii (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 : Tertiary 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

10.2. Information on the genus Pangasius and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

Neopangasius Status: synonym Gender: masculine
Popta, 1904, p. 180, CAS Ref: 3547
Type by monotypy.
Type species : *Neopangasius nieuwenhuisii* Popta, 1904
Current genus : *Pangasius*

Pangasianodon Status: valid Gender: masculine
Chevey, 1931, p. 538, CAS Ref: 830
Type by monotypy.
Type species : *Pangasianodon gigas* Chevey, 1931
Current genus : *Pangasius*

Pangasius Status: valid Gender: masculine
Valenciennes in Cuvier & Valenciennes, 1840, p. 45, CAS Ref: 1008
Type by monotypy.
Type species : *Pangasius buchanani* Valenciennes, 1840
Current genus : *Pangasius*

Pseudolais Status: synonym Gender: feminine
Vaillant, 1902, p. 51, CAS Ref: 4490
Type by monotypy.
Type species : *Pseudolais tetranema* Vaillant, 1902
Current genus : *Pangasius*

Pseudopangasius Status: synonym Gender: masculine
Bleeker, 1862, p. 399, CAS Ref: 391
Type by original designation (also monotypic).
Type species : *Pangasius polyuranodon* Bleeker, 1852
Current genus : *Pangasius*

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*

10.3. General information on *Pangasius djambal*

Classification

Class	: Actinopterygii (Ray-finned fishes)	MainRef. 007432
Order	: Siluriformes	
Family	: Pangasiidae (Shark catfishes)	
Species	: Pangasius djambal	
Author	: (Bleeker, 1846)	Author Ref.

Environment

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

Importance

Importance to fisheries	: Commercial				
Main catching method	:				
Other methods	: ⊘ Seines	⊘ Gillnets	O Castnets	O Traps	O Spears
	⊘ Trawls	O Dredges	O Liftnets	O Hooks+Lines	O 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)	: 90	Ref. 037770
Common length (cm) (male/unsexed)	:	
Maximum weight (g) (male/unsexed)	: 16,000.00	Ref. 037770

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

10.4. Synonyms, misidentifications, etc. used for *Pangasius djambal*

Synonym	Author	Status	Ref.
Pangasius djambal	Bleeker, 1846	original combination	007432
Pangasius pangasius	non Hamilton, 1822	misidentification	007432

10.5. Common names for *Pangasius djambal*

Name	Language	Country	Ref.
Trey pra	Khmer	Cambodia	012693

10.6. Distribution of *Pangasius djambal*

Asia : Mekong Basin (Ref. 12693); also from Malaysia and Indonesia. MainRef.: 007432
Status of threat : NL.

Country	Status	Ref.
Cambodia	native	012693

Known from the Mekong Basin (Ref. 37770). Downstream migration occurs over an eight month period, mainly during June-July while upstream migration takes place mainly during December-February (Ref. 37770). Small juveniles (2-4 cm) have been encountered from Kratie to Kompong Cham from May to November (Ref. 37770).

Indonesia	native	007432

Reported from Batavia, Krawang, Tjikao, and Parongkalong on the island of Java. Also known from Borneo.

Lao People's Dem. Rep.	native	030857

Known from the Mekong Basin. Migrates up stream from May, when the water level rises, until August (Ref.37770). Undertakes downstream migration in Savannakhet during October-November (Ref. 37770). Small juveniles (2-4 cm) have been encountered at Savannakhet from May to November (Ref. 37770).

Malaysia	native	012693
Thailand	native	012693

Found in the Mun River of the Middle Mekong in Northeast Thailand. Migrates upstream from May, when the water level rises, until August (Ref. 37770). Undertakes downstream migration in Loei during October-November (Ref. 37770). Small juveniles (2-4 cm) have been encountered at Nakhon Phanom from May to November (Ref. 37770).

Viet Nam	native	037770

Known from the Mekong.

Total native = 6 Total introduced = 0

10.7. Summary information (no. of records) available for *Pangasius djambal*

Level : species in general **StockCode: 07432** **MainRef.: 007432**
Asia : Mekong Basin (Ref. 12693) also from Malaysia and Indonesia.

Ecology	1	Max. sizes	0	Strains	0
Food items	3	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	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.	0	Aquaculture	0	Occurrence	1

10.8. Morphology of *Pangasius djambal*

Level : species in general **StockCode : 014041** **Main Ref.: 012693**

Diagnostic Characters
Dorsum dull grey; blunt snout lacking broad white band around muzzle; 24-35 gill rakers in the first arch (Ref. 12693).

Descriptive Characters
Operculum present: No

Meristic Characters

Gill rakers	on lower limb	total : 24-35
Vertebrae	preanal	-
Dorsal fins		
Adipose fin	: present	
Caudal fin		
Shape of fin	: forked	
Attributes	: more or less	normal
Paired fins		
Pectoral attributes	: more or less	normal
Pelvics attributes	: more or less	normal
position	: abdominal	behind origin of D1
Body proportions	(based on picture)	

10.9. General information on the reproduction of *Pangasius djambal*

Locality : Mekong Mainstream **Stockcode: 014041**
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					

DataRef.: 039630

Comment : Based on the presence of eggs in the abdomen from March to August, mostly from April to July.

10.10. Ecology of *Pangasius djambal*

Level : species in general **StockCode: 014041, 014145** **Main Ref.: 012693**
Habitats
Streams : Yes Lake: No 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
Tropical soft bottom : No Hard bottom: No Seagrass beds: No Macrophyte: No

Feeding
Feeding Type : plants/detritus+animals (troph. 2.2 -2.79 and up) Ref: 012693

Trophic level(s):	**Original sample**		**Unfished population**	**Remarks**
Estimation method	Troph	s.e	troph s.e	
From indiv. food item:	2.7	0.26		Trophic level estimate

10.11. Food items for *Pangasius djambal*

Level: species in general **StockCode: 014041**

Food item					Ref.
plants					
other plants	terrestrial	plants unidentified	unidentified		012693
zoobenthos					
insects	insects	unidentified	unidentified	012693	
worms	n.a./other	annelids	unidentified	unidentified	012693

10.12. References used for *Pangasius djambal*

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Acknowledgments

The persons acknowledged below provided, entered or checked information on at least one of the species detailed in this document

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