

Conservation status and endemicy of type fish species discovered from Arunachal Pradesh

S.D. Gurumayum¹, K.P. Nath¹, L. Kosygin*²

Arunachal Pradesh Regional Centre, Zoological Survey of India, Itanagar, Arunachal Pradesh-791113

*Zoological Survey of India, Kolkata-700053

*Email: santaguru@rediffmail.com

Abstract

Conservation status, distribution and endemism of fish species discovered from Arunachal Pradesh were studied. 63 fish species belonging to 04 orders, 13 families and 26 genera with Arunachal Pradesh as 'type locality' were found. Order Cypriniformes has the maximum representative family (6), whereas, Sisorideae has the maximum representing genera (7). Genus *Garra* has the highest number of species (15). Out of total 63 species, 56 species are still known to be endemic to the state. 13 species were evaluated by IUCN red list of threatened species, and categorized *Lepidocephalichthys arunachalensis*, *Amblyceps arunachalensis* and *Devario horai* under Endangered Category.

Keywords: Biodiversity hotspots, Endemism, Type locality.

INTRODUCTION

Arunachal Pradesh is the largest state in terms of geographical area as well as in forest cover among North Eastern states of India. The state is located between 26°28' to 29°30' North Latitude and 91°30' to 97°30' East Longitude (Tsering et al., 2017). It has an area of 83,743 km². With combination of diverse habitats and high level of endemism, the state is a part of the Eastern Himalaya biodiversity hotspot (Myers et al., 2000) and it is also a faunal gateway of Indo-Chinese and Indo-Malayan elements. Being in the transition zones of Palaearctic and Oriental Biogeographic regions, the state possess biotic elements from both the regions, as well as it has exclusive components and thus, it represents Indo-Chinese, Indo-Malayan, Indo-Burmese and Indian biotic components (Captain and Bhatt, 2000).

The state harbors innumerable water bodies in the form of hill streams, swampy water bodies, rivers, rivulets, high altitude lakes, etc. accounting for 86 % of the total wetland area in the state is truly a paradise for not only Ichthyologist but also for taxonomists

of all branches. Report of describing of new species is a very common phenomenon in the state. In 1839, McClelland described 04 fish species from Arunachal Pradesh. During Abor expedition from 1911 – 1912, Chaudhuri reported 21 species (Chaudhuri, 1913). Since then, plenty of research articles have published on the fishes from the state (Hora, 1921; Jayaram and Mazumdar, 1964; Menon, 1964; Srivastava, 1966; Dutta and Sen, 1977; Vishwanath and Darshan, 2007; Nath et al., 2010; Lokeshwar and Vishwanath, 2012; Nebeshwar and Vishwanath, 2013; Arunachalam et al., 2013, 2014; Darshan et al., 2014, 2019; Kosygin, 2019; Tamang et al., 2011, 2015; Gurumayum and Kosygin, 2016).

Foremost work on the compilation of the fishes of Arunachal Pradesh was done by Nath and Dey (2000) and the most recent and notable works on the collection of fish species of the state in the form of pictorial book was carried out by Sen and Khyntiam (2014) whom listed 225 species. In 2016, Gurumayum et al., (2016a) reported a total of 259 fishes from the state. Besides, there have been additions of new discoveries and new

reports enriching the fish diversity of the state. There are still many unexplored areas in the difficult mountain terrain of Arunachal Pradesh, where many unknown species are believed to be existed.

MATERIAL AND METHODS

Based on the collection during extensive filed survey taken up from 2014 to 2020 and review of published literatures, a list of fish species reported for the first time from the states is presented here. The systematic arrangement used in this study follows Van der Laan et al. (2020). Species are presented alphabetically under each genus. The conservation status of the species was worked out following IUCN Red List of Threatened Species, Version 2021-1 (Anonymous, 2021). Specimen preserved at various museum were studied. This includes i). RGUFM: Rajiv Gandhi University Fish Museum, ii). ZSI FF: APFS/ZSI/P: Arunachal Pradesh Field Station, Zoological Survey of India, iii). ZSI/APRC/P: Arunachal Pradesh Regional Centre, Zoological Survey of India, iv). MSUMNH: Manonmaniam Sundaranar University Museum of Natural History, v). CMA: Collection of M.Arunachalam, vi). EBRC/ZSI/F: Estuarine Biology Regional Centre, Zoological Survey of India, Gopalpur, vii). MUMF: Manipur University Fish Museum, viii). SRS/ZSI: Zoological Survey of India/ Southern Regional Station, ix). JNC/ZOO-FM/SR: Jawaharlal Nehru College, Pasighat, x). F/GUZ: Gauhati University, Zoology Department, xi). ERS-V/F: Eastern Regional Centre, Shillong.

RESULTS AND DISCUSSION

All the fish species recorded from the state by different authors till the filing of this report were studied along with systematic accounts including conservation status,

distribution and remarks and found that 63 species are described for the first time from the state. These 63 fish species having type locality as Arunachal Pradesh come under 4 orders, 13 families and 26 genera (Table 1). Order Cypriniformes has the maximum number of representative families (6) which contain 37 species, followed by Siluriformes (4 families and 21 species), Anabantiformes (2 families and 4 species). Synbranchiformes is a monotypic genus. Class Sisoridae has the highest representative genera (7) followed by Cyprinidae, Danionidae and Nemacheilidae (3 each) and Bagridae (2). Remaining nine families were monotypic. Though, in the present study, family Cyprinidae is represented by only 3 genera, however, the genus *Garra* has the maximum number of newly described species (15 species). Majority of the fish described from the state were found to be endemic (56 species) to the state. This high level of fish endemism may be due to recent discoveries of most new species. 11 species were discovered in the year 2013 and 09 species in the year 2019. More new discoveries are expected from this region in near future due to presence of large number of unexplored areas in the state and increasing interest in fish taxonomy among researchers.

Conservation status

Out of 63 species listed in table 1, conservation status of only 13 fishes were evaluated by IUCN and categories under 5 categories viz. Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concerned (LC) and Data Deficient (DD) (Table 2). Three species comes under EN category (*Amblyceps arunachalensis*, *Devario horai* and *Lepidocephalichthys arunachalensis*), two under VU (*Aborichthys tikaderi* and *Pseudecheneis sirenica*) and two under NT (*Aborichthys kempfi* and *Garra rupicola*). Both the endangered species are also endemic to the

state. Three species each are kept under LC and DD categories. There are 50 more species which are still not evaluated by IUCN.

Table.1. Systematic details of fish species discovered in Arunachal Pradesh

Family	Genus	No. of sp.
<u>Order: Cypriniformes</u>		
i. Cobitidae	<i>i.) Lepidocephalichthys</i>	1
ii. Balitoridae	<i>i). Bhavania</i>	1
iii. Nemacheilidae	<i>i). Aborichthys</i>	9
	<i>ii). Mustura</i>	3
	<i>iii). Schistura</i>	2
iv. Psilorhynchidae	<i>i). Psilorhynchus</i>	1
v. Cyprinidae	<i>i). Garra</i>	15
	<i>ii). Pethia</i>	1
	<i>iii). Schizothorax</i>	1
vi. Danionidae	<i>i). Opsarius</i>	1
	<i>ii). Devario</i>	1
	<i>iii). Rasbora</i>	1
<u>Order: Siluriformes</u>		
i. Bagridae	<i>i). Mystus</i>	1
	<i>ii) Olyra</i>	1
ii. Amblycipitidae	<i>i). Amblyceps</i>	3
iii. Sisoridae	<i>i). Creteuchiloglanis</i>	4
	<i>ii). Erethistoides</i>	1
	<i>iii). Exostoma</i>	2
	<i>iv). Glyptothorax</i>	2
	<i>v). Oreoglanis</i>	2
	<i>vi). Pseudolaguvia</i>	3
	<i>vii). Pseudecheneis</i>	1
iv. Siluridae	<i>i). Pterocryptis</i>	1
<u>Order: Anabantiformes</u>		
i. Badidae	<i>i). Badis</i>	2
ii. Channidae	<i>i). Channa</i>	2
<u>Order: Synbranchiformes</u>		
i. Synbranchidae	<i>i). Monopterus</i>	1
Total No. of species:		63

Out of 63 species, *Garra rupicola* (NT), *Amblyceps apangi* (LC) and *Psilorhynchus*

arunachalensis (DD) were also reported from other countries like Nepal, Bhutan and China.

Table 2. Conservation status and endemism of the fish species discovered from the state.

IUCN Redlist Category	No. of sp.	Name of species	Region of Endemism
EN	3	<i>Amblyceps arunachalensis</i> , <i>Devario horai</i> , <i>Lepidocephalichthys arunachalensis</i>	AP
VU	2	<i>Aborichthys tikaderi</i>	NE India
		<i>Pseudecheneis sirenica</i>	AP
NT	2	<i>Aborichthys kempfi</i>	AP
		<i>Garra rupicola</i>	–
LC	3	<i>Garra kempfi</i>	AP
		<i>Schistura tirapensis</i>	NE India
		<i>Amblyceps apangi</i>	–
DD	3	<i>Psilorhynchus arunachalensis</i>	–
		<i>Pterocryptis indicus</i>	AP
		<i>Erethistoides senkhiensis</i>	AP
NE	50	–	–

[AP: Arunachal Pradesh; NE India: North East India]

ENUMERATION

Class Actinopteri

Order Cypriniformes

Family Cobitidae

Genus *Lepidocephalichthys* Bleeker 1863

1. *Lepidocephalichthys arunachalensis* (Dutta & Barman 1984)

1984 *Noemacheilus arunachalensis* (Dutta & Barman). *Ind. Bull. Zoo. Surv. Ind.*, 6(1-3): 275-277.

Material Referred: Holotype: ZSI FF1713. Paratypes: ZSI FF1714 (2).

Type Locality: Namdapha River, Namdapha Wildlife Sanctuary, Tirap District, Arunachal Pradesh, India.

Distribution: Brahmaputra drainage, Arunachal Pradesh, India.

Remarks: Endemic to the state

Family Balitoridae

Genus *Bhavana* Hora 1920

2. *Bhavana arunachalensis* Nath et al., 2007 2007. *Bhavana arunachalensis* Nath, Dam, Bhutia, Dey & Das. *Rec. Zoo. Sur. Ind.*, 107 (3): 71-78.

Material Referred: Holotype: APFS/ZSI/P-488.

Type Locality: Noadhing river, Namsai district.

Distribution: Noadhing river basin, Arunachal Pradesh, India.

Remarks: Endemic to the state.

Family Nemacheilidae

Genus *Aborichthys* Chaudhuri 1913

3. *Aborichthys cataracta* Arunachalam et al., 2014

2014. *Aborichthys cataracta* Arunachalam, Manickam, Punniyam & Mayden. *Species*, 7(18): 33-47.

Material Referred: Holotype: MSUMNH 2.

Type Locality: Ranga River in Upper Subanshri District, India.

Distribution: Ranga River drainage, Arunachal Pradesh, India.

Remarks: Endemic to the state since no further report of its finding available.

4. *Aborichthys iphipaniensis* Kosygin et al., 2019

2019. *Aborichthys iphipaniensis* Kosygin, Gurumayum, Singh & Chowdhury, *Uttar Pradesh Journal of Zoology*, 39(2): 69-75.

Material Referred: Holotype: ZSI FF 8002. Paratypes: ZSI/V/APRC/P-1659.

Type Locality: Iphipani, Lower Dibang Valley.

Distribution: Upper Brahmaputra River basin, India.

Remarks: Not reported from other places, Endemic to the state.

5. *Aborichthys kailashi* Shangningam et al., 2019

2019. *Aborichthys kailashi*, Shangningam, Kosygin, Sinha & Gurumayum, *Ichthyological Exploration of Freshwaters*: 1123.

Material Referred: Holotype. ZSI FF 8310.

Type Locality: Pange River Arolenching, Ziro.

Distribution: Upper Brahmaputra River basin, India.

Remarks: Endemic to the state.

6. *Aborichthys kemp* Chaudhuri 1913

1913. *Aborichthys kemp* Chaudhuri. *Records of the Indian Museum (Calcutta)*, 8(31913): 245, Pl. 7 figs. 1a-b).

Material Referred: Syntypes: ZSI F7721/1.

Type Locality: Egar stream of Dihang River, Yembung, Abor Hills.

Distribution: Mountain streams in Abor Hills, India.

Remarks: Endemic to the state.

7. *Aborichthys pangensis* Shangningam et al., 2019

2019. *Aborichthys pangensis* Shangningam, Kosygin, Sinha & Gurumayum. *Ichthyological Exploration of Freshwaters*, 1123.

Material Referred: Holotype. ZSI FF 8000.

Type Locality: Pange River Arolenching, Ziro.

Distribution: Pange River Arolenching, Ziro.

Remarks: Endemic to the state.

8. *Aborichthys tikaderi* Barman 1985

1985. *Aborichthys tikaderi* Barman. *Journal of the Bombay Natural History Society*, 81(3): 680, Fig. 1.

Material Referred: Holotype: ZSI FF2135.

Type Locality: Namdapha Wildlife Sanctuary, Arunachal Pradesh.

Distribution: Upper Brahmaputra basin, Arunachal Pradesh, northeastern India.

Remarks: Endemic to the state.

9. *Aborichthys verticauda* Arunachalam et al., 2014

2014. *Aborichthys verticauda* Arunachalam, Manickam, Punniyam & Mayden. *Species*, 7(18): 37, Figs. 4-5.

Material Referred: Holotype: CMA 16 (2).

Type Locality: Tributary of Ranga River, 7 km away from Hola camp, Lower Subansiri.

Distribution: Upper Brahmaputra basin, Arunachal Pradesh, northeastern India.

Remarks: Endemic to the state as of now.

10. *Aborichthys waikhomi* Kosygin 2012

2012. *Aborichthys waikhomi* Kosygin. *Rec. Zool. Surv. Ind.* 112 (1): 49-55.

Material Referred: Holotype: EBRC/ZSI/F.7414.

Type Locality: Bulbulia stream near Bulbulia a tributary of Noa-Dihing river, Namdapha.

Distribution: Ranga River drainage, Arunachal Pradesh, northeastern India.

Remarks: Endemic to the state.

11. *Aborichthys uniobarensis* Nanda et al., 2021

2021. *Aborichthys uniobarensis* Nanda, Machahary, Tamag and Das. *Asian Journal of Conservation Biology*, 10(1): 3-9.

Material Referred: Holotype: EBRC/ZSI/F-12607.

Type Locality: Senki stream, Police Colony, Itanagar.

Distribution: Brahmaputra basin, Arunachal Pradesh, India.

Remarks: Endemic to the state.

Genus *Mustura* Kottelat 2018

12. *Mustura dikrongensis* Lokeshwar & Vishwanath 2012

2012. *Physoschistura dikrongensis* Lokeshwar & Vishwanath. *Zootaxa* 3586:249-254

Materials Referred: Holotype: MUMF 11091/3.

Type Locality: Dikarong River at Doimukh, Papum Pare.

Distribution: Brahmaputra basin, Arunachal Pradesh, India.

Remarks: Endemic to the state.

13. *Mustura harkishore* Das and Darshan, 2019

2019. *Physoschistura harkishorei*. Das and Darshan. *Zootaxa*, 4337(3): 404

Material Referred: Holotype: RGUMF 290.

Type Locality: Dibang River, Lower Dibang Valley district.

Distribution: Dibang and Lohit Rivers, Brahmaputra basin, Arunachal Pradesh, India.

Remarks: Endemic to the state.

14. *Mustura walongensis* Tamang & Sinha 2016

2016. *Physoschistura walongensis* Tamang & Sinha. *Zootaxa*, 4173(3): 280-288.

Material Referred: Holotype: ZSI/APRC 1190.

Type Locality: Lohit River (Brahmaputra River basin) at Walong.

Distribution: Dibang and Lohit Rivers, Brahmaputra basin, Arunachal Pradesh, India.

Remarks: Endemic to the state.

Genus *Schistura* McClelland 1838

15. *Schistura tirapensis* Kottelat 1990

1990 *Schistura tirapensis* Kottelat. *Indochinese nemacheilines*: 62.

Material Referred: Holotype: SRS/ZSI F572.

Type Locality: Riwa River at Manpong /Nampong, Changlang District.

Distribution: Northeastern, India.

Remarks: Endemic to the state.

16. *Schistura rebuw* Choudhury et al., 2019
2019. *Schistura rebuwa*, Choudhury, Hrishikesh, Dey, Abhinit, Bharali, Ratul Ch., Sarma, Dandadhar, Vishwanath, Waikhom, *Zootaxa*, Vol-4551, 1.

Type Locality: Kameng River, West Kameng District.

Distribution: Kameng River basin.

Remarks: Endemic to the state.

Family Psilorhynchidae

Genus *Psilorhynchus* McClelland 1838

17. *Psilorhynchus arunachalensis* (Nebeshwar, Bagra & Das, 2007)

2007. *Psilorhynchoides arunachalensis* Nebeshwar, Bagra & Das. *Zoos' Print J.* 22(3):2632-2636.

Material Referred: Holotype: RGUMF-0001.

Type Locality: Dirang River at Dirang, East Kameng District.

Distribution: Brahmaputra River basin, India and China.

Remarks: Endemic to the state.

Family Cyprinidae

Genus *Garra* Hamilton 1822

18. *Garra alticaputus* Arunachalam, Nandagopal & Mayden, 2013.

2013. *Garra alticaputus* Arunachalam, Nandagopal & Mayden. *J. Fish. Aqua.*, 4(3):121-138.

Material Referred: RGUMF-418.

Type Locality: Dikrong River at Boorum village Itanagar.

Distribution: Ranga River drainage, Brahmaputra River basin, India.

Remarks: Endemic to the state.

19. *Garra arunachalensis* Nebeshwar & Vishwanath 2013

2013. *Garra arunachalensis* Nebeshwar & Vishwanath. *Species*, 10(24):43-57.

Material Referred: Holotype: MUMF 4304.

Type Locality: Deapani River at Roing, Lower Dibang Valley.

Distribution: Upper Brahmaputra River basin, Arunachal Pradesh, India.

Remarks: Endemic to the state.

20. *Garra arupi* Nebeshwar, Vishwanath & Das 2009

2009. *Garra arupi* Nebeshwar, Vishwanath & Das. *J. Threatened Taxa*, 1(4):197-202.

Material Referred: Holotype: RGUMF-0184.

Type Locality: Deapani River at Roing, Lower Dibang Valley.

Distribution: Upper Brahmaputra River basin, Arunachal Pradesh, India and Bhutan.

Remarks: Endemic to the eastern Himalaya.

21. *Garra birostris* Nebeshwar & Vishwanath 2013

2013. *Garra birostris* Nebeshwar & Vishwanath, *Ichthyological Exploration of Freshwaters*, 24(2): 97-120.

Material Referred: Holotype: MUMF 4302.

Type Locality: Dikrong River, Doimukh.

Distribution: Upper Brahmaputra River basin, India and Bhutan.

Remarks: Endemic to the eastern Himalaya.

22. *Garra kalpangi* Nebeshwar, Bagra & Das 2012

2012. *Garra kalpangi*, Nebeshwar, Bagra & Das. *J. Threatened Taxa*, 4(2): 2353-2362.

Material Referred: Holotype: RGUMF 0006.

Type Locality: Kalpangi River Yachuli Lower Subansiri District.

Distribution: Upper Brahmaputra River basin, India.

Remarks: Endemic to the state.

23. *Garra kempfi* Hora 1921

1921. *Garra kempfi* Hora 665, Pl. 26 (figs. 3-3a), *Records of the Indian Museum* (Calcutta) v. 22 (pt 5, no. 29).

Material Referred: Holotype (unique): ZSI F7716/1.

Type Locality: Siyom River, below Damda, among the Abor Hills, Assam, India, elevation 1300 feet.

Distribution: Upper Brahmaputra River basin, India.

Remarks: Endemic to North East.

24. *Garra kimini* Arunachalam, Nandagopal & Mayden 2013

2013. *Garra kimini* Arunachalam, Nandagopal & Mayden. *J. Fish. Aqua.*, 4(3):121-138

Material Referred: Holotype: ZSI/SRS F8581.

Type Locality: Tributary of Ranga River, Hola camp, Lower Subanshri District

Distribution: Upper Brahmaputra River basin, India.

Remarks: Endemic to the state.

25. *Garra magnacavus* Shangningam & Kosygin & Sinha 2019

2019. *Garra magnacavus* Shangningam, Kosygin & Sinha. *Zootaxa*, 4695(2): 148-158.

Material Referred: Holotype. ZSI FF 6010.

Type Locality: Ranga River, Lower Subansiri District, Arunachal Pradesh.

Distribution: Upper Brahmaputra River basin, India.

Remarks: Endemic to the state.

26. *Garra magnidiscus* Tamang, 2013

2013. *Garra magnidiscus* Tamang. *Ichthyological Exploration of Freshwaters*, 24(1):31-40.

Material Referred: Holotype: ZSI/V/APFS/P-622.

Type Locality: Tributary of the Siang River, Bomdo Village Tuting, Upper Siang district.

Distribution: Upper Brahmaputra River basin, India.

Remarks: Endemic to the state.

27. *Garra minima* Arunachalam, Nandagopal & Mayden 2013

2013 *Garra minimus* Arunachalam, Nandagopal & Mayden 124, Figs. 4 [Journal of Fisheries and Aquaculture. v. 4 (no. 3).

Material Referred: Holotype: ZSI/SRS F8577.

Type Locality: Tributary of Ranga River, Lower Subanshri District.

Distribution: Upper Brahmaputra River basin, India.

Remarks: Endemic to the state.

28. *Garra quadratiostris* Nebeshwar & Vishwanath, 2013

2013. *Garra quadratiostris* Nebeshwar & Vishwanath. *Ichthyological Exploration of Freshwaters*, 24(2): 97-120.

Material Referred: Holotype: MUMF 4306.

Type Locality: Holotype from Sikkim and Paratypes from Arunachal Pradesh.

Distribution: Upper Brahmaputra River basin, India.

Remarks: Endemic to the state.

29. *Garra nigricauda* Arunachalam, Nandagopal & Mayden 2013

2013. *Garra nigricauda* Arunachalam, Nandagopal & Mayden. *J. Fish. Aqua.*, 4(3):121-138.

Material Referred: Holotype: ZSI/SRS F8580.

Type Locality: Siang River, near Pasighat.

Distribution: Siang River drainage, Brahmaputra River basin, India.

Remarks: Endemic to the state.

30. *Garra ranganensis* Tamang et al., 2019
2019. *Garra ranganensis* Tamang, Sinha, Abujam & Kumar. *Species*, 20: 59-71.

Material Referred: Holotype: ZSI/APRC 782.

Type Locality: Ranga River, Yazali, Lower Subansiri District.

Distribution: Upper Brahmaputra River drainage, Arunachal Pradesh.

Remarks: Endemic to the state.

31. *Garra rupicola* (McClelland, 1839)
1839 *Gonorhynchus rupicolus*, McClelland. *Asiatic Researches*, 19(2): 281, Pl. 43.

Material Referred: Talwar, P. K. and A. G. Jhingran, 1991.

Type Locality: Lareeh River, few miles beyond Bramacuna (Brahmakund), Mishmee Hills.

Distribution: Brahmaputra River basin, India and Nepal.

Remarks: No type known.

32. *Garra tamangi* Gurumayum & Kosygin
2016

2016. *Garra tamangi* Gurumayum & Kosygin. *Species*, 17(55): 84-93.

Material Referred: Holotype: ZSI/APRC/P-1175.

Type Locality: Dikrong River at Hoj, Papum Pare district.

Distribution: Upper Brahmaputra River basin, India.

Remarks: Endemic to the state.

Genus: *Pethia* Pethiyagoda et al., 2012

33. *Pethia arunachalensis* Shangningam, Kosygin and Chowdhury, 2019.

2019. *Pethia arunachalensis* Shangningam, Kosygin and Chowdhury. *Rec. Zool. Surv. Ind.*, 119(4): 329.

Material Referred: Holotype: ZSI FF 7162.

Type Locality: Nao-Dihing River, Miao, Changlang.

Distribution: Nao-Dihing River, Brahmaputra basin, Arunachal Pradesh.

Remarks: Endemic to the state.

Genus: *Schizothorax* Heckel, 1838

34. *Schizothorax sikusirumensis* Jha, 2020
2020. *Schizothorax sikusirumensis* Jha. *Journal of Global Bioresource*, 9(5): 7339-7351.

Material Referred: Holotype- JNC/ZOO-FM/SR/27.1.

Type Locality: Sikurirum River, Gakang area, Mebo, East Siang.

Distribution: Presently known only from Siku-Sirum River, East Siang.

Remarks: Endemic to the state.

Family Danionidae

Genus *Opsarius* McClelland 1838

35. *Opsarius arunachalensis* (Nath, Dam & Kumar 2010)

2010. *Barilius arunachalensis*. Nath, Dam & Kumar. *Rec. Zool. Surv. Ind.*, 110(3): 19-33

Material Referred: Holotype: APFS/ZSI/P-502.

Type Locality: Agari River, D.Ering Wildlife Sanctuary, Pasighat, East Siang

Distribution: Upper Brahmaputra River basin, India.

Remarks: Endemic to the state.

Genus *Devario* Heckel 1843

36. *Devario horai* (Barman, 1984)
1984. *Danio (Brachydanio) horai*, Barman. *Current Science*, 52(4): 177, Fig. 1

Material Referred: Holotype: ZSI FF1827.

Type Locality: Namdapha River, Tirap District.

Distribution: Namdapha River drainage, Arunachal Pradesh, India.

Remarks: Endemic to the state.

Genus *Rasbora* Bleeker 1859

37. *Rasbora kobonensis* Chaudhuri 1913.

1913. *Rasbora rasbora* var. *kobonensis* Chaudhuri. *Records of the Indian Museum (Calcutta)*, 8(3): 251, Pl. 8, figs. 2, 2a-b.

Material Referred: Holotype: ZSI F7796/1.

Type Locality: Brahmaputra River, Kobo, Abor Hills, Assam.

Distribution: India.

Remarks: Exact type locality is not clear since the author mentioned two localities, Abor hills and Kobo village. Endemic to northeast.

Order Siluriformes

Family Bagridae

Genus *Mystus* Scopoli 1777

38. *Mystus prabini* Darshan et al., 2019

2019. *Mystus prabini*, Darshan, Abujam, Ramkumar, Yambem, Vishwanath, Das & Pandey. *Zootaxa*, 4648(3): 513, Figs. 11, 2a, 5a.

Material Referred: Holotype: RGUMF 499.

Type Locality: Sinkin Rivers, Anpum village, Lower Dibang Valley.

Distribution: Sinkin and Dibang River basins, Arunachal Pradesh, India.

Remarks: Endemic to the state.

Genus *Olyra* McClelland 1842

39. *Olyra parviocula* Kosygin, Shangningam and Gopi, 2018

2018. *Olyra parviocula* Kosygin, Shangningam and Gopi. *Environmental Biology of Fishes*, **101**: 589-593

Material Referred: Holotype: ZSI FF 6058

Type Locality: Kameng River at Bhalukpong

Distribution: Kameng River, Brahmaputra drainage, Arunachal Pradesh

Remarks: Endemic to the state.

Family Amblycipitidae

Genus *Amblyceps* Blyth 1858

40. *Amblyceps apangi* Nath & Dey, 1989

1989. *Amblyceps apangi*, Nath & Dey. *Journal Assam Scientific Society*, 32(1): 2, Fig. 2.

Material Referred: Holotype: F/GUZ 1215.

Type Locality: Dikrong River, Arunachal Pradesh, India.

Distribution: Brahmaputra River drainage, Arunachal Pradesh, India; Bhutan.

Remarks: Endemic to the eastern Himalayas

41. *Amblyceps arunachalensis* Nath & Dey 1989

1989. *Amblyceps arunachalensis* Nath & Dey. *Journal Assam Scientific Society*, 32(1): 3, fig.3.

Material Referred: Holotype: F/GUZ 1213.

Type Locality: Dikrong River, Arunachal Pradesh, India.

Distribution: Brahmaputra River basin, Arunachal Pradesh, India.

Remarks: Endemic to the state.

42. *Amblyceps waikhomi* Darshan, Kachari, Dutta, Ganguly & Das

2016. *Amblyceps waikhomi* Darshan, Kachari, Dutta, Ganguly & Das. *PLoS ONE*, 11(2): e0147283.

Material Referred: Holotype: ZSI/APRC/P-1125.

Type Locality: Nongkon stream, a tributary of Noa Dehing River, Nongkon village Namsai.

Distribution: Brahmaputra River basin, Arunachal Pradesh, India.

Remarks: Endemic to the state.

Family Sisoridae

Genus *Creteuchiloglanis* Zhou, Li & Thomson 2011

43. *Creteuchiloglanis arunachalensis* Sinha & Tamang 201

2014. *Creteuchiloglanis arunachalensis* Sinha & Tamang. *Ichthyological Research*, 62(2): 189-196.

Material Referred: Holotype (unique): ZSI/V/APRC/P-844.

Type Locality: Pange River at Aro-Lenching, Ziro, Lower Subansiri District.

Distribution: Brahmaputra River basin, northeastern India.

Remarks: Endemic to the state.

44. *Creteuchiloglanis kamengensis* (Jayaram 1966)

1966. *Euchiloglanis kamengensis*. *Journal of the Zoological Society of India*, 15(1): 85, Fig.1.

Material Referred: Holotype: ZSI F2105/2.

Type Locality: Norgum River at Kalaktang, West Kameng district.

Distribution: Brahmaputra River drainage, India and upper Mekong River drainage, Yunnan Province, China.

Remarks: Reported to occur in Tibet and China.

45. *Creteuchiloglanis payjab* Darshan et al., 2014

2014. *Ceteuchiloglanis payjab* Darshan, Dutta, Kachari, Gogoi, Aran & Das. *Aqua, International Journal of Ichthyology*, 20(2): 73-80.

Material Referred: Holotype: RGUMF 0249. Paratypes: ZSI/V/APRC/P-921.

Type Locality: Yomgo River at Mechuka, a tributary of Siang River, West Siang District.

Distribution: Yomgo River drainage, Brahmaputra basin, northern India.

Remarks: Endemic to the state.

46. *Creteuchiloglanis tawangensis* Darshan et al., 2019

2019. *Creteuchiloglanis tawangensis* Darshan, Abujam, Wangchu, Kumar, Das, Kumar & Imotomba. *aqua, International Journal of Ichthyology*, 25(1): 17-25.

Material Referred: Holotype: RGUMF 449.

Type Locality: Tawang Chu River in Tawang district.

Distribution: Tawang Chu River drainage, upper Brahmaputra River basin, northern India.

Remarks: Endemic to the state.

Genus *Erethistoides* Hora 1950

47. *Erethistoides senkhiensis* Tamang, Chaudhry & Choudhury 2008

2008. *Erethistoides senkhiensis* Tamang, Chaudhry & Choudhury. *Ichthyological Exploration of Freshwaters*, 19 (2): 186.

Material Referred: Holotype: ZSI/V/APRC/P-4049.

Type Locality: Senki stream, Papum Pare district, Arunachal Pradesh.

Distribution: Senki stream, Arunachal Pradesh, India.

Remarks: Endemic to the state.

Genus *Exostoma* Blyth 1860

48. *Exostoma kottelati* Darshan et al., 2019

2019. *Exostoma kottelati* Darshan, Vishwanath, Abujam & Das. *Zootaxa* 4585 (2): 369-377

Material Referred: Holotype: RGUMF 457.

Type Locality: Stream flowing into Ranga River at Yazali village.

Distribution: Ranga River drainage, upper Brahmaputra River basin, Arunachal Pradesh.

Remarks: Endemic to the state.

49. *Exostoma tenuicaudata* Tamang, Sinha & Gurumayum 2015

2015. *Exostoma tenuicaudata* Tamang, Sinha & Gurumayum. *Zootaxa*, 4048(3): 441-445
Material Referred: Holotype: ZSI/APFS/P-929.

Type Locality: Siang River, Bomdo village, Tuting, Upper Siang.

Distribution: Siang River drainage, Brahmaputra basin, Arunachal Pradesh, northeastern India and Tibet, China.

Remarks: Reported occur in China and Tibet also.

Genus *Glyptothorax* Blyth 1860

50. *Glyptothorax dikrongensis* Tamang & Chaudhry 2011

2011. *Glyptothorax dikrongensis* Tamang & Chaudhry. *Ichthyological Research*, 58(1):1-9

Material Referred: Holotype: ZSI V/APFS/P-515.

Type Locality: Dikrong River at Doimukh.

Distribution: Dikrong River drainage, Arunachal Pradesh, northeastern India.

Remarks: Endemic to the state.

51. *Glyptothorax pantherinus* Anganthoibi & Vishwanath 2013

2013. *Glyptothorax pantherinus* Anganthoibi & Vishwanath. *Ichthyological Research*, 60(2): 172-177.

Material Referred: Holotype: MUMF 10047.

Type Locality: Noa Dehing River, Deban-Namdapha, Changlang.

Distribution: Arunachal Pradesh, India.

Remarks: Endemic to the state.

Genus *Oreoglanis* Smith 1933

52. *Oreoglanis majusculus* Linthoingambi & Vishwanath 2011

2011. *Oreoglanis majusculus* Linthoingambi & Vishwanath. *Zootaxa*, 2754: 60-66.

Material Referred: Holotype: MUMF 6294

Type Locality: Kameng River, Rupa, West Kameng.

Distribution: Kameng River, Brahmaputra basin, Arunachal Pradesh, India.

Remarks: Presently known only from the type locality: the Kameng River in Arunachal Pradesh.

53. *Oreoglanis pangenensis* Sinha & Tamang, 2015

2015. *Oreoglanis pangenensis* Sinha & Tamang. *Ichthyological Exploration of Freshwaters*, 25(4): 331-338.

Material Referred: Holotype (unique): ZSI / APRC P-791.

Type Locality: Pange River, Ziro, Lower Subansiri district.

Distribution: Currently known only from its type locality.

Remarks: Endemic to the state.

Genus *Pseudolaguvia* Misra 1976

54. *Pseudolaguvia jiyaensis* Tamang & Sinha 2014

2014. *Pseudolaguvia jiyaensis* Tamang & Sinha. *Zootaxa*, 3887(1): 37-54.

Material Referred: Holotype: ZSI/V/APRC/P-1034.

Type Locality: Jiya stream, Bolik village, Roing, Lower Dibang Valley District.

Distribution: Brahmaputra basin, Arunachal Pradesh, India.

Remarks: Endemic to the state but chances of availability in Assam because the type locality is very close to the plains of Assam.

55. *Pseudolaguvia magna* Tamang & Sinha 2014

2014. *Pseudolaguvia magna* Tamang & Sinha. *Zootaxa*, 3887(1): 37-54.

Material Referred: Holotype: ZSI/V/APRC/P-947.

Type Locality: Jiya stream, Bolik village, Lower Dibang Valley.

Distribution: Brahmaputra basin, Arunachal Pradesh, India.

Remarks: Endemic to the state but chances of availability in Assam is high because the type locality is very close to the plains of Assam.

Genus *Pseudecheneis* Blyth 1860

56. *Pseudolaguvia viriosa* Ng & Tamang 2012
2012. *Pseudolaguvia viriosa* Ng & Tamang. *Zootaxa*, 3522: 81-88.

Material Referred: Holotype: ZSI V/APRC/P-524.

Type Locality: Sille River, Ruksin, East Siang District.

Distribution: Brahmaputra basin, Arunachal Pradesh, India.

Remarks: Endemic to the state.

57. *Pseudecheneis sirenica* Vishwanath & Darshan 2007

2007. *Pseudecheneis sirenica* Vishwanath & Darshan. *Zoos' Print Journal*, 22(3): 2627-2631.

Material Referred: Holotype: MUMF 9070/1.

Type Locality: Siren River, Upper Siang District.

Distribution: Siren River, Brahmaputra basin, Arunachal Pradesh, India.

Remarks: Endemic to the state.

Family Siluridae

Genus *Pterocryptis* Peters 1861

58. *Pterocryptis indicus* (Dutta, Barman & Jayaram, 1987)

1987. *Kryptopterus indicus* Dutta, Barman & Jayaram. *Bulletin of the Zoological Survey of India*, 8(1-3): 29, Fig. 1.

Material Referred: Holotype (unique): ZSI FF1699.

Type Locality: Hornbill Point, Namdapha River, Namdapha Wildlife Sanctuary.

Distribution: Arunachal Pradesh, Assam and West Bengal.

Remarks: Endemic to the Northeast.

Order Anabantiformes

Family Badidae

Genus *Badis* Bleeker 1853

59. *Badis triocellus*, Khyntiam & Sen 2013
2013: *Badis triocellus*, Khyntiam & Sen. *Rec. Zool. Surv. Ind.*, 111(4): 65-72.

Material Referred: Holotype: Holotype: ERS-V/F-2806.

Type Locality: Subansiri River below dam site, Lower Subansiri district.

Distribution: North east India: Arunachal Pradesh, Assam and Meghalaya, India.

Remarks: Endemic to the Northeast.

60. *Badis singenensis* Geetakumari & Kadu 2011

2011. *Badis singenensis* Geetakumari & Kadu. *J. of Threatened Taxa*, 3(9): 2085-2089.

Material Referred: Holotype: MUMF-Per 113.

Type Locality: Saku-Kadu Village, Singen River, East Siang district, Arunachal Pradesh.

Distribution: Brahmaputra drainage, Arunachal Pradesh, India.

Remarks: Endemic to the state.

Family Channidae

Genus *Channa* Scopoli 1777

61. *Channa pmanensis* Gurumayum and Tamang 2016

2016. *Channa pomanensis*, Gurumayum & Tamang. *Species*, 17(57): 175-186.

Material Referred: Holotype: ZSI/V/APRC/P-1066.

Distribution: Poma River, Brahmaputra drainage, Arunachal Pradesh, India

Remarks: Endemic to the state.

62. *Channa melanostigma* Geetakumari & Vishwanath, 2010

2010. *Channa melanostigma* Geetakumari & Vishwanath. *Journal of Bombay Natural History Society*, 107(3): 231-235.

Material Referred: Holotype- MUMF-Per 39.

Type Locality: Lohit River, Tezu.

Distribution: Lohit River, Brahmaputra drainage, Arunachal Pradesh.

Remarks: Endemic to the state.

Order Synbranchiformes

Family Synbranchidae

Genus *Monopterus* Lacepède 1800

63. *Monopterus hodgarti* (Chaudhuri 1913)

1913. *Moringua hodgarti*, Chaudhuri. *Records of the Indian Museum (Calcutta)*, 8(3): 255, Pl. 9, Figs.3a-b).

Material Referred: Syntypes: ZSI F7830/1.

Type Locality: Upper Rotung, Abor Hills, Arunachal Pradesh.

Distribution: Arunachal Pradesh, Northeast India.

Remarks: Endemic to the state.

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REFERENCES

Anonymous, 2021. The IUCN Red List of Threatened Species. Version 2021-1. Available: <https://www.iucnredlist.org> (Accessed on 18.06.2021).

Arunachalam, M., Nandagopal, S., Mayden, R.L., 2013. Morphological diagnoses of *Garra* (Cypriniformes: Cyprinidae) from North-Eastern India with four new species descriptions from Brahmaputra River. *Journal of Fisheries and Aquaculture*. 4(3), 121-138.

Arunachalam, M., Raja, M., Punniyam, M., Mayden, R.L., 2014. New species of *Aborichthys* (Cypriniformes: Balitoridae) from Arunachal Pradesh, India. *Species*. 7(18), 33-47.

Captain, A., Bhatt, B.B., 2000. An interim checklist of the snakes of Arunachal Pradesh. *The RFNEI newsletter*. 3, 10-13.

Chaudhuri, B.L. 1913. Zoological results of the Abor Expedition, 1911-12. XVIII. *Fish. Records of the Indian Museum (Calcutta)*. 8(3): 243-257.

Darshan, A., Abujam, S., Wangchu, L., Kumar, R., Das, D.N., R., 2019. A new species of *Glyptosternine* catfish (Siluriformes: Sisoridae) from the Tawang-chu River of Arunachal Pradesh, Northeastern India. *Aqua, International Journal of Ichthyology*. 25(1), 17-24.

Darshan, A., Dutta, R., Kachari, A., Gogoi, B., Aran, K., Das, D.N., 2014. A new species of *Glyptosternine* catfish (Siluriformes: Sisoridae) from Yomgo River, Arunachal Pradesh, India. *Aqua, International Journal of Ichthyology*. 20(2), 73-80.

Datta, A.K., Barman, R.P., 1984. On a new species of *Noemacheilus* (Pisces: Cobitidae) from Arunachal Pradesh, India. *Bulletin of the Zoological Survey of India*. 6(1-3), 275-277.

Dutta, A.K., Sen, T.K., 1977. *Schizopygopsis stoliczkae* Steindachner- First record from Arunachal Pradesh, India, with observation on the extension on the geographical range. *Newsletter Zoological Survey of India*. 3(4), 143-144.

Gurumayum, S. D., Kosygin, L., 2016. *Garra tamangi*, a new species of cyprinid fish (Teleostei: Cypriniformes) from Arunachal Pradesh, northeastern India. *Species*. 17(55), 84-93.

Gurumayum, S.D., Kosygin, L., Tamang, L., 2016a. Ichthyofaunal diversity of Arunachal Pradesh, a part of Northeast India biodiversity hotspot. *International Journal of Fisheries and Aquatic Studies*. 4(1), 341-244.

- Hora, S.L., 1921.** Indian cyprinoid fishes belonging to the genus *Garra*, with notes on related species from other countries. Records of the Indian Museum (Calcutta). 22 (5-29), 633-687.
- Jayaram, K.C., Mazumdar, A.N., 1964.** On a collection of fish from the Kameng frontier division, NEFA. Journal of the Bombay Natural History Society. 61(2), 264-280.
- Kosygin, L., Gurumayum, S.D., Singh, P., Chowdhury, B.R., 2019.** *Aborichthys iphipaniensis*, a new species of loach (Cypriniformes: Nemacheilidae) from Arunachal Pradesh, India. Uttar Pradesh Journal of Zoology. 39(2), 69-75.
- Lokeshwor, Y., Vishwanath, W., 2012.** *Physoschistura dikrongensis*, a new loach from Arunachal Pradesh, India (Teleostei: Nemacheilidae). Zootaxa. 3586, 249-254.
- McClelland, J., 1839.** *Gonorhynchus rupicolus*. Asiatic Researches. 19(2), 281-373.
- Menon, A. G. K., 1964.** Monograph of the cyprinid fishes of the genus *Garra* Hamilton. Mem Ind Mus.14(4), 173-260.
- Myers, N., Mittermeier, R.A., Mittermeier, C.G., de Fonseca, G.A.B., Kent, J., 2000.** Biodiversity hotspots for conservation priorities. Nature. 403, 853-858.
- Nath, P., Dam, D., Kumar, A., 2010.** A new fish species of the genus *Barilius* (Cyprinidae: Rasborinae), from the river Siang, D.Ering Memorial Wildlife Sanctuary, Arunachal Pradesh, India. Records of the Zoological Survey of India. 110(3), 19-33.
- Nath, P., Dey, S.C., 2000.** Fish and fisheries of North Eastern India, Arunachal Pradesh, Vol-I. New Delhi. Narendra Publishing House, pp. 201.
- Nebeshwar, K., Vishwanath, W., 2013.** Three new species of *Garra* (Pisces: Cyprinidae) from North-eastern India and redescription of *G. gotyla*. Ichthyological Exploration of Freshwaters. 24 (2), 97-120.
- Sen, N., Khyntiam, D., 2014.** Pictorial Handbook of Fishes of North East India, Zoological Survey of India, pp. 1-345.
- Srivastava, C.B., 1966.** On a collection of fishes from Tirap frontier division (NEFA), India. Journal of the Zoological Survey of India. 18, 122-128.
- Tamang, L., Chaudhry, S., 2011.** *Glyptothorax dikrongensis*, a new species of catfish (Teleostei: Sisoridae) from Arunachal Pradesh, Northeastern India. Ichthyological Research. 58(1), 1-9.
- Tamang, L., Sinha, B., Gurumayum, S.D., 2015.** *Exostoma tenuicaudata*, a new species of glyptosternine catfish (Siluriformes: Sisoridae) from the upper Brahmaputra drainage, Northeastern India. Zootaxa. 4048(3), 441-445.
- Tsering, J., Tam, N., Hui, T., Gogoi, B.J., Apang, O., 2017.** Medicinal orchids of Arunachal Pradesh- A review. Bulletin of Arunachal Forest Research. 32(1&2), 1-16.
- Van der Laan, R., Fricke, R., Eschmeyer, W.N. 2020.** Eschmeyer's Catalog of Fishes: Classification. Available: <http://www.calacademy.org/scientists/catalog-of-fishes-classification/> (Accessed on 18.06.2021).
- Vishwanath, W., Darshan, A., 2007.** Two new catfish species of the genus *Pseudecheneis* Blyth (Teleostei: Siluriformes) from Northeastern India. Zoos' Print Journal. 22(3), 2627-2631.