Global Veterinaria 14 (3): 358-361, 2015
ISSN 1992-6197

DOI: 10.5829/idosi.gv.2015.14.03.9322

Diversity of Freshwater Fish Fauna in Khanozai Dam of Pishin District, Province Balochistan, Pakistan

Fariha Mengal, Saima Durrani and Zubia Masood

Department of Zoology, Sardar Bahadur Khan Women's University,
Quetta, Province Balochistan, Pakistan

Abstract: The present study was carried out to check the fish fauna occurs in Khanozi dam of Pishin district, Balochistan, Pakistan during the period from January to December 2014. A total of 50 fish samples identified that were belonging to one family, four genera and four species including, *Cyprinus carpio, Carassius auratus, Tor soro, Labeo boggut,* respectively. Among them, *Cyprinus carpio* was considered as the most abundant dominant species as 40% of the total catch. This shows that the environment of dam favors the biodiversity of this economically very important carp species, though still few species found in this dam were facing many threats.

Key words: Khanozai Dam · Pishin District · Biodiversity of Fish Fauna

INTRODUCTION

Khanozai is a town of Pishin district in the Pashtoon belt of Balochistan located approximately 78km from Quetta city of Pakistan. Fish is a heterogeneous group of chordates that consist of hagfishes, lampreys, rays, sharks and bony fishes. Freshwater fishes are the most diverse group than the marine fishes. Each continent has atypical freshwater fish fauna and their distribution [1]. According to Levêque*et al*. [2], temperate regions fish fauna is much richer than glaciated region.

Fish exhibit enormous diversity in their morphology, biology as well as the habitats in which they lived. Fish are a diverse assemblage of known vertebrates [3]. Fish occupied an extra-ordinary group of habitats. They can be found in ponds, streams, desert springs, oceans, cold mountain streams [4]. Fishes are one of the major important essentials in the aquatic habitat and play a vital role in the economy of many nations because they have been constantly using as a food resourcesin the diet of many natives [5].

Biodiversity refers to the extent, diversity and distribution across biological scales ranging through genetics and life forms of populations, species, communities and ecosystems [6]. Biodiversity affects the lifestyle of living organisms to act in response to changes in the environment and provides the ecosystem goods that support human welfare e.g., nutrient cycling, cleaning water etc. as reported by Costanza *et al*. [7], Hooper *et al*. [8] and Diaz *et al*. [9]. The changes in biodiversity should be frequently monitored so they might manage the way of progress over the next decades [10].

Studies of fish's diversity and distribution are very important to know all those factors that influence on the geneticmakeup of fish community [11, 12]. The division and composition of fish species in each habitat is closely related with a variety of factors such as, availability of food, breeding sites, water current, depth, geography, physical and chemical properties of water [13].

In Pakistan, about 193 species of freshwater fishes had been described by Rafique and Khan [14] that belongs to 13 orders, 30 families and 86 genera.

MATERIALS AND METHODS

Fish samples were collected randomly from different regions of Khanozai dam of Pishin district using small meshed cast nets, scoop nets and hooks. Samples were collected monthly during one year period from January to December 2014.

Corresponding Author: Zubia Masood, Department of Zoology, SardarBahadur Khan Women's University, Quetta, Balochistan, Pakistan. E-mail: zubiamasood12@gmail.com.

Fig. 1: Map shows Khanozai dam of District Pishin Pishin.https://www.google.com/maps/place/Khanozai+Dam, +Pakistan/@30.6212332,67.3619325,14z/data=!4m2!3m1!1s0x3ed3351940fe1405:0xc584dd28b127f2ec.

Fish Collection and Preservation: After collection all samples were preserved in ice and later transferred into the laboratory. In laboratory, each fish sample was identified up to species level by using pictorial keys of fish identification [15,16] and by using identification guides available on website: www.fishbase.org/. Then each sample was placed in a separate labeled plastic jar and preserved in 10% formalin solution for long term preservation [17].

RESULTS AND DISCUSSION

A study was taken to investigate the biodiversity of fish fauna found in Khanozai dam of Pishin district. During the study period, fifty samples of fishes were collected and identified and their detail systematic data was recorded in Table 1, respectively. All fish samples were belongs to a single family Cyprinidae Fish samples identified in the present study were belonging to a single family Cyprinidae, its four genera and four species including, *Cyprinus carpio, Tor soro, Carassius auratus, Labeo boggut,* respectively (Table 1 Figures 1a-4d). In the present survey, a total catch of 50 specimens found in Kahnozai dam comprises 40% individuals of *Cyprinus carpio,* 26% of *Carassius auratus,* 24% of *Tor soro* and 10% of *Labeo boggut* of the total catch of fishes, therefore, the abundance of each fish species in this dam were arranged in decreasing order; *Cyprinus carpio>Tor soro>Carassius auratus> Labeo boggut,* respectively (Figure 1).Thus the result of this diverse group of fish species reveals that species like *Cyprinus carpio* was occurs in large number as compared to the other cyprinid species that includes 40% of the total catch and also considered as most vulnerable species as reported by Rafique and Khan [14] in the list of IUCN. This shows that the environment of dam favors the biodiversity of this economically very important carp species. However, still few fish species found in this dam were facing many threats.

Freshwater species are the most diverse group and their species are encounter more threats [18-20]. Adecline of freshwater species had been reported globally [20], locally and regionally [21]. The most important factors

Table 1: Systematic representation of ichthyo diversity of Khanozai dam of Pishin district.

S. No.	Order	Family	Genus	Species	Local name
1					
2	Cypriniformes	Cyprinidae	Cyprinus	*Cyprinus carpio*	Gulfam
			Carassius	*Carassius auratus*	Mahseer
3			Tor	*Tor soro*	Sunahrimachli
4			Labeo	*Labeo boggut*	Gulfam

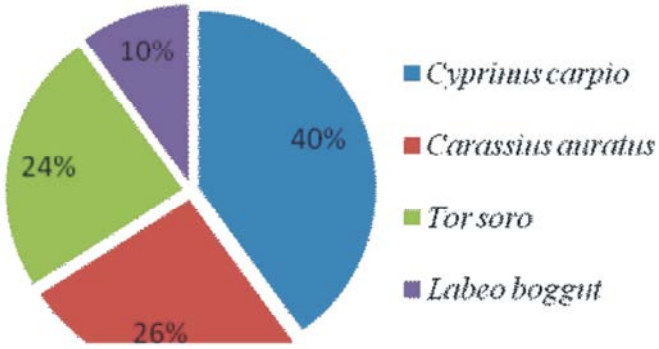

Fig. 1: Percentage composition of four species of family Cyprinidae collected from Khanozai dam of Pishin districr (N=50)

Fig. 1a.*Cyprinus carpio*

Fig. 1b.*Carassius auratus*

Fig. 1c.*Tor soro*

Fig. 1d.*Labeo boggut*

those are responsible for the decline of freshwater fish species including dam construction, over fishing, water pollution, mining, building construction, use of different fertilizer [22].

CONCLUSION

Thus, it had been concluded from the obtained results that Khanozai dam is a good source of data for fish diversity, particularly cyprinid species, but little work has been done on this site. Therefore, there is a need of concentration for the development of fish culture in this area so that to fill gaps, increase food resources and income of local people.

RECOMMENDATIONS

Maintainable fishery is not only concern with fishing for economic purpose but it has to save the fish habitat. Further, it is not only important to save freshwater resources but also save the whole environment and keeps the ecosystem unchanged as far as possible. These resources will support our life in the future [23]. Therefore, there should be an implementation of laws regarding to fishing and fish safety. The tribal people should be heartened to boost their skills and make the traditions attractive. Their culture should be honored right perspective and not on income generation. In this way, not only fresh water resources can be saved but provide alternate way of employment to the local community [24, 25].

REFERENCES

1. Maitland, P.S., 2003. Freshwater fish distribution by T.M. Berra. Aquatic Conservation: Marine and freshwater ecosystem. Academic Press, San Diego, 2001, xxxv+604pp. ISBN 0-12-093156-7. 13:372.

2. Levêque, C., Oberdorff, T., Paugy, D., Stiassny, M. L. J. and P.A. Tedesco, 2008. *Global diversity of fish (Pisces) in freshwater*. In Freshwater animal diversity assessment Springer Netherlands pp: 545-567.
3. Forese, R. and D. Pauly, 1998. Fish Base 98: Concepts, Design and Data sources, Manila: ICLARM, pp: 66-94.
4. Moyel, P.B. and J.J. Cech, Jr., 1996. An introduction to ichthyology.3rdedition. Printice Hall, New Jersey. pp: 67-122.
5. Essetchi, P.K, G.T.Guy, N.D. Valentin, G.B.I. Gouli and K. Tidiani, 2003. Fish diversity and its relationships with environmental variables in a West African basin. *Hydrology,* 505: 139-146.
6. Mace, G., H. Masundire, J. Baillie, T. Ricketts and T. Brooks, 2005. Biodiversity. In: Hassan, R., Scholes, R., Ash, N. (Eds.), Ecosystems and Human Well-Being: Current State and Trends (Findings of the Condition and Trends Working Group). Island, pp: 77-122.
7. Costanza, R., R.D.' Arge, R.D.E. Groot, S. Färber, M. Grasso, B. Hannon, K. Limburg, S. Naeem, R.V. O'Neill, J. Paruelo, R.G. Raskin, P. Sutton and M. Van Den Belt, 1997. The value of the world's ecosystem services and natural capital. Nature, 387: 253-260.
8. Hooper, D.U., F.S.Chapin III, J.J. Ewel, A. Hector, P. Inchausti, S. Lavorel, J.H. Lawton, D.M. Lodge, M. Loreau, S. Naeem, B. Schmid, H. Setälä, A.J. Symstad, J. Vandermeer and D.A. Wardle, 2005. Effects of biodiversity on ecosystem functioning: a consensus of current knowledge. Ecological Monographs, 75(1): 3-35.
9. Díaz, S., J. Fargione, F.S. Chapin and D. Tilman, 2006. Biodiversity loss threatens human well-being. PLOS Biology, 4(8): e277. pp: 1300-1305.
10. Raymond, L., 1995. Climate and anthropogenic effects of fish diversity and fish yields in the central delta of the Nigar River. Aquat. Liv. Resour., 8: 43-58.
11. Belliard, J., P. Boet and E. Tales, 1997. Regional and longitudinal patterns of fish community structure in the Seine River basin, France. Environ. Boil. Fishes, 50: 133-147.
12. Galactos, K, S.R Barriga and D.J. Stewart, 2004. Seasonal and habitat influences on fish communities within the lower Yasuni River basin of the Ecuadorian Amazon. Environ. Boil. Fishes, 71: 33-51.
13. Harris, J.H, 1995. The use of fish in ecological assessments. Aust. J. Ecol., 20: 65-80.
14. Rafique, M., and N.U.H. Khan, 2012. Distribution and status of significant freshwater fishes of Pakistan. Rec. Zool. Surv. Pakistan, 21: 90-95.
15. Mirza, M.R., 1990. Fresh water fishes of Pakistan (in urdu). Urdu Science board, Lahore, pp: 31-35.
16. Mirza, M.R. and A.A. Sandu, 2007. Fishes of the Punjab Pakistan, Polymer Publication, Urdu Bazar, Lahore.
17. Ullah, S., 2014. ichthyofaunal diversity of rhound stream at district Lower Dir, Khyber Pakhtunkhwa Pakistan.
18. Bruton, M.N., 1995. Have fish had their chips? The dilemma of threatened fishes. Environmental Biology of Fishes, 43: 1-27.
19. Leidy, R.A. and P.B. Moyle, 1998. Conservation status of the world's freshwater fish fauna: an overview. In: Fielder PL, Karieva PM (eds.). Conservation Biology: for the coming decade, 2ndedn. pp: 187-227. Chapman and Hall: New York.
20. Duncan, J.R. and J.L. Lockwood, 2001. Extinction in a field of bullets: a search for causes in the decline of the world's freshwater fishes. Biological Conservation, 102: 97-105.
21. López-Rojas, H. and A. Bonilla-Rivero, 2000. Anthropogenically induced fish diversity reduction in Lake Valencia Basin, Venezuela. Biodiversity and Conservation, 9: 757-765.
22. Helfrich, A.L. and J.R. Neves, 2009. Sustaining America's aquatic biodiversity freshwater fish biodiversity and conservation. Virginia Cooperative Extension,Publication 420-525, pp: 1-6, Virginia State University (https://pubs.ext.vt.edu/420/420-525/420-525.html).
23. Chaudhuri, S.K., 2004. Freshwater fish diversity information system as a basis for sustainable fishery. In IASLIC XXI National Seminar, Kolkata (India), 31 December 2004 -3 January 2005. [Conference paper].
24. Asmat-Ullah, Hikmat-Ullah, R. Abdul, M. Zubia, Faiz-Ur-Rhman, Hameed-Ur-Rehman, H. Ziagham, S. Ayaz and Asim-Ullah, 2014. The diversity of fish fauna in Baran dam of district Bannu, Khyber Pakhtunkhwa province (KPK), Pakistan.International Journal of Advanced Research, 2(9): 136-145.
25. Hasan, Z., M.A. Khan, Z. Ali, Q. Zia, M. Zubia, W. Khan, 2015. Fish Diversity of Sharki Dam, District Karak, Khyber Pakhtunkhwa, Pakistan. Sindh University Research Journal (Science Series), 47(1): 167-170.