Indian J. Applied & Pure Bio. Vol. 40(3), 1881-1896 (2025). **ISSN: 0970-2091**
A web of Science Journal

Catfish (Teleostei: Siluriformes) diversity in Eastern Vidarbha region of Maharashtra, India

[1,2]Satyanarayan Vyenkati Pusala and [2]Mandar Satish Paingankar

[1]Department of Zoology, Mohsinbhai Zaweri Mahavidyalay, Desaiganj, Wadasa, Gadchiroli -441207 (India)
[2]Department of Zoology, Government Science College, Chamorshi Road, Gadchiroli-442605 (India)
*Corresponding Author, E-mail:- spusala12@gmail.com

Abstract

The diversity of freshwater catfish species of the Wainganga River basin, covering Chandrapur and Gadchiroli District, was studied from March 2020 to December 2024. A total of 72 sampling sites were visited at least three times, and a checklist of catfishes of the Chandrapur and Gadchiroli districts of the Eastern Vidarbha region of Maharashtra, India, was prepared. The catfish diversity of Chandrapur and Gadchiroli is represented by 14 species belonging to six families and nine genera. The Bagridae family was predominant with six species, followed by Siluridae with three species. *Amblyceps mangois, Clupisoma bastari,* and *Rita bakalu* were for the first time recorded from Chandrapur and Gadchiroli. Using previously published data from 43 locations in Eastern Vidarbha, a comprehensive checklist of 18 catfishes with their distribution has been prepared. The findings of the present study indicate that the Wainganga River could serve as an appropriate habitat for the conservation of freshwater catfish, provided that threats are mitigated.

Key words : Catfish Diversity, Catfish Distribution, Ichthyofauna, Maharashtra, Vidarbha.

Numerous countries are embracing the Sustainable Development Goals (SDGs) with heightened emphasis on natural resources; however, inland fish and fisheries are inadequately addressed in policy deliberations concerning the SDGs[8,12,28,43]. Over fifty percent of all recorded fish species reside in freshwater ecosystems[11], making them a crucial element of global biodiversity[26]. Inland fish and fisheries are markedly underrepresented in the Sustainable Development Goals and other international policies; thus, they continue to decline in the majority of countries globally. The IUCN Red List serves as a critical indicator of global biodiversity, evaluating and classifying the conservation status of species. The IUCN Red List Index also functions as an indicator for the Sustainable Development

Goal[19], and the inclusion of supplementary inland aquatic data may augment the effectiveness of the current indicators.

India possesses an exceptional assemblage of freshwater fish species characterized by significant endemism, mostly located in two biodiversity hotspots: the Western Ghats in the southern peninsula and the Himalayas in the northern and northeastern regions of the country[7,49]. Other locations, such as the Eastern Ghats hill ranges and Central India, which are comparatively arid and include various freshwater habitats, including hill streams and big rivers, remain under investigated for their aquatic biodiversity. Consequently, it is imperative to enhance our understanding of fish biodiversity in unexplored regions, like the Vidarbha region of Central India.

Central India, distinguished by predominantly dry and semi-arid regions and traversed by two major river systems, the Godavari (1465 km) and Narmada (1312 km), constitutes a significant biogeographic component of the Indian subcontinent. The semi-arid Vidarbha region of Central India, traversed by the tributaries of the Godavari, is distinguished by its mineral deposits, forest resources, and agricultural activities, with minimal industrialization[14,13]. Recent urbanization and intensive mining activities[14,44] are significantly affecting river water quality. This region is among the least investigated for freshwater fish diversity.

Catfish constitute a diverse and ecologically significant group of freshwater and marine fish, with roughly 3000 species that are either endangered or successful invaders worldwide[10]. Recent breakthroughs in molecular and morphological techniques have enhanced our understanding of the hidden diversity within catfish species. The diversity of catfish is notably higher in areas such as northeastern India, the Ganga-Brahmaputra River, and the Western Ghats[4,9,42]. Catfishes are crucial for food security, nutritional security, and livelihoods due to their global diversity, distribution, and nutritional value[3,38]. Catfish face serious risks from habitat degradation, pollution, and overfishing[2,18].

The freshwater fish species of the Vidarbha region had been inadequately documented until recent fish diversity studies published from a few areas, including Gadchiroli, Chandrapur, Nagpur, Bhandara, and Gondia. Over the past two decades, numerous localized checklists and compilations confined to smaller sections of Vidarbha have been published[15,17,27,39,48]. Despite many studies on fish biodiversity, the catfish diversity in the Vidarbha region remains inadequately explored. A thorough evaluation of catfish biodiversity is essential for enhancing our understanding of their diversity and distribution. The primary objective of this study was to compile an inventory of catfish species in the Vidarbha area of Central India and to elucidate their distribution patterns. The results of this study will yield significant data that could enhance monitoring and conservation efforts for the catfishes in the Vidarbha region of Central India.

Sampling sites, specimen collection, and taxonomic identification :

Data on fish species were collected from two different freshwater habitats, 'river'

(various tributaries of the Wainganga, part of the Godavari River system) and naturally occurring 'ponds' in Chandrapur and Gadchiroli districts of the Eastern Vidarbha region in central India (Figure 1). A total of 72 sites (Table-1) were surveyed at least thrice during the sampling period.

Fish were caught with the help of local fishermen using the basket traps, cast nets, dragnets, gill nets, and scoop nets. Fish species available at the local markets were also studied. All the live specimens were returned to the habitat from where they were caught. Specimens from local markets were preserved for accurate identification. Collected specimens were stored in 4% formaldehyde and identified based on standard literature[20-22,25,29-31]. Taxonomic and nomenclatural status mainly follows[11].

Data collection :

At each sampling site, the presence of a given species was noted, and a qualitative presence-absence matrix was created for the species occurrence. Sampling sites were classified into two habitat types based on whether it was a 'river' or a 'pond.' Similarly, sampling sites were classified into high or low human stress. For the present checklist, along with our data on 72 locations, we searched and analyzed all published literature in the eastern Vidarbh region of Maharashtra State. We have also provided an explanation for the deletion of the taxa earlier recorded in literature.

Statistical analysis :

Species co-occurrence was estimated using the association index, $Iab = 2J/(Na+Nb)$, where *Iab* is the co-occurrence index between species *a* and *b*, *J* is the number of joint occurrences, and *Na* and *Nb* are the number of occurrences of species *a* and *b,* respectively[46]. Species co-occurrence was depicted as a network graph plotted in PAST 4.03[16].

Fourteen species of catfish from six families and nine genera were recorded at the study sites (Table-2, Supplementary Information Table S1). The total occurrences of each species from the 72 sampling sites are listed in Table-2. The bagrid catfish, *Mystus vittatus*, was the predominant species recorded at all sites, followed by *Mystus cavasius*, which was also very common, present at multiple sample locations. *Amblyceps mangois*, *Mystus tengara,* and *Bagarius bagarius* were recorded from less than ten sampling locations. Three species, *A. mangois*, *Clupisoma bastari*, and *Rita bakalu*, were recorded for the first time in the Chandrapur and Gadchiroli Districts. The analysis of species co-occurrences (Figure 2) indicated that species such as *Mystus bleekeri, M. tengara, A. mongois, B. bagarius, and Ompak bimaculatus* co-occurred with an association index of 0.8 or higher. Conversely, *Rita gogra, Ompak pabda*, and *Wallago attu* exhibited a low association value, suggesting that they did not have specific co-occurring species. Consequently, these species did not constitute species-specific assemblages.

Catfish have been recorded by multiple researchers in different parts of India[1,42,45]. The Karala River in West Bengal harbors seven species[40], the wetlands of Shivamogga District in Karnataka represent ten species[23], the Kelo and Mand rivers in Raigharh District, Chhattisgarh, India, host 17 species[47], and the Krishna River in Sangli District, Maharashtra,

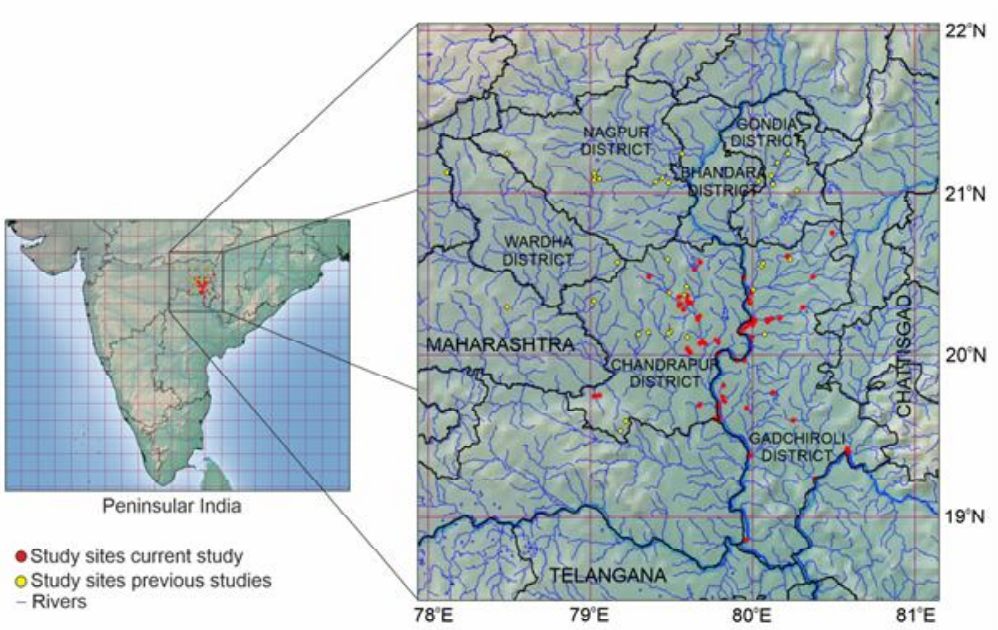

Fig. 1. Sampling sites of current study (red circle) and previous studies (yellow circles) reported from Eastern Maharashtra, India

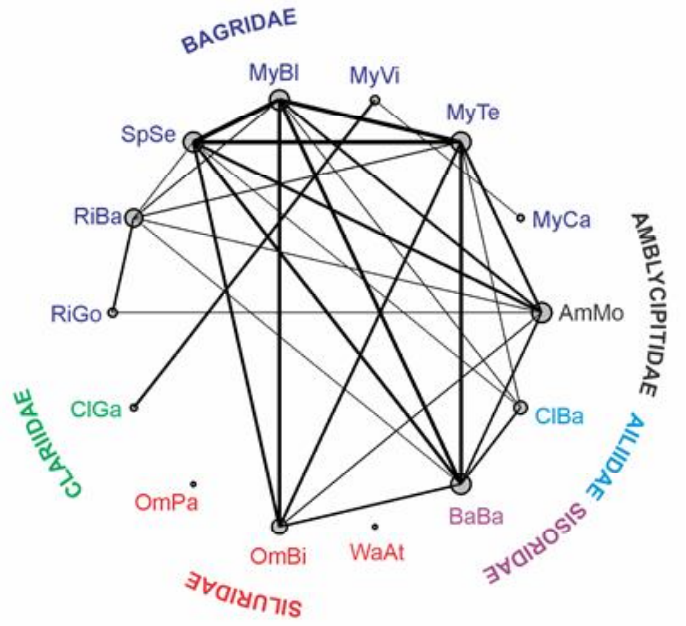

Fig. 2 Network of species co-occurrences based on association index. Size of the node is proportional to number of network connections. Co-occurring species with association index 0.8 (or 80%) and above are connected with lines, where the line width is proportional to the index value.

Table-1. Collection sites

Sr. No.	Code	Sampling location	Water body type	Human stress	District	Latitude (°N)	Longi-tude (°E)
1	SITE 01	Mul, Uma River	River	High	Chandrapur	20.071	79.701
2	SITE 02	Chittegaon	Pond	Low	Chandrapur	20.07	79.675
3	SITE 03	Mul 2, Uma River	River	High	Chandrapur	20.082	79.69
4	SITE 04	Kantapeth	Pond	Low	Chandrapur	20.016	79.612
5	SITE 05	Tolewahi, Kantapeth	Pond	Low	Chandrapur	20.025	79.606
6	SITE 06	Aagdi	Pond	Low	Chandrapur	20.035	79.593
7	SITE 07	Mingahri 1	Pond	Low	Chandrapur	20.332	79.597
8	SITE 08	Mingahri 2	Pond	Low	Chandrapur	20.322	79.598
9	SITE 09	Mingahri 3, Uma River	River	Low	Chandrapur	20.322	79.62
10	SITE 10	Ratnapur	Pond	Low	Chandrapur	20.359	79.545
11	SITE 11	Nawargoan	Pond	High	Chandrapur	20.364	79.593
12	SITE 12	Shivani, Andhari River	River	Low	Chandrapur	20.313	79.549
13	SITE 13	Ashti 1, Wainganga River	River	High	Gadchiroli	19.677	79.788
14	SITE 14	Asthi 2, Wainganga River	River	High	Gadchiroli	19.69	79.787
15	SITE 15	Ankoda	Pond	Low	Gadchiroli	19.711	79.827
16	SITE 16	Gadchiroli 1, Kathani River	River	High	Gadchiroli	20.21	80.01
17	SITE 17	Vasa	Pond	Low	Gadchiroli	20.319	79.98
18	SITE 18	Deudgav	Pond	Low	Gadchiroli	20.386	79.99
19	SITE 19	Konsari	Pond	Low	Gadchiroli	19.743	79.811
20	SITE 20	Yenapur	Pond	Low	Gadchiroli	19.812	79.819
21	SITE 21	Chamorshi River	River	High	Gadchiroli	19.968	79.945
22	SITE 22	Shioni 1	Pond	Low	Chandrapur	20.301	79.544
23	SITE 23	Vasera	Pond	Low	Chandrapur	20.278	79.571
24	SITE 24	Shioni 2, Huma river	River	Low	Chandrapur	20.313	79.553
25	SITE 25	Gadchiroli 2, Wainganga River	River	High	Gadchiroli	20.134	79.923
26	SITE 26	Gadchiroli 3	Pond	High	Gadchiroli	20.187	79.996
27	SITE 27	Kotgal	Pond	Low	Gadchiroli	20.181	79.964
28	SITE 28 River	Bhamragad 1, Pearlkota River	Low	Gadchiroli		19.42	80.584
29	SITE 29	Bhamragad 2,	River	Low	Gadchiroli	19.408	80.592

		Pamulguatami River					
30	SITE 30	Bhamragad 3, Indravati River	River	Low	Gadchiroli	19.403	80.582
31	SITE 31	Saralpar Mama Talav	Pond	Low	Chandrapur	20.235	79.67
32	SITE 32	Andhari river	River	Low	Chandrapur	20.22	79.659
33	SITE 33	Saralpar lake	Pond	Low	Chandrapur	20.229	79.659
34	SITE 34 River	Nandwardhan, Wardha River	Low	Gadchiroli		19.607	79.76
35	SITE 35	Sivani/Chaprala, Wardha-Wainganga River	River	Low	Gadchiroli	19.602	79.788
36	SITE 36	Panora, Wainganga River	River	Low	Gadchiroli	19.624	79.788
37	SITE 37	Indala	Pond	Low	Gadchiroli	20.164	79.944
38	SITE 38	Gadchiroli 4, Wainganga River	River	High	Gadchiroli	20.134	79.923
39	SITE 39	Visapur	Pond	Low	Gadchiroli	20.185	79.969
40	SITE 40	Bamni	Pond	Low	Gadchiroli	20.203	80.092
41	SITE 41	Ambe Shivani River	River	Low	Gadchiroli	20.223	80.113
42	SITE 42	Bamni River	River	Low	Gadchiroli	20.211	80.087
43	SITE 43	Mul	Pond	High	Chandrapur	20.068	79.675
44	SITE 44	Chamorshi, Wainganga River	River	High	Gadchiroli	19.966	79.902
45	SITE 45	Allapalli-Aheri, Pranhita River	River	High	Gadchiroli	19.384	79.981
46	SITE 46	Bhamaragad, Indrawati River	River	Low	Gadchiroli	19.406	80.579
47	SITE 47	Armori, Wainganga River	River	High	Gadchiroli	20.476	79.941
48	SITE 48	Dhanora River	River	Low	Gadchiroli	20.29	80.308
49	SITE 49	Chatgaon River	River	Low	Gadchiroli	20.228	80.163
50	SITE 50	Bormala Ghat, Gadchiroli, Wainganga River	River	High	Gadchiroli	20.216	79.988
51	SITE 51	Gadchiroli 5, Kathani River	River	High	Gadchiroli	20.212	80.011
52	SITE 52	Talodhi Mokasa, Gadchiroli, Pol RIver	River	Low	Gadchiroli	19.969	79.946
53	SITE 53	Shivani, Gadchiroli, Potphodi River	River	Low	Gadchiroli	20.112	79.994

54	SITE 54	Sinroncha, Pranhita River	River	High	Gadchiroli	18.856	79.958
55	SITE 55	Haranghat, Wainganga River	River	Low	Chandrapur	20.01	79.785
56	SITE 56	Chargaon River	River	Low	Chandrapur	20.092	79.772
57	SITE 57	Saoli	Pond	High	Chandrapur	20.08	79.784
58	SITE 58	Malewada	River	Low	Gadchiroli	20.48	80.37
59	SITE 59	Korachi	River	Low	Gadchiroli	20.75	80.49
60	SITE 60	Kurkheda	River	Low	Gadchiroli	20.61	80.21
61	SITE 61	Mulchera	River	High	Gadchiroli	19.67	79.96
62	SITE 62	Gondpipari	River	High	Chandrapur	19.69	79.67
63	SITE 63	Chimur	River	Low	Chandrapur	20.48	79.36
64	SITE 64	Ghodazari	River	Low	Chandrapur	20.53	79.64
65	SITE 65	Dhamrancha	River	Low	Gadchiroli	19.234	80.383
66	SITE 66	Nagbhid Chandrapur	River	Low	Chandrapur	20.5764	79.673
67	SITE 67	Wansadi	River	High	Chandrapur	19.747	79.051
68	SITE 68	Korpana	River	High	Chandrapur	19.744	79.019
69	SITE 69	Ghot Regadi dam	River	Low	Gadchiroli	19.769	80.122
70	SITE 70	Poteshwar Ghat, Porla, Gadchiroli, Wainganga	River	Low	Gadchiroli	20.345	79.973
71	SITE 71	Adapalli, Gadchiroli, Kathani	River	High	Gadchiroli	20.204	79.999
72	SITE 72	Etapally	River	Low	Gadchiroli	19.595	80.25

showed the presence of 13 species[24]. Several reports from various river basins in Eastern Vidarbha have reported the diversity of catfish species. A thorough catalog of catfishes in Eastern Vidarbh is missing from the literature. This paper presents a detailed inventory of 18 catfish species and their range, based on 72 sampling sites from our research and from 43 earlier studies (Supplementary Information Table-2) from Eastern Vidarbha. While preparing the checklist of catfishes of eastern Vidarbha, 11 species formerly included in earlier publications and checklists have been omitted due to taxonomic reasons and/or range inconsistencies (Table-3). Among the 18 species, one is classified as Endangered, two as Near Threatened, two as Vulnerable, two as Data Deficient, and 11 as Least Concern (Table-2). Pond habitats exhibited a lower diversity of species compared to river ecosystems. Of the 18 species, some were documented in both pond and riverine settings, while others were only reported from riverine habitats (Table-2).

Table-2. Checklist of Catfishes of Eastern Vidarbh region, Maharashtra, India

	FAMILY/Species	Habitat type	IUCN	Occur-rence	Collection sites Current study	Collection sites Earlier reports
	AMBLYCIPITIDAE					
1	*Amblyceps mangois* (Hamilton 1822) BAGRIDAE	RL, RH,	LC	06	S34,S36,S50,S51,S52,S55	-
2	*Mystus cavasius* (Hamilton 1822)	RL, RH, PL, PH	LC	84	S1,S2,S3,S7,S8,S9,S10,S11,S12, S13,S14,S16,S17,S18,S21,S22, S23,S24,S25,S26,S27,S28,S29, S30,S31,S32,S34,S35,S36,S38, S41,S42,S43,S44,S45,S46,S47, S48,S49,S50,S51,S54,S55,S58, S59,S60,S61,S62,S63,S64,S65, S67,S68,S69,S70,S71,S72	ES03,ES05,ES06,ES14,ES16, ES17,ES19,ES20,ES21,ES22, ES23,ES25,ES26,ES28,ES 29,ES31,ES32,ES33,ES36,E S37,ES38,ES39,ES40,ES41, ES42,ES43
3	*Mystus tengara* (Hamilton 1822)	RL	LC	05	S35	ES32,ES33,ES38,ES39
4	*Mystus vittatus* (Bloch 1794)	RL, RH, PL, PH	LC	95	S1 to S72(All 72 sites)	ES04,ES05,ES06,ES07,ES17, ES20,ES21,ES23,ES24,ES25, ES26,ES28,ES29,ES30,ES32, ES33,ES37,ES38,ES39,ES40, ES41,ES42,ES43
5	*Mystus bleekeri* (F. Day, 1877)	RL	LC	11	S66	ES03,ES05,ES06,ES17,ES23, ES25,ES28,ES31,S32
6	*Sperata aor* (Hamilton, 1822)		LC	02	-	ES32,ES36,
7	*Sperata seenghala*	RL	LC	24	S55,S66	ES01,ES02,ESO4,ES05,ES06,

	(Sykes 1839)					ES07,ES08,ES14,ES16,ES 20,ES21,ES22,ES23,ES24,ES25, ES26,ES28,ES30,ES31, ES32,ES33,ES36
8	*Rita bakalu* Lal, Dwivedi & Singh 2016	RL, RH	DD	11	S21,S34,S44,S46,S47,S50,S54, S58,S59,S60,S65	-
9	*Rita gogra* (Sykes 1839)	RL, RH	LC	21	S34,S35,S36,S46,S47,S48,S49, S50,S51,S54,S58,S59,S60,S65, S69,S72	ES6,ES32,ES33,ES38,ES39
	CLARIIDAE					
10	*Clarias gariepinus* (Burchell 1822)	RL, RH, PL, PH	LC	80	S01,S02,S03,S04,S05,S06,S07, S08,S09,S10,S11,S12,S13,S14, S15,S16,S17,S18,S19,S20,S21, S 22,S23,S24,S25,S26,S27,S28, S29,S30,S31,S32,S33,S34,S35, S36,S38,S39,S40,S41,S42,S43, S44,S45,S46,S47,S50,S51,S54, S55,S57,S58,S59,S6O,S61,S62, S63,S64,S65,S66,S67,S68,S69, S70,S71	ES02,ES08,ES21,ES22,ES23, ES25,ES26,ES28,ES37,ES38, ES39,ES40,ES41.ES42,ES43
11	*Clarias magur* (Hamilton, 1822)		EN	22	-	ES23 (Populations once considered to be *Clarias batrachus* in the Indian subcontinent have been reidentified as *C. magur* (Ng and Kottelat 2008. Therefore, the following reports of *C.batrachus* are considered as *C. magur*). ES01,ES03,ES04,ES07,ES08, ES09,ES11,ES12,ES15,ES21,

						ES22,ES24,ES25,ES26,ES27, ES28,ES30,ES31,ES33,ES34,ES35
	SILURIDAE					
12	*Ompok pabda* (Hamilton 1822)	RL, RH, PL, PH	NT	33	S01,S04,S05,S06,S09,S10,S11, S12,S16,S25,S28,29,S30,S32, S34,S35,S36,S45,S46,S47,S50, S54,S55,S66,	ES02,ES15,ES17,ES22,ES24, ES25,ES26,ES32,ES36
13	*Ompok bimaculatus* (Bloch, 1794)	RL, RH, PL,	NT	20	S65,S66,S67,S68,S69,S70	ES01,ES03,ES04,ES07,ES14, ES17,ES23,ES25,ES26,ES28, ES29,ES32,ES33,ES36
14	*Wallago attu* (Bloch & Schneider 1801)	RL, RH	VU	57	S09,S12,S16,S25,S28,S32,S34, S35,S36,S38,S41,S42,S46,S47, S58,S59,S60,S63,S64,S65,S70, S71,S72	ES01,ES02,ES04,ES05,ES07, ES08, ES09,ES10,ES12,ES15, ES24,ES25,ES26,ES27,ES28, ES17,ES19,ES21,ES22,ES23, ES30,ES31,ES32,ES33,ES34,ES35, ES36,ES37,ES38,ES39,ES40,ES41, ES42,ES43
	SISORIDAE					
15	*Bagarius bagarius* (Hamilton, 1822) AILIIDAE	RL	VU	06	S28,S29,S30	ES25,ES28,ES33,
16	*Clupisoma bastari* Datta & Karmakar, 1980	RL,RH	DD	13	S13,S14,S28,S29,S30,S44,S45, S46,S52,S54,S65,S72	ES36
	HETROPNUSTIDAE					
17	*Heteropneustes fossilis* (Bloch, 1794)		LC	19	-	ES01,ES02,ES03,ES04,ES05, ES07,ES08,ES09,ES10,ES13, ES19,ES22,ES24,ES25,ES26, ES30,ES31,ES33,ES36
	PANGASIIDAE					
18	*Pangasius pangasius* (Hamilton, 1822)		LC	04	-	ES08,ES25,ES31,ES33,

Table-3. Doubtful species removed from the final list of cat fishes known from Eastern Vidarbha region, Maharashtra India

	FAMILY/Species	Remark	Reference
1	*Mystus aor* (Hamilton, 1822)	Not a valid species but a junior subjective synonym of *Sperata aor.*	Fricke et al. 2020
2	*Mystus leucophasis* (Blyth, 1860)	*Mystus leucophasis* species is documented from the Sittang and Irrawaddy river drainages in Myanmar.	Ng, H.H. 2010a.
3	*Rita rita* (Hamilton, 1822)	*Rita rita* documented in the Ganges-Brahmaputra river basin in India, Nepal and Bangladesh.	Ng, H.H. 2010b.
4	*Rita pavimentata* (Valenciennes 1840)	Not a valid species but a junior subjective synonym of *Rita gogra.*	Fricke *et al.* 2020
5	*Rita kuturnee* (Sykes, 1839)	Not recorded from Vidarbha region or Wainganga River basin. *Rita kuturnee* recorded from Krishna and Godavari river basin in Maharashtra, Karnataka, Andhra Pradesh and Chhattisgarh states.	Dahanukar, N. 2011.
6	*Clarias batrachus* (Linnaeus, 1758)	*Clarias batrachus* was once thought to be widely distributed in Cambodia, Thailand, Viet Nam and Lao PDR (the Mekong and Chao Phraya basins), Malaysia (Sarawak, Sabah and the peninsula), and Indonesia (Kalimantan, Sumatra and Java). Populations of *Clarias batrachus* in the Indian subcontinent have been reidentified as *C. magur* (Ng and Kottelat 2008). The distribution of *Clarias batrachus* species is now considered to only include Java (Ng and Kottelat 2008), with those from the Greater Sunda Islands and Indochina suspected to be distinct species (Ng and Kottelat 2008).	Ng, H.H. & Low, B.W. 2019.

7	*Ompok pabo* (Hamilton, 1822)	Not a valid species but a junior subjective synonym of *Ompak pabda*	Fricke *et al.* 2020
8	*Pterocryptis wynaadensis* (Day, 1873)	*Pterocryptis wynaadensis* is recorded from the Kabini, Kuttiyadi, Chandragiri, Tungabhadra, Bedti, Bhavani, Moyar, Tambaraparini and Neerar River Systems and is endemic to the Western Ghats.	Raghavan, R. & Ali, A. 2011.
9	*Bagrus yarrelli* Sykes, 1839	Not a valid species but a junior subjective synonym of *Bagarius bagarius*.	
10	*Glyptothorax* spp	Species level identification is not carried out therefore not included in checklist.	Fricke *et al.* 2020
11	*Clupisoma garua* (Hamilton, 1822)	Not recorded from Central India. *Clupisoma garua* was described from the rivers of the Gangetic provinces (Hamilton 1822), and is recorded from the northern part of the Indian subcontinent to the Mahanadi River drainage and the Indus River drainage.	Ng, H.H. 2010c.

Two species, *O. pabda* and *O. bimaculatus*, are categorized as Near Threatened, while W. attu and *B. bagarius* are designated as Vulnerable on the IUCN Red List. The overexploitation of these species for consumption may result in considerable population reduction in Chandrapur and Gadchiroli. Threats also include human activity, such as habitat loss due to sand mining and pollution. Ng and Kottelat[32] performed an extensive taxonomic study of *Bagarius* specimens collected from South and Southeast Asia and proposed that *Bagarius bagarius* (Hamilton, 1822) is endemic to the Indian subcontinent, whereas *B. yarrelli* is its junior subjective synonym[32]. It is a carnivorous fish that preys on small fish, prawns, frogs, insects, and analogous organisms. Thus, *B. bagarius* serves a crucial function as a predator in the top-down management of riverine food webs. *B. bagarius* is documented from a limited number of sample locations in the Wainganga River basin, and additional habitat degradation may lead to a decrease in the fish population in the Vidarbha region.

C. bastari has been observed in the upper and lower sections of the Godawari River, although it remains unrecorded in Chandrapur and Gadchiroli. *R. bakalu* is presently recognized solely from its type locality in the Pranahita River, Bejjur, Telangana, within the Godavari River system in peninsular India[25]. Currently residing in the central Indian state of Chhattisgarh, *C. bastari* and *R. bakalu* are classified as "Data Deficient" on the IUCN Red List[5,6]. *C. batari* and *R. bakalu* were first time recorded from the Chandrapur and Gadchiroli districts of Maharashtra. Recently, the natural habitats of

C. batari and *R. bakalu* have grown more fragmented due to various anthropogenic activities, including habitat degradation, heightened application of chlorinated pesticides, mining operations, and overexploitation. The natural population size has significantly diminished, resulting in a considerable loss of genetic resources. Most contemporary populations are dispersed, small, and fragmented, increasing the likelihood of genetic drift and inbreeding. Due to their restricted distribution, threats, and the information at hand, *C. bastari* and *R. bakalu* have been categorized as data-deficient fish species. Consequently, the conservation of the species is imperative.

The *A. mangois* is presently categorized as Least Concern on the IUCN Red List. Nonetheless, the habitat of *A. mangois* is frequently jeopardized by anthropogenic activities, including deforestation, pollution, and dam construction. *A. mangois* is rarely recorded from the study area, and the population of *A. mangois* is declining because of habitat degradation and overfishing.

The invasive species *C. gariepinus* was identified in the Wainganga River. This species may have been introduced to the Wainganga River system from nearby aquaculture tanks or ponds and subsequently disseminated down the tributaries.

The steady and uniform movement of water, along with its expanse, ensures an ongoing provision of nutrients. The riverbed has nutrient-dense clay and a variety of aquatic flora and fauna. Thus, the findings of the current study suggest that the Wainganga River system offers a suitable habitat for the protection of catfish. The Wainganga River is polluted due to the release of industrial effluents and sewage runoff from nearby settlements and urban areas. Furthermore, the activities of fishing for food, fish harvesting, and sand mining are alarmingly increasing along the Wainganga River system. If the current trend continues, the adverse conditions may lead to the extinction of the fish fauna in the Wainganga River system. Considering the commercial importance of catfish as a food source and our findings suggesting that the Wainganga River offers a more favorable habitat for the future survival of freshwater catfish, it is essential to enact conservation strategies to bolster the fish population in the Wainganga River system.

Funding : District Planning Committee Gadchiroli, Maharashtra – Grant for Infrastructure development of colleges - Government Science College Gadchiroli (2202-C748-ME-52).

Competing Interests: The authors declare no competing interests.

We are thankful to Principal, Government Science College for providing the facilities. We are thankful to District Planning Committee Gadchiroli Maharashtra for providing financial assistant for infrastructure development in Government Science College Gadchiroli. We are thankful to Principal, Mohsinbhai Zaweri Mahavidyalay, Desaiganj, Wadasa, Gadchiroli for providing the facilities.

References :

1. Ali, A., N. Dahanukar, A. Kanagavel, S. Phillip, and R. Raghavan, (2013). *Journal of Threatened Taxa*, *5*(11): 4569-4578.
2. Arthington, A. H., N. K. Dulvy, W.

Gladstone, and I. J. Winfield, (2016). *Aquatic Conservation: Marine and Freshwater Ecosystems*, *26*(5): 838-857.
3. Bennett, A., P. Patil, K. Kleisner, D. Rader, J. Virdin, and X. Basurto, (2018). *Current knowledge, policy, and research*. NI report, *18:* 02.
4. Biswas, S. P., and S. Boruah, (2000). *Ecological Engineering*, *16*(1): 39-50.
5. Dahanukar, N. and A. Sidharthan, (2023). *Rita bakalu*. *The IUCN Red List of Threatened Species* 2023: e.T173139922 A173139932. https://dx.doi.org/10.2305/IUCN.UK.2023-1.RLTS.T173139922A173139932.en. Accessed on 15 July 2025.
6. Dahanukar, N. (2011). *Rita kuturnee*. *The IUCN Red List of Threatened Species* 2011: e.T172420A6888538. https://dx.doi.org/10.2305/IUCN.UK.2011-1.RLTS.T172420A6888538.en. Accessed on 13 July 2025.
7. Dahanukar, N., R. Raghavan, A. Ali, R. Abraham and C.P. Shaji (2011). The status and distribution of freshwater fishes of the Western Ghats. In: Molur S, Smith KG, Daniel BA, Darwall WRT, editors. *The status and distribution of freshwater biodiversity in the Western Ghats, India*. Cambridge, UK and Gland, Switzerland: IUCN and Coimbatore, India: Zoo Outreach Organization. pp 21–48.
8. Dickens, C., M. McCartney, D. Tickner, I. J. Harrison, P. Pacheco and B. Ndhlovu, (2020). *Sustainability*, *12*(18): 7381.
9. Dutta, R., S. K. Bhagabati, and S. Baishya (2018). *Fishing Chimes*, *38*(1&2): 54-60.
10. Ferraris Jr, C. J., and R. P. Vari, (2007). *Ichthyology & Herpetology*, *4:* 866-885.
11. Fricke, R., W. Eschmeyer, and R. van der Laan, (2020). Eschmeyer's Catalog of Fishes: Genera, Species, References. Available at: https://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp (Accessed on 12 July 2025).
12. Funge S. Smith, and A. Bennett, (2019). *Fish and Fisheries*, *20*(6): pp.1176-1195. doi:10.1111/faf.12403
13. Gawande RR, A.K. Srivastava and A. Jeyaram (2002). *Journal of the Indian Society* of *Remote Sensing 30:* 95–104.
14. Ghatol, S.G. and R.L. Karale (2000). *Journal of the Indian Society* of *Remote Sensing 28:* 213–219.
15. Gunwant P. Gadekar. (2015). *European Journal of Zoological Research*, *4*(1): 19-22.
16. Hammer, Ø., D.A.T Harper and P.D. Ryan (2001). *Palaeontologia Electronica 4:* 1–9.
17. Heda, N.K. (2009). *Journal of Threatened Taxa*, 514-518.
18. Hogan, Z. (2011). Ecology and conservation of large-bodied freshwater catfish: a global perspective. *In American Fisheries Society Symposium* (Vol. 77, pp. 39-53).
19. IUCN (2022). The IUCN Red List of Threatened Species. Version 2021-3 Available at: https://www.iucnredlist.org/assessment/red-list-index (Accessed on 12 July 2025).
20. Jayaram, K.C. and A. Sanyal (2003). *Records of the Zoological Survey of India Occasional Paper 207:* 1–136.
21. Jayaram, K.C. and J.J. Dhas (2000). *Records of Zoological Survey of India Occasional Paper 183:* 1–143.
22. Jayaram, K.C. (2010). *The freshwater fishes of the Indian region*. Delhi, India: Narendra Publishing House.
23. Kiran, B.R. (2011). *Asian Journal of*

Experimental Biological Sciences 2(2): 349–353.

24. Kumbar, S.M. and S.B. Lad (2014). *Journal of Threatened Taxa 6*(1): 5362–5367; http://dx.doi.org/10.11609/JoTT.o3394.5362-7
25. Lal, K.K., A.K. Dwivedi, R.K. Singh, V. Mohindra, S. Chandra, B.K. Gupta, S. Dhawan and J. Jena (2017). *Hydrobiologia 790:* 67–81.
26. Loh, J., R.E. Green, T. Ricketts, J. Lamoreux, M. Jenkins, V. Kapos, and J. Randers, (2005). *Philosophical Transactions of the Royal Society B: Biological Sciences*, *360*(1454): pp.289-295. doi:10.1098/RSTB.2004.1584
27. Lonkar, S., and G. Kedar, (2013). *An International Refereed & Indexed Quarterly Journal*, *2*(5): 35-39.
28. Lynch, A.J., I.G. Cowx,E. Fluet-Chouinard, S. M. Glaser, S. C. Phang, T. D. Beard, … and S. J. Youn, (2017). *Global Environmental Change*, *47:* 167-173.
29. Menon, A.G.K. (1987). The fauna of India and adjacent countries, Pisces, vol. 4, Teleostei-Cobitoidea, Part-1, Homalopteridae. Kolkata, India: *Zoological Survey of India*.
30. Menon, A.G.K. (1992a). The fauna of India and adjacent countries, Pisces, Vol-4, Teleostei-Cobitoidea, Part-2 Cobitidae. Kolkata, India: Zoological Survey of India.
31. Menon, A.G.K. (1992b). *Journal of the Bombay Natural History Society 89:* 210–228.
32. Ng HH, and M Kottelat (2021) *Zootaxa 4926*(1): 134–146. https://doi.org/10.11646/zootaxa.4926.1.9
33. Ng, H.H. and B.W. Low, (2019). Clarias batrachus. The IUCN Red List of Threatened Species 2019: e.T166613A1138872. https://dx.doi.org/10.2305/IUCN.UK.2019-2.RLTS.T166613A1138872.en. Accessed on 12 July 2025.
34. Ng, H.H. and M. Kottelat (2008). *Zoological Journal of Linnean Society 153:* 725–732.
35. Ng, H.H. (2010a). Mystus leucophasis. The IUCN Red List of Threatened Species 2010: e.T168475A6499324. https://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T168475A6499324.en. Accessed on 12 July 2025.
36. Ng, H.H. (2010b). *Rita rita.* The IUCN Red List of Threatened Species 2010: e.T166602A6245095. https://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T166602A6245095.en. Accessed on 12 July 2025.
37. Ng, H.H. (2010c). Clupisoma garua. The IUCN Red List of Threatened Species 2010: e.T166588A6241893. https://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T166588A6241893.en. Accessed on 12 July 2025.
38. Obiero, K., P. Meulenbroek, S. Drexler, A. Dagne, P. Akoll, R. Odong, ... and H. Waidbacher (2019). *Sustainability*, *11*(6): 1636.
39. Paliwal, G.T., and S.V. Bhandarkar (2017). *International Journal of Zoology Studies*, *2*(3): 25-28.
40. Patra, A.K. (2011). *Journal of Threatened Taxa* 3(3): 1610–1614; http://dx.doi.org/10.11609/JoTT.o2474.1610-4.
41. Raghavan, R. and A. Ali (2011). Pterocryptis wynaadensis. The IUCN Red List of Threatened Species 2011: e.T172472A6899106. https://dx.doi.org/10.2305/IUCN.UK.2011-1.RLTS.T172472A6899106.en. Accessed on 12

July 2025.
42. Raghavan, R., S. Philip, A. Ali, U. Katwate, and N. Dahanukar, (2016). *Reviews in Fish Biology and Fisheries*, *26*(2): 169-180.
43. Salinas-Rodríguez, S. A., E. Barba-Macías, D. Infante Mata, M. Z. Nava-López, I. Neri-Flores, R. Domínguez Varela and I.D. González Mora, (2021). *Sustainability, 13*(3): 1240.
44. Satapathy, D.R., P.R. Salve and Y.B. Katpatal (2009). *Environmental Geology 56:* 1323–1352.
45. Singh, A. K., A. Ansari, S. C. Srivastava, and V.K. Shrivastava (2015). An appraisal of introduced African catfish Clarias gariepinus (Burchell 1822) in India: invasion and risks. *Annual Research & Review in Biology, 6*(1): 41. Southwood, T.R.E. (1966). *Ecological methods*. London: Methuen and Co. Ltd.
46. Southwood, T.R.E. (1966). *Ecological methods*. London: Methuen and Co. Ltd.
47. Tamboli, R.K. and Y.N. Jha (2012). *ISCA Journal Biological Scences 1:* 71–73.
48. Telkhade, M.P. and H.S. Jambhule (2017). *International Journal of Researches in Biosciences, Agriculture and Technology*, *5*(1): 63-65.
49. Vishwanath, W., H.H. Ng, R. Britz, L.K. Singh, S. Chaudhry and K.W. Conway (2010). The status and distribution of freshwater fishes of the Eastern Himalaya region. In Allen DJ, Molur S, Daniel BA, editors. *The Status and Distribution of Freshwater Biodiversity in the Eastern Himalaya*. *Cambridge*: *IUCN and Coimbatore, India: Zoo Outreach Organization*. pp 22–41.