

OCCURRENCE OF EXOTIC SAILFIN CATFISH *PTERYGOLICHTHYS PARDALIS*
(CASTELNAU, 1855) IN BHIMA RIVER NEAR KARJAT, DISTRICT AHMEDNAGAR,
MAHARASHTRA, INDIA

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Abstract

The exotic sailfin catfish *Pterygoplichthys pardalis* (Castelnau, 1855) native to Amazon river were recorded from Bhima river at Shedgaon Phata near Karjat, District Ahmednagar, Maharashtra India in 2014. *P. pardalis* is also recorded from five states of India from 2006 to 2017. The collected live fishes from fisherman are identified and morphological features are studied. The genus *Pterygoplichthys* belonging to family Loricariidae with armored body, triangular sucker mouth, head region with radiating pattern, discrete spots get joined to beginning vermiculate pattern on ventral side. Due to armored spines body they destroyed the nets of fisherman and not used as food. The sucker mouth of the fish disturbs the bottom of the river and competes with algae grazers. It is found that the number of catch is increasing every year due to the absence of natural predator in the habitat. Study is needed to find their other applications.

Keywords: Bhima River, Exotic Sailfin Catfish, *Pterygoplichthys pardalis*

Introduction

Introduction of exotic species is one of the causes of biodiversity loss. Exotic species spread fast due to absence of natural predator in the habitat. *Pterygoplichthys pardalis* is native to the Amazon River Basin of Brazil and Peru (23). Although normally a bottom-dwelling fish, they have the ability to breathe air from the surface of the water during dry periods and those in which dissolved oxygen is too low (15). The genus *Pterygoplichthys* is widely introduced in tropical and subtropical countries in freshwater bodies (19). They are popular as an aquarium pets due to their appearance and ability as a cleaner. Carelessness of owner resulted in the successfully spreading of sailfin catfish into the fresh water body across the world. Occurrences of genus *Pterygoplichthys* in water bodies around the world is reported by various biologists includes from USA in 2001 (17), Japan in 2002 (14), Indonesia, Malaysia and Singapore in 2006 (21) Philippines in 2006 and 2007 (9,8), Mexico in 2007 (3), Turkey in 2007 (18), Bangladesh in 2008 (7), Europe in 2008 and 2010 (10,22,23), Taiwan in 2011 (30), Vietnam in 2013(31), Sri Lanka in 2013 (26), and Israel in 2013(6).

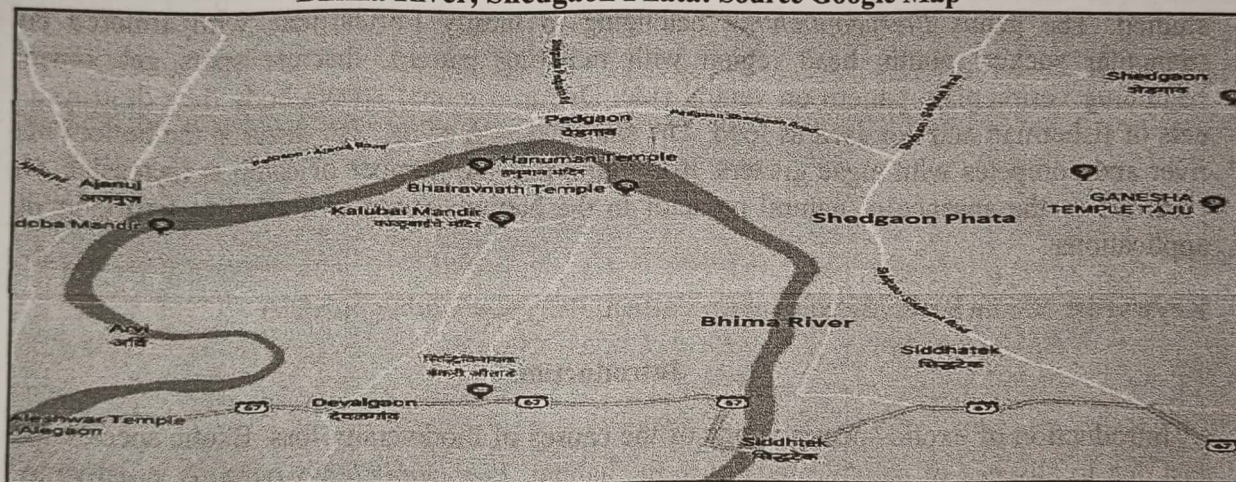
In India the sucker mouth armored catfish species was also reported which include *Pterygoplichthys multiradiatus* from Kerala and Tamil Nadu in 1998, 2006, 2009 and 2010 (2, 5, 13, 12), *Pterygoplichthys anisitsi* from Bihar in 2010 (25), *Pterygoplichthys disjunctivus* and *P. pardalis* from Andhra Pradesh, West Bengal, Bihar and Uttar Pradesh in 2014, 2015 and 2017

(24), *P. pardalis* and *P. disjunctivus* from Kerala in 2015 (1) and *P. pardalis* from Telangana in 2017 (11). *Pterygoplichthys* is one of the fast dispersing species in the invaded countries, introduced primarily through uncontrolled pet trade and their invasion results in serious ecological and economic consequences (16). The present paper deals with the occurrence of *P. pardalis* in the Bhima river at Shedgaon Phata near Karjat, District Ahmednagar, Maharashtra and its effect on the economy of local fisherman.

Material and Methods

During this present study the first record of the sucker catfish is observed on November 2014. The fishes were collected from the local fisherman from the Bhima river, Shedgaon Phata Karjat of district Ahmednagar captured by using sieve net and brought to laboratory of Department of Zoology, Dada Patil Mahavidyalaya and maintained in a fish pond for identification and morphological studies. Photography is done using 700D Canon camera. The fishes were identified using the keys provided by Weber and Armbruster (27, 28, 4). Help of Zoological Survey of India Pune is also been taken. After the first record the year wise information is collected from the local fisherman on the number of catches of the catfishes.

Bhima River, Shedgaon Phata: Source Google Map



Results

Morphological identification of suckerfish sailfin catfish: The fish recorded from the study area exhibited the characters of native specimens of *P. pardalis* occurs naturally in the Amazon River basin of Brazil and Peru such as abdominal colour pattern consisting of discrete black spots. The abdominal spots of the inter-grades were joined together, beginning to form vermiculations (Image 6). *P. pardalis* possessed a radiating pattern of light lines on the head (Image 4). The ventral sucker is triangular in shape and contains rows of teeth on upper and lower lips (Image 2). A pair of subterminal dark barbels (Image 3), usually body is covered by bony plates. The lateral side of the body is covered with large bony plates with five rows of spine (Image 5).

The table 1 shows the year wise increase in fish catch by the local fisherman from Bhima river. After discussion with the local fisherman it is found that the number of caught of the *P. pardalis*

is increasing twice every year and they are destroying their nets. Due to their different shape they are not used as a food fish.

Table 1: Showing the number of increase in the harvesting of *P. pardalis* per catch.

Sr.No	Year	Number of <i>P. pardalis</i> Harvested Per Catch
1	2014	1 to 2
2	2015	3 to 5
3	2016	7 to 8
4	2017	10 to 15

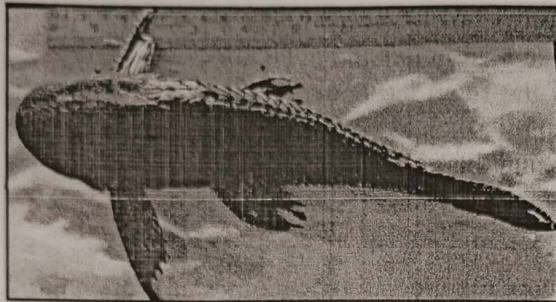


Image 1: *Pterygoplichthys pardalis*

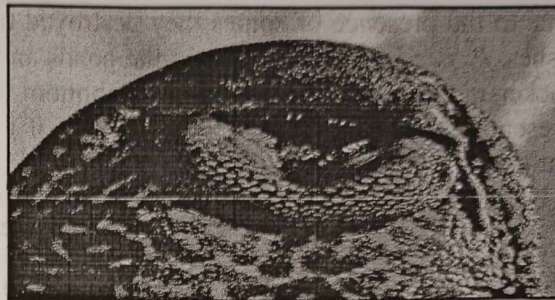


Image 2: Ventral Sucker Mouth with Teeth

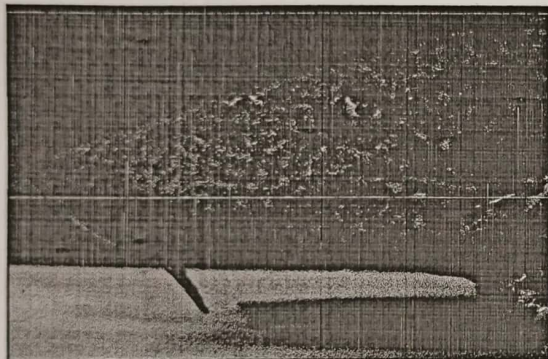


Image 3: Gill arch, Barbels and Eyes

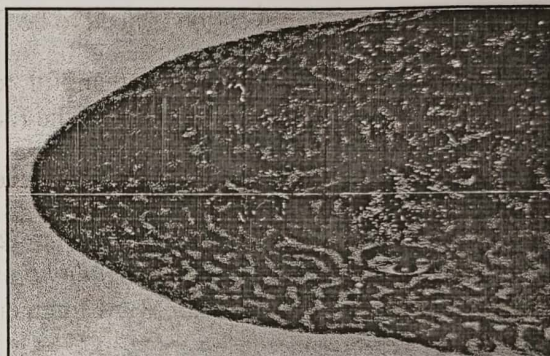


Image 4: Head Region with Radiating Pattern

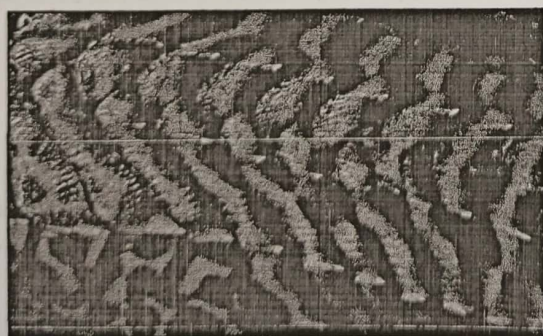


Image 5: Lateral side covered with Bony Plates with row of spines

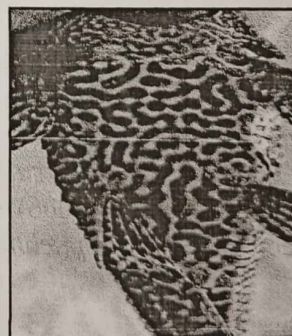


Image 6: Ventral side showing spots gets joined to begin vermiculation pattern

Discussion

It is found that the captured fish is *P. pardalis* which is native to Amazon River basin of Brazil and Peru (29) and now found in the freshwater of many states of India. The genus *Pterygoplichthys* have four closely related species such as *P. anisitsi*, *P. multiradiatus*, *P. pardalis* and *P. disjunctivus* and are identified by abdominal patterns (16). The similar characters were also reported by Page and Burr (20), Page and Robins (21). Rao and Sunchu (11) has done the morphometric study of the fish and found that the *P. pardalis* has a spotted pattern on the abdomen where as the *P. disjunctivus* has a vermiculated pattern (11). The abdominal discrete spots get joined together, beginning to form vermiculations is observed in the present study as also reported by Bijukumar et. al. in 2015 (1).

Due to the presence of spines they destroyed the nets of fisherman and compete with the local fishes. *P. pardalis* create holes in the ponds and tangled in net and even burst fish bags (11). The sucker mouth of the fish disturbs the bottom of the river and competes with algae grazers. In present study it is found that the number of catch is increasing every year due to absence of natural predator in the habitat. Study is needed to find their other applications.

Conclusion

The *Pterygoplichthys pardalis* an invasive fish now reported from various states of India. The fish is spreading and destroying the time and economy of fisherman. The fish also disturb the bottom of fresh water body. Due to their armored body and different looks they are avoided as food. Some alternative application is need to be finding for their use in human betterment.

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References

1. A.Bijukumar , R. Smrithy , U. Sureshkumar & S. George (2015) Invasion of South American suckermouth armoured catfishes *Pterygoplichthys* spp. (Loricariidae) in Kerala, India - a case study, *Journal of Threatened Taxa* , www.threatenedtaxa.org , , 7(3): 6987–6995
2. Ajithkumar, C.R., C.R. Biju & R. Thomas (1998). *Plecostomus multiradiatus* - an armoured catfish from freshwater ponds near Kunnankulam, Kerala and its possible impact on indigenous fishes. *LAK News*, *Limnological Association of Kerala*, pp. 1–2.
3. Armando, T.W.K., R.C. Ramon & A.A. Enrique (2007). Amazon sailfin catfish *Pterygoplichthys pardalis* (Castelnau, 1885) (Loricariidae), another exotic species established in south-eastern Mexico. *Southwestern Naturalist* 52(1): 141–144.
4. Armbruster JW, Page LM. (2006) Redescription of *Pterygoplichthys punctatus* and description of a new species of *Pterygoplichthys* (Siluriformes: Loricariidae). *Neotropical Ichthyology*.; 4(4):401-409.
5. Daniels, R.J.R. (2006). Introduced fishes: a potential threat to the native freshwater fishes of Peninsular India. *Journal of the Bombay Natural History Society* 103: 346–348.

6. Golani, D. & G. Snovsky (2013). Occurrence of Suckermouth Armored Catfish (Siluriformes, Loricariidae, *Pterygoplichthys*) in inland waters of Israel. *BioInvasions Records* 2(3): 253–256; <http://dx.doi.org/10.3391/bir.2013.2.3.13>
7. Hossain, M.Y., M.M. Rahman, Z.F. Ahmed, J. Ohtomi & A.B.M.S. Islam (2008). First record of the South American sailfin catfish *Pterygoplichthys multiradiatus* in Bangladesh. *Journal of Applied. Ichthyology* 24: 718–720.
8. Hubilla, M., F. Kis & J. Primavera (2007). Janitor fish *Pterygoplichthys disjunctivus* in the Agusan Marsh: a threat to freshwater biodiversity. *Journal of Environmental Science and Management* 10(1): 10–23.
9. Joshi, R.C. (2006). Invasive alien species (IAS): concerns and status in the Philippines, pp. 1–23. In: *Proceedings of the International Workshop on the Development of Database (APASD) for Biological Invasion*. FFTC, Taichung, Taiwan, China.
10. Keszka, S., R. Panicz & A. Tanski (2008). First record of the Leopard Pleco, *Pterygoplichthys gibbiceps* (Actinopterygii, Loricariidae) in the Brda River in the centre of Bydgoszcz (northern Poland). *Acta Ichthyologica Et Piscatoria* 38: 135–138; <http://dx.doi.org/10.3750/AIP2008.38.2.08>
11. K Rama Rao and Venugopal Sunchu (2006) A report on *Pterygoplichthys pardalis* Amazon sailfin suckermouth Catfishes in Freshwater tanks at Telangana state, India *International Journal of Fisheries and Aquatic Studies* X; 5(2): 249-254
12. Knight, J.D.M. (2010). Invasive ornamental fish: a potential threat to aquatic biodiversity in peninsular India. *Journal of Threatened Taxa* 2(2): 700–704; <http://dx.doi.org/10.11609/JoTT.o2179.700-4>
13. Krishnakumar, K., R. Raghavan, G. Prasad, A. Bijukumar, M. Sekharan, B. Periera & A. Ali (2009). When pets become pests - exotic aquarium fishes and biological invasions in Kerala, India. *Current Science* 97: 474–476.
14. Nakabo, T. (ed.) (2002). *Fishes of Japan with Pictorial Keys to The Species*, English edition, Tokai University Press, Tokyo.
15. Nico LG, Butt PL, Johnson GR, Jelks HL, Kail M, Walsh SJ. (2012) Discovery of the South American Suckermouth Armoured Catfish (Loricariidae, *Pterygoplichthys* spp.) in the Santa Fe River drainage, Suwannee River basin, USA. *Bioinvasion Records.*; 1:179-200.
16. Nico L, Cannister M, Neilson M. (2012) *Pterygoplichthys pardalis*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL.
17. Nico, L.G. & T.R. Martin (2001). The South American Suckermouth Armored Catfish, *Pterygoplichthys anisitsi* (Pisces: Loricariidae), in Texas, with comments on foreign fish introductions in the American Southwest. *Southwestern Naturalist* 46(1): 98–104

18. Ozdilek, S.Y. (2007). Possible threat for middle-east inland water: an exotic and invasive species, *Pterygoplichthys disjunctivus* (Weber, 1991) in Asi river, Turkey. *Journal of Fisheries and Aquatic Sciences* 24(3-4): 303-306.
19. Page LM. (1994) Identification of sailfin catfishes introduced to Florida. *Florida Scientist*; 57(4):171-172.
20. Page LM, Burr BM. (1991) A field guide to freshwater fishes of North America north of Mexico. Peterson Field Guide Series, Houghton Mifflin Company, Boston, MA.; 432.
21. Page, L.M. & R.H. Robins (2006). Identification of sailfin catfishes (Teleosti: Loricariidae) in south-eastern Asia. *The Raffles Bulletin of Zoology* 54: 455-457.
22. Piazzini, S., E. Lori, L. Favilli, S. Cianfanelli, S. Vanni & G. Manganelli (2010). Invasion note: a tropical fish community in thermal waters of southern Tuscany. *Biological Invasions* 12: 2959-2965; [http:// dx.doi.org/10.1007/s10530-010-9695-x](http://dx.doi.org/10.1007/s10530-010-9695-x)
23. Simonovic P, Nikolic V, Grujic S. (2010) Amazon sailfin catfish *Pterygoplichthys pardalis* (Castellnnau, 1855) (Loricariidae, Siluriformes), a new fish species recorded in the Serbian section of the Danube River. *Biotechnol. & Biotechnol. Eq.* Second Balkan Conference on Biology. Special Edition/On-line. 655-660.
24. Singh, A.K. (2014). Emerging alien species in Indian aquaculture: prospects and threats. *Journal of Aquatic Biology & Fisheries* 2: 32-41.
25. Sinha, R.K., U.K. Sarkar & W.S. Lakra (2010). First record of the Southern Sailfin Catfish, *Pterigoplichthys anisitsi* Eigenmann & Kennedy, 1903 (Teleostei: Loricariidae), in India. *Journal of Applied Ichthyology* 26: 606-608.
26. Sumanasinghe, H.P.W. & U.S. Amarasinghe (2013). Population dynamics of accidentally introduced Amazon Sailfin Catfish, *Pterygoplichthys pardalis* (Siluriformes, Loricariidae) in Pologolla reservoir, Sri Lanka. *Sri Lanka Journal of Aquatic Sciences* 18: 37-45.
Weber C. Nouveaux taxa dans *Pterygoplichthys* sensu lato (Pisces, Siluriformes, Loricariidae). *Revue Suisse de Zoologie*. 1991; 98:637-643.
27. Weber C. (1991) Nouveaux taxa dans *Pterygoplichthys* sensu lato (Pisces, Siluriformes, Loricariidae). *Revue Suisse de Zoologie*.; 98:637-643.
28. Weber C. (1992) Revision du genrew *Pterygoplichthys sensu lato* (Pisces, Siluriformes, Loricariidae). *Revue Francaise d Aquariologie Herpetologie*.; 19:1-36.
29. Weber,C.(2003) :Subfamily Hypostominae (armoured catfish).In Reis, R.E.,S.O.Kullander & C.J.J.Ferraris (eds) Checklist of the Fresh Fishes of the south and central America, EIPUCRS, Porto Alegre,729 PP

30. Wu, L.W., C.C. Liu & S.M. Lin (2011). Identification of exotic Sailfin Catfish species (*Pterygoplichthys*, Loricariidae) in Taiwan based on morphology and mtDNA sequences. *Zoological Studies* 50: 235–246.

31. Zworykin, D.D. & S.V. Budaev (2013). Non-indigenous armoured catfish in Vietnam: invasion and systematic. *Ichthyological Research* 60(4): 327–333; <http://dx.doi.org/10.1007/s10228-013-0356-9>