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AMBLYPHARYNGODON CHULABHORNAE SP. NOV., A NEW CYPRINID FISH FROM THAILAND AND KAMPUCHEA

*Chavalit Vidthayanon** and *Maurice Kottelat***

ABSTRACT

Amblypharyngodon chulabhornae sp. nov. is described from two different river basins in Northeast, Central and Northern Thailand and Kampuchea, where it inhabits swamps, marshes and canals. The new species differs from its congeners by having fewer scales on the lateral row (42–50, mode 47) and a shorter lateral line (6–7 perforated scales). The largest known specimen is 37.9 mm SL. This is the first record for Thailand and Indochina of this genus which is otherwise known from the Indian subcontinent. A single record of *A. chulabhornae* from Singapore is possibly the result of introduction.

INTRODUCTION

The small cyprinid genus *Amblypharyngodon* had previously been recorded from the Indian subcontinent (India, Pakistan, Nepal, Sri Lanka and Bangladesh) and Burma; it includes four species. There is no record from Indochinese freshwaters (SMITH, 1945; SIDTHIMUNKA, 1970; KAWAMOTO et al., 1972; RAINBOTH, LAGLER & SONTIRAT, 1976; KOTTELAT, 1985, 1989). The geographically nearest record is from Tenasserim Burma (VINCIGUERRA, 1890: 302).

The purpose of this paper is to describe and name the first species of *Amblypharyngodon* from the Chao Phraya and Mekong basins. It was first caught in 1962 in Kampuchea by François d'Aubenton and has subsequently been collected by us and by colleagues in Northeast, North and Central Thailand in swamps, communal village fishponds and small canals.

MATERIALS AND METHODS

Counts and measurements are based on HUBBS & LAGLER (1947). Measurements were made to the nearest 0.1 mm with dial caliper. All proportions are expressed as percent of standard length (% SL) or as percent of head length (% HL). Some characters have been transformed to percent of total length (% TL), for comparison with

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previous data of Indian species given by DAY (1878) and JAYARAM (1981). The scales are counted along the longitudinal row on which the lateral line is located, from head to end of hypural plate (lateral row); in the count of scales on a transverse row between lateral line and pelvic fin origin, the lateral row (on which the lateral line is situated) is used if the lateral line does not reach above pelvic fins. Comparative observations of osteology have been made on cleared and stained material of *A. mola*, type species of the genus. The examined material belongs to the following collections: CMK, second author's collection. CUMZ, Chulalongkorn University Museum of Zoology, Bangkok; KUMF, Kasetsart University Museum of Fisheries, Bangkok; MCSNG, Museo Civico di Storia Naturale, Genova; MNHN, Muséum National d'Historie Naturelle, Paris; NIFI, National Inland Fisheries Institute, Bangkok: NSMT-P, National Sciences Museum, Natural History, Tokyo; RMNH, Rijksmuseum van Natuurlijke Historie, Leiden; ZMH, Zoologisches Museum und Zoologisches Institut, Hamburg; ZRC, Zoological Reference Collection, Singapore; ZSM, Zoologische Staatssammlung, Munich.

Amblypharyngodon Bleeker

Amblypharyngodon Bleeker, 1860: 433 (type species: *Cyprinus mola* Hamilton, 1822, by monotypy).

A genus in which have been placed four species from the Indian subcontinent and Burma (DAY, 1875; MUNRO, 1955; MIRZA, 1970; JAYARAM, 1981). It is characterized by pharyngeal teeth compressed, crown blunt and enlarged, anterior angle of pharyngeal arch expanded with 2 large hollows. Moderately elongate and compressed body, rounded abdomen, 42–79 small scales on the lateral row, incomplete lateral line, absence of upper lip, barbels or any fleshy fold, 2 simple and 7 branched dorsal rays, 3 simple and 5 branched anal rays. Small size 40–150 mm SL. The following description and key will aid in distinguishing the recognized species; they are based on the examined specimens and on the literature (DAY, 1878; JAYARAM, 1981).

Key to the Species of *Amblypharyngodon*

1. - 4–6 scales on a transverse row between normal course of lateral line and front of pelvic fin base 2
   - 8–10 scales on a transverse row between normal course of lateral line and front of pelvic fin base 4

2. - 42–50 scales on lateral row, with 6–7 perforated scales; northern, northeast and central Thailand and Kampuchea . . . . . *A. chulabhornae* sp. nov.
   - 50–65 scales on lateral row 3

3. - 50–57 scales on lateral row, with 15–23 perforated scales; Western India to Sri Lanka . . . . . *A. melettinus* (Valenciennes, 1844)
   - 58–65 scales on lateral row, with 7–12 perforated scales; Eastern India to Bangladesh . . . . . *A. microlepis* (Bleeker, 1853)

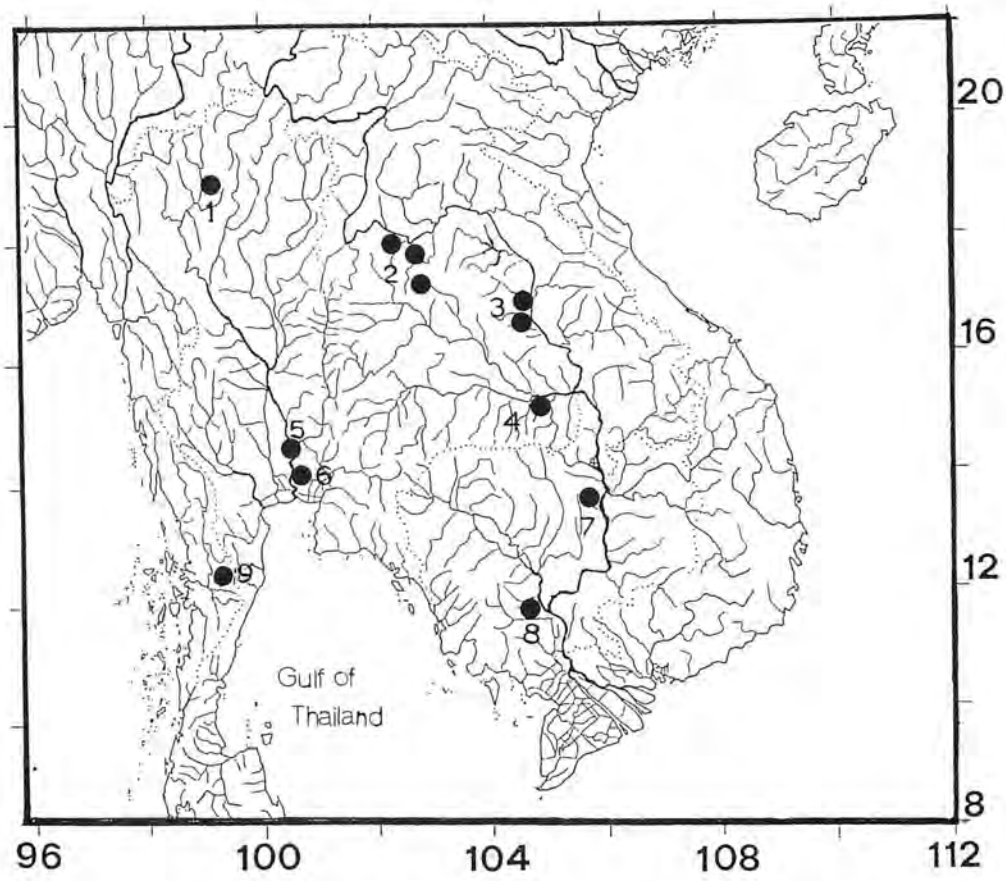

Figure 1. Map of collecting localities of *A.chulabhornae* in Mekong and Chao Phrya River basins. 1: Chiang Mai; 2: Nong Khai; 3: Nakhon Phanom 4: Ubol; 5: Ayutthaya; 6: Nonthaburi 7: Stung Tang; 8: Phnom Penh; 9: Petchaburi.

4. - 55–65 scales on lateral row, body depth at dorsal fin origin 36–41% SL (30% TL); Burma . . . . . *A. atkinsonii* (Blyth, 1860)
   - 65–79 scales on lateral row, body depth at dorsal fin origin 24–28% SL (19–22% TL); throughout Indian subcontinent and Burma . . *A. mola* (Hamilton, 1822)

Amblypharyngodon chulabhornae, new species

Holotype. KUMF 2993, 35.6 mm SL; Thailand; Nong Khai Prov.: Amphoe Muang, Nong Tua, communal village fishpond (17°52'N, 102°49'E); C. Vidthayanon, 18 XII 1986.

Paratypes. THAILAND: — NIFI 2223, 60 ex., 16.7–33.4 mm SL; same data as holotype. — CUMZ 2531.3.31.1–7, 7 ex., 23.4–27.1 mm SL; same data as holotype. — KUMF 2994, 8 ex., 20.9–27.4 mm SL; same data as holotype. — NIFI 2224, 16 ex., 26.1–27.9 mm SL; Nong Khai Prov.: small swamp in Amphoe Srichiangmai; C. Vidthayanon, 26 I 1987. — CMK 5049, 5 ex., 15.1–22.9 mm SL; Udon Thani Prov.: swamp, 6 km N of Udon Thani, where road 2 crosses the railway (17°28'N 102°48'E); M. Kottelat, 16 III 1985. — NIFI 2222, 18 ex., 18.0–25.3 mm SL; Nakhon Phanom Prov.: That Phanom market; T.R. Roberts, 31 XII 1988. — NIFI 2226, 6 ex., 17.2–24.6 mm SL; Mukdahan Prov.: Amphoe Muang; C. Vidthayanon, 8 I 1988. — NIFI 2225, 6 ex., 17.2–24.6 mm SL; Ubon Ratchathani Prov.: Amphoe Warin Chamrap; C. Vidthayanon, 9 I 1988. — ZSM 27191, 3 ex., 21.3–27.6 mm SL; Ayutthaya; C. Vidthayanon, 11 XII 1988. — NIFI 2221, 13 ex., 24.5–36.5 mm SL; Pathum Thani Prov.: paddy field; S. Lumlertdecha, VI 1985. — CUMZ 2531.3.31.8, 1 ex., 33.4 mm SL; Nonthaburi Prov.: small canal; NIFI staff, 19 VIII 1987. —CMK 4019, 3 ex., 22.3–26.8 mm SL; Chieng Mai Prov.: ponds along road from Chieng Mai to Mae Jo, near bridge over Mae Khao; M. Kottelat & P. Hobelman, 12 VI 1983.

KAMPUCHEA: — MNHN 1989–272, 17 ex., ZSM 27120, 5 ex., CMK 6338, 3 ex., 15.2-37.9 mm SL; Stung Sang; F. d'Aubenton, 3 VIII 1962. — CMK 4290, 1 ex., 26.7 mm SL; same data; cleared and stained. — MNHN 1989–271, 75 ex., ZSM 27119, 16 ex., CMK 6337, 10 ex., 15.5–33.4 mm SL; road from Phnom Penh to Kompong Cham; F. d'Aubenton, 2 VIII 1962.

Non-type: ZRC uncat., 2 ex.; Singapore. — NIFI 02345, 28 ex., 25.0–30.8 mm SL; from the type locality; 30 III 1989. —NSMT-P 35801, 4 ex. 30.3–35.3 mm SL; Petchaburi Prov.; Khlong Munelieng, Kao Yoi District; A. Doi, 26. VII.1990.

Diagnosis. The new species is distinguished from other species in the genus by having fewer scales on the lateral row (42–50 [mode 47], vs. 50–79), 6–7 perforated scales along lateral line (vs. 7–23), and 4–5 scales on a transverse row between normal course of the lateral line and the base of pelvic fin. The largest known specimen is 37.9 mm SL while the four other species reach larger to much larger sizes (47–80 mm SL). It is the only representative of the genus in the Chao Phraya and Mekong basins.

Description. D. iii, 7; P. i, 10–12; V. i, 6–7; A. iii, 5; C. ii–iii, 1/9 + 8/1, ii–iv. Body moderately oblong, somewhat compressed. Head conical, slightly compressed with thin integument. The general appearance is shown in Figs. 2 and 3, morphometric and meristic data are recorded in Tables 1–2. Mouth terminal, lower jaw prominent with a weak symphysal knob at the tip. Corner of lower lips with a short labial fold. Nostrils closer to anterior eye margin than lip. Anterior nostril round, smaller than the posterior, which is crescent-shaped. Pharyngeal teeth formula 4,1 : 1,4 compressed with blunt crowns (Fig. 4). Gill rakers 12–13 at the first arch. Total vertebrae count 31–32.

Dorsal fin small, height 18.6–28.8% SL, origin behind the pelvic insertion and closer to the caudal than the tip of snout. Pectoral fin broadly pointed, posterior margin straight, its length 14.5–19.8% SL. Ventral fin sharply pointed, posterior margin concave. Anal fin origin under insertion of last dorsal ray of slightly behind. Caudal fin deeply forked, each lobe with a pointed tip.

Figure 2. Fresh specimen *of Amblypharyngodon chulabhornae* sp. nov., 28.5 mm SL. NIFI 02345 from the type locality. (Photographed by Midori Kobayakawa.)

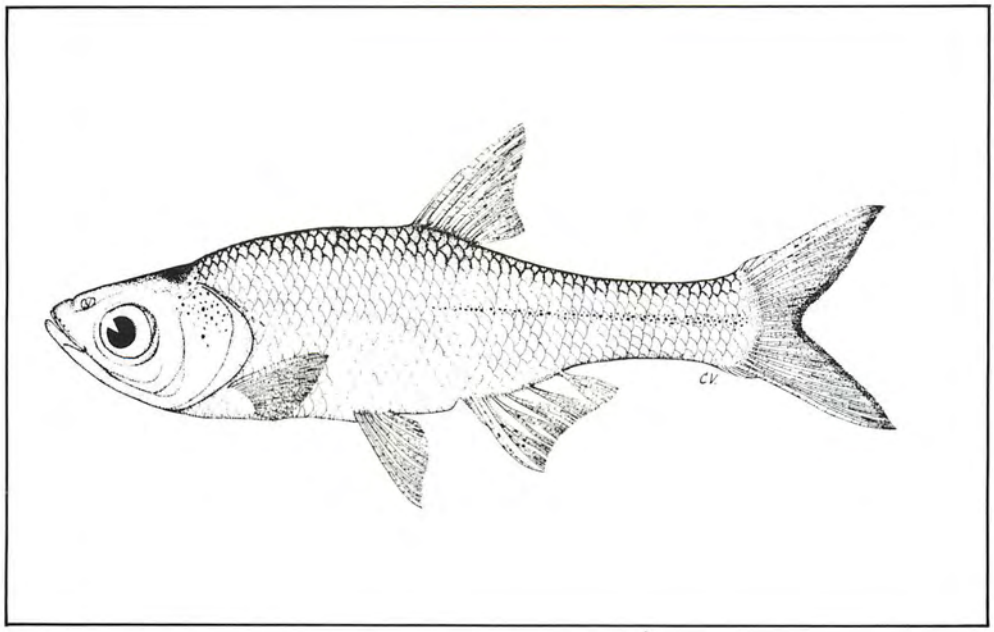

Figure 3. *Amblypharyngodon chulabhornae* sp. nov., CUMZ 2531.31.8, paratype. 33.4 mm SL. Nonthaburi, Thailand.

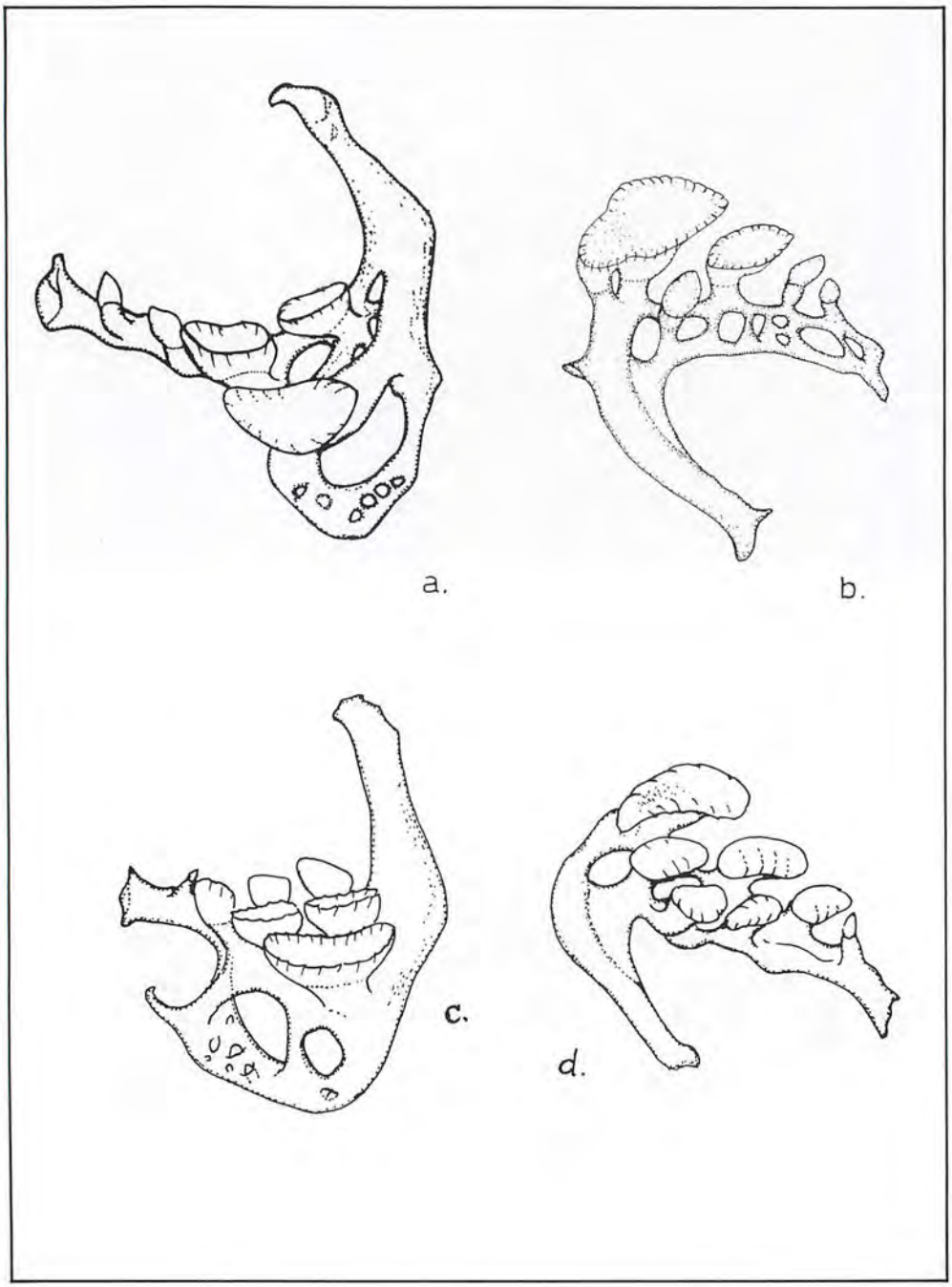

Figure 4. Comparison of pharyngeal teeth in the right arch of *A. chulabhornae* sp. nov., 30.2 mm SL. (a, b) and *A. mola* 37.0 mm SL. (c, d). a and c, posterior view; b and d, mesial view.

Scales small, easily deciduous, 42–50 [mode 47] on lateral row. Lateral line incomplete with 6–7 perforated scales. 4–5 scales on a transverse row between normal course of lateral line and the base of pelvic fins.

Gas-bladder divided into two lobes, the anterior rounded to ovate and the posterior elongated. Intestinal coiling pattern with 4 loops (Fig. 6). Specimens over 30.0 mm SL exhibit various stages of ripe gonads.

Colouration. In fresh specimens, the body is slightly yellowish opaque with a silvery band along each side from operculum to base of caudal fin. The gas-bladder is partly visible above viscera. Head, opercle and belly silvery gray, cranium gold shining. Eye silvery blue with dark pupil. Dorsal, pectoral, pelvic and anal fins translucent, caudal fin yellowish translucent with pigmented posterior margin.

In preserved specimens, head and body become opaque and paler, sometimes with a pale band along sides. Cranial part and mid-dorsal part pigmented, posterior mid-body with a pigmented line to the caudal base. Fins translucent and the caudal with pigmented posterior margin.

Etymology. The new species is named in honour of H.R.H. Princess Chulabhorn Mahidol of Thailand in recognition of her interest and patronage of research and development in science and technology, including biology and fisheries. The Thai vernacular name is "Siew Chao Pha Chulabhorn" (ซิวเจ้าฟ้าจุฬาภรณ์).

Ecology. In Northeast Thailand *A. chulabhornae* is locally abundant in marshes with shallow water (0.3–1.0 m) and submerged terrestrial grass and aquatic macrophytes; it is also commonly found in rehabilitated small swamps or communal fishponds for village fisheries purposes; it is not found in fishponds for intensive culture. In Central and Northern Thailand *A. chulabhornae* was found occasionally in paddy fields and canals with some floating aquatic plants.

This new species is incidentally caught by the artisanal fishermen while netting the small palaemonid shrimp *Macrobrachium lankesteri.* This bycatch also includes the following diminutive species: *Rasbora borapetensis* Smith, 1934; *R. spilocerca* Rainboth & Kottelat, 1987; *Oryzias mekongensis* Uwa & Magtoon, 1986; and *Trichopsis schalleri* Ladiges, 1962. Due to the poverty in some areas of Northeast Thailand, all fish species are important protein sources. *Amblypharyngodon chulabhornae* is an edible species which is caught by small dipnet, scoopnet and small seine. The species is reputed for its good taste while some other diminutive cyprinids *(Rasbora, Esomus)* are reported to have a bitter taste.

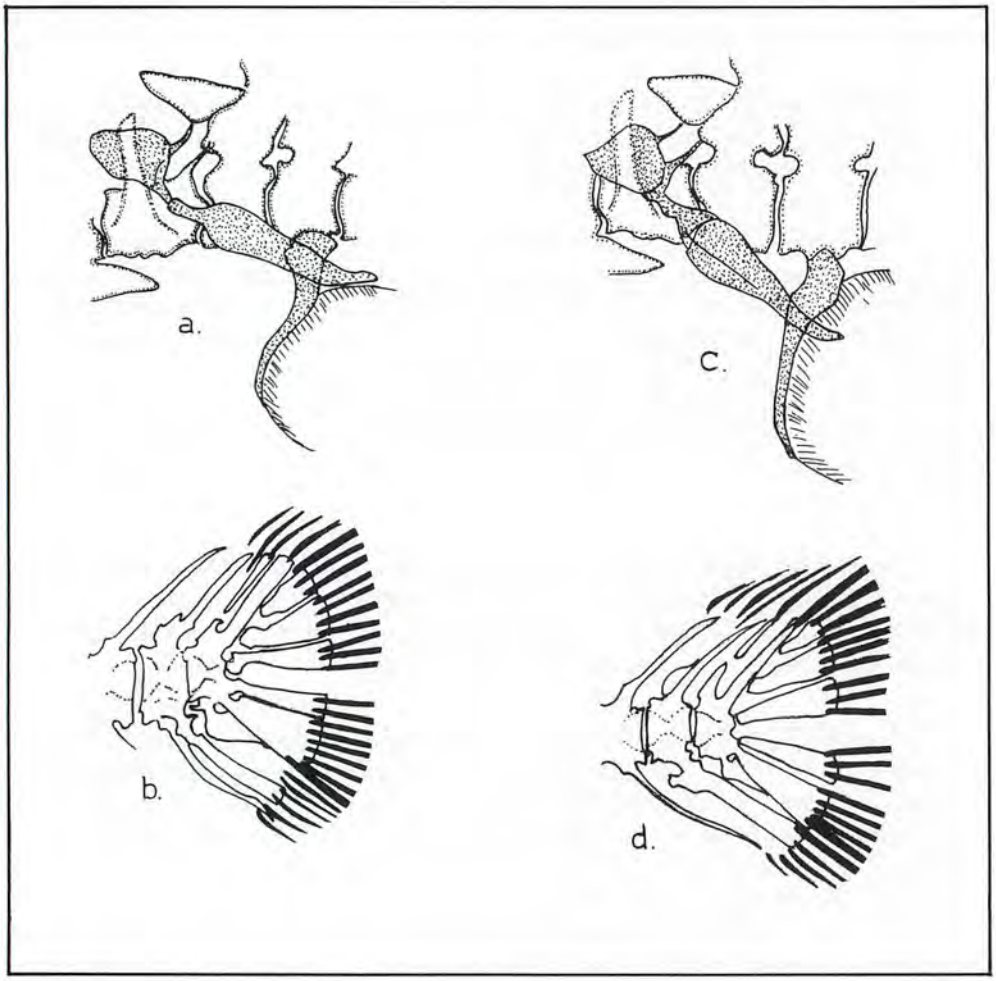

Figure 5. Comparison of Weberian apparatus and caudal complex of *A. chulabhornae*, 30.2 mm SL (a, b), and *A. mola*, 37.0 mm SL (c, d).

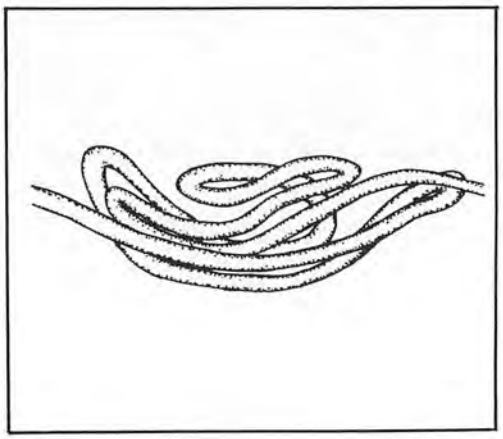

Figure 6. Intestinal loops of *A. chulabhornae* sp. nov., 30.0 mm SL. Oesophagus at left side of the figure.

Table 1. Morphometric and meristic data of *Amblypharyngodon chulabhornae* sp. nov. in % SL (except eye diameter, snout length and interorbital width are in % HL.)

Characters	Holotype	Paratypes			
		North-eastern n=38	Central n=14	Northern n=3	Kampuchea n=15
Dorsal fin rays	ii,7	ii,7	ii,7	ii,7	ii,7
Pectoral fin rays	i,11	i,10–12	i,10–11	i,11–12	ii,9–12
Anal fin rays	ii,5	ii,5	ii,5	ii,5	ii,5
Pelvic fin rays	i,6	i,6–7	i,6	i,6–7	i,6–7
Caudal fin rays	i,9+8,i	i,9+8,i	i,9+8,i	i,9+8,i	i,9+8,i
Lateral scale rows	47	43–49	42–50	43–46	44–49
Perforated lateral line scales	loose	6–7	6	6–7	6–7
Transverse scales rows	17	16–18	17	15–16	15–17
Predorsal scales	22	19–22	18–25	18–19	18–20
T.S between lateral and pelvic fin	loose	5–6	5–6	5–6	5–6
Circumpeduncle scales	18	16–18	16–18	16	16–18
Total length (in mm)	44.2	20.8–44.2	31.3–46.1	27.0–33.6	20.6–36.8
Standard length (in mm)	33.6	16.7–33.4	24.2–33.7	22.3–26.8	16.9–28.9
Head length	28.9	25.2–34.4	25.7–30.4	28.5–30.0	28.7–31.4
Predorsal length	57.6	52.0–61.2	55.6–60.3	54.8–55.2	53.7–57.7
Prepelvic length	51.3	48.0–54.3	49.2–52.7	47.1–48.2	45.2–42.2
Preanal length	65.9	61.2–68.0	63.4–68.4	59.1–61.3	61.4–63.0
Caudal peduncular length	26.8	22.1–27.4	22.6–27.3	23.2–23.3	18.7–27.0
Depth of caudal peduncle	12.9	10.5–13.4	11.0–14.0	11.4–11.6	10.3-11.1
Head depth posterier eye margin	19.6	16.2–19.6	17.4–18.6	17.4–18.0	17.4–19.2
Body depth at the dorsal origin	29.9	27.0–32.0	27.3–39.2	24.8–30.0	21.6–28.5

Table 1 (continued).

Characters	Holotype	Paratypes			
		North-eastern n=38	Central n=14	Northern n=3	Kampuchea n=15
Snout length	20.0	23.0–30.4	22.1–30.4	28.0–28.3	25.0–29.9
Interorbital wicth	34.7	28.3–34	32.4–38.1	29.1–32.8	21.9–33.0
Eye diameter	26.4	26.4–39.0	30.0–39.2	32.3–34.6	26.5–32.0
Dorsal fin height	27.2	18.6–28.8	20.1–28.6	25.3–26.1	17.9–26.3
Pectoral fin length	17.4	14.5–19.0	15.2–19.8	18.4–19.4	14.0–17.2
Pelvic fin length	25.8	14.6–18.8	14.6–16.9	17.4–17.5	13.3–16.8
Anal fin height	16.8	13.1–20.1	15.2–18.3	18.7–20.4	14.6–18.0

Table 2. Comparative data on counts and selected proportion in *Amblypharyngodon* species (measurements in parentheses from DAY (1875) and JAYARAM (1981).

Characters	Species				
	A. chulabhornae sp. nov.	*A. melettinus*	*A. microlepis*	*A. atkinsonii*	*A. mola*
Lateral scale raws	42–50	51(50–57)	58–65	61(55–75)	65–79
Perforated lateral scale	6–7	23(15–20)	8–12	19	13–15
Dorsal fin rays	ii,7	ii,7	ii,7	ii,7	ii,6–7
Pectoral fin rays	i,10–12	i(14)–15	i,13	i,14	i,14
Anal fin rays	ii,5	ii-iii,5	ii,5	ii,6	ii–iii,6
Pcevic fin rays	i,6–7	i,8	i,8	i,8	i–ii,6
caudal fin rays	i,9+8,i	i,9+8,i	i,9+8,i	i,9+8,i	i,9+8,i
Eye diameter (%HL)	26.4–39.0	(25)–26.5	31.7–35.5	26.9(23.5–25)	25–28.5
Head length SL	25.2–34.4	27.5	27.7–30.5	28.6	31.5–35.5
TL	20.0–25.9	(18.2–20.0)	(20–25)	(20–25)	25.6–25.8
Body depth SL	27.0–32.0	24.9	24.3–26.3	40.5	23.7–28.0
TL	19.0–25.2	(18.2–20.0)	(15.8–22.2)	(30)	18.5–21.9
Caudal peduncle SL	21.1–27.4	22.7	21.7–25.1	20.8	21.3–24.7
TL	16.8–21.5	20	(15.8–22.2)	(20)	16.6–19.3

Comparison. The systematic position of the genus *Amblypharyngodon* is unresolved. It does not seem to have close relationships with the other known genera of small cyprinids occurring in the area, like *Rasbora, Danio, Brachydanio*, etc.

The new species is distinguishable from its four congeners by having a smaller number of scales on the lateral row (42–50, vs. 50–79) and a smaller number of perforated scales (6–7, vs. 7–23) on the lateral line. The closest number of scales on the lateral row is found in *A. melettinus* (50–57) which has more perforated scales (15–20) along the lateral line. The geographically nearest species is *A. atkinsonii* which differs in body shape (body depth at dorsal origin about 36–41% SL vs. 25–39% and in the number of perforated scales along lateral line (19, vs. 6–7). See Table 2 for comparative data for the five species.

Pharyngeal teeth (Fig. 4) differ from the generic type *A. mola* in formula: 4,1 : 1, 4 (vs. 4,2,1 : 1,2,4), the hollow on anterior angle of pharyngeal arch which is relatively large. Weberian apparatus (Fig. 5) with large scaphium and tripus, lateral process of centrum 2 in contact with tripus. Os suspensorium elongated and anteriorly convex attached to anterior chamber of gas bladder. Total vertebral count of both is 31–32.

There are no clear differences between material from Northeast and Central Thailand in terms of counts or measurements.

We have seen two specimens collected in 1986 in Singapore. The species is not mentioned by ALFRED (1966) and its presence might be the result of introduction, possibly as an aquarium fish.

Comparison material. *Amblypharyngodon atkinsoni*: RMNH 8701, 1 ex.; Burma; from Day's collection. — MCSNG 17266, 1 ex.: Burma: Kokarit; L. Fea. *A. melettinus* : RMNH 8702, 1 ex.; India: Cochin; from Day's collection. *A. microlepis*: RMNH 7043, 4 ex.; Bengal; from Bleeker's collection. *A. mola*: NIFI 02220, 5 ex., 25.6–38.1 mm SL; India: Orissa: Mahanadi basin near Sambalpur; T.R. Roberts, II 1985. — NIFI 02224, 1 ex., 59.3 mm SL; Bangladesh: Ganges Basin; S Boonyaratpalin, IV 1988. — ZMH 3178, 44 ex.; India: Nishangara, Varei; G.v. Maydell, 4 IX 1956. — ZMH 3179, 4 ex.; India: Ganges at Benares; G.v. Maydell, 29 X 1956. — MCSNG 17267, 1 ex.; Burma: Rangoon or Bhamo; L. Fea. — RMNH 4961, 2 ex.; Bengal; from Bleeker's collection.

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