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A new fish species of the genus *Garra* (Teleostei: Cyprinidae) from the Chalou River, Manipur, India

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Abstract

A new species of the genus *Garra* is described from the Chalou River in Manipur, northeastern India. The new species, *Garra chingaiensis*, belongs to the "proboscis with a transverse lobe species group". It further belongs to the unilobed proboscis group and can be distinguished from its congeners in having a combination of the following characters: a prominent 3-4 unicuspid tubercles on the unilobed proboscis, a transverse lobe with an irregular 11-13 unicuspid tubercles, lateral surface of the snout with 2-3 minute tubercles; a narrow black 5 stripes, laterally more distinct towards caudal peduncle, 3 stripes below the lateral line and 2 stripes above lateral line; black stripes in the middle of caudal fin; chest and belly scaled; 12 circumpeduncular scales; 34-35 lateral scales; 8 ½ branched dorsal fin rays; and 5 ½ branched anal fin rays.

Keywords: Labeoninae, *Garra*, Taxonomy, new species, Chalou River, Manipur

Introduction

The cyprinid genus *Garra* Hamilton, 1822 includes elongated small to medium sized bottom-dwelling fishes, usually found in swift-flowing rivers or mountain streams and are distributed from the Sub-Saharan Africa to Borneo through the Arabian Peninsula, South Asia and Southern China (Zhang & Chen, 2002). It is diagnosed by the presence of a labial fold forming a gular disc that displays a variation in the snout (Kottelat, 2020). This genus is divided into five groups based on snout morphology: a smooth snout species group, a transverse lobe species group, a proboscis species group, a rostral flap species group, and a rostral lobe species group (Nebeshwar & Vishwanath, 2017).

Currently, 45 species of *Garra* that belongs to the "snout with proboscis group" are reported, out of which 11 are distributed in the Chindwin River Basin: *G. bispinosa* Zhang 2005, *G. chindwinensis* Premananda, Kosygin and Saidullah 2017, *G. cornigera* Shangningam and Vishwanath 2015, *G. elongata* Vishwanath and Kosygin 2000, *G. gravelyi* Annandale 1919, *G. litanensis* Vishwanath 1993, *G. moyonkhulleni* Moyon and Arunkumar 2018, *G. qiaojiensis* Wu and Yao 1977 (in Wu 1977), *G. rotundinasus* Zhang 2006, *G. surgifrons* Sun, Xu Li, Zhou and Fenglian 2018 and *G. trilobata* Shangningam and Vishwanath 2015. A collection of fishes from the Chalou River, a tributary of the Chindwin River in the Ukhrul District of Manipur, India included 6 undescribed specimen of *Garra* with proboscis on the snout, which herein described as *Garra chingaiensis,* new species.

Material and Methods

The specimens were collected from streams of Chalou River at Chingai Village by means of hand picking after diverting part of a stream by damming. They were found along some shallow beds of the stream. Specimens obtained were not much greater in length. A planned expedition may perhaps obtain larger specimen. The fishes were fixed in 10% formalin. Measurements were made point to point with a digital calliper on the left side of specimens to the nearest

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0.1mm. Counts, measurements and terminology follow Nebeshwar and Vishwanath (2013). Lateral line scales (scales on the body + scales on the caudal fin) were counted from the anterior most pored scale in contact with the shoulder girdle to the posterior most pored scales on the caudal fin. Fin rays were counted following Kottelat (2001), indicating the last two rays articulating on the same pterygiophore as "1 ½". The identification of the elements of the gular disc follows Kottelat (2020). Fin rays and the number of scales were counted under stereoscopic Zoom microscope. Holotype of the species have been deposited in Zoological Survey of India Kolkata and paratypes deposited in the Dhanamanjuri University, Museum of Fishes.

Results

Garra chingaiensis, sp. nov
urn:lsid:zoobank.org:act:8BA0D603-05D4-41BA-848D-F109E76A5745

(Figure1)

Material examined. Holotype: ZSI FF 9810 67.6 mm SL: India, Manipur, Ukhrul district: Chalou River, Chingai Village (Chindwin basin), 2586.05 31° N, 9453.45 49° E; coll. Rinchuiphy Rungsung, 4th January, 2020.

Paratype: DMUMF-TA02-DMUMF-TA06, 65.5-74.2 mm SL; same data as holotype.

Diagnosis: *Garra chingaiensis sp. nov.* belongs to the "proboscis with transverse lobe" group of Nebeshwar and Vishwanath, 2017. This group further consists of "incipient or weakly developed, unilobed, bilobed or trilobed proboscis". The new species belongs to the group with unilobed proboscis and can be distinguished from the congeners of the Chindwin-Irrawaddy drainage (except *G. litanensis, G. qiaojiensis, G. rotundinasus*) in having unilobed proboscis vs. weakly developed in *G. elongata*, incipient in *G. gravelyi,* bilobed in *G. bispinosa, G. chindwinensis, G. cornigera, G. moyonkhulleni* vs. trilobed in *G. surgifrons, G. trilobata.* It is closely similar to *G. elongata* and *G. litanensis,* however differs in presence (vs. absence) of scales on chest, presence (vs. absence) of black spot at the upper angle of gill opening. It further differs from *G. elongata* in having five stripes on body (vs. a stripe from the gill opening to caudal fin base); from *G. litanensis* in absence (vs. presence of a black spot at dorsal fin base). It further differs from *G. gravelyi* in entirely absence (vs. presence of a few indistinct black spots at the base of branched dorsal fin rays), presence (vs. absence of black band at the middle of caudal fin); from *G. qiaojiensis* in having fewer unbranched dorsal fin rays (2 vs. 4); from *G. rotundinasus* in having lesser lateral line scales (33-34 vs. 36-37), caudal fin with black band in the middle (vs. with a dark distal margin). It is similar to *G. substrictorostris* from the Barak drainage of Manipur in having unilobed proboscis however differs in having lesser transverse scale rows above lateral line (3½ vs. 5½) and circumpeduncular scales (12 vs. 16), absence (vs. presence) of black spot at dorsal fin base; from *G. paratrilobata* in having unilobed (vs. trilobed) proboscis, lesser transverse scales above lateral line (3½ vs. 4½). It also differs from *G. koladynenis* from the Koladan River drainage in having unilobed (vs. trilobed) proboscis. A detailed comparison is discussed herein.

Description: Morphometric data and counts are presented on Table 1. Body elongated, slightly compressed laterally, more compressed in caudal peduncle. Dorsal profile smoothly arched to dorsal- fin origin then gently sloping towards caudal peduncle. Ventral profile flattened from head to chest, then more or less round up to pelvic-fin origin and straight from pelvic to caudal-fin base. Head moderately large and depressed with slightly convex interorbital space, height less than length, width greater than height; Eyes small, dorso-laterally located, closer to posterior margin of opercle than to snout tip; snout moderately rounded with transverse lobe covered with 11-13 small to medium unicuspid acanthoid tubercles, demarcated posteriorly by deep transverse groove; a prominent unilobed proboscis, protruding forward, moderately elevated upwards, the anterior margin of proboscis sharply delineated from the depressed rostral surface by a narrow transverse groove; width smaller than the internarial space, each anterolateral marginal corner of the proboscis with one large unicuspid acanthoid tubercle, and one small tubercle in between (Figure1.d.). Depressed rostral surface flat. Sublachrymal groove deep, horizontally curved and confluent to lateral groove of rostral cap. Rostral lobe absent. Barbel two pairs; rostral barbel anteroventrally located, longer than eye diameter; maxillary barbel shorter than rostral barbel and at the corner of the mouth. Rostral cap long, well-developed, fimbriated, papillated ventral surface moderately wide. Upper lip present, with weakly developed papillae in one row, completely covered by rostral cap. Mental adhesive disc elliptical, shorter than wide and narrower than head through roots of maxillary barbel, and posteriorly positioned; torus of mental adhesive disc slightly arched, its lateral extension reaching slightly beyond imaginary vertical line through lateral margin of

pulvinus; pulvinus relatively small (width 34.9-37.6% HL, length 27.2-29.01 % HL), its anterior and posterior halves equally rounded, width 1.3-1.4 times its length; Labellum convex with large distinct posterior margin, its upper marginal region covered slightly by rostral cap; anterior margin of Labrum extend upto level of posterior margin of eye; groove between torus and pulvinus narrow, moderately deep; pulvinus with a narrow, papillated transverse lobe at the anterior portion, demarcated posteriorly by a shallow transverse groove, anteriorly separated from the torus by a transverse grove (Figure 1.e.). Papillae on ventral surface of rostral cap, torus, labellum, and labrum rounded, evenly arranged.

Dorsal fin with ii simple and 8 ½ branched rays; last simple ray shorter than the head length; origin closer to snout tip than to caudal fin base, inserted anterior to vertical from pelvic fin origin; first branched ray longest, last branched ray not extending vertically to anal fin origin; posterior margin emarginate. Pectoral fin with i simple and 16 branched rays, reaching beyond midway to pelvic- fin origin when adpressed; fifth branched ray longest, shorter than head length; margin acuminate. Pelvic fin with i simple and 8 branched rays; second branched ray longest, reaching beyond midway to anal-fin origin, surpassing anus; origin closer to anal-fin origin than to pectoral-fin origin; inserted under based of third branched dorsal-fin ray; posterior margin straight. Anal fin short with ii simple rays and 5 ½ branched rays; first branched ray longest, reaching base of caudal fin; posterior margin straight; origin closer to caudal-fin base than to pelvic-fin origin. Anus to anal distance is 39.9-42.0 % of pelvic-anal fin distance. Caudal fin forked, lobe tips pointed; upper lobe with 10 and lower lobe with 9 rays respectively (10+9 lobes).

Lateral line complete with 32+2 or 32+3 scales. Transverse scale rows above lateral line 3 ½ and scales between lateral line and pelvic fin origin 3. Circumpeduncular scale rows 12. Pre dorsal scales 10; regularly arranged. Chest and belly scaled. One axillary scale at base of pelvic-fin reached the posterior end of pelvic-fin base. Preanal scales 4. Dorsal-fin base scales 6 of which last three to five connected to base of dorsal fin. Anal-fin base scales 5, of which last one or two connected to base of anal fin.

Colouration in Preservative: In formalin, the head, dorsum and lateral sides are dark grey. Mouth, chest and abdomen light brown. Dorsal, pectoral, pelvic, anal and caudal fins greyish. Faint greyish stripes over lateral line scales, more distinct posteriorly to the caudal fin. A faint blackish spot immediately anterior to the upper angle of the gill opening. A longitudinal black band in the middle of the caudal fin. Narrow black stripes on body, laterally more distinct towards caudal peduncle, 3 stripes below lateral line and 2 stripes above lateral line; black stripes in the middle of the caudal fin, occupying the 8^{th}, 9^{th}, 10^{th} fin rays of upper lobe and 6^{th}, 7^{th}, 8^{th}, 9^{th}fin rays of lower lobe (counting from the periphery of the lobes)

Distribution: *Garra chingaiensis* is known from the Chalou River at Chingai village in Ukhrul district, Manipur, India (Chindwin River basin).

Etymology: Named after its type locality, Chingai village. Noun.

Discussion

The genus *Garra* develops a modification on the snout to adapt to the running waters. Species are distinguished by their variation in morphology of proboscis, variation in the shape and structure of mental disc, the morphology and the pattern of distribution of tubercles. Nebeshwar &Vishwanath (2017) divided *Garra into* five groups based on snout morphology: a smooth snout species group, a transverse lobe species group, a proboscis species group, a rostral flap species group, a rostral lobe species group. Comparisons of *G. chingaiensis* is therefore, restricted to congeners of proboscis with transverse lobe from the Chindwin-Irrawaddy drainage. We have also compared *G. chingaiensis* with other similar congeners of proboscis with transverse lobe from the neighbouring Barak, Brahmaputra and Kaladan River drainages.

Garra chingaiensis is distinguished from its congeners except *G. chindwinensis* by the presence (vs. absence) of a narrow, papillated transverse lobe at the anterior portion of the pulvinus, which is demarcated posteriorly by a transverse groove. It is further distinguished from its congeners of the Chindwin-Irrawaddy drainage except *G. litanensis, G. rotundinasus, G. qiaojiensis* in having a unilobed proboscis (vs. weakly developed in *G. elongata* vs. incipient in *G. gravelyi* vs. bilobed in *G. bispinosa, G. cornigera, G. chindwinensis*; vs. trilobed in *G. surgifrons* and *G. trilobata*). It differs from *G. litanensis* in the presence (vs. absence) of scales on the chest, fewer scales above lateral line scales (3½ vs 5½), absence (vs. presence) of black spot along the base of dorsal fin, more lateral line scales (34-35 vs. 32); from *G. rotundinasus*

in having a longer head (23.0-23.8% SL vs 19.9-21.7), fewer lateral line scales (34-35 vs. 36-37), more caudal peduncle depth (13.4-15.7% SL vs 10.8-11.5), larger eye diameter (20.1-24.6% HL vs. 13.8-18.6), longer rostral cap (vs. shorter), posterior region of labrum farther from the level of pectoral fin origin (vs. nearer); from *G. qiaojiensis* in having a fewer unbranched dorsal fin rays (2 vs. 4), smaller gular disc width (57.4-59.2 % HL vs. 65-70), more compressed body (body depth 18.4–20.2% SL vs. 20-5–26.0), presence (vs. absence) of a band in the middle of caudal fin. It further differs from *G. elongata* in having presence (vs. absence) of scales on chest, absence (vs. presence) of transverse black bar on dorsal fin, more longitudinal stripes on body (5 vs. one from the gill opening to caudal fin base), more branched pectoral fin rays (16 vs. 11-12), lesser lateral line scales (34-35 vs. 39-40) and pre dorsal scales (10 vs. 13); from *G. gravelyi* in having fewer lateral line scales (34-35 vs. 36-37), entirely absence (vs. presence) of a few indistinct black spots at the base of branched dorsal fin rays, presence (vs. absence) of a black band in the middle of caudal fin; from *G. bispinosa* in having unilobed proboscis (vs. bilobed), fewer unbranched dorsal fin rays (3 vs. 4), fewer circumpeduncular scale rows (12 vs. 16), more longitudinal stripes on the lateral sides of the body (5 vs. 3-4), longer disc length (50.6-52.7% HL vs. 38.1-43.8) and more forward position of anus (anus-anal distance 39.9-42.0% pelvic-anal distance vs. 25.9-30.6); from *G. chindwinensis* in having shallow head depth at eye (35.3-36.8% HL vs. 55-58), larger eye diameter (20.1-24.6 % HL vs. 14.0-15.0), longer mental disc length (50.6-52.7 % HL vs. 39.0-41.0), more anal fin base scales (5 vs. 3), pectoral fin branched rays 16 vs 13-14; from *G. cornigera* in having fewer circumpeduncular scale rows (12 vs.14), presence (vs. absence of anterolateral lobe; from *Garra moyonkhulleni* in having a fewer transverse scale rows above lateral line (3 ½ vs. 4 ½), fewer circumpeduncular scale rows (12 vs. 14), more predorsal scales (10 vs. 8), greater pulvinus width (54.5-59.3 % HL vs. 31.1-35.8), longer pulvinus length (50.6-52.7 % HL vs. 19.7-26.3), more forward position of anus (anus-anal distance 39.9-42.0% pelvic-anal distance vs. 26.3-32.5), more pectoral branched rays (16 vs. 14), lesser head depth at nape (28.6-30.5 % HL vs. 64.0-71.4) and at eye (35.3-36.8 % HL vs. 59.5-63.5); from *G. surgifrons* in having fewer circumpeduncular scales (12 vs. 16), more forward position of anus (anus-anal fin distance 39.9-40.2% pelvic-anal fin distance vs. 18.5-29.9), more branched pectoral fin rays (16 vs. 13), proboscis just reaching transverse lobe (vs. distance between proboscis and transverse lobe equal to eye diameter), presence (vs. absence) of stripes on the body, presence (vs. absence) of median black band on caudal fin; from *G. trilobata* in having a unilobed (vs. trilobed) proboscis, absence (vs. presence) of multicuspid acanthoid tubercles on snout, longer disc length (50.6-52.7% HL vs. 20-34), more lateral line scales (34-35 vs. 31-32), fewer circumpeduncular scales (12 vs. 14). *G. longchuanensis* Yu *et.al.*, 2013 is similar to *G. chingaiensis* in having unilobed proboscis, however, comparison amongst the two have not been studied since Sun *et.al.,* 2018 mentioned the former should be a junior synonym of *G. qiaojiensis.*

Garra chingaiensis differs from all its congeners of proboscis with transverse lobe from the Brahmaputra basin except *G. arunachalensis, G. bimaculacauda, G. binduensis, G. clavirostris, G. dengba, G. jaldhakaensis, G. kalpangi, G. langlungensis, G. magnacavus, G. parastenorhynchus, G. quadratirostris* in having a unilobed proboscis. *Ga. chingaiensis* can be easily distinguished from *G. arunachalensis* in having a shallower body depth at dorsal fin origin (18.4-20.2 % SL vs. 23.3-25.4), shorter head length (23.8 % SL vs. 24.6-27.1), longer dorsal fin length (20.8-24.7 % SL vs. 16.4-20.1), more forward position of anus (distance between anus and anal fin origin % Pelvic-anal distance 39.9-42.0 vs. 19-25), presence (vs. absence) of longitudinal stripes on the sides of body; from *G. bimaculacauda* fewer scales above lateral line (3½ vs. 6), labellum distinct with posterior margin (vs. fused with labrum), presence (vs. absence) of five stripes on the body, absence (vs. presence) of a conspicuous dark spot at caudal fin base, absence (vs. presence) of two distinct spots on tips of each lobe of caudal fin; from *G. binduensis* in having a shorter dorsal fin length (20.8-23.5% SL vs. 24.5-29.1), more pectoral-fin branched rays (16 vs. 13-14), smaller pulvinus length (6.1-7.0 % SL vs. 11.0-14.4), presence (vs. absence) of longitudinal stripes on the sides of body; from *G. clavirostris* in having a transverse lobe of only unicuspid tubercles (vs. multicuspid), longer caudal peduncle length (14.1-15.9 % SL vs. 10.1-14.6), more forward position of anus (distance between anus and anal fin origin % pelvic-anal distance 39.9-42.0 vs. 18.6-25.1), more pectoral-fin branched rays (16 vs. 14-15), having a proboscis moderately elevated upwards (club-shaped proboscis); from *G. dengba* in having lesser lateral line (34-35 vs. 42-44), predorsal scales (10 vs. 14-16) and axillary scale on pelvic fin base (1 vs. 2), more branched dorsal fin rays (8½ vs. 6), presence (vs. absence) of black stripes on the body; from *G. jaldhakaensis* in having transverse lobe with 11 unicuspid tubercles (vs. 16-25 multicuspid tubercles), fewer

circumpeduncular scales (12 vs. 16), longer gular disc (50.6-52.7 % HL vs. 34.6-37.2), bigger pulvinus width (34.9-37.7% HL vs. 27.1-30.4); from *G. kalpangi* in present (vs. absent) of transverse groove, fewer circumpeduncular scales (12 vs. 16), more branched pectoral fin rays (16 vs. 10-12), presence (vs. absence) of stripes on the body and present (vs. absent) of median black band on caudal fin; from *G. langlungensis* in having more lateral line scales (34-35 vs. 30-32), less circumpeduncular scale rows (12 vs. 13-15), bigger disc width (54.5-59.3 % HL vs. 46-54), more predorsal scales (10 vs. 8-9), more forward position of anus (39.9-42.0 % pelvic-anal distance vs 19-31), bigger disc width (54.5-59.3 % HL vs. 46-54); from *G. magnacavus* in having well-developed gular disc (vs. weakly developed), absence (vs. presence) of 15-19 rounded large pits on snout, fewer lateral line scales (34-35 vs. 42), predorsal scales (10 vs. 14-16), pre anal scales (4 vs. 6-7) and circumpeduncular scales (12 vs. 16); from *G. parastenorhynchus* in having more lateral line scales (34-35vs.31-32), fewer circumpeduncular scale rows (12 vs. 16), shorter head depth at eye (35.3-36.8 % HL vs. 57.4-62.9), bigger disc width (54.5-59.3 % HL vs. 46.0-52.3), longer disc length (50.6-52.7 % HL vs. 32.6-37.2), bigger pulvinus width (34.9-37.7 % HL vs. 24.4-27.4), longer pulvinus length (25.0-29.8 % HL vs. 15.7-21.1); from *G. quadratirostris* in having fewer lateral line scales (34-35 vs. 37), shorter dorsal fin length (20.8-23.5 % SL vs 24.1-27.1), shorter pelvic-fin length (18.7-19.2 % SL vs. 20.5-23.3), shorter anal-fin length (17.4-19.4 % SL vs 20.5-24.9), bigger disc width (54.5-52.7 % HL vs. 43-48).

Garra chingaiensis is further compared with *G. paratrilobata* and *G. substrictorostris* from the Barak drainage of Manipur and *G. koladynenis* from the Koladan River drainage. It differs from *G. substrictorostris* and from *G. paratrilobata* and *G. koladynenis* in having unilobed and protruding forward proboscis vs unilobed and club-shaped proboscis vs trilobed proboscis respectively; fewer circumpeduncular scales (12 vs. 16), fewer tubercles on transverse lobe (11 unicuspid tubercles vs. 14-20 multicuspid tubercles vs. 13-17 bi- to tetracuspid tubercles vs. 11-23 unicuspid to hexacuspid tubercles) and each on lateral surfaces (2 vs. 7-11 vs. 6-9 vs. 6-10) respectively. It further differs from *G. koladynenis* in absence (vs. presence) of tubercles on rostral surface; from *G. paratrilobata* in presence (vs. absence) of labellum; from *G. substrictorostris* in fewer scales above lateral line (3½ vs. 5½) and more forward position of anus (anus-anal fin distance 39.9-40.2% pelvic-anal fin distance vs. 15-27). The new species further differs from both *G. mutuoensis* and *G. yajiangensis* in having unilobed (vs. quadrate, slightly bilobed) proboscis, more pectoral fin rays (16 vs 13-14), median black band on caudal fin present (vs absent), more forward position of anus (anus–anal fin base distance 40.0-42.0 vs. 36-46 and 19-24) respectively % pelvic-anal fin base distance. It further differs from *G. motuoensis* in having 11 (vs. 16-20) unicuspid tubercles on snout, and further from *G. yajiansis* in absence (vs presence) of sub marginal band on distal half of dorsal fin.

Fishes of the genus *Garra* are well adapted to fast flowing rivers and streams by clinging to the rocky substratum, mainly by means of the suctorial mental disc modified from the lower lip (Menon, 1964; Shangningam and Vishwanath, 2015). *G. chingaiensis* like *G. chindwinensis* are a specialized rheophilic species among the species of the genus since it developed an additional papillated adhesive transverse lobe at the anterior region of the callous pad, which is demarcated posteriorly from the remaining portion by a transverse groove.

Nebeshwar & Vishwanath (2017) during their extensive report on snout and oromandibular structure of the genus *Garra* claimed that the shapes of proboscis in them may change during ontogeny and may differ between the sexes. *G. bimaculacauda* has its smallest reported size upto 66.2mm SL and is said to have weak proboscis with poorly developed tubercles. *G. parastenorhynchus* (57.0 mmSL) also has unilobed and well developed proboscis. Similarly *G. magnicavus* (68.0 mmSL) is also reported to have unilobed incipient proboscis. *G. gravelyi* too have weakly developed proboscis. During the present study not more than 74.2 mmSL specimen were obtained. However the proboscis in the species has well developed unilobed proboscis. An extensive collection of the species throughout the year may perhaps highlight the changes in the structure of the snout during ontogenic development.

Comparative material

Garra arunachalensis - MUMF 4304, 121.0 mm SL; India: Arunachal Pradesh: Lower Divang valley district: Deopani River at Roing (Brahmaputra basin), 29°09'35" N 95°54'08" E; A. L. Bony, 9 Jan 2005.

Garra binduensis - ZSI/ FF 5623, 87.2 mm SL; India: North Bengal Darjeeling district, Jaldhaka River at Bindu near Jaldhaka Hydel complex, a tributary of Brahmaputra River basin; Collector Ujjal Das 22 August 2016.

Garra chindwinensis - ZSI FF 5906, 120 mm SL, India, Manipur, Senapati District, Laniye River near Laii, (Chindwin basin), 25´31´20´N 93´26´13´E, 05-xi-2015, coll. N. Premananda

Garra clavirostris - MUMF 22004, 117.5 mm SL, male; India: Assam: Dima Hasao District: Dilaima River at Boro Chenam Village below the confluence of Dilaima and Dihandi (Brahmaputra drainage); 25°18 03" N, 92°52 05" E, 401 m above sea level, Sarbojit et al, 19 April 2015.

Garra cornigera - MUMF 12061, 76.0 mm SL; India: Manip ur state: Ukhrul District: Sanalok River (Chindwin basin), 24°52'N 94°39'E; Shangningam *et al.*, 18 April 2011.

Garra elongata - MUMF 2311, 94.9 mm SL; Locality: INDIA:Manipur: Chindwin basin: hill stream near Tolloi, 25° 12' N, 94° 20' E, C. 2,016 m above msl; ColI. L. Kosygin, 12.xi.1997.

Garra gravelyi - ZSI F 11586/1, 107.5–112.4 mm SL; Myanmar, S. Shan States, Lawksawk Canal at Lwaksawk (Chindwin basin)

Garra jaldhakaensis - ZSI FF 8126, 97.2 mm SL, India, West Bengal, Kalimpong district, Jaldhaka River near Jhalong, Brahmaputra River Drainage, 27°02'39' N 88°52'71'E, elevation 1,220 ft. 09.iv.2018, coll. Ujjal Das.

Garra langlungensis - ZSI FF7152, 13.i.2017, 54.9mm SL, India, Nagaland, Langlung River near Zutovi Village, Dimapur District, Brahmaputra Basin; 25.7160 N, 93.6500 E, collected by Ezung *et al.*

Garra litanensis – MUMF-68/1, 92.5 mm SL, Litan stream, Litan, Manipur, female; 16.3.86 (collected by W. Vishwanath)

Garra magnacavus - ZSI FF 6010, 68.0 mm SL; India: Arunachal Pradesh: Lower Subansiri District, Ranga River, Brahmaputra River Basin, 27°20' N 93°48' E, 547 m above sea level, Bikramjit Sinha, 16 March 2013.

Garra paratrilobata - MUMF 22050, 137 mm SL, India: Manipur: Noney district: Leimatak River, a tributary of Irang River (Barak drainage), at Awangkhul Village, 24°49'07.20" N, 93°30'00.60" E; Chinglemba et al, 4 November 2017.

Garra quadratirostris - MUMF 4306, 108.0 mm SL; India: Sikkim: Tista River at Rangpo (Ganga basin), 27°10' 43" N 88°32'10" E; W. Vishwanath *et al.*, 2-9 January 2006.

Garra substrictorostris - MUMF 22034, 173 mm SL; India: Manipur: Churachandpur District: Leimatak River (Barak River drainage); 24°34'33" N, 93°40'01" E, 513 m above sea level, Nebeshwar *et al.*, 9 August 1999

Garra trilobata - MUMF 12051, 118.5 mm SL; India: Manipur state: Ukhrul District: Sanalok River (Chindwin basin), 24°52'N 94°39'E, Shangningam *et al.*, 18 April 2011.

Published information used for comparison:

Zhang, 2005 for *Garra bispinosa*; Thoni *et.al.*, 2016 for *Garra bimaculacauda* and *Garra parastenorhynchus*; Deng *et.al.*, 2018 for *Garra dengba*; Wu *et.al.*, 1977 for *Garra qiaojensis*; Zhang, 2006 for *Garra rotundinasus*; Chao *et al.*, 2018 for *Garra surgifrons*.

Table 1. Morphometric data of holotype and five paratypes *Garra chingaiensis* sp. nov.

Morphometrics	**Holotype**	**Range (n=5 paratypes)**	
		Min-Max	Mean±SD
Standard length (in mm)	67.6	65.5-74.2	
In percent of standard length			
Head length	24.0	23.0-23.8	23.2±0.2
Body depth at dorsal fin origin	20.1	18.4-20.2	19.2±0.7
Head width	19.5	17.9-20.3	19.1±0.7
Head depth at nape	7.24	6.7-7.8	7.1±0.3
Head depth at eye	8.57	8.4-9.0	8.6±0.2
Body width at anal fin origin	11.6	11.5-12.8	12.0±0.4
Body width at dorsal fin origin	17.7	16.0-18.3	17.2±0.8

Morphometrics	Holotype	Range (n=5 paratypes)	
Caudal peduncle length	14.9	14.1-15.9	14.8±0.6
Caudal peduncle depth	13.9	13.4-15.7	14.1±0.7
Dorsal fin base length	15.1	13.8-16.9	15.1±0.9
Dorsal fin length	22.6	20.8-23.5	21.3±1.3
Pectoral fin length	21.4	19.3-21.8	21.1±1.1
Pelvic fin length	19.2	18.7-19.2	19.0±0.2
Anal fin base length	6.7	5.8-7.2	6.6±0.4
Anal fin length	17.4	17.4-19.4	17.9±0.7
Pre-dorsal length	46.7	46.7-48.6	47.9±1.3
Pre-pectoral length	22.6	22.0-24.7	23.0±0.9
Pre-pelvic length	54.8	54.3-59.7	55.5±1.9
Pre-anal length	82.1	77.0-84.1	80.4±2.5
Pre-anus length	70.0	68.3-70.2	69.2±0.7
Pelvic anal distance	25.7	23.6-26.4	25.3±1.0
Disc width	14.2	12.7-14.2	13.5±0.5
Disc length	12.1	12.1-13.3	12.5±0.4
Pulvinus width	9.0	8.1-9.5	8.9±0.4
Pulvinus length	7.1	6.1-7.0	6.5±0.4
Anus anal fin distance	10.7	9.4-11.0	10.3±0.6
In percent of pelvic-anal distance			
Anus-anal distance	42.1	39.9-42.0	40.7±1.0
In percent of head length			
Head depth at nape	30.2	28.6-30.5	29.8±0.7
Head depth at eye	35.8	35.3-36.8	36.0±0.6
Head width	81.5	77.5-81.9	79.8±1.6
Snout length	51.2	48.5-53.3	51.8±1.6
Eye diameter	22.8	20.1-24.6	22.3±1.6
Interorbital distance	46.9	44.3-47.4	46.4±1.0
Disc width	59.3	54.5-59.3	56.2±1.7
Disc length	50.6	50.6-52.7	52.3±0.8
Pulvinus width	37.7	34.9-37.7	37.1±1.0
Pulvinus length	29.2	25.0-29.8	27.3±1.7

Figure 1. *Garra chingaiensis* sp. nov., holotype, ZSI FF 9810, 67.6mm SL; **a.** dorsal view, **b.** lateral view, **c.** ventral view, **d.** dorsal view of head showing transverse lobe and proboscis, **e.** oromandibular structure **f.** lateral view of snout showing small tubercles, shape of proboscis and position of eye. India: Manipur: Ukhrul district: Chalou River (Chindwin basin).

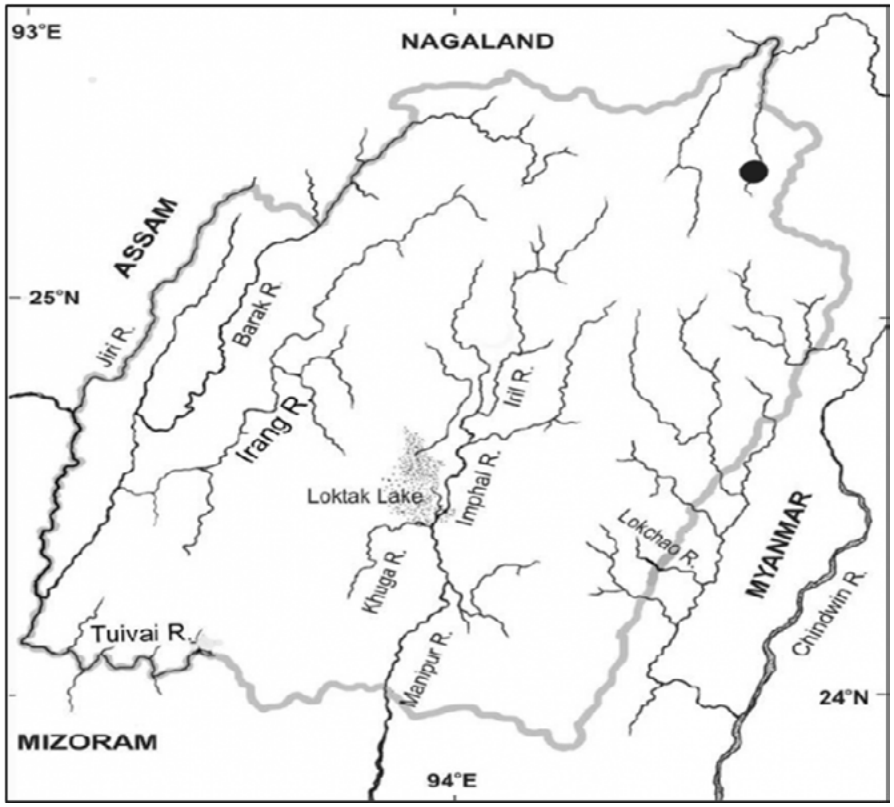

Figure 2. Map showing type locality of *Garra chingaiensis,* sp. nov.

Figure 3. Chalouriver, Manipur, India; habitat of *Garra chingaiensis*. sp. nov.

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References

Annandale, N. 1919. The fauna of certain small streams in the Bombay Presidency. V. Notes on freshwater fish mostly from the Satara and Poona districts. Rec. Indian Museum. 16: 125-138, pls 1=3.

Das, U., Kosygin, L. and Panigrahi A. K. 2016. *Garra binduensis*, a new species of cyprinid fish (Teleostei: Cypriniformes) from North Bengal, India. Bioglobia, 3 (1): 52 – 58.

Deng, S., Cao, L. and Zhang, E. 2018. *Garra dengba,* a new species of cyprinid fish (Pisces: Teleostei) from eastern Tibet, China. Zootaxa, 4476(1):094-108.

Ezung, S., Shangningam, B. and Pankaj, P. P. 2021. A new fish species of genus *Garra* (Teleostei: Cyprinidae) from Nagaland, India. Journal of Threatened Taxa, 13(6): 18618-18623.

Hora, S. L. 1921. Indian cyprinoid fishes belonging to the genus *Garra*, with notes on related species from other countries. Records of Indian Museum, 22: 633-687.

Kosygin, L, Shangningam B., Pratima Singh and Ujjal, D. 2021. Garra jaldhakaensis, a new cyprinid fish (Teleostei: Cyprinidae) from West Bengal India. Rec Zool Survey of India. 121(3): 325-331.

Kottelat, M. 2001. Fishes of Laos. Wildlife Heritage Trust, Colombo, 198 pp

Kottelat, M. 2020. *Ceratogarra*, a genus name for *Garra cambodgiensis* and *G. fasciacauda* and comments on the oral and gular soft anatomy in labeonine fishes (Teleostei: Cyprinidae). Raffles Bulletin of Zoology, *35*: 156-178.

Menon, A. G. K. 1964. Monograph of the cyprinid fishes of the *Garra* Hamilton. Memoirs of the Indian Museum, 14: 173-260.

Moyon, W. A. and Arunkumar, L. 2018. *Garra moyonkhulleni*, a new labeonine species (Cyprinidae: Labeoninae) from Manipur, Northeastern India. Intern. J. Fish Aqua. Stud, 6(5): 107-115.

Nebeshwar, K. and Vishwanath, W. 2017. On the snout and oromandibular morphology of genus *Garra*, descripton of two new species from the Koladyne River basin in Mizoram, India, and redescripton of *G. manipurensis* (Teleostei: Cyprinidae). Ichthyological Exploraton of Freshwaters, 28: 17–53.

Nebeshwar, K. and Vishwanath, W. 2013. Three new species of *Garra* (Pisces: Cyprinidae) from north-eastern India and redescription of *G. gotyla*. Ichthyological Exploration Freshwaters, 24(2): 97-120.

Premananda, N., Kosygin, L. and Saidullah, B. 2017. *Garra chindwinensis*, a new species of cyprinid fish (Teleostei: Cypriniformes) from Manipur, Northeastern India. Records of the Zoological Survey of India, 117(3): 191-197.

Roni, N., Sarbojit, T. and Vishwanath, W. 2017. *Garra clavirostris*, a new cyprinid fish (Teleostei: Cyprinidae: Labeoninae) from the Brahmaputra drainage, India. Zootaxa, 4244(3):367-376.

Shangningam, B. and Vishwanath, W. 2015. Two new species of Garra from the Chindwin basin, India (Teleostei: cyprinidae). Ichthyolological Exploration of Freshwaters, 26(3): 263-272.

Sun, C., Li, X., Zhou, W. and Li, F. 2018. A review of Garra (Teleostei: Cypriniformes) from two rivers in West Yunnan, China with description of a new species. Zootaxa, 4378 (1): 049–070.

Thoni, R. J., Gurung, D. B. and Mayden, R. L. 2016. A review of the genus *Garra* Hamilton 1822 of Bhutan, including the descriptions of two new species and three additional records (Cypriniformes: Cyprinidae). *Zootaxa*, *4169*(1): 115-132.

Vishwanath, W. 1993.On a collection of fishes of the genus *Garra* Hamilton from Manipur, India, with description of a new species. Journal of Freshwater Biology, 5(1): 59-68.

Vishwanath, W. and Kosygin, L. 2000. *Garra elongata*, a new species of the subfamily Garrinae from Manipur, India (Cyprinidae, Cypriniformes). Journal of the Bombay Natural History Society, 97: 408–414.

Zhang, E. 2005. *Garra bispinosa,* a new species of cyprinid fish (Teleostei: Cypriniformes) from Yunnan, Southwest China. Raffles Bulletin of Zoology, 13: 9-15.

Zhang, E. 2006. *Garra rotundinasus*, a new species of cyprinid fish (Pisces: Teleostei) from the upper Irrawaddy River basin, China. Raffles Bulletin of Zoology, 54(2): 447-453.

Zhang, E., and Chen, Y. Y. 2002. *Garra tengchongensis*, a new cyprinid species from the upper Irrawaddy River basin in Yunnan, China (Pisces: Teleostei). Raffles Bulletin of Zoology, 50(2):459-464.