

Fish Fauna of River Barandu with New Record (*Cyprinus carpio*) from District Buner, Khyber Pakhtunkhwa Pakistan

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Abstract: Pakistan had introduced many exotic fish species in warm and cold water. In current study we reported the fish species common carp (*Cyprinus carpio*) from River Barandu which is exotic and new record from River Barandu district Buner Khyber Pakhtunkhwa Pakistan

Key words: *Cyprinus carpio* • Exotic Species • River Barandu

INTRODUCTION

Biodiversity is the variety of living organisms considered at all levels of organization, from genetics through species, to higher taxonomic levels, including the variety of habitats and ecosystems, as well as the processes occurring therein. Biodiversity is not the same as the number of different kinds of species in a place. Biodiversity is in fact more complex than species richness, although species richness is certainly one component of Biodiversity [1].

Fishes is the only major group of vertebrate which very much effect on human civilization from ancient time to date [2]. “The most wonderful mystery of the life may well be the means by which it created so much diversity from so little physical matter” [3].

Fish diversity is more apparent than in their morphology. Fishes range in size from the very small to the very large, adult gobies may be just 8 mm, whereas the whale shark, *Rhincodon typus*, may reach 12 m. Some species lack eyes, scales or fins whereas others are heavily armoured or have adaptations for producing sound, venom, electricity or light [4]. Studies of spatial and temporal patterns of diversity, distribution and species composition of freshwater fishes are useful to examine factors influencing the structure of the fish community [5].

Fish constitutes half of the total number of vertebrates in the world. They live in almost all conceivable aquatic habitats. A total of 21,723 living species of fish have been recorded, out of these 8,411 are fresh water species and 11,650 are marine [2].

Pakistan has many of the world’s climatic and vegetation zones within even a small area. Extensive water management programs were started to ensure regular supply of water after independence in 1947, In this regard three water storage reservoirs, sixteen barrages, twelve interlink canals, two siphons and forty three main channels were built to prosper the agro based economy of the country by IUCN [6].

There are more than 186 freshwater fish species described from freshwater bodies of Pakistan. Substantial quantities of commercially important fish are caught from rivers annually. The inland commercially significant native fish fauna comprises about 30 species of which the economically important species are: *Labeo rohita*, *Gibelion catla*, *Cirrhinus mrigala*, *Cirrhinus reba*, *Channa straita*, *Channa marulius*, *Sperata sarwari*, *Wallago attu*, *Rita rita*, *Bagarius bagarius*, *Tenualosa ilisha*, *Notopterus notopterus*, *Nemacheilus* spp., *Tor macrolepis*, *Schizothorax* spp. and *Clupisoma naziri* [7].

Freshwater as a resource has never been an issue of concern until recent population explosion that has caused an immense pressure on water resources [8], which became worst with the advent of industrial revolution and rapid expansion of urban areas [9]. Rapid Industrialization, extensive urbanization, intensive agriculture practices and burning of fossil fuel are amongst anthropogenic activities, which have increased rapidly and have been considered important for changing the natural condition of an aquatic ecosystem [10, 11]. The adverse effect of human activities have resulted in degradation of

stream and riverine ecosystems [12], which ultimately alter the water quality and structure and function of aquatic biota [13].

In the last four decades, Pakistan has introduced several alien exotic fish species e.g. grass carp (*Ctenopharyngodon idella*), bighead carp (*Hypophthalmichthys nobilis*), silver carp (*Hypophthalmichthys molitrix*), common carp (*Cyprinus carpio*), gold fish (*Carassius auratus*), three species of tilapia (*Oreochromis aureus*, *Oreochromis mossambicus*, *Oreochromis niloticus*) in warm waters and two trout species: the rainbow trout (*Onchorynchus mykiss*) and the brown trout (*Salmo trutta fario*) in colder regions for various purposes like sport fishing, yield enhancement for the biological control of aquatic weeds and mosquito [14].

In district Buner study on fish fauna was carried out in 2013 on river Barandu district Buner by Saeed and his worker, who reported total 11 species belonging to 3 order and 4 families. These Species were *Barilius pakistanicus*, *Triplophysa naziri*, *Tor putitora*, *Crossocheilus latius*, *Schizothorax plagiotomus*, *Channa gachua*, *Gara gotyla*, *Glyptothorax punjabensis*, *Matacembelus armatus*, *Puntius sophore* and *Schistura punjabensis* [15].

The current study was conducted to present the fish fauna of river barandu and to determine the exotic fishes in river barandu district Buner Khyber Pakhtunkhwa Pakistan.

MATERIALS AND METHODS

Study Area: Buner is a district of Malakand division. It consists of Tehsil Daggar, Gagra, Totalai, Chagharzi, Chamla and Gadeze. The Daggar is the head quarter of the district. Buner lies between 34-09 and 34-43°N latitude and 72-10 and 72-47°E longitude. It is bounded on the north by Swat District, on the west by Malakand agency, on the south by Mardan District and on the east by river Indus and Hazara division. The river Barandu originates from many springs and streams in different area of district Buner. River Barandu flow in tehsil Daggar and then enter to tehsil Gagra. River Barandu is the most important water line as it connects with all major villages eventually falling into the river Indus at Kala Dhaka [16].

Fish Sampling: The collection of fishes from different points was done with the help of different nets of different sizes, hooks, cast nets, automatic rod, gill nets, dragon nets, hook net and hand nets. The collected fishes were kept in the dilute formalin solution (10%) in order to keep

the fish in original form. The fishes were injected with diluted formalin solution (5%). The fishes appearing same were stored in a same glass jar. The fishes were preserved and then brought to the museum of Abdul Wali Khan University (Buner Campus) and attached a label to each jar indicating the name of locality, date and time of collection. Various morphometric measurements of fish were made by ruler and vernier caliper. Other instruments used for laboratory work are Petri dishes, surgical gloves, forceps and tissue papers, counting needles and magnifying glass.

Identification: Taxonomic identification and classification was done on the basis of morphometric characteristics up to the species level. Fish species were identified by different taxonomic keys [17].

RESULTS AND DISCUSSIONS

During current study 10 fish species belonging to 3 order and 4 families were identified. These species were. These Species were *Barilius pakistanicus*, *Triplophysa naziri*, *Tor putitora*, *Crossocheilus latius*, *Schizothorax plagiotomus*, *Channa gachua*, *Gara gotyla*, *Glyptothorax punjabensis*, *Matacembelus armatus*, *Puntius sophore*, *Schistura punjabensis* and *Cyprinus carpio*.

During the study by Saeed *et al.* [15] fish species described from river barandu were *Barilius pakistanicus*, *Triplophysa naziri*, *Tor putitora*, *Crossocheilus latius*, *Schizothorax plagiotomus*, *Channa gachua*, *Gara gotyla*, *Glyptothorax punjabensis*, *Matacembelus armatus*, *Puntius sophore* and *Schistura punjabensis*.

In our study the exotic fish identified from the River Barandu was *Cyprinus carpio* (Fig. 1). This was recorded from River Barandu in September 2014 by the first author and April 2015 by second author which ensures the *Cyprinus carpio* as new record for river Barandu district Buner.

Saeed *et al.* [15] reported 9 fish species from River Barandu belonging to 3 order and 4 families. In our study the 10 fish species has been reported from River Barandu belonging to 3 orders and 4 families. The new specie reported in our study was *Cyprinus carpio* which is exotic fish species in river Barandu district Buner.

Pakistan has introduced several alien exotic fish species e.g. grass carp (*Ctenopharyngodon idella*), bighead carp (*Hypophthalmichthys nobilis*), silver carp (*Hypophthalmichthys molitrix*), common carp (*Cyprinus carpio*), gold fish (*Carassius auratus*), three species of



Fig. 1: *Cyprinus carpio*

tilapia (*Oreochromis aureus*, *Oreochromis mossambicus*, *Oreochromis niloticus*) in warm waters and two trout species: the rainbow trout (*Onchorynchus mykiss*) and the brown trout (*Salmo trutta fario*) in colder regions for various purposes like sport fishing, yield enhancement for the biological control of aquatic weeds and mosquito [14]. During our study the exotic fish species found was common carp (*Cyprinus carpio*) (Fig. 1).

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