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Abstract
Northeast India is one of important ichthyobiodiversity hot-spot area, mainly drained by four river drainages or basins viz., Brahmaputra, Barak-Meghna-Surma, Chindwin and Kaladan. Eight species viz., five species of spiny eels of Macrognathus and three species of Mastacembelus are reported from this region and shared 9.19% in the world. Macrognathus aculeatus of Dhanze et al. (2018) is erected as a new species, M. dhanzei due to lack of ocelli, 28-34 vertical transverse bars, XXIV-XXVII dorsal spines, 31-38 soft dorsal fin rays, 15-18 pectoral fin rays, 10-12 caudal fin rays, dorsal spine fin base length 72.6-79.9%SL, preorbital or snout length 34.3-44.0% HL, head width 15.2-29.1%HL, upper jaw length 24.3-30.0% HL, absence of rostral plates and presence of 72 vertebrae respectively. Easiest key for the spiny eel of the genus Macrognathus in the northeast India is provided.

Keywords: Mastacembelid fishes, Macrognathus dhanzei sp. nov.
Fig 1: Northeast States of India showing four river drainages: 1= Arunachal Pradesh; 2= Assam; 3= Manipur; 4= Meghalaya; 5= Mizoram; 6= Nagaland; 7= Sikkim and 8= Tripura. B= Brahmaputra; BSM= Barak-Surma-Meghana; K= Kaladan and C= Chindwin.

Table 1: The distribution pattern of mastacembelid spiny eels in the four major river drainages of north-east India. Presence and absence of each species is indicated by + and – sign respectively. B= the Brahmaputra River drainage, BMS= the Barak-Surma-Meghana River drainage, C= the Chindwin River drainage and K= the Kaladan River drainage.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Scientific Name</th>
<th>B</th>
<th>BMS</th>
<th>C</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Macrognathus aral</em> (Schneider, 1801)</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>2</td>
<td><em>Macrognathus dhanzei</em> sp.nov.</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>3</td>
<td><em>Macrognathus morehensis</em> Arunkumar &amp;Tombi Singh 2000</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
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<tr>
<td>4</td>
<td><em>Macrognathus pancalus</em> Hamilton – Buchanan, 1822</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>5</td>
<td><em>Macrognathus siangensis</em> Arunkumar, 2016</td>
<td>+</td>
<td>-</td>
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</tr>
</tbody>
</table>

Key to *Macrognathus* species of the inland water bodies of India

1. Rostral tooth-plates present ......................................................... 2
2. Rostral tooth-plates present ......................................................... 11
3. Presence of a pair series of rostral tooth-plates ......................... 3
4. Presence of 14-28 pairs of rostral tooth-plates .............................. 4
5. Presence of 15-17 pairs of rostral tooth-plates .............................. 5
6. Presence of 8-11 pair pairs of rostral tooth-plates ........................... 6
7. 26-30 dorsal spines ........................................................................... 7
8. 14-16 dorsal spines ........................................................................... 8
9. 19-22 dorsal spines ........................................................................... 9
10. 11-16 dorsal spines ........................................................................... 10
11. 29 irregular blotches present on mid-dorsal line form the top of opercular to base of caudal ......................................................... M. albus
12. 3-6 perfect ocelli at the branched dorsal fin rays ............................... M. aral
13. Eye size black blotches along dorsal fin ........................................... M. lineatomaculatus
14. 12-14 imperfect ocelli at the base of dorsal fin rays .......................... M. morehensis
15. Preorbital spine present .................................................................. 12
16. Preorbital spine absent .................................................................. 15
17. Lateral side of body with 26-27 distinct yellow vertical bars originating form mid-dorsal to ventral side .................................................. M. fasciatus
18. Lateral side of body sparkled with small white dots, a distinct streak of longitudinal spots runs along the lateral line from eye to the rays caudal fin ................................................. 13
19. 28-30 dorsal spines ........................................................................... 14
20. 24-26 dorsal spines, vertebrae 65 ................................................... M. pancalus
21. 27-30 dorsal spines ........................................................................... M. guentheri
22. 15-19 dorsal spines ........................................................................... 16
23. 24-27 dorsal spines, vertebrae 72 ................................................... M. siangensis
24. 24-27 dorsal spines, vertebrae 72 ................................................... 17

M. dhanzei sp.nov.
2. Materials and Methods

Fishes were collected from different localities. Colour in fresh was noted before fixation and preserved in 10% formalin. Measurements were made point to point with dial calliper to the nearest 0.1mm and expressed as percentages of standard length (SL). Subunits of head are expressed as proportions of head length (HL). Spines and fin rays were counted from the preserved specimens under transmitted light with the help of binocular microscope. Standard practices of Britz (2009, 2010) [5, 6], Britz & Kottelat (2020) [7], Day (1889) [10], Dhanze et al. (2018) [11], Hamilton –Buchanan (1822) [15], Jayaram (1999) [16], Ng and Tan (2020) [22], Roberts (1980, 1986) [26, 27], Sufi (1956) [31], Talwar & Jhingran (1991) [32] and Yazdani (1990) [38] were followed. A systematic review and check list of mastacembelid spiny eel fishes of northeast India has been prepared based on present collection and by consulting available literatures. The updated scientific names of valid taxa available in this list have followed that of catalogue of fishes, California Academy of Sciences and WORMS World Register of Marine Species (WWW. Marine species.org/aphi, down loaded on the 8th July 2020).

3. Results and Discussions

The study reveals 5 Macrognathus species from the north-east India. The systematic accounts of mastacembelid spiny eel fishes are given below:

3.1. Macrognathus aral (Schneider, 1801)

*Rhynchobdella aral* Bloch & Schneider, 1801; *Syst. Ichth.*; 479, Pl. 89 (type locality: “Fluvios Tranquabrenses”).

**Fig 2: Macrognathus aral**


3.3. Remarks

*Macrognathus aral* is previously referred to as either *M. aculeatus* (Day, 1878, 1889, Vinciguerra, 1889-1890, Sufi, 1956) [6, 10, 34, 31] or *M. aral* (Roberts, 1980 and 1986) [26, 27], Talwar & Jhingran, 1991; Vidyaiyano et al., 2005) [31, 33] were belongs to *M. dorsiocellatus* (Britz, 2009) [5]. It is distributed strictly in the western side of Manipur and distinctive fish fauna of the Barak drainage in the northeastern India (Arunkumar & Tombi Singh, 2000) [3]. Bungdon & Waikhom (2015) [8] reported it from the Chindwin river basin of Manipur which have 16-23 rostral tooth plates, smooth preorbital and preopercular, and rounded caudal-fin without any meristic and morphometric characters. It differs from *M. dorsiocellatus* in having lesser ocelli along the base of soft dorsal-fin rays (perfect 3-7 ocelli vs. 10 circular black blotches along the base of soft dorsal-fin rays and more rostral tooth plates 20-24 vs. 15-17 (Britz, 2009) [5] and differs from *Pentaphalamos* in having more dorsal-fin spines (18-22 vs. 14-16), shorter predorsal 35.5–40.8% SL vs. 43.3-46.8), shorter preanal (53.7-58.4%SL vs. 60.0-64.6), lesser soft dorsal-fin rays (44-45 vs. 50–52), lesser number of ocelli at the base of soft dorsal-fin rays (3-7 vs. 4-9) and absence vs. presence of a smaller ocellus at the posterior base of anal fin respectively (Pethiyagoda et al., 2008) [24]. Preanal length of *M. aral* given by Dhanze et al. (2018) [11] is more longer than given by Pethiyagoda et al. (2008) [24] viz., 59.79-68.23%SL vs. 53.7-58.4. The numbers of soft dorsal-fin rays shown in Table 2 and Diagnosis 5 of this species, *Macrognathus aral* given by Dhanze et al. (2018) [11] are full of doubt viz., 45-53 and 45-43 respectively. 71 and 60 numbers of total vertebrae were also reported for this species of spiny eel by Vreven (2005) [35] and Dhanze et al. (2018) [11] respectively. IUCN Red List Category: Least Concern.

3.4. Macrognathus dhanzei sp. nov.

*Macrognathus aculeatus* Dhanze, Debbarma, Debbarma & Dhanze, 2018; *J. Entomol. Zool. Stud.;* 6: 373, fig. 1, a; 1. b; fig. 2.a (type locality: India: Assam and Tripura, northeastern region of India).

**Fig 3: Macrognathus dhanzei**

A

B

3.5. Materials: 28 exs. Standard length (SL) 53.4-126.2 mm. [Data of Dhanze et al. (2018) for *M. aculeatus*].

3.6. Diagnosis

D. XXIV-XXVII 31-38, A III 30-41, P. i15-18; C. 10-12. Vertebrae 34+38= 72. Body contour cylindrical, tapering gently from occipital region to the pointed tip of snout anteriorly and from the origin of soft dorsal-fin to caudal Brahmaputra river drainages and *M. dorsiocellatus* is known from the Ayeyarwaddy (or Irrawaddy), lower Sittang and lower Salween river drainages or basins in Myanmar. Britz (2009) [5] stated that *M. lineatomaculatus* had been figured as *M. aral* by Roberts (1980) [26]: fig. 2b. *M. aral* differs from *M. lineatomaculatus* in having lesser soft dorsal fin rays (44-45 vs. 50-57), lesser caudal-fin rays (14-15 vs. 16-17), presence of perfect 3-7 ocelli vs. 10 circular black blotches along the base of soft dorsal-fin rays and more rostral tooth plates 20-24 vs. 15-17 (Britz, 2009) [5] and differs from *Pentaphalamos* in having more dorsal-fin spines (18-22 vs. 14-16), shorter predorsal 35.5–40.8% SL vs. 43.3-46.8), shorter preanal (53.7-58.4%SL vs. 60.0-64.6), lesser soft dorsal-fin rays (44-45 vs. 50–52), lesser number of ocelli at the base of soft dorsal-fin rays (3-7 vs. 4-9) and absence vs. presence of a smaller ocellus at the posterior base of anal fin respectively (Pethiyagoda et al., 2008) [24]. Preanal length of *M. aral* given by Dhanze et al. (2018) [11] is more longer than given by Pethiyagoda et al. (2008) [24] viz., 59.79-68.23%SL vs. 53.7-58.4. The numbers of soft dorsal-fin rays shown in Table 2 and Diagnosis 5 of this species, *Macrognathus aral* given by Dhanze et al. (2018) [11] are full of doubt viz., 45-53 and 45-43 respectively. 71 and 60 numbers of total vertebrae were also reported for this species of spiny eel by Vreven (2005) [35] and Dhanze et al. (2018) [11] respectively. IUCN Red List Category: Least Concern.
peduncle posteriorly. Rostrum with tubular nostril guarded by fimbriae. Opercular and pre-orbital spines absent. Overall colour yellowish grey with light brown vertically strat or oblique bands on dorsal and lateral aspect of entire body from opercular region to caudal peduncle giving zebra like striations; dorsal and anal fin hyaline with oblique black dotted streaks and on caudal fin vertical black dotted streaks. Dorsal and anal fins are not confluent with caudal fin.

3.7. Body proportions [mean, (ranges)] of the specimen:
Dorsal fin base length 75.9, (72.6-79.9), pre-spinous dorsal-fin length 24.5, (22.1-27.5)%SL; post-orbital length 52.0, (46.9-56.2), upper jaw length 28.8, (24.3-33.0), lower jaw length 12.1, (8.5-15.3), head depth 34.2, (28.5-43.6)%HL; eye diameter 29.0, (21.6-37.4), interorbital width 28.9, (20.5-36.8), upper jaw length 73.7, (56.7-83.8), lower jaw length 31.1, (21.0-42.6)% of preorbital length or snout length; eye diameter 21.8, (15.3-27.3), preorbital length 75.4, (62.1-85.9)% of post orbital length, pre-spinous dorsal length or predorsal length at the origin of spine 40.1, (24.2-46.2) and pre-soft dorsal fin rays 107.3, (102.8-111.0)% of pre-soft anal fin ray respectively.

3.8. Colouration
Imperfect and perfect ocelli are totally absent at the bases and rays of the dorsal, anal and caudal fins. 28-34 vertical transverse bars are present.

3.9. Etymology
The specific name is named in the honour of R Dhanze, Professor and Head, Department of Fisheries Resource Management, Central Agricultural University (1), Lembucherra, Tripura (W), India.

3.10. Remarks
Ophidion aculeatum Bloch, 1786 is the synonym of Macronathus aculeatum (Bloch, 1786) and its type locality was “Sussen Wasser von Ostidien”; Roberts (1986) [27] reported that M. aculeatum had not been found in Burma (now, Myanmar) or in the Indian Subcontinent. All or almost reports of this species, M. aculeatum from India and Sri Lanka are referred to M. aral. Macronathus aculeatum of Day, 1878 [9], 1889 [10]; Vinciguerra, 1889-90 [30], Sufi, 1956 [31] or M. aral of Roberts, 1980 [32], 1986 [33]; Talwar & Jingran, 1991 [32] and Vidhyahanan et al., 2005 [33] are referred to M. dorsiocellatus (Britz, 2009) [3]. The important distinctive meristic characters of M. aculeatum are XIII-XIII-dorsal-fin spines, 48-56 soft dorsal-fin rays and 50-54 soft anal-fin rays (Gunther, 1861 [31]; Weber & Beaufort, 1962 [36]; Khachonpisitsak, 2007 [37] and Froese & Pauly, 2013 [12]. M. dhanzei sp. nov. is easily distinguished from M. aculeatum by having more dorsal-fin spines XXIV-XXVII vs. XIII-XII, lesser soft dorsal-fin rays 31-38 vs. 48-56 and lesser soft anal fin rays iii-iii41 vs. 50-54. Macronathus aculeatum of Dhanze et al. (2018) [11] from Assam and Tripura of the northeastern region of India is quite different from the M. aculeatum of Thailand (based on Khachonpisitsak, 2007 [37]; Rainboth, 1996 [27] and Roberts, 1989 [28], viz., (1) D. XXIV-XXVII 31-38 vs. D. XV-XIX 48-54; (2) Pi 15-18 vs. 24-27 (Khachonpisitsak, 2007) [37] & 22-29 (Roberts, 1989) [27]; (3) A. III 30-41 vs. A. III 44-51; (4) C. 10-12 vs. 13-16; (5) Dorsal spine fin base length 72.6-79.9%SL vs. 23.7-30.9; (6) Snout length or preorbital length 34.3-44.0% HL vs. 50.9-54.9; (7) Head width 15.2-29.1%HL vs. 10.5-16.8; (8) Upper jaw length 24.3-33.0%HL vs. 12.1-16.8; (9) Body with a series of 28 vertical bars (Fig. 1.a, from Assam) and 33-34 vertical transverse bars (Fig. 1.b, from Tripura vs. 13-17 obliquely oriented dark bars and (10) No number of rostral tooth plates i.e., absence of rostral tooth plates vs. 30-50, 29-55 & 21-55 pairs of rostral tooth plates (Khachonpisitsak, 2007, Rainboth, 1996 and Roberts, 1980 and 1989) [17, 25, 26, 28] respectively. It has more number of vertebrae 72 vs. 70 (Vreven, 2005) [35]. M. aculeatus have XIV-XX dorsal spines, 52-56 soft dorsal fin rays and 50-54 branched anal soft rays [(AqGRISI), ICAR National Bureau of Fish Genetic Resources; https://tasteofhome.in/detail, dated 07.06.2020]. This meristic data is also totally distinct from M. aculeatus of Dhanze et al. (2018) [11] M. dhanzei sp. nov. differs from M. aral in having more dorsal-fin spines (XXIV-XXVII vs. XVI-XXII), lesser soft dorsal-fin rays (31-38 vs. 44-45), lesser soft branched anal fin rays (30-41 vs. 44-52), and absence vs. presence of distinct ocelli at the base of soft dorsal-fin rays respectively. It also differs from M. dorsiocellatus in having more dorsal-fin spines XXIV-XXVII vs. XIV-XXII, lesser soft dorsal-fin rays (31-38 vs. 51-61), lesser soft anal-fin rays (iii30-iii41 vs. 51-60), lesser caudal-fin rays (10-12 vs. 16-20), absence vs. presence of 7-11 ocelli along the base of soft dorsal-fin rays, shorter predorsal at the origin of spinous dorsal-fin (22.1-27.5)%SL vs. 35.3 -42.8) and longer predorsal at the origin of soft dorsal-fin ray (68.7-76.3)%SL vs. 63.5-70.2) respectively. M. dhanzei sp. nov. is most closed to M. pancalus in meristic and morphometric characters but distinctly different in the total number of vertebrae 72 vs. 65 respectively (Dhanze et al., 2018) [11]. They did not mentioned about the numbers of rostral tooth-plates for M. aculeatum of them. The new species, M. dhanzei differs from M. kris in having lesser branched dorsal fin rays (31-38 vs. 46-55), anal fin rays (30-41 vs. 51-59), caudal-fin rays (10-12 vs. 20-23), vertebrae (72 vs. 76-78) and absence vs. presence of 11-14 irregular pentagonal dark blotches on sides of body. Data of Ng and Tan (2020) [22] for M. kris were used for comparison. It differs from M. morehensis in lacking imperfect ocelli at the base of branched dorsal-fin rays and differs from M. siangensis in having more dorsal spines (XXIV-XXVII vs. XV-XIX) and lesser dorsal soft fin rays (31-38vs. 42-53) respectively. M. dhanzei sp. nov. differs from M. zebrinus in having less dorsal spine fin (XXIV-XXVII vs. XXVIII-XXXI), lesser soft dorsal-fins rays (31-38 vs. 48-55), lesser anal soft fin rays (30-41 vs. 48-59), lesser caudal fin rays (10-12 vs. 18-19), more vertical bars of body (28-34 vs. 17-22), absence vs. presence of 1 preorbital spine, longer upper jaw 24.3-33.0%HL vs. 15.2-20.5 and shorter pectoral-fin 25.1-37.6%HL vs. 43.4-34.3 respectively. M. aculeatus is widely distributed in Borneo, Sumatra, Java and the Malay Peninsula northwards to the Tapi River basin, Thailand, an endemic species to the Southern basins from Kra isthmus to the Southern-most country. Only specimens encountered in Java are to be identified as M. aculeatus according to Britz (2010) [6] and www.gbif.org downloaded on 27.7.2020. Due to the above remarks, Macronathus aculeatus of Dhanze (2018) [11] is considered as a new species, Macronathus dhanzei. IUCN Red list category: Not evaluated.

3.11. Macronathus morehensis Arunkumar & Tombi Singh, 2000

3.13. Remarks

*Macrognathus morehensis* differs *M. aureus* in having lesser dorsal spines (XI-XVI vs. 21-22), longer head (18.6-24.3%SL vs. 16.9-18.3), longer predorsal of spinous dorsal fin (43.3-46.7% SL vs. 33.1-33.8), lesser caudal fin rays (11-14 vs. 16-19), absence vs. presence of a series of around 20 irregular-shaped black blotches along dorsum from nape to caudal-fin base extending anteriorly as a black stripe to vertical through eye (Britz, 2010) [6]. It is further distinguished from *M. dorsiocellatus* in having lesser rostral tooth plates (8-11 vs. 19-24), lesser dorsal-fin spines (11-16 vs.17-22) and presence of 9-14 imperfect ocelli vs. 7-11 perfect ocelli along the base of soft dorsal-fin rays respectively (Britz, 2009) [5]. *M. morehensis* differs from *M. kris* in having lesser number of rostral-plates (8-11 vs. 43-45), lesser dorsal spines (XI-XVI vs. XXIV-XXV), lesser caudal-fin rays (11-14 vs. 20-23), and absence vs. presence of 11-14 irregular pentagonal dark brown blotches on sides of body. Data of Ng & Tan (2020) [22] for *M. kris* were used for comparison. Soram et al. (2012) [30] reported *morehensis* from the Sidzii hill stream of Manipur or also called Cheherii by local Mao community, belonging to the mighty Brahmaputra river of Assam. Their specimens of *M. morehensis* shall be belongs to the genus *Mastacembelus* due to the confluence of dorsal, caudal and anal fins. *M. morehensis* is an endemic mastacembelid fish species of the Chindwin basin of Manipur and Myanmar (Arunkumar & Tombi Singh, 2000; Britz, 2009 & 2010 and Khaing et al. 2019) [3, 5, 6, 18]. IUCN Red list category: Least concern.


*Macrognathus pancalus* Hamilton-Buchanan, 1822; *Fish Ganges*; 30, 364, pl. XXII; fig. 7 (type locality: India: Ganges River drainage).


3.16. Remarks

Day (1888-1889) [10] once noted that he thought *M. pancalus* and *M. zebrinus* were one species. *Macrognathus pancalus* is not mentioned in the fishes of inland waters of Southeast Asia (Kottelat, 2013) [19]. Preopercular with 2-5 spines and 1 strong preorbital spine are present and piercing in the skin (Yazdani, 1990 and Talwar & Jhingran, 1991) [38, 32]. Dhanze et al. (2018) [11] reported that such type of spines are absent in this fish. Singh et al. (2018) [29] reported different ranges of dorsal spines in the key and in the description of this species viz., 24-26 and 35-36 respectively. Perfect and imperfect ocelli are totally absent at the base of soft dorsal and anal fin rays. 64, 60a2 and 65 number of total vertebrae are reported for *M. pancalus* by Vreven, 2005b [35]; Pattra & Datta, 2013 [23] and Dhanze et al. 2018 [11] respectively. It is distributed in the Barak and Yu river basin belonging to the Chindwin drainages of Manipur. IUCN Red lists category: Least concern.


rays 32-51 vs. 51-60 and lesser caudal-fin rays 13-14 vs. 16-
20, respectively. Data of Britz (2009) [5] for M. dorsio
cellatus were used for comparison. M. siangensis differs from M. kris
in having absence vs. presence of 43-45 rostral tooth-plates,
lesser dorsal spines (XV-XIX vs. XXIV-XXV), lesser
branched anal fin rays (32-51 vs. 51-59), caudal-fin rays (13-
14vs. 20-23), lesser body depth (10.3-11.0%SL vs. 11.8-15.9)
and absence vs. presence of 11-14 irregulars pentagonal dark
brown blotches on the sides of body. Data of Ng & Tan
(2020) [22] for M. kris were used for comparison. It differs from M. lineato
calcatas in having absence vs. presence of 15-17, lesser
dorsal spines 15-19 vs. 19-22, lesser caudal fin
(13-14 vs. 16-17) and narrower width of body 1.5-17 in depth
of body vs. 2.1-2.7 respectively. Data of Britz (2009) [5] for M.
lineatocalcutas were used for comparison. It differs from M.
morehensis in having more dorsal spines (15-19 vs. 11-16),
lesser body depth (10.3-11.0%SL vs. 11.8-13.8), shorter
predorsal length at the origin of dorsal spine (34.3-39.0%SL
vs. 43.3-46.7), absence vs. presence of 8-11 rostral tooth-
plates, lesser imperfect ocelli at the base of soft dorsal-fin
rays (7-11 vs. 12-14), presence of 22-27 dark blotches like very
short transverse oblique bars vs. 20-25 broad complete
transverse oblique bars respectively. It differs from M.
ortho
osemos in having absence vs. presence of rostral tooth
plates, presence of 7-11 imperfect ocelli vs. 8-12 perfect
ocelli, larger eye (11.8-18.9%HL vs. 9.0-11.0), lesser width of
body in its depth (1.5-1.7 vs. 1.8-2.7), lesser caudal fin rays
(13-14 vs. 15-17), more transverse oblique bars in front of
soft dorsal fin (17-19 vs. 8-12) and absence vs. presence of 7-
9 dark spots along the anal-fin base respectively. Data of Britz
& Kottelat (2020) [5] for M. orthosemos were used for comparison.
It differs from M. pance
calus in having lesser dorsal fin spines (15-19 vs. 22-27), more soft dorsal fin rays
(42-53 vs. 30-42), mores pectoral fin rays (22 vs. 15-19),
presence vs. absence of 7-11 imperfect ocelli at the base of
soft dorsal branched fin rays, presence vs. absence of 22-27
oblique transverse bars on the lateral sides of body, shorter
dorsal fin spine base (27.2-31.8%SL vs. 70.00-80.06) and
longer predorsal at dorsal-fin spine origin (34.3-39.0% SL vs.
21.7-27.4) respectively. IUCN Red list category: Not
evaluated.

4. Conclusion
Mastacembid spiny eels of 87 species (25 species of
Macrognathus in Asian region + 17 species of
Mastacembelus in Asian region + 45 species of
Mastacembelus in African region) are well known recorded.
Only 5 that is 20.0% of Macrognathus species are still
recorded and shared from the north-east India, in the South
Asian Countries of the World. Further investigations,
explorations and classification of spiny eels of mastacembelid
fishes in the north east region of India are highly necessary.

5. Comparative materials
1. Macrognathus aculeatus: Data from Roberts (1980, 1986,
2. Macrognathus aral: Data from Roberts (1980, 1986) [20],
Talwar & Jhingran (1991) [32], Arunkumar & Tombi Singh
(2000) [3], Vidhyanan et al. (2005) [33], Britz (2009) [5],
Dhanze et al. (2018c). 3. Macrognathus aureus: Data from
Britz (2010) [8], 4. Macrognathus dhanzei sp. nov.: Data of
Macrognathus dorsio
cellatus: Data from Britz (2009) [5]. 6. Macrognathus lineato
calcutas: Data from Britz (2009) [5].

7. Macrognathus morehensis: Data from Arunkumar &Tombi
8. Macrognathus orthosemos: Data from Britz & Kottelat
(2020) [7]. 9. Macrognathus pance
calus: Data from Hamilton-
Buchanan (1822) [14], Sufi (1956) [31], Yazdani (1990) [8],
Talwar & Jhingran (1991) [32], Arunkumar & Tombi Singh
(2000) [3], Arunkumar (2016) [2], Singh et al. (2018) [29],
pentophthalmos: Data from Pethiyagoda et al. (2008) [24]. 11.
Macrognathus siangensis: Data from Arunkumar (2016) [2].

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viewers comments of whom helped to improve the manuscript.

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