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, Channa 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.
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

Chheng Phen, Touch Bun Thang, Eric Baran, Leng Sy Vann
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Volume I:
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Catfishes  Pangasius hypophthalmus; Pangasius djambal.

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

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

A Way to Achieve This:
through research, partnership, capacity building and policy support, we promote sustainable development and use of living aquatic resources based on environmentally sound management.

We believe this work will be most successful when undertaken in partnership with governments and nongovernment institutions and with the participation of the users of the research results.
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Chheng Phen
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Eric Baran
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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: Channa striata, Channa micropeltes; Barbonymus altus; Barbonymus gonionotus; Cyclocheilichthys apogon; Cyclocheilichthys enoplos; Henicorhynchus lineatus; Henicorhynchus siamensis; 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

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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

I. Monograph on Channa striata ................................................................. 1
  1.1. Summary information on the family Channidae................................. 1
  1.2. Information on the genus Channa and its synonyms ......................... 1
  1.3. Synonyms, misidentifications, etc. used for Channa striata ............... 2
  1.4. Distribution of Channa striata ....................................................... 3
  1.5. Introductions of Channa striata .................................................... 4
  1.6. Summary information (no. of records) available for Channa striata .... 5
  1.7. Morphology of Channa striata ...................................................... 7
  1.8. Genetic information for Channa striata ......................................... 7
  1.9. FAO Aquaculture Production Data for Channa striata ....................... 8
  1.10. Weight proportions and chemical composition of Channa striata ....... 10
  1.11. Oxygen consumption of Channa striata ....................................... 10
  1.12. General information on the reproduction of Channa striata ............. 11
  1.13. Ecology of Channa striata ....................................................... 11
  1.14. Food items for Channa striata .................................................. 12
  1.15. Diet composition of Channa striata .......................................... 13
  1.16. Maximum weight/length/age of Channa striata ................................ 13
  1.17. Length-Weight relationships of Channa striata ............................. 14
  1.18. Growth and mortality of Channa striata ..................................... 14
  1.19. Diseases reported for Channa striata ....................................... 14
  1.20. FAO annual catch data (in tonnes) for Channa striata .................. 14
  1.21. References used for Channa striata .......................................... 21

II. Monograph on Channa micropeltes .................................................. 29
  2.1. Summary information on the family Channidae ................................ 29
  2.2. Information on the genus Channa and its synonyms ........................ 29
  2.3. General information on Channa micropeltes ................................... 30
  2.4. Synonyms, misidentifications, etc. used for Channa micropeltes ....... 30
  2.5. Common names for Channa micropeltes ....................................... 31
  2.6. Distribution of Channa micropeltes ............................................ 31
  2.7. Introductions of Channa micropeltes ......................................... 32
  2.8. Summary information (no. of records) available for Channa micropeltes 32
  2.9. Morphology of Channa micropeltes ............................................. 33
  2.10. Genetic information for Channa micropeltes ................................ 33
  2.11. FAO Aquaculture Production Data for Channa micropeltes ............... 34
  2.12. General information on the reproduction of Channa micropeltes ....... 35
  2.13. Food items for Channa micropeltes .......................................... 35
  2.14. Maximum weight/length/age of Channa micropeltes ........................ 35
  2.15. Length-Weight relationships of Channa micropeltes ....................... 35
  2.16. FAO annual catch data (in tonnes) for Channa micropeltes ............... 36
  2.17. References used for Channa micropeltes ..................................... 37

III. Monograph on Barbonymus altus ..................................................... 41
  3.1. Summary information on the family Cyprinidae ................................ 41
  3.2. Information on the genus Barbonymus and its synonyms .................... 41
  3.3. General information on Barbonymus altus ..................................... 41
  3.4. Synonyms, misidentifications, etc. used for Barbonymus altus ........... 42
  3.5. Common names for Barbonymus altus .......................................... 42
  3.6. Distribution of Barbonymus altus ............................................... 43
  3.7. Summary information (no. of records) available for Barbonymus altus ... 43
  3.8. Morphology of Barbonymus altus ............................................... 44
  3.9. Genetic information for Barbonymus altus .................................... 44
  3.10. General information on the reproduction of Barbonymus altus .......... 45
  3.11. Ecology of Barbonymus altus .................................................. 45
  3.12. Food items for Barbonymus altus ............................................. 45
  3.13. References used for Barbonymus altus ....................................... 46
IV. Monograph on *Barbonymus gonionotus* ..............................................................
4.1. Summary information on the family Cyprinidae............................................. 51
4.2. Information on the genus *Barbonymus* and its synonyms ............................. 51
4.3. General information on *Barbonymus gonionotus* ......................................... 51
4.4. Synonym names for *Barbonymus gonionotus* ............................................. 52
4.5. Common names for *Barbonymus gonionotus* ............................................. 53
4.6. Distribution of *Barbonymus gonionotus* .................................................... 53
4.7. Introductions of *Barbonymus gonionotus* .................................................. 54
4.8. Summary information (no. of records) available for *Barbonymus gonionotus*... 55
4.9. Morphology of *Barbonymus gonionotus* .................................................... 56
4.10. Genetic information for *Barbonymus gonionotus* ...................................... 57
4.11. Weight proportions and chemical composition of *Barbonymus gonionotus* ...... 58
4.12. FAO aquaculture production data for *Barbonymus gonionotus* .................... 58
4.13. General information on the reproduction of *Barbonymus gonionotus* ............ 59
4.15. Food items for *Barbonymus gonionotus* .................................................. 59
4.16. Length-Weight relationships of *Barbonymus gonionotus* ........................... 60
4.17. Diseases reported for *Barbonymus gonionotus* ......................................... 61
4.18. FAO annual catch data (in tonnes) for *Barbonymus gonionotus* .................. 61
4.19. References used for *Barbonymus gonionotus* ........................................... 62

V. Monograph on *Cyclocheilichthys apogon* .....................................................
5.1. Summary information on the family Cyprinidae.............................................67
5.2. Information on the genus *Cyclocheilichthys* and its synonyms ......................67
5.3. General information on *Cyclocheilichthys apogon* .....................................68
5.4. Synonyms, misidentifications, etc. used for *Cyclocheilichthys apogon* .......... 68
5.5. Common names for *Cyclocheilichthys apogon* ..........................................69
5.6. Distribution of *Cyclocheilichthys apogon* ................................................69
5.7. Summary information (no. of records) available for *Cyclocheilichthys apogon* 70
5.8. Morphology of *Cyclocheilichthys apogon* ................................................70
5.9. Genetic information for *Cyclocheilichthys apogon* ....................................70
5.10. Ecology of *Cyclocheilichthys apogon* .....................................................71
5.11. Food items for *Cyclocheilichthys apogon* ................................................71
5.12. Diet composition of *Cyclocheilichthys apogon* .........................................72
5.13. Growth and mortality of *Cyclocheilichthys apogon* ..................................72
5.14. References used for *Cyclocheilichthys apogon* .........................................73

VI. Monograph on *Cyclocheilichthys enoplos* ..................................................
6.1. Summary information on the family Cyprinidae.............................................77
6.2. Information on the genus *Cyclocheilichthys* and its synonyms ......................77
6.3. General information on *Cyclocheilichthys enoplos* ....................................78
6.4. Synonyms, misidentifications, etc. used for *Cyclocheilichthys enoplos* ........ 79
6.5. Common names for *Cyclocheilichthys enoplos* ..........................................79
6.6. Distribution of *Cyclocheilichthys enoplos* ................................................79
6.7. Summary information (no. of records) available for *Cyclocheilichthys enoplos* 80
6.8. Morphology of *Cyclocheilichthys enoplos* ................................................80
6.9. Genetic information for *Cyclocheilichthys enoplos* ....................................81
6.10. Ecology of *Cyclocheilichthys enoplos* ....................................................82
6.11. Food items for *Cyclocheilichthys enoplos* ................................................82
6.12. References used for *Cyclocheilichthys enoplos* .........................................83

VII. Monograph on *Henicorhynchus lineatus* .....................................................
7.1. Summary information on the family Cyprinidae.............................................87
7.2. Information on the genus *Henicorhynchus* and its synonyms .........................87
7.3. General information on *Henicorhynchus lineatus* .......................................87
7.4. Synonyms, misidentifications, etc. used for *Henicorhynchus lineatus* .......... 88
7.5. Common names for *Henicorhynchus lineatus* .............................................88
7.6. Distribution of *Henicorhynchus lineatus* ..................................................88
7.7. Summary information (no. of records) available for *Henicorhynchus lineatus* 89
7.8. Morphology of *Henicorhynchus lineatus* ..................................................89
7.9. References used for *Henicorhynchus lineatus* ...........................................90
VIII. Monograph on *Henicorhynchus siamensis* .......................................................... 83
  8.1. Summary information on the family Cyprinidae................................................. 93
  8.2. Information on the genus *Henicorhynchus* and its synonyms............................ 93
  8.3. General information on *Henicorhynchus siamensis*........................................ 93
  8.4. Synonyms, misidentifications, etc. used for *Henicorhynchus siamensis*............. 94
  8.5. Common names for *Henicorhynchus siamensis*............................................... 95
  8.6. Distribution of *Henicorhynchus siamensis*................................................... 95
  8.7. Summary information (no. of records) available for *Henicorhynchus siamensis*... 96
  8.8. Morphology of *Henicorhynchus siamensis*.................................................... 96
  8.9. General information on the reproduction of *Henicorhynchus siamensis*............. 96
  8.10. Ecology of *Henicorhynchus siamensis*......................................................... 97
  8.11. Food items for *Henicorhynchus siamensis*.................................................. 98
  8.12. References used for *Henicorhynchus siamensis*.................................... 99

IX. Monograph on *Pangasius hypophthalmus* .......................................................... 103
  9.1. Summary information on the family Pangasiidae.............................................. 103
  9.2. Information on the genus *Pangasius* and its synonyms.................................. 103
  9.3. General information on *Pangasius hypophthalmus*......................................... 104
  9.4. Synonyms, misidentifications, etc. used for *Pangasius hypophthalmus*............. 105
  9.5. Common names for *Pangasius hypophthalmus*............................................... 105
  9.6. Distribution of *Pangasius hypophthalmus*................................................... 105
  9.7. Introductions of *Pangasius hypophthalmus*.................................................. 106
  9.8. Summary information (no. of records) available for *Pangasius hypophthalmus*... 107
  9.9. Morphology of *Pangasius hypophthalmus*..................................................... 107
  9.10. Genetic information for *Pangasius hypophthalmus*...................................... 108
  9.11. General information on the reproduction of *Pangasius hypophthalmus*............. 109
  9.13. Food items for *Pangasius hypophthalmus*................................................... 110
  9.14. Length-Weight relationships of *Pangasius hypophthalmus*............................. 110
  9.15. Diseases reported for *Pangasius hypophthalmus*........................................ 110
  9.16. FAO aquaculture production data for *Pangasius hypophthalmus*....................... 112
  9.17. References used for *Pangasius hypophthalmus*.................................... 113

X. Monograph on *Pangasius djambal* ........................................................................ 119
  10.1. Summary information on the family Pangasiidae............................................. 119
  10.2. Information on the genus *Pangasius* and its synonyms.................................. 119
  10.3. General information on *Pangasius djambal*.................................................... 120
  10.4. Synonyms, misidentifications, etc. used for *Pangasius djambal*...................... 120
  10.5. Common names for *Pangasius djambal*.......................................................... 121
  10.6. Distribution of *Pangasius djambal*............................................................... 121
  10.7. Summary information (no. of records) available for *Pangasius djambal*.......... 121
  10.8. Morphology of *Pangasius djambal*............................................................... 122
  10.9. General information on the reproduction of *Pangasius djambal*..................... 122
  10.10. Ecology of *Pangasius djambal*...................................................................... 122
  10.11. Food items for *Pangasius djambal*................................................................ 123
  10.12. References used for *Pangasius djambal*................................................. 124
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

Picture by Escudero P.T

Picture by Baird, I.G

*Channa Striata*
*native*
1.1. Summary information on the family *Channidae*

MainRef.: 007463

<table>
<thead>
<tr>
<th>Family</th>
<th>Channidae (Snakeheads)</th>
</tr>
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<tbody>
<tr>
<td>Order</td>
<td>Perciformes</td>
</tr>
<tr>
<td>Class</td>
<td>Actinopterygii (ray-finned fishes)</td>
</tr>
<tr>
<td>Number of genera</td>
<td>2</td>
</tr>
<tr>
<td>Number of species</td>
<td>21</td>
</tr>
<tr>
<td>Occurs in</td>
<td>O Marine</td>
</tr>
<tr>
<td></td>
<td>O Brackish</td>
</tr>
<tr>
<td></td>
<td>☀ Freshwater</td>
</tr>
<tr>
<td>Aquarium fishes</td>
<td>some</td>
</tr>
<tr>
<td>Species currently in FishBase:</td>
<td>Genera: 2   Species: 31   (Including subspecies)   Complete: Yes</td>
</tr>
</tbody>
</table>

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)*

**Bostrychoïdes**

Lacepède, 1801, p. 144, CAS Ref: 2710

Type by monotypy.

Type species: *Bostrychoïdes oculatus* Lacepède, 1801

Current genus: *Channa*

**Channa**

Scopoli (exGronow), 1777, p. 459, CAS Ref: 3990

Type by subsequent monotypy.

Type species: *Channa orientalis* Bloch & Schneider, 1801

Current genus: *Channa*

**Channa**

Gronow, 1763, p. 135, CAS Ref: 1910

Current genus: *Channa*

**Ophicephalus**

Bloch, 1793, p. 137, CAS Ref: 4868

Type by subsequent designation.

Type species: *Ophicephalus striatus* Bloch, 1793

Current genus: *Channa*

**Philypnoides**

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: Bostrychoideus 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: Bostrychoideus 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 to 10 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  
☒ Castnets  
☒ Traps  
☒ Trawls  
☒ Dredges  
☒ Liftnets  
☒ Hooks+Lines  
☒ 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 ophicephali* 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*

<table>
<thead>
<tr>
<th>Synonym</th>
<th>Author</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ophiocephalus philippinus</td>
<td>Peters, 1869</td>
<td>junior synonym</td>
<td>033021</td>
</tr>
<tr>
<td>Ophicephalus planiceps</td>
<td>Cuvier, 1831</td>
<td>junior synonym</td>
<td>041236</td>
</tr>
<tr>
<td>Channa striata</td>
<td>Bloch, 1793</td>
<td>new combination</td>
<td>027732</td>
</tr>
<tr>
<td>Ophiocephalus striatus</td>
<td>Bloch, 1793</td>
<td>original combination</td>
<td>006028</td>
</tr>
<tr>
<td>Ophicephalus striatus</td>
<td>Bloch, 1793</td>
<td>original combination</td>
<td>001479</td>
</tr>
<tr>
<td>Channa striatus</td>
<td>Bloch, 1793</td>
<td>misspelling</td>
<td>027732</td>
</tr>
<tr>
<td>Ophiocephalus vagus</td>
<td>Peters, 1869</td>
<td>junior synonym</td>
<td>002854</td>
</tr>
</tbody>
</table>

1.5. Common names for *Channa striata*

<table>
<thead>
<tr>
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<th>Language</th>
<th>Country</th>
<th>Ref.</th>
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<tr>
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<td>Bangladesh</td>
<td>047891</td>
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<tr>
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<td>Khmer</td>
<td>Cambodia</td>
<td>036651</td>
</tr>
<tr>
<td>Ros</td>
<td>Khmer</td>
<td>Cambodia</td>
<td>036651</td>
</tr>
<tr>
<td>Trey phtuok</td>
<td>Khmer</td>
<td>Cambodia</td>
<td>012693</td>
</tr>
<tr>
<td>Trey ras</td>
<td>Khmer</td>
<td>Cambodia</td>
<td>036654</td>
</tr>
<tr>
<td>Trey raws</td>
<td>Khmer</td>
<td>Cambodia</td>
<td>012693</td>
</tr>
<tr>
<td>Trey ros (or ras)</td>
<td>Khmer</td>
<td>Cambodia</td>
<td>002686</td>
</tr>
<tr>
<td>Chevron snakehead</td>
<td>English</td>
<td>Hawaii (USA)</td>
<td>044091</td>
</tr>
<tr>
<td>Pongee</td>
<td>English</td>
<td>Hawaii (USA)</td>
<td>044091</td>
</tr>
<tr>
<td>Pa kaw</td>
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</tr>
<tr>
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<td>Burmese</td>
<td>Myanmar</td>
<td>002686</td>
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<td>Nga-yau-auk</td>
<td>Burmese</td>
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<td>007100</td>
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<td>Striped snake head murrel</td>
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<td>005736</td>
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<td>Thailand</td>
<td>006459</td>
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<td>United Kingdom</td>
<td>012693</td>
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<tr>
<td>Snakehead murrel</td>
<td>English</td>
<td>United Kingdom</td>
<td>001739</td>
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<tr>
<td>Chevron snakehead</td>
<td>English</td>
<td>USA (contiguous states)</td>
<td>004537</td>
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<td>English</td>
<td>USA (contiguous states)</td>
<td>004537</td>
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<td>036625</td>
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<td>Viet Nam</td>
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</tr>
<tr>
<td>Cá träu</td>
<td>Vietnamese</td>
<td>Viet Nam</td>
<td></td>
</tr>
</tbody>
</table>
1.6. Distribution of *Channa striata*

**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.

<table>
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<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very abundant in beels, haors, ponds, ditches and swamps throughout the country. Also Ref. 4854,4833, 27732, 39989,41236,43640.</td>
</tr>
<tr>
<td><strong>Bhutan</strong></td>
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<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Occurs in natural waters (Ref. 9418). Found in Gaylegphug River (Ref. 40882).</td>
</tr>
<tr>
<td><strong>Cambodia</strong></td>
<td>native</td>
<td>012693</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td><strong>China</strong></td>
<td>native</td>
<td>027732</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Occurs in the Mekong basin in Yunnan (Ref. 27732). Also Ref. 4833, 35840, 36654, 43640.</td>
</tr>
<tr>
<td><strong>Hawaii (USA)</strong></td>
<td>introduced</td>
<td>005360</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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)</td>
</tr>
<tr>
<td><strong>India</strong></td>
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<td>004833</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Occurs throughout India (Ref. 45255). Also Ref. 27732, 29108, 36654, 41236,43634, 43640, 44148, 44149.</td>
</tr>
<tr>
<td><strong>Indonesia</strong></td>
<td>native</td>
<td>007050</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Korea, Republic of</strong></td>
<td>introduced</td>
<td>001739</td>
</tr>
<tr>
<td><strong>Lao People's Dem. Rep.</strong></td>
<td>native</td>
<td>027732</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Madagascar</strong></td>
<td>introduced</td>
<td>013686</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>Also Ref. 13333.</td>
</tr>
<tr>
<td><strong>Malaysia</strong></td>
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</tr>
<tr>
<td><strong>Mauritius</strong></td>
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<tr>
<td><strong>Myanmar</strong></td>
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</tr>
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<td></td>
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<td>Also Ref. 4833,41236,43640.</td>
</tr>
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<td><strong>Nepal</strong></td>
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<tr>
<td></td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td><strong>New Caledonia</strong></td>
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</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Occurs throughout the plains of Pakistan. Recorded from the river Nulli-ni, near Kota Meer Muhammad. Also Ref. 4854, 4833, 41236, 43640.</td>
</tr>
<tr>
<td><strong>Papua New Guinea</strong></td>
<td>introduced</td>
<td>002847</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Two specimens observed by G. Hitchcock in August 2000 at Balamuk and Wando villages (Ref. 50786).</td>
</tr>
<tr>
<td><strong>Philippines</strong></td>
<td>native</td>
<td>012165</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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</td>
</tr>
</tbody>
</table>
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
- **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
- **Introduced:** to Guam from Unknown
- **Reason:** unknown
- **Comments:**

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

- **Year:** Pre 18th century
- **Introduced:** to Indonesia from Southern China
- **Reason:** unknown
- **Comments:** Well established. Collected in streams near Bintuni on the Vogelkop Peninsula, Irian Jaya in 1989.

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

- **Year:** unknown
- **Introduced:** to Indonesia from Unknown
- **Reason:** unknown

Monograph on *Channa striata* 5
**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 of fish. 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 distance seafarers in ancient times (Ref. 1739).
1.8. Summary information (no. of records) available for *Channa striata*

<table>
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<tr>
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<td>Larvae</td>
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<tr>
<td>Aquaculture</td>
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</tr>
<tr>
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<tr>
<td>Egg dev't.</td>
<td>0</td>
</tr>
<tr>
<td>Vision</td>
<td>0</td>
</tr>
<tr>
<td>Introductions</td>
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<td>Metabolism</td>
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<tr>
<td>Swimming speed</td>
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<tr>
<td>Aquaculture</td>
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<tr>
<td>Egg dev't.</td>
<td>0</td>
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<td>Egg dev't.</td>
<td>0</td>
</tr>
<tr>
<td>Vision</td>
<td>0</td>
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<tr>
<td>Introductions</td>
<td>11</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>0</td>
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</tbody>
</table>

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
- **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
Pelvis attributes : more or less normal position : abdominal spines : soft-rays: 6 -6

1.10. Genetic information for *Channa striata*

<table>
<thead>
<tr>
<th>Locality</th>
<th>Chromosome number (haploid)</th>
<th>Chromosome number (diploid)</th>
<th>Genetic marker(s) present</th>
<th>DNA content (picogram, haploid)</th>
<th>Chromosome arm no.</th>
<th>Main Ref.</th>
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</tbody>
</table>

Remarks:
M = 8, ST = 6 and T = 26
Sex chromosomes not distinguishable. No banding technique used. Also in ref. 030184.
Also in Ref. 034370.
Expected vs observed heterozygosity of Channa striata

DNA content vs. phylogenetic sequence of Channa striata
1.11. FAO aquaculture production data for *Channa striata*

<table>
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<td>132</td>
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<td>7,792</td>
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<td>12,304</td>
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<td>4,511</td>
<td>5,544</td>
<td>5,544</td>
<td>5,954</td>
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<td>9,803</td>
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</tr>
</tbody>
</table>

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

**Level**: species in general  
**Stockcode**: 000357  
**Locality**: Not stated.  
**MainRef.**: 027117

**Gill area of Channa striata**
- Gill area: 163 (cm²)  
- Blood/water distance: DataRef. 002321  
- Body weight: 59.9 (g)  
- Gill area/weight: 2.72 (cm²/g)

Relative gill area of Channa Striata
1.13. Oxygen consumption of *Channa striata*

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

**Relative oxygen consumption of Channa striata**

**Relative oxygen consumption of Channa striata**

*All experiments*  

*Standard / Routine without Stress*

---

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

Breed 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  
**MainRef**: 037770

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

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>

**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  
**MainRef**: 032692

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

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
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<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>
**Locality: Nepal**
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**
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**
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**
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**
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

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

**Locality: Hawaii, Not specified**
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,**
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 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*

<table>
<thead>
<tr>
<th>Level : species in general</th>
<th>StockCode: 000357</th>
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</thead>
<tbody>
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<td>Food item</td>
<td>Ref.</td>
</tr>
<tr>
<td>nekton</td>
<td></td>
</tr>
<tr>
<td>finfish</td>
<td>n.a./other finfish</td>
</tr>
<tr>
<td>zoobenthos</td>
<td></td>
</tr>
<tr>
<td>benth. crust.</td>
<td>n.a./other benth.</td>
</tr>
<tr>
<td>crustaceans</td>
<td></td>
</tr>
<tr>
<td>zooplankton</td>
<td></td>
</tr>
<tr>
<td>plank. crust.</td>
<td>cladocerans</td>
</tr>
<tr>
<td>plank. copepods</td>
<td>unidentified</td>
</tr>
</tbody>
</table>

1.17. Diet composition of *Channa striata*

<table>
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<tr>
<th>Level : species in general</th>
<th>StockCode : 000357</th>
<th>MainRef : 013497</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locality</td>
<td>Bukit Merah Reservoir, between September 1979 and August 1980</td>
<td></td>
</tr>
<tr>
<td>Stage of fish sampled</td>
<td>recruits/juv.</td>
<td>Number : 15</td>
</tr>
<tr>
<td>Food group (%)</td>
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<td></td>
</tr>
<tr>
<td>45.0 bony fish, juv./adults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.0 insects, both aquatic and terrestrial forms of Diptera, Odonata, etc., adults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.0 insects, mainly Chironomidae, some Chaoboridae, Dysticidae, unid. larvae &amp; nymphs, larvae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.0 n.a./other plank. Crustaceans, Copepodeae, Cladocera, Decapoda, juv./adults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.0 Total</td>
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<td></td>
</tr>
</tbody>
</table>

Remarks

- 45.0 bony fish
- 25.0 insects
- 15.0 insects
- 15.0 n.a./other plank. Crustaceans

Total = 1

Monograph on *Channa striata* 13
1.18. Maximum weight/length/age of *Channa striata*

<table>
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<th>StockCode : 000357</th>
</tr>
</thead>
<tbody>
<tr>
<td>India, Krishna and Godavari Rivers, Karnataka</td>
<td>Ref.: 043636</td>
</tr>
<tr>
<td>Max weight (g): 2500 total weight</td>
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</tr>
<tr>
<td>Max length (cm): Same specimen for WL:</td>
<td>No Sex : unsexed</td>
</tr>
<tr>
<td>Max age (yrs)No: Same specimen for LT :</td>
<td>No</td>
</tr>
<tr>
<td>India, Maharashtra</td>
<td>StockCode : 000357</td>
</tr>
<tr>
<td>Max weight (g): 1000 total weight</td>
<td></td>
</tr>
<tr>
<td>Max length (cm): Same specimen for WL:</td>
<td>No Sex : unsexed</td>
</tr>
<tr>
<td>Max age (yrs)No: Same specimen for LT :</td>
<td>No</td>
</tr>
<tr>
<td>India, Tamil Nadu</td>
<td>StockCode : 000357</td>
</tr>
<tr>
<td>Max length (cm): 19.5 Same specimen for WL : No</td>
<td>Sex : unsexed</td>
</tr>
<tr>
<td>Max age (yrs)No: Same specimen for LT :</td>
<td>No</td>
</tr>
<tr>
<td>India, Western Ghats Rivers, Karnataka</td>
<td>StockCode : 000357</td>
</tr>
<tr>
<td>Max length (cm): 45 Same specimen for WL : No</td>
<td>Sex : unsexed</td>
</tr>
<tr>
<td>Max age (yrs)No: Same specimen for LT :</td>
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</tr>
<tr>
<td>Nepal, Rivers of terai and mid hills.</td>
<td>StockCode : 000357</td>
</tr>
<tr>
<td>Max length (cm): 91.5 Same specimen for WL : No</td>
<td>Sex : unsexed</td>
</tr>
<tr>
<td>Max age (yrs) : Same specimen for LT :</td>
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</tr>
<tr>
<td>Comment:</td>
<td></td>
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</tbody>
</table>

Total = 5

1.19. Length-Weight relationships of *Channa striata*

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

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</thead>
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<td>Length range : 57 - 57 TL Sample size : 1</td>
<td>Ref.: 040637</td>
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<tr>
<td>a 0.0162 Correlation coefficient :</td>
<td>Sex : unsexed</td>
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<td>b 3</td>
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**Comment:** L-W relationship calculated from data in Ref. 40637.

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</thead>
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<td>Length range : - SL Sample size :</td>
<td>Ref.: 041847</td>
</tr>
<tr>
<td>a 0.0279 Correlation coefficient :</td>
<td>Sex : unsexed</td>
</tr>
<tr>
<td>b 2.811</td>
<td></td>
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</table>

Total = 2

1.20. Growth and mortality of *Channa striata*

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<th>Country</th>
<th>L (cm)</th>
<th>W (g)</th>
<th>Kt (year)</th>
<th>t * (y)</th>
<th>Sex</th>
<th>Ref.</th>
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<td>52 TL</td>
<td>0.21</td>
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<td></td>
<td></td>
<td>032692</td>
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<tr>
<td>China Main</td>
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1.21. Diseases reported for *Channa striata*

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

**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

**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

**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

**Causative agent:** *Neocamallanus sp.*

**Occurrence:** Chittagong, Bangladesh, 1974

**Remarks:** Infestation commonly occurs in the pyloric caeca. Besides 1974 (Anonymous), the infestation was also recorded in 1968 (Ali) but with no specific locality cited.

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

**Causative agent:** *Anchistrocephalus sp.*

**Occurrence:** Chittagong, Bangladesh, 1974

**Remarks:** Infestation commonly occurs in liver and intestine. Besides 1974 (Anonymous), the infestation was also recorded in 1968 (Ali) with no specific locality cited. The record from fresh water fishes of Bangladesh may involve a misidentification.

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

**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

**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

**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

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

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

Causative agent: *Euclinostomum heterostomum*

Occurrence: Dhaka, Bangladesh, 1993

**Remarks**: Infestation commonly occurs in the liver.

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

Causative agent: *Camallanus intestinalis*

Occurrence: Dhaka, Bangladesh, 1974

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

Parasitic infestations (protozoa, worms, etc.): *Pallisentis* infestation

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

Causative agent: *Procamallanus 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.): Epizootic Ulcerative Syndrome

Causative agent: N.A.

Occurrence: Laguna de Bay, Philippines, 1991

Parasitic infestations (protozoa, worms, etc.): Fish louse infestation

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, brachioseptal 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.*
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.*
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 (Quines and Paycana).

Parasitic infestations (protozoa, worms, etc.): False fungal infection (Epistylis sp.)  Ref. : 041805
Causative agent : *Epistylis sp.*
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*
Occurrence : Luzon, Philippines, 1933
Remarks : Infestation commonly occurs in the periocular tissue, gill cavity, brachioseptal musculature, and the pericardium. Besides 1933 (Tubangui), the infestation also occurred in 1988 (Velasquez).
Parasitic infestations (protozoa, worms, etc.): Piscicola infestation
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
Causative agent: NA
Occurrence: Luzon, Philippines, 1983
Remarks: Infestation occurs most commonly in the periorcular tissues.

Parasitic infestations (protozoa, worms, etc.): Cercaria disease (e.), Cercariosis
Causative agent: Diplostomum sp.
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
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.)
Causative agent: Apiosoma sp.
Occurrence: Luzon, Philippines, 1975
Remarks: Infestation occurs most commonly in the gills and skin.

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

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

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

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

Causative agent: *Neocamallanus ophicephali*

Occurrence: Luzon, Philippines, 1966

Remarks: Infestation commonly occurs in the stomach, pyloric caeca and intestines. 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

Causative agent: *Centrocestus caninus*

Occurrence: Luzon, Philippines, 1939

Remarks: Infestation occurs most commonly in the gills.

Parasitic infestations (protozoa, worms, etc.): Fish louse infestation

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

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

Causative agent: *Lernaea cyprinacea*

Occurrence: Luzon, Philippines, 1988

Remarks: The parasites head is commonly embebded in the eye, nostril, and host. With the body protruding externally.

Parasitic infestations (protozoa, worms, etc.): Opegaster infestation

Causative agent: *Opegaster minima*

Occurrence: Luzon, Philippines, 1944

Remarks: Infestation commonly occurs in the intestine.

Parasitic infestations (protozoa, worms, etc.): Taphrobothrium infestation

Causative agent: *Taphrobothrium japonense*

Occurrence: not specified, Bangladesh, 1993

Remarks: (Location of infestation not specified)
Parasitic infestations (protozoa, worms, etc.), Polyonchobothrium Disease

Causative agent: Polyonchobothrium sp.
Occurrence: not specified, Bangladesh, 1993

Remarks: (Location of infestation not specified.)

Parasitic infestations (protozoa, worms, etc.): Bothriocephalus infestation

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

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

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

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

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

Causative agent: Posthodiplostomum sp.
Occurrence: not specified, Philippines, 1976

Remarks: Infestation commonly occurs in the scales. Besides 1976 (Velasquez), the infestation was also recorded in 1977 by the same author.

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

Infectious Ascites; Haemorrhagic; 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

Causative agent: Posthodiplostomum grayi
Occurrence: not specified, Philippines, 1943

Remarks: Infestation commonly occurs in the body cavity.

Parasitic infestations (protozoa, worms, etc.): Neocamallanus infestation

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*

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Monograph on *Channa striata* 21
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CHANNA MICROPELTES
(Cuvier, 1831)
Giant snakehead

*Channa micropelttes*

*native*
2.1 Summary information on the family *Channidae*

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

Species currently in FishBase:
- Genera: 2
- Species: 31 (Including subspecies)
- Complete: Yes

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*

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).
2.3. General information on *Channa micropeltes*

**Classification**

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

**Environment**

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

**Importance**

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

**Size and age**

Maximum length (cm) (male/unsexed): 130  
Common length (cm) (male/unsexed): (female):  
Maximum weight (g) (male/unsexed): 20,000.00 (female):

**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*

<table>
<thead>
<tr>
<th>Synonym</th>
<th>Author</th>
<th>Status</th>
<th>Ref.</th>
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<tbody>
<tr>
<td><em>Ophicephalus bivittatus</em></td>
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<td>002091</td>
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<td><em>Channa diprogramme</em></td>
<td>nonDay, 1865</td>
<td>misidentification</td>
<td>027732</td>
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<td><em>Ophiocephalus micropeltes</em></td>
<td>Cuvier, 1831</td>
<td>misspelling</td>
<td>040966</td>
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<tr>
<td><em>Ophicephalus micropeltes</em></td>
<td>Cuvier, 1831</td>
<td>original combination</td>
<td>002091</td>
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<tr>
<td><em>Channa micropeltes</em></td>
<td>Cuvier, 1831</td>
<td>new combination</td>
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<tr>
<td><em>Ophicephalus serpentinus</em></td>
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<tr>
<td><em>Ophicephalus stevensii</em></td>
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<tr>
<td><em>Ophiocephalus studeri</em></td>
<td>Volz, 1903</td>
<td>junior synonym</td>
<td>002091</td>
</tr>
</tbody>
</table>

通常与深水体有关（Ref. 27732）。在大型河流和运河（Ref. 4833）中发现，有水流的持续或缓慢流动（Ref. 12693）。主要以鱼类为食，但也吃一些 crustaceans。作为食用鱼（Ref. 4931）。
2.5. Common names for *Channa micropeltes*

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

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.

- **Cambodia**: native
  - 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
  - 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
  - Occurs in Sumatra and Borneo (Ref. 27732). Also Ref. 7050.
- **Lao People's Dem. Rep.**: native
  - 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
  - Occurs in the Chao Praya 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
  - 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 referring 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.

<table>
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<td>0 Genetics</td>
<td>1 Ciguatera</td>
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<td>Diet composition</td>
<td>0 Allele frequency</td>
<td>0 Ecotoxicology</td>
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<td>0</td>
</tr>
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<td>Predators</td>
<td>0 Reproduction</td>
<td>1 Gill area</td>
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<tr>
<td>Morphology</td>
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<td>0 Swimming type</td>
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<tr>
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<td>Growth/mortality</td>
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<td>0 Vision</td>
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<td>0 Larvae</td>
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<td>Recruitment</td>
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<td>L/W relat.</td>
<td>1 Aquaculture</td>
<td>0 Occurrence</td>
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</tr>
</tbody>
</table>

---

32 Monograph on *Channa micropeltes*
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 ventral

**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**  
Main Ref: 012337

Locality: Unspecified

Chromosomenumber (haploid): 22 Ref: 012337

Chromosome number (diploid): 44 Ref: 012337

Genetic marker(s) present: No
2.11. FAO aquaculture production data for *Channa micropeltes*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<td>1999</td>
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<td>2001</td>
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<tr>
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<td>2000</td>
<td>2001</td>
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<tr>
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<td>2000</td>
<td>2001</td>
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<tr>
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<td>386</td>
<td>325</td>
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<td>183</td>
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<td>166</td>
<td>497</td>
<td>331</td>
<td>285</td>
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<tr>
<td>(t)</td>
<td>700</td>
<td>905</td>
<td>870</td>
<td>856</td>
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<td>1,822</td>
<td>1,841</td>
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<td>4,108</td>
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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/marshes/swamps: No
- Marine: No  
- Oceanic: No  
- Neritic: No  
- Coral reefs: No
- Tropical: No  
- soft bottom: No  
- Hard bottom: No  
- Seagrass beds: No  
- Macrophyte: No

**Feeding**
- **Feeding Type**: Mainly animals (troph 2.8 and up)  
- **Feeding Habit**: Hunting macrofauna (predation)  
Ref: 012693

**Trophic level(s):**
- **Original sample**: 3.9 0.56
- **Unfished population**: - -
- **Remarks**: propic level estimate

Ref: 012975
2.13. Food items for *Channa micropeltes*

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<td></td>
<td></td>
</tr>
<tr>
<td>finfish</td>
<td>bony fish</td>
<td>unidentified</td>
</tr>
<tr>
<td>others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n.a./other reptiles</td>
<td>unidentified larvae</td>
<td>unidentified</td>
</tr>
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<td>zoobenthos</td>
<td></td>
<td></td>
</tr>
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<td>unidentified</td>
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<td>worms</td>
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<td>Lumbricidae</td>
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</table>

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

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</thead>
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<td>Max weigh (g): 20000</td>
<td>Total weight</td>
<td>Same specimen for WL : No</td>
</tr>
<tr>
<td>Max length (cm): 100</td>
<td>TL</td>
<td>Same specimen for WL : No</td>
</tr>
<tr>
<td></td>
<td>Sex : Unsexed</td>
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</tr>
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</table>

2.15. Length-Weight relationships of *Channa micropeltes*

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

<table>
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<th>Locality</th>
<th>StockCode : 000358</th>
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</thead>
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<td>Length range : 70-70 TL</td>
<td>Sample: 1</td>
</tr>
<tr>
<td>a : 0.0219</td>
<td>Correlation coefficient :</td>
</tr>
<tr>
<td>b : 3</td>
<td></td>
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<tr>
<td>Comment : L-W relationship calculated from data in</td>
<td>Ref. 40637.</td>
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2.16. FAO annual catch data (in tonnes) for *Channa micropeltes*

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<td>4,300</td>
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<td>9,946</td>
<td>9,513</td>
<td>8,145</td>
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<td>8,482</td>
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<td>8,866</td>
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<td>10,103</td>
<td>9,024</td>
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<td>8,523</td>
<td>10,128</td>
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</table>
2.17. References used for Channa micropeltes


009648 Sidthishimunka, A. 1970. A report on the fisheries survey of the Mekong River in the vicinity of the Pa Mong Dam site. Inland Fisheries Division, Department of Fisheries, Bangkok, Thailand. 75 p.


031975 Anon. 1999. Fish collection database of the Natural History Museum, London (formerly British Museum of Natural History (BMNH)). Natural History Museum, London (formerly British Museum of Natural History (BMNH)).
Monograph on Channa micropeltes

036662 Lamberts, D and T. Sarath. 1997. Base line information on the ecology of the fish and the habitats of the flood area of the Tonlé Sap Lake in Siem Reap province, Cambodia. GCP/CMB/002/BEL.
038732 Anon. 2001. Fish collection database of the National Museum of Natural History (Smithsonian Institution). Smithsonian Institution - Division of Fishes.
040637 IGFA. 2001. Database of IGFA angling records until 2001. IGFA, Fort Lauderdale, USA.
BARBONYMUS ALTUS
(Günther, 1868)
Red tailed tinfoil
រឿងស្បែងតូច
3.1. Summary information on the family Cyprinidae

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

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

<table>
<thead>
<tr>
<th>Class</th>
<th>Actinopterygii (Ray-finned fishes) MainRef. : 027732</th>
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</thead>
<tbody>
<tr>
<td>Order</td>
<td>Cypriniformes</td>
</tr>
<tr>
<td>Species</td>
<td><em>Barbonymus altus</em></td>
</tr>
<tr>
<td>Author</td>
<td>(Günther, 1868) Author Ref. Date Eschmeyer, pers. comm.</td>
</tr>
</tbody>
</table>

### Environment

| Freshwater : Yes Habitat : Benthopelagic |
| Brackish : No Migrations : |
| Saltwater : No Depth range : |
Importance
Main catching method:
- Seines
- Gillnets
- Castnets
- Traps
- Spears
- Trawls
- Dredges
- Liftnets
- Hooks+Lines
- Other

Other methods:
- Commercial
- Never/rarely

Used for aquaculture:
- Commercial
- Ref. 012693

Used as bait:
- Never/rarely
- Ref.

Aquarium fish:
- Commercial 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

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

<table>
<thead>
<tr>
<th>Synonym</th>
<th>Author</th>
<th>Status</th>
<th>Ref.</th>
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<td>Puntius altus</td>
<td>Günther, 1868</td>
<td>new combination</td>
<td>26336</td>
</tr>
<tr>
<td>Barbus altus</td>
<td>Günther, 1868</td>
<td>original combination</td>
<td>1632</td>
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<td>Barbonymus altus</td>
<td>Günther, 1868</td>
<td>new combination</td>
<td>43281</td>
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<tr>
<td>Barbodes altus</td>
<td>Günther, 1868</td>
<td>new combination</td>
<td>26336</td>
</tr>
<tr>
<td>Puntius bocourti</td>
<td>Bleeker, 1865</td>
<td>other</td>
<td>1632</td>
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<tr>
<td>Barbodes foxi</td>
<td>Fowler, 1937</td>
<td>junior synonym</td>
<td>26580</td>
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3.5. Common names for Barbonymus altus

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

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).
3.6 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)

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

Ref: 008482  Refers to species in general
Locality: Central Thailand, Thailand  Ref: 027732
Chromosome number: 25
Chromosome number (diploid): 50
Genetic marker(s) present: No
DNA content (picogram, haploid): Chromosome arm no: 84
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

Main Ref.: 037769

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

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<tr>
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<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
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<th>Dec</th>
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</table>

Data Ref.: 037769

3.11. Ecology of *Barbonymus altus*

Level: species in general

StockCode: 008482 / 008171 / 009497

Ref.: 009497

Habitats

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

Feeding

- Feeding Type: mainly plants/detritus (troph. 2.2.19)
- Feeding Habit: grazing on aquatic plants

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

Ref.

Detritus

- Detritus debris unidentified unidentified 012693

Plants

- other plants benthic algae/weeds unidentified unidentified 009497
- terrestrial plants unidentified unidentified 012369

Zoobenthos

- other benth. n.a./other benth. unidentified unidentified 012693
- Invertebrates

Total = 4
3.13. References used for *Barbonymus altus*

001632 Suvatti, C. 1981. Fishes of Thailand. Royal Institute of Thailand, Bangkok. 379 p. [not seen]


009648 Sidhimunka, A. 1970. A report on the fisheries survey of the Mekong River in the vicinity of the Pa Mong Dam site. Inland Fisheries Division, Department of Fisheries, Bangkok, Thailand. 75 p.


038732 Anon. 2001. Fish collection database of the National Museum of Natural History (Smithsonian Institution). Smithsonian Institution - Division of Fishes.


BARBONYMUS GONIONOTUS
(Bleeker, 1850)
Java barb
プノヒナゴ}

Picture by Warren, T
4.1. Summary information on the family Cyprinidae

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

Distribution: North America (Northern Canada to Southern Mexico), Africa, and Eurasia. Pharynx with 1-3 rows of teeth, each row with a maximum of 8 teeth. Usually thin lips, plicae or papillae absent; mouth sometimes suckerlike (Garra and Labeo). With or without barbels. Premaxilla usually borders the upper jaw making the maxilla entirely or almost entirely excluded from the gape. Usually protrusible upper jaw. Dorsal fin with spinelike rays in some. Primitive number of chromosomes 2n=50, some with 48; polyploidy exists. Maximum length at least 2.5 m to probably 3 m in *Catlocarpio siamensis*; many species less than 5 cm. Mainly non-guarders, but in some species males build nests and/or protect the eggs.  
Etyymology: 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)  
- Order : Cypriniformes  
- Family : Cyprinidae (Minnows or carps)  
- Subfamily :  
- Species : *Barbonymus gonionotus*  
- 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 ☑ Gillnets ☑ Castnets ☐ Traps ☑ Spearfishing ☐ Trawls ☐ Dredges ☐ Liftnets ☐ Hooks+Lines ☐ 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):  4.4. Synonym names for *Barbonymus gonionotus*

<table>
<thead>
<tr>
<th>Synonym</th>
<th>Author</th>
<th>Status</th>
<th>Ref.</th>
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<tbody>
<tr>
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<td>new combination</td>
<td>012693</td>
</tr>
<tr>
<td><em>Barbus gonionotus</em></td>
<td>Bleeker, 1850</td>
<td>original combination</td>
<td>006128</td>
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<td>new combination</td>
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<td><em>Barbodes gonionotus</em></td>
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<td><em>Puntius javanicus</em></td>
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<td>002686</td>
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<td>006128</td>
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<tr>
<td><em>Puntius viehoeveri</em></td>
<td>Fowler, 1943</td>
<td>junior synonym</td>
<td>012693</td>
</tr>
</tbody>
</table>

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, Ipomoea 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] ).
4.5. Common names for *Barbonymus gonionotus*

<table>
<thead>
<tr>
<th>Name</th>
<th>Language</th>
<th>Country</th>
<th>Ref.</th>
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<tbody>
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<td>036651</td>
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<td>012693</td>
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<td>Khmer</td>
<td>Cambodia</td>
<td>012693</td>
</tr>
<tr>
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<td>Javanese</td>
<td>Indonesia</td>
<td>006107</td>
</tr>
<tr>
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<td>Javanese</td>
<td>Indonesia</td>
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</tr>
<tr>
<td>Tawes</td>
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<tr>
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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.

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<td>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.</td>
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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).

**Bangladesh**
- **Year**: 1977  
- **Established**: yes  
- **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.

**Sri Lanka**
- **Year**: 1968  
- **Established**: no  
- **Reason**: aquaculture  
- **Comments**: Not established  
- **Ref.**: 001739  

**China Main**
- **Year**: 1986  
- **Established**: yes  
- **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.

**Fiji**
- **Year**: 1968  
- **Established**: yes  
- **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*

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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: abdominal
- 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*

Localities:
- **Barbonymus gonionotus**
  - **Unspecified**
  - **Central Thailand, Thailand**
  - **Central Thailand, Thailand**
  - **Central Thailand, Thailand**
  - **Central Thailand, Thailand**

**Main Refs.**:
- 027780
- 030168
- 030184
- 034370
- 034741

**Genetic markers present**:
- Yes
- No

**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).
- Listed as *Puntius gonionotus*.

**Chromosome numbers**:
- (haploid): 25
- (diploid): 50
- arm no.: 70

**Monograph on Barbonymus gonionotus** 57

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

**Level**: species in general
**Locality**: Not specified

**Stockcode**: 000300
**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*

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<td>(mt)</td>
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</tbody>
</table>

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  
- **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.


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  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)  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

<table>
<thead>
<tr>
<th>Food item</th>
<th>StockCode</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
<tr>
<td>Diffugiiidae</td>
<td>042329</td>
<td></td>
</tr>
<tr>
<td>others</td>
<td>n.a./others</td>
<td></td>
</tr>
<tr>
<td>Hydrocharitaceae</td>
<td>004835</td>
<td></td>
</tr>
<tr>
<td>benthic algae/weeds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convolvulaceae</td>
<td>004835</td>
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<tr>
<td>Cyanophyceae</td>
<td>027822</td>
<td></td>
</tr>
<tr>
<td>Oscillatoriae</td>
<td>042329</td>
<td></td>
</tr>
<tr>
<td>Phormidiae</td>
<td>042329</td>
<td></td>
</tr>
<tr>
<td>Eutoniaceae</td>
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<td></td>
</tr>
<tr>
<td>Naviculaceae</td>
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<td>Eunogeniae</td>
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<tr>
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<tr>
<td>Euglenaceae</td>
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</tr>
<tr>
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<td>042329</td>
<td></td>
</tr>
<tr>
<td>Euglenaceae</td>
<td>042329</td>
<td></td>
</tr>
<tr>
<td>Chlorophyceae</td>
<td>027822</td>
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</tr>
<tr>
<td>Scenedesmus</td>
<td>027822</td>
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</tr>
<tr>
<td>Mesotaeniaceae</td>
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<tr>
<td>Micractiniaceae</td>
<td>042399</td>
<td></td>
</tr>
<tr>
<td>Oocystaceae</td>
<td>042329</td>
<td></td>
</tr>
<tr>
<td>Green algae</td>
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<td></td>
</tr>
<tr>
<td>Mesotaeniaceae</td>
<td>042399</td>
<td></td>
</tr>
<tr>
<td>Micractiniaceae</td>
<td>042399</td>
<td></td>
</tr>
<tr>
<td>Oocystaceae</td>
<td>042329</td>
<td></td>
</tr>
</tbody>
</table>

Monograph on Barbonymus gonionotus  59
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  
Sample size: 150  
Correlation coefficient: 0.995  
Ref.: 008609

a: 0.0413  
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*

<table>
<thead>
<tr>
<th></th>
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<td>8,445</td>
<td>9,530</td>
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<td>15,084</td>
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<td>10,105</td>
<td>12,767</td>
<td>8,652</td>
<td>12,598</td>
<td>12,346</td>
<td>12,346</td>
<td>16,550</td>
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<td>17,677</td>
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<td>14,964</td>
<td>16,082</td>
<td>15,027</td>
<td>19,084</td>
<td>18,102</td>
<td>19,601</td>
<td>19,469</td>
<td>20,189</td>
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</tr>
</tbody>
</table>

60 Monograph on *Barbonymus gonionotus*
4.20. References used for *Barbonymus gonionotus*


009648 Sidthimunka, A. 1970. A report on the fisheries survey of the Mekong River in the vicinity of the Pa Mong Dam site. Inland Fisheries Division, Department of Fisheries, Bangkok, Thailand. 75 p.


031982 Anon. 1999. Fish collection database of the Natural History Museum, London (formerly British Museum of Natural History (BMNH)). Natural History Museum, London (formerly British Museum of Natural History (BMNH)).


036662  Lamberts, D and T. Sarath. 1997. Base line information on the ecology of the fish and the habitats of the fish area of the Tonle Sap Lake in Siem Reap province, Cambodia. GCP/CMB/002/BEL.


038732  Anon. 2001. Fish collection database of the National Museum of Natural History (Smithsonian Institution). Smithsonian Institution - Division of Fishes.


043281  Anon. 2002. Fish collection of the University of the Philippines in the Visayas Museum. UPV Museum.


CYCLOCHEILICHTHYS APOGON
(Valenciennes, 1842)
Beardless barb

Picture by FAO

Picture by Roberts T

Map showing distribution of Cyclocheilichthys apogon.
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

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 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).

5.2. Information on the genus Cyclocheilichthys and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

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

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

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

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

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

Monograph on *Cyclocheilichthys apogon* 67
5.3. General information on *Cyclocheilichthys apogon*

**Classification**

<table>
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<th>Actinopterygii (Ray-finned fishes)</th>
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<td>Order</td>
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<tr>
<td>Family</td>
<td>Cyprinidae (Minnows or carps)</td>
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</tr>
<tr>
<td>Species</td>
<td>Cyclocheilichthys apogon</td>
<td></td>
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<tr>
<td>Author</td>
<td>(Valenciennes, 1842)</td>
<td>Author Ref.</td>
<td>(ex Kuhl) In Cuvier &amp; Valenciennes.</td>
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</tbody>
</table>

**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: Ø Seines, Ø Gillnets, Ø Castnets, Ø Traps, Ø Trawls, Ø Dredges, Ø Liftnets, Ø Hooks+Lines, Ø Other
- Used for aquaculture: Never/rarely
- Used as bait: Never/rarely
- Aquarium fish: Commercial based mainly on capture
- Game fish: No
- Dangerous fish: Harmless
- Electrobiology: No special ability

**Size and age**

<table>
<thead>
<tr>
<th>Maximum length (cm) (male/unsexed)</th>
<th>25 TL</th>
<th>Ref. 030857</th>
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</thead>
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<tr>
<td>Common length (cm) (male/unsexed)</td>
<td>(female):</td>
<td></td>
</tr>
<tr>
<td>Maximum weight (g) (male/unsexed)</td>
<td>(female):</td>
<td></td>
</tr>
</tbody>
</table>

**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*

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<th>Synonym</th>
<th>Author</th>
<th>Status</th>
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<td>Systomus apogon</td>
<td>Valenciennes, 1842</td>
<td>new combination</td>
<td>002091</td>
</tr>
<tr>
<td>Cyclocheilichthys apogon</td>
<td>Valenciennes, 1842</td>
<td>new combination</td>
<td>012693</td>
</tr>
<tr>
<td>Barbus apogon</td>
<td>Valenciennes, 1842</td>
<td>new combination</td>
<td>004832</td>
</tr>
<tr>
<td>Systomus apogonoides</td>
<td>Bleecker, 1855</td>
<td>original combination</td>
<td>002091</td>
</tr>
<tr>
<td>Rohteichthys macrolepis</td>
<td>Holly, 1927</td>
<td>junior synonym</td>
<td>013275</td>
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<tr>
<td>Systomus macularius</td>
<td>Blyth, 1860</td>
<td>junior synonym</td>
<td>004832</td>
</tr>
<tr>
<td>Cyclocheilichthys rubripinnis</td>
<td>Fowler, 1934</td>
<td>junior synonym</td>
<td>002091</td>
</tr>
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</table>
5.5. Common names for *Cyclocheilichthys apogon*

<table>
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<th>Name</th>
<th>Language</th>
<th>Country</th>
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<td>Khmer</td>
<td>Cambodia</td>
<td>036651</td>
</tr>
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<td>Trey kros</td>
<td>Khmer</td>
<td>Cambodia</td>
<td>012693</td>
</tr>
<tr>
<td>Trey sraka kdam</td>
<td>Khmer</td>
<td>Cambodia</td>
<td>036654</td>
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<td>Trey srakardam</td>
<td>Khmer</td>
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<td>Trey srawka kdam</td>
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<td>Seren</td>
<td>Javanese</td>
<td>Indonesia</td>
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<td>Malay</td>
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<td>006107</td>
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<tr>
<td>Pa dok ngieu</td>
<td>Laotian</td>
<td>Lao People's Dem. Rep.</td>
<td>037767</td>
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<td>Pla ngam lung</td>
<td>Thai</td>
<td>Thailand</td>
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<td>Playa</td>
<td>Thai</td>
<td>Thailand</td>
<td>042982</td>
</tr>
<tr>
<td>Beardless barb</td>
<td>English</td>
<td>United Kingdom</td>
<td>012693</td>
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<tr>
<td>Beardless barb</td>
<td>English</td>
<td>USA (contiguous states)</td>
<td>004537</td>
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<tr>
<td>Indian river barb</td>
<td>English</td>
<td>USA (contiguous states)</td>
<td>004537</td>
</tr>
<tr>
<td>Redeye barb</td>
<td>English</td>
<td>USA (contiguous states)</td>
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<tr>
<td>Cà ba ky do</td>
<td>Vietnamese</td>
<td>Viet Nam</td>
<td>036625</td>
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</table>

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.

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
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</tr>
</thead>
<tbody>
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<td><strong>Cambodia</strong></td>
<td>native</td>
<td>012693</td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Indonesia</strong></td>
<td>native</td>
<td>007050</td>
</tr>
<tr>
<td>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.</td>
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<tr>
<td><strong>Lao People’s Dem. Rep.</strong></td>
<td>native</td>
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</tr>
<tr>
<td>Found in the Mekong River (Ref. 30857) at Ban Hang Khone in Khong District, Champasak Province (Ref. 37767). Also Ref. 7050.</td>
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<td></td>
</tr>
<tr>
<td><strong>Malaysia</strong></td>
<td>native</td>
<td>002091</td>
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<tr>
<td>Also Ref. 12693, 36654, 43281.</td>
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<td></td>
</tr>
<tr>
<td><strong>Myanmar</strong></td>
<td>native</td>
<td>004832</td>
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<tr>
<td>Also Ref. 12693, 36654, 43281.</td>
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</tr>
<tr>
<td><strong>Thailand</strong></td>
<td>native</td>
<td>026336</td>
</tr>
<tr>
<td>Occurs in the Mae klong, 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.</td>
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</tr>
<tr>
<td><strong>Viet Nam</strong></td>
<td>native</td>
<td>036625</td>
</tr>
<tr>
<td>Found in Mekong Delta (Ref. 36625). Also Ref. 7050, 36654.</td>
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Monograph on *Cyclocheilichthys apogon*  69
5.7. Summary information (no. of records) available for *Cyclocheilichthys apogon*

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<th>MainRef.: 004832</th>
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5.8. Morphology of *Cyclocheilichthys apogon*

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<td>Appearance refers to: O females O males</td>
<td>Diagnostic Characters</td>
<td>Sex Attributes</td>
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<td>Specialized organs</td>
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<td>Different appearance</td>
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<td>Meristic Characters</td>
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</table>
5.10. Ecology of *Cyclocheilichthys apogon*

**Level**: species in general  
**StockCode**: 010636 010313  
**Main Ref.**: 013497

**Habitats**
- 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  
- Seagrass beds: No  
- Macrophyte: No

**Feeding**
- **Feeding Type**: plants/detritus+animals (troph. 2.2-2.79)  
  **Ref.**: 013497

**Trophic level(s)**:  
- Original  
- Unfished  
- Remarks

**Estimation method**
- From diet composition: 2.8 ± 0.34  
- From indiv. food items: 3.1 ± 0.30

**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
10.0 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

Max weight (g) : 18 total weight
Max length (cm) : 8.1 SL Same specimen for WL : Yes

Total = 1

5.13. Growth and mortality of Cyclocheilichthys apogon

<table>
<thead>
<tr>
<th>Country</th>
<th>L (cm)</th>
<th>W</th>
<th>(g) Kt (/year) t o (y)</th>
<th>Sex</th>
<th>Ref.</th>
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<td>Malaysia</td>
<td>12.2</td>
<td>SL</td>
<td>0.367</td>
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<td>Thailand</td>
<td>30</td>
<td>TL</td>
<td>0.32</td>
<td>unsexed</td>
<td>043031</td>
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</tbody>
</table>
5.14. References used for Cyclocheilichthys apogon

001632 Suvatti, C. 1981. Fishes of Thailand. Royal Institute of Thailand, Bangkok. 379 p. [not seen]
    Perlitierkunde, Germany. 992 p.
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004517 Hureau, J.-C. 1991. La base de données GICIM: Gestion informatisée des collections ichthyologiques
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    Naturelle, Paris.
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    Balkema, Rotterdam. 541 p.
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    system in nature. Research Institute of Evolutionary Biology Special Publications no. 1, 77 p. Tokyo,
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    Office of Environmental Policy and Planning, Bangkok. 102 p.
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    southern Lao. Lao Community Fisheries and Dolphin Protection Project. Ministry of Agriculture and
    Forestry, Lao PDR.161 p.
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031982 Anon. 1999. Fish collection database of the Natural History Museum, London (formerly British Museum
    of Natural History (BMNH)). Natural History Museum, London (formerly British Museum of Natural
    History (BMNH)).
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    Ichthyology and Herpetology, Zoological Museum Hamburg (ZMH).
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    CMB/95/003. "Natural Resources-Based Development Strategy for the Tonle Sap Area."
036662 Lamberts, D and T. Sarath. 1997. Base line information on the ecology of the fish and the habitats of
    the flood area of the Tonlé Sap Lake in SiemReap province, Cambodia. GCP/CMB/002/BEL.
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    report: Sectoral Studies. CMB/95/003, Vol. 2 partB.

Anon. 2001. Fish collection database of the National Museum of Natural History (Smithsonian Institution). Smithsonian Institution - Division of Fishes.


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Monograph on *Cyclocheilichthys apogon*
CYCLOCHEILICHTHYS ENOPLOS
(Bleeker, 1850)
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
          : Ø Brackish
          : Ø Freshwater
Aquarium fishes : many
First fossil record : Lower Tertiary Eocene  Ref. : 004879
Species currently in FishBase: Genera: 331  Species: 2408  (Including subspecies)  Complete : Yes

Distribution: North America (Northern Canada to Southern Mexico), Africa, and Eurasia. Pharynx with 1-3 rows of teeth, each row with a maximum of 8 teeth. Usually thin lips, plicae or papillae absent; mouth sometimes suckerlike (Garra and Labeo). With or without barbels. Premaxilla usually borders the upper jaw making the maxilla entirely or almost entirely excluded from the gape. Usually protrusible upper jaw. Dorsal fin with 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).

6.2. Information on the genus Cyclocheilichthys and its synonyms

After Eschmeyer, March 2003 (Ref. 46206)

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

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

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

Oxybarbus
Vaillant, 1893, p. 57, CAS Ref: 4485
Type by monotypy.
Type species : Barbus heteronema Bleeker, 1853
Current genus : Cyclocheilichthys
6.3. General information on *Cyclocheilichthys enoplos*

**Classification**

- **Class**: Actinopterygii (Ray-finned fishes)
- **Order**: Cypriniformes
- **Family**: Cyprinidae (Minnows or carps)
- **Species**: Cyclocheilichthys enoplos
- **Author**: (Bleeker, 1850)

**Environment**

- **Freshwater**: Yes
- **Brackish**: No
- **Saltwater**: No

**Importance**

- **Importance to fisheries**: Commercial
- **Main catching method**: O Trawls O Dredges O Liftnets O Hooks+Lines O Other
- **Other methods**: Ø Seines Ø Gillnets Ø Castnets Ø Traps
- **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*

<table>
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<th>Synonym</th>
<th>Author</th>
<th>Status</th>
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<td>043281</td>
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<tr>
<td><em>Cyclocheilichthys dumerilii</em></td>
<td>Sauvage, 1881</td>
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<td>002091</td>
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<tr>
<td><em>Barbus enoploides</em></td>
<td>Tirant, 1885</td>
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<tr>
<td><em>Cyclocheilichthys enoplos</em></td>
<td>Bleeker, 1850</td>
<td>new combination</td>
<td>043281</td>
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<tr>
<td><em>Capoeta enoplos</em></td>
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<td><em>Barbus enoplus</em></td>
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<tr>
<td><em>Barbus macracanthus</em></td>
<td>Bleeker, 1853</td>
<td>junior synonym</td>
<td>002091</td>
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6.5. Common names for *Cyclocheilichthys enoplos*

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</tr>
<tr>
<td>Seren</td>
<td>Malay</td>
<td>Indonesia</td>
<td>006107</td>
</tr>
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<td>Pa chok</td>
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<td>042982</td>
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<td>Pla kra tai</td>
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<td>Pla nham lung</td>
<td>Thai</td>
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<td>42982</td>
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<tr>
<td>Pla ta kok</td>
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<td>Thailand</td>
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</tr>
<tr>
<td>Pla takoke</td>
<td>Thai</td>
<td>Thailand</td>
<td>6459</td>
</tr>
<tr>
<td>Pla tiok</td>
<td>Thai</td>
<td>Thailand</td>
<td>6459</td>
</tr>
<tr>
<td>Takok tapien</td>
<td>Thai</td>
<td>Thailand</td>
<td>9648</td>
</tr>
<tr>
<td>Cá coc</td>
<td>Vietnamese</td>
<td>Viet Nam</td>
<td>36625</td>
</tr>
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</table>

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.: 043281

Status of threat: NL.

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>native</td>
<td>012693</td>
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</tbody>
</table>

Known from the Mekong Basin. A migratory species (Ref. 37772) found around the Tonle Sap river, Great Lake (Ref. 366651) 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*

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<tr>
<th>Level : species in general</th>
<th>StockCode: 043281</th>
<th>MainRef.: 043281</th>
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<table>
<thead>
<tr>
<th>Ecology</th>
<th>Max. sizes</th>
<th>Strains</th>
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<table>
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<th>FAO catches</th>
<th>Diseases</th>
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<td>15502</td>
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<th>Ciguatera</th>
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<table>
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<th>Ecotoxicology</th>
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<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Reproduction</th>
<th>Gill area</th>
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</thead>
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<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Morphology</th>
<th>Spawning</th>
<th>Swimming type</th>
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<td>1</td>
<td>3</td>
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<table>
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<tr>
<th>Processing</th>
<th>Eggs</th>
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<table>
<thead>
<tr>
<th>Growth/mortality</th>
<th>Egg dev't.</th>
<th>Vision</th>
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<table>
<thead>
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<th>Brains</th>
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<table>
<thead>
<tr>
<th>Recruitment</th>
<th>Larval dynamics</th>
<th>Introductions</th>
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<table>
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<th>Aquaculture</th>
<th>Occurrence</th>
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<td>49</td>
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</table>

### 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
Locality: Unspecified
Locality: Central Thailand, Thailand
Chromosome number (haploid): 25
Chromosome number (diploid): 50
Genetic marker(s) present: No
Chromosome arm no: 90

Main Ref.: 010419

Leve: species in general
Locality: Central Thailand, Thailand
Chromosome number (haploid): 25
Chromosome number (diploid): 50
Genetic marker(s) present: Yes
Chromosome arm no: 70

Main Ref.: 034370

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,
Season (% of mature females; 111= presence of mature females):
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111 111 111 111 111 111

Stockcode: 014269

Main Ref.: 037770

Locality: Laos, Mekong Basin, Xayabouri Province,
Season (% of mature females; 111= presence of mature females):
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111

Stockcode: 014269

Main Ref.: 037770

Locality: Laos, Mekong Basin, Xayabouri Province,
Season (% of mature females; 111= presence of mature females):
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
111 111 111 111

Stockcode: 014269

Main Ref.: 037770
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  
- **Rocky**: No  
- **Marine**: No  
- **Soft**: No  
- **Rocky**: No  
- **Mangroves/marches/swamps**: 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)  
- **Trophic level(s)**: Original sample  

**Estimation method**
- **Troph s.e**: 3.2  0.43

**Trophic level estimate**

6.11. Food items for *Cyclocheilichthys enoplos*

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

**Food item**
- **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  
  - 012975
  - insects  
  - Ephemeroptera  
  - unidentified  
  - 012975
  - Hemiptera  
  - unidentified  
  - 012975
  - unidentified  
  - unidentified  
  - 033813

- **mollusks**
  - bivalves  
  - unidentified  
  - unidentified  
  - 006459

- **zooplankton**
  - other plank.  
  - n.a./other plank.  
  - unidentified  
  - unidentified  
  - 033813

- **invertebrates**
  - Invertebrates  

**Total = 9**
6.12. References used for Cyclocheilichthys enoplos

001632 Suvatti, C. 1981. Fishes of Thailand. Royal Institute of Thailand, Bangkok. 379 p. [not seen]
010419 Sidhimunika, A. 1970. A report on the fisheries survey of the Mekong River in the vicinity of the Po Mong Dam site. Inland Fisheries Division, Department of Fisheries, Bangkok, Thailand. 75 p.
031982 Anon. 1999. Fish collection database of the Natural History Museum, London (formerly British Museum of Natural History (BMNH)). Natural History Museum, London (formerly British Museum of Natural History (BMNH)).
036662 Lamberts, D and T. Sarath. 1997. Base line information on the ecology of the fish and the habitats of the flood area of the Tonlé Sap Lake in Siem Reap province, Cambodia. GCP/CMB/002/BEL.


038732 Anon. 2001. Fish collection database of the National Museum of Natural History (Smithsonian Institution). Smithsonian Institution - Division of Fishes.


HENICORHYNCHUS LINEATUS

(Smith, 1945)

Picture by Baird, I
7.1. Summary information on the family Cyprinidae

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

Monograph on Henicorhynchus lineatus  87
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

<table>
<thead>
<tr>
<th>Synonym</th>
<th>Author</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henicorhynchus cryptopogon</td>
<td>non Fowler, 1935</td>
<td>misidentification</td>
<td>033488</td>
</tr>
<tr>
<td>Henicorhynchus lineatus</td>
<td>Smith, 1945</td>
<td>new combination</td>
<td>027732</td>
</tr>
<tr>
<td>Cirrhinus lineatus</td>
<td>Smith, 1945</td>
<td>original combination</td>
<td>036656</td>
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Total = 3

7.5. Common names for Henicorhynchus lineatus

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<th>Name</th>
<th>Language</th>
<th>Country</th>
<th>Ref.</th>
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<tbody>
<tr>
<td>Pasoi</td>
<td>Laotian</td>
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<td>010421</td>
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<tr>
<td>Pa soi lai</td>
<td>Laotian</td>
<td>Lao People's Dem. Rep</td>
<td>037767</td>
</tr>
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<td>Pla soi la</td>
<td>Thai</td>
<td>Thailand</td>
<td>009648</td>
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</table>

7.6. Distribution of Henicorhynchus lineatus

Asia: Mekong and Chao Phraya Basins. Main Ref.: 027732

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
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<tbody>
<tr>
<td>Cambodia</td>
<td>native</td>
<td>033488</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>native</td>
<td>038630</td>
</tr>
<tr>
<td></td>
<td>Occurs in the Mekong Basin in Yunnan. Also Ref. 27732, 43281.</td>
<td></td>
</tr>
<tr>
<td>Lao People's Dem. Rep.</td>
<td>native</td>
<td>043281</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>native</td>
<td>027732</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Viet Nam</td>
<td>native</td>
<td>043281</td>
</tr>
<tr>
<td></td>
<td>Occurs in the Mekong Basin.</td>
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</tr>
</tbody>
</table>

Total native = 5 Total introduced = 0
7.7. Summary information (no. of records) available for *Henicorhynchus lineatus*

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<thead>
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<th>StockCode</th>
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<tr>
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<td>027732</td>
</tr>
<tr>
<td>Ecology</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Food items</td>
<td>0</td>
<td>15502</td>
</tr>
<tr>
<td>Food consumption</td>
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<td>0</td>
</tr>
<tr>
<td>Diet composition</td>
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<tr>
<td>Ration</td>
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<td>0</td>
</tr>
<tr>
<td>Predators</td>
<td>0</td>
<td>0</td>
</tr>
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<td>Morphology</td>
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<td>Processing</td>
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<td>0</td>
</tr>
<tr>
<td>Growth/mortality</td>
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<td>0</td>
</tr>
<tr>
<td>Maturity</td>
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<td>0</td>
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<tr>
<td>Recruitment</td>
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Total = 1

7.8. Morphology of *Henicorhynchus lineatus*

<table>
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<th>Level</th>
<th>StockCode</th>
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</thead>
<tbody>
<tr>
<td>Appearance refers to</td>
<td>O females</td>
<td>O males</td>
</tr>
<tr>
<td>Diagnostic Characters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meristic Characters</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
7.9. References used for *Henicorhynchus lineatus*


009648 Sidthimunka, A. 1970. A report on the fishery survey of the Mekong River in the vicinity of the Pa Mong Dam site. Inland Fisheries Division, Department of Fisheries, Bangkok, Thailand. 75 p.


038732 Anon. 2001. Fish collection database of the National Museum of Natural History (Smithsonian Institution). Smithsonian Institution - Division of Fishes.

HENICORHYNCHUS SIAMENSIS

(Sauvage, 1881)
Siamese mud carp

Picture by FAO

Picture by Warren T
8.1. Summary information on the family Cyprinidae

<table>
<thead>
<tr>
<th>Family</th>
<th>Cyprinidae (Minnows or carps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order</td>
<td>Cypriniformes</td>
</tr>
<tr>
<td>Class</td>
<td>Actinopterygii (Ray-finned fishes)</td>
</tr>
<tr>
<td>Number of genera</td>
<td>210</td>
</tr>
<tr>
<td>Number of species</td>
<td>2010</td>
</tr>
<tr>
<td>Occurs in</td>
<td>Marine, Brackish, Freshwater</td>
</tr>
<tr>
<td>Aquarium fishes</td>
<td>many</td>
</tr>
<tr>
<td>First fossil record</td>
<td>Lower Tertiary Eocene</td>
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Species currently in FishBase: Genera: 331  Species: 2408  (Including subspecies)  Complete: Yes

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

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).

Monograph on Henicorhynchus siamensis 93
Importance

Importance to fisheries : Commercial

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

Dangerous fish harmless
Electrobiology No special ability

Size and age

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

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*

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

Total = 14
8.5. Common names for *Henicorhynchus siamensis*

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

Total = 7

8.6. Distribution of *Henicorhynchus siamensis*

**Asia**: Mekong and Chao Phraya Basins.  
MainRef.: 033488

Status of threat: NL.

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>native</td>
<td>012693</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lao People's Dem. Rep.</td>
<td>native</td>
<td>027732</td>
</tr>
</tbody>
</table>

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 downstream 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.

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>native</td>
<td>033488</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viet Nam</td>
<td>native</td>
<td>027732</td>
</tr>
</tbody>
</table>

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*

<table>
<thead>
<tr>
<th>Level: species in general</th>
<th>StockCode: 033488</th>
<th>MainRef.: 033488</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia: Mekong and Chao Phraya Basins.</td>
<td>Ecology 1</td>
<td>Max. sizes 0</td>
</tr>
<tr>
<td></td>
<td>Food items 4</td>
<td>FAO catches 15502</td>
</tr>
<tr>
<td></td>
<td>Food consumption 0</td>
<td>Genetics 0</td>
</tr>
<tr>
<td></td>
<td>Diet composition 0</td>
<td>Allele frequency 0</td>
</tr>
<tr>
<td></td>
<td>Ration 0</td>
<td>Heritability 0</td>
</tr>
<tr>
<td></td>
<td>Predators 0</td>
<td>Reproduction 0</td>
</tr>
<tr>
<td></td>
<td>Morphology 1</td>
<td>Spawning 7</td>
</tr>
<tr>
<td></td>
<td>Processing 0</td>
<td>Eggs 0</td>
</tr>
<tr>
<td></td>
<td>Growth/mortality 0</td>
<td>Egg dev't. 0</td>
</tr>
<tr>
<td></td>
<td>Maturity 0</td>
<td>Larvae 0</td>
</tr>
<tr>
<td></td>
<td>Recruitment 0</td>
<td>Larval dynamics 0</td>
</tr>
<tr>
<td></td>
<td>L/W relat. 0</td>
<td>Aquaculture 0</td>
</tr>
</tbody>
</table>

Total = 1

8.8. Morphology of *Henicorhynchus siamensis*

<table>
<thead>
<tr>
<th>Level: species in general</th>
<th>StockCode: 045787</th>
<th>Main Ref.: 027732</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance refers to: O females</td>
<td>O males</td>
<td></td>
</tr>
</tbody>
</table>

**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
- Pelvic 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

<table>
<thead>
<tr>
<th>Season (% of mature females; 111 = presence of mature females)</th>
<th>Main Ref.: 037770</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>

**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

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

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>

**Comment**: Based on 11 female specimens with fully developed ovaries.

---

### Locality: Laos, Mekong Basin at Savannakhet-Mukdahan

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

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>

### Locality: Laos, Mekong Basin at Sambor

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

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>

**Comment**: Mature females release eggs which then flow downstream.

---

### Locality: Thailand, Mekong Basin at Savannkhet-Mukdahan

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

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>

### Locality: Thailand, Mekong Basin at Loei

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

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>

**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

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

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>

**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**: No
- **Seagrass beds**: No
- **Macrophyte**: No

#### Feeding

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

---

*Monograph on Henicorhynchus siamensis* 97
### 8.11. Food items for *Henicorhynchus siamensis*

<table>
<thead>
<tr>
<th>Level : species in general plants</th>
<th>StockCode : 045787</th>
</tr>
</thead>
<tbody>
<tr>
<td>other plants benthic algae/weeds</td>
<td>Chlorophytes</td>
</tr>
<tr>
<td></td>
<td>unidentified filamentous chlorophytes 037771</td>
</tr>
<tr>
<td>periphyton</td>
<td>unidentified</td>
</tr>
<tr>
<td>phytoplankton n.a./other</td>
<td>unidentified</td>
</tr>
<tr>
<td>phytoplankton</td>
<td>unidentified</td>
</tr>
</tbody>
</table>

```
8.12. References used for *Henicorhynchus siamensis*


033488 Lamberts, D and T. Sarath. 1997. Baseline information on the ecology of the fish and the habitats of the flood area of the Tonlé Sap Lake in SiemReap province, Cambodia. GCP/CMB/002/BEL.


038732 Anon. 2001. Fish collection database of the National Museum of Natural History (Smithsonian Institution). Smithsonian Institution - Division of Fishes.


PANGASIUS HYPOPHTHALMUS
(Sauvage, 1878)
Sutchi catfish

Picture by FAO

Picture by Baird I

Map showing distribution of Pangasius hypophthalmus

[Map of the world with markings indicating the distribution of Pangasius hypophthalmus]
9.1. Summary information on the family Pangasiidae

Family: Pangasiidae (Shark catfishes)  
Order: Siluriformes  
Class: Actinopterygii (ray-finned fishes)  
Number of genera: 2  
Number of species: 21  
Occurs in: Marine, Brackish, Freshwater  
Aquarium fishes: some  
First fossil record: Tertiary  
Species currently in FishBase: Genera: 5, Species: 30 (Including subspecies)  
Complete: Yes

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
9.3. General information on *Pangasius hypophthalmus*

**Classification**

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

**Environment**

- **Freshwater**: Yes  
- **Brackish**: No  
- **Saltwater**: No  
- **Habitat**: Benthopelagic  
- **Depth range**:

**Importance**

- **Main catching method**:  
  - Seines  
  - Gillnets  
  - Castnets  
  - Traps  
  - Trawls  
  - Dredges  
  - Liftnets  
  - Hooks+Lines  
  - Other

- **Used for aquaculture**: Commercial  
- **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  
- **Maximum length (cm) (female)**:  
- **Maximum weight (g) (male/unsexed)**: 15,500.00  
- **Maximum weight (g) (female)**:  

**Inhabitats 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*

<table>
<thead>
<tr>
<th>Synonym</th>
<th>Author</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pangasius hypophthalmus</em></td>
<td>Sauvage, 1878</td>
<td>new combination</td>
<td>007432</td>
</tr>
<tr>
<td><em>Pangasianodon hypophthalmus</em></td>
<td>Sauvage, 1878</td>
<td>new combination</td>
<td>007432</td>
</tr>
<tr>
<td><em>Helicophagus hypophthalmus</em></td>
<td>Sauvage, 1878</td>
<td>original combination</td>
<td>007432</td>
</tr>
<tr>
<td><em>Pangasius pangasius</em></td>
<td>non Hamilton 1822</td>
<td>misidentification</td>
<td>007432</td>
</tr>
<tr>
<td><em>Pangasius pleurotaenia</em></td>
<td>non Sauvage, 1878</td>
<td>misidentification</td>
<td>007432</td>
</tr>
<tr>
<td><em>Pangasius sutchi</em></td>
<td>Fowler, 1937</td>
<td>junior synonym</td>
<td>007432</td>
</tr>
</tbody>
</table>

9.5. Common names for *Pangasius hypophthalmus*

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

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.

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>introduced</td>
<td>044085</td>
</tr>
<tr>
<td>One of the most ‘disastrous’ alien invasive species brought to the country (Ref. 44085).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>native</td>
<td>007432</td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lao People's Dem. Rep.</td>
<td>native</td>
<td>007432</td>
</tr>
<tr>
<td>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 &quot;lee&quot; (wing) trap fishery during May to July each year (Ref. 37770). Also Ref. 4792, 30857, 37767.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 sooi 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 Cambod 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 : Artifically bred and has a good prospect for aquaculture.

Year : 1978  Established : probably yes  Ref. 006096
Introduced : to Philippines  from Thailand
Reason : fisheries

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

<table>
<thead>
<tr>
<th>Level</th>
<th>StockCode</th>
<th>MainRef.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology</td>
<td>007432</td>
<td>007432</td>
</tr>
<tr>
<td>Max. sizes</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FAO catches</td>
<td>15502</td>
<td>12</td>
</tr>
<tr>
<td>Genetics</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Allele frequency</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Heritability</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Reproduction</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Spawning</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Eggs</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Egg dev't.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Larvae</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Larval dynamics</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Occurrence</td>
<td>7</td>
<td>38</td>
</tr>
</tbody>
</table>

9.9. Morphology of Pangasius hypophthalmus

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
Pelvic attributes : more or less normal
  position : abdominal behind origin of D1
  spines : 8 -9

9.10. Genetic information for *Pangasius hypophthalmus*

Level : species in general
Chromosome number (haploid) : 30
Chromosome number (diploid) : 60
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):**

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>111</td>
<td>111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment**: Eggs occur during March to August, with a strong peak in June-July.

**Locality**: Laos, Mekong Basin at Xayabouri  
**Stock code**: 014046  
**Main ref**: 037770

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

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>111</td>
<td>111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment**: Based on presence of eggs and milt during migration.

**Locality**: Thailand, Mekong Basin at Loei  
**Stock code**: 014046  
**Main ref**: 037770

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

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>111</td>
<td>111</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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

**Habits**

- Streams: Yes  
- Lake: Yes  
- Cave: No  
- Estuaries/lagoons/brackish seas: No  
- Intertidal: 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)  
- **Feeding habit**: hunting macrofauna (predator)

**Trophic level(s)**

<table>
<thead>
<tr>
<th>Original sample</th>
<th>Unfished population</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Troph s.e</td>
<td>troph s.e</td>
<td></td>
</tr>
<tr>
<td>From indiv. food item: 3.3</td>
<td>0.50</td>
<td>-</td>
</tr>
</tbody>
</table>

Monograph on *Pangasius hypophthalmus* 109
9.13. Food items for *Pangasius hypophthalmus*

<table>
<thead>
<tr>
<th>Level: species in general</th>
<th>Stock code: 014046</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food item</td>
<td>Ref.</td>
</tr>
<tr>
<td>nektton</td>
<td></td>
</tr>
<tr>
<td>finfish</td>
<td>unidentified</td>
</tr>
<tr>
<td>bony fish</td>
<td>unidentified</td>
</tr>
<tr>
<td>n.a./other finfish</td>
<td>unidentified</td>
</tr>
<tr>
<td>unidentified fish</td>
<td>049196</td>
</tr>
<tr>
<td>plants</td>
<td></td>
</tr>
<tr>
<td>other plants</td>
<td>unidentified</td>
</tr>
<tr>
<td>benthic algae/weeds</td>
<td>unidentified</td>
</tr>
<tr>
<td>unidentified</td>
<td>012693</td>
</tr>
<tr>
<td>periphyton</td>
<td></td>
</tr>
<tr>
<td>unidentified</td>
<td>012693</td>
</tr>
<tr>
<td>plants</td>
<td></td>
</tr>
<tr>
<td>other plants</td>
<td></td>
</tr>
<tr>
<td>benthic algae/weeds</td>
<td></td>
</tr>
<tr>
<td>unidentified</td>
<td></td>
</tr>
<tr>
<td>unidentified vegetable</td>
<td></td>
</tr>
<tr>
<td>debris</td>
<td></td>
</tr>
<tr>
<td>periphyton</td>
<td></td>
</tr>
<tr>
<td>unidentified</td>
<td></td>
</tr>
<tr>
<td>unidentified</td>
<td></td>
</tr>
<tr>
<td>Total = 6</td>
<td></td>
</tr>
</tbody>
</table>

9.14. Length-Weight relationships of *Pangasius hypophthalmus*

\[ W = a \cdot L^b \] with Length in cm and Weight in g 

<table>
<thead>
<tr>
<th>Locality</th>
<th>StockCode : 014046</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length range : 84 - 91.5</td>
<td>Main Ref. 040637</td>
</tr>
<tr>
<td>TL</td>
<td>Correlation coefficient : 3</td>
</tr>
<tr>
<td>Sample size : 2: 0.0152</td>
<td>Sex : unsexed</td>
</tr>
<tr>
<td></td>
<td>Comment : L-W relationship calculated from data in</td>
</tr>
<tr>
<td></td>
<td>Ref. 40637.</td>
</tr>
</tbody>
</table>

9.15. Diseases reported for *Pangasius hypophthalmus*

<table>
<thead>
<tr>
<th>StockCode : 014046</th>
<th>Main : 026129</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parasitic infestations (protozoa, worms, etc.), Silurodiscoides Infestation</td>
<td>Ref. : 026129</td>
</tr>
<tr>
<td>Causative agent</td>
<td>Silurodiscoides sp.</td>
</tr>
<tr>
<td>Occurrence</td>
<td>Luzon, Philippines, 1992</td>
</tr>
<tr>
<td>O eggs</td>
<td>O fry</td>
</tr>
<tr>
<td>O larvae</td>
<td>O females</td>
</tr>
<tr>
<td>O in the wild</td>
<td>O in culture</td>
</tr>
</tbody>
</table>

**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 larvae              | O females      |
| O in the wild         | O 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

**Trichodinella sp.**
- **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
- **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

- **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 (Henneguya sp.)

- **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

- **Causative agent:** Dactylogyrus sp.
- **Occurrence:** not specified
  - O eggs
  - O fry
  - ⊗ females
  - O in the wild
  - O larvae
  - O juveniles
  - ⊗ males
  - ⊗ in culture

Monograph on Pangasius hypophthalmus 111
### 9.16. FAO aquaculture production data for *Pangasius hypophthalmus*

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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 | 7,740 | 7,740 | 7,740 |
| (US$'000) | 4,609 | 6,026 | 6,922 | 4,257 | 4,257 | 4,257 | 4,257 |
9.17. References used for *Pangasius hypophthalmus*

031982 Anon. 1999. Fish collection database of the Natural History Museum, London (formerly British Museum of Natural History (BMNH)). Natural History Museum, London (formerly British Museum of Natural History (BMNH)).


038732 Anon. 2001. Fish collection database of the National Museum of Natural History (Smithsonian Institution). Smithsonian Institution - Division of Fishes.


040637 IGFA. 2001. Database of IGFA angling records until 2001. IGFA, Fort Lauderdale, USA.


Monograph on Pangasius hypophthalmus
PANGASIUS DJAMBAL
(Bleeker, 1846)

Picture by FAO

Map showing distribution of Pangasius djambal

*Pangasius djambal*
*native*
10.1. Summary information on the family Pangasiidae

Family : Pangasiidae (Shark catfishes)
Order : Siluriformes  
Class : Actinopterygii (ray-finned fishes)  
MainRef. : 007463  
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:
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
Bleecker, 1862, p. 399, CAS Ref: 391
Type by original designation (also monotypic).
Type species : Pangasius polyuranodon  
Bleecker, 1852
Current genus : Pangasius
10.3. General information on *Pangasius djambal*

**Classification**
- **Class**: Actinopterygii (Ray-finned fishes)  
- **Order**: Siluriformes  
- **Family**: Pangasiidae (Shark catfishes)  
- **Species**: Pangasius djambal  
- **Author**: (Bleeker, 1846)  
- **Environment**: Freshwater: Yes, Habitat: Benthopelagic  
- **Importance**: Importance to fisheries: Commercial, Main catching method: ☒ Seines ☒ Gillnets O Castnets O Traps O Spears  
- **Size and age**: Maximum length (cm) (male/unsexed): 90, Common length (cm) (male/unsexed): , Maximum weight (g) (male/unsexed): 16,000.00  

**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  

**Electrobiology**: No special ability  

**Remarks**:  

- **Synonyms, misidentifications, etc. used for *Pangasius djambal***
  - **Synonym**: Pangasius djambal, Author: Bleeker, 1846, Status: original combination, Ref. 007432  
  - **Synonym**: Pangasius pangasius, Author: non Hamilton, 1822, Status: misidentification, Ref. 007432  

---

- Fowler, 1937, p. 142, CAS Ref: 1425  
- Type by original designation (also monotypic).  
- Type species: *Pangasius cultratus*, Smith, 1931  
- Current genus: *Pangasius*
10.5. Common names for *Pangasius djambal*

<table>
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<tr>
<th>Name</th>
<th>Language</th>
<th>Country</th>
<th>Ref.</th>
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<td>Trey pra</td>
<td>Khmer</td>
<td>Cambodia</td>
<td>012693</td>
</tr>
</tbody>
</table>

10.6. Distribution of *Pangasius djambal*

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

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>native</td>
<td>012693</td>
</tr>
</tbody>
</table>
| 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).

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>native</td>
<td>007432</td>
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</table>
| Reported from Batavia, Krawang, Tjikao, and Parongkalong on the island of Java. Also known from Borneo.

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lao People's Dem. Rep.</td>
<td>native</td>
<td>030857</td>
</tr>
</tbody>
</table>
| 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).

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>native</td>
<td>012693</td>
</tr>
</tbody>
</table>
| 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).

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Ref.</th>
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</thead>
<tbody>
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<td>Viet Nam</td>
<td>native</td>
<td>037770</td>
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</table>
| Known from the Mekong.  

Total native = 6  Total introduced = 0

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

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<th>StockCode: 07432</th>
<th>MainRef.: 007432</th>
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<td>Asia: Mekong Basin (Ref. 12693) also from Malaysia and Indonesia.</td>
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<tr>
<td>Food consumption</td>
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</tr>
<tr>
<td>Diet composition</td>
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<tr>
<td>Ration</td>
<td>0 Hertiability 0 Metabolism 0</td>
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<tr>
<td>Predators</td>
<td>0 Reproduction 0 Gill area 0</td>
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<tr>
<td>Morphology</td>
<td>1 Spawning 1 Swimming type 0</td>
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<tr>
<td>Processing</td>
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<td>L/W relat.</td>
<td>0 Aquaculture 0 Occurrence 1</td>
<td></td>
</tr>
</tbody>
</table>
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: present
- Adipose fin: forked
- Shape of fin: normal
- Attributes: 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  
**Main Ref.:** 037770  
**DataRef.:** 039630

**Season (% of mature females; 111= presence of mature females):**
- Jan: 111
- Feb: 111
- Mar: 111
- Apr: 111
- May: 111
- Jun: 111
- Jul: 111
- Aug: 111
- Sep: 111
- Oct: 111
- Nov: 111
- Dec: 111

**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: 2.7  
- Unfished population: 0.26  
- Remarks: Trophic level estimate
10.11. Food items for *Pangasius djambal*

<table>
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<th>Level: species in general</th>
<th>StockCode: 014041</th>
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<td>plants unidentified unidentified 012693</td>
</tr>
<tr>
<td><strong>zoobenthos</strong></td>
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</tr>
<tr>
<td>insects insects unidentified</td>
<td>unidentified 012693</td>
</tr>
<tr>
<td>worms n.a./other annelids</td>
<td>unidentified unidentified 012693</td>
</tr>
</tbody>
</table>
10.12. References used for *Pangasius djambal*


031982 Anon. 1999. Fish collection database of the Natural History Museum, London (formerly British Museum of Natural History (BMNH)). Natural History Museum, London (formerly British Museum of Natural History (BMNH)).


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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