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RESEARCH PAPER

Dynamics of exploited fish populations and sex ratio of *Cyprinus carpio* var. Communis in the Yamuna river at Allahabad

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ABSTRACT

Preliminary information was generated on the exploitation structure and sex ratio of common carp (*Cyprinus carpio*) from the Yamuna river. The fish sample was obtained at random during March 2007 to February 2008. The specimens of crop varyied from 10.1-76.2 cm size groups. The maximum exploitation was observed in 16.1-22.0 cm size group (34.37%) and minimum in 76.1-82.0 cm size group (0.26%). The abrupt decline was observed from the size group 22.1-28.0 to 28.1-34.0 cm. Overall lower size groups were maximum exploited. Sex ratio of female was higher than male in all size groups except 10.1-16.0 cm size groups. In 70.1-76.0 cm size group male and female both were equal. The chi-square values varied from 0.20 to 6.94. In the stock, female ratio was higher than male (1.0:1.14).

Key words : Yamuna river, Exploitation, Sex ratio, *Cyprinus carpio*, Common carp.

Cyprinus carpio Linnaeus commonly known as common carp is native of Asia but has been widely introduced to many regions of the world including Europe, North America, the Middle east, Canada and Australia and is now found world wide except for the poles and Northern Asia (Froese and Pauly, 2002; Nelson, 1984). *C. carpio* is highly appreciated by many recreational fisheries, particularly in Europe (*e.g.* United Kingdom, Linfield 1980; Czech. Republic, Vacha, 1999; Germany, Wedekind *et al.*, 2001). Common carp is generally considered to be one of the most ecologically detrimental of all fresh water invasive fish species (Crivelli, 1983; Zambrano *et al.*, 2001; Dean, 2003; Koehn, 2003). Their ability to reach high biomass and their feeding behavior has been implicated in causing major environmental degradation in many fresh water ecosystems (Roberts *et al.*, 1995; Zambrano *et al.*, 1999; Barton *et al.*, 2000).

They prefer larger, slower-moving bodies of water with soft sediments (Moyle, 1984, Balon, 1995) but they are tolerant and hardy fish that thrive in a wide variety of aquatic habitats (Froese and Pauly, 2002; Page and Burr, 1991). There is a report of a common carp living an astounding 47 years, probably in captivity. Other reports of 17 to 20 years are probably more typical (Froese and Pauly, 2002).

Common carps are primarily selective benthic omnivores that specialize on invertebrates which live in the sediments (Lammens and Hoogenboezem ,1991). Newly hatched carp initially feeds on zooplankton; specifically rotifers, copepods, and algae (McCrimmon, 1968). Young of year carp feeds on a variety of macroinvertebrates including chironomids, caddis flies, molluscs, ostracods and crustaceans (McCrimmon, 1968). Adult carp are known to eat a wide variety of organisms including, insects, crustaceans, annelids, molluscs, fish eggs, fish remains, and plant tubers and seeds (McCrimmon, 1968; Lammens and Hoogenboezem, 1991). Common carp feed by sucking up mud from the bottom ejecting it and those selectively consuming items while they are suspended (McCrimmon, 1968). The feeding galleries of carp are easily recognized in shallow waters as depressions in the sediment (Cahn, 1929; Lammens and Hoogenboezem, 1991; McCrimmon, 1968)

Common carps act as "nutrient pumps" when they consume the nutrient rich benthic sediments and then excrete those nutrients back into the water column in a form that is available to other organisms (Drenner *et al.*, 1996). This tendency to cause a general decay in water quality and the high fecundity of the carp has caused them to be generally regarded as a nuisance (McCrimmon, 1968; Brabrand *et al.*, 1990; Drenner *et al.*,1996; Fletcher *et al.*, 1985; Lamarra, 1975; Lougheed *et al.*, 1998; McCrimmon, 1968; Page and Burr, 1991). Some of the recent studies on the sex ratio include Malhotra *et al.* (1992), Bhatt *et al.* (1998 and 2004), Desai (2000), Johal *et al.* (2000), Nautiyal and Negi (2004), Anupama *et al.* (2006) and Dwivedi (2006). But there is no published information on *Cyprinus carpio* in the Yamuna river. The present study was aimed to highlight the exploited population and sex ratio of *Cyprinus carpio* in the Yamuna river at Allahabad.