



## RESEARCH ARTICLE

## Biodiversity, Ecological status and Conservation priority of the fishes of river Gomti, Lucknow (U.P., India)

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### Abstract

The studies of fish fauna of different water bodies were made by different workers. However, the study of ichthyofauna of the Gomti River at Lucknow is scanty. This paper deals with the fish fauna of the Gomti river at Lucknow (Latitude: 26° 51N and Longitude: 80° 58E). A systematic list of 70 species have been prepared containing two endangered, six vulnerable, twelve indeterminate and fifty not evaluated species, belonging to nine order, twenty one families and forty two genera respectively. Scientific names, morphological character, fin-formula, local name, common name etc. of each species was studied giving a generalized idea about finfishes of Lucknow.

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## INTRODUCTION

Biodiversity in relation to ecosystem function is one of the emerging areas of the research in environmental biology, and very little is known about it at national and international level. It is a contracted form of biological diversity encompassing the variety of all forms on the earth. It is identified as the variability among living organisms and the ecological complexes of which they are part including diversity between species and ecosystems. Biodiversity manifests itself at three levels: -

1. Species diversity, which refers to the number and variety of living organisms.
2. Genetic diversity refers to the genetic variations within a population of species.
3. Ecosystem diversity i.e., the variety of habitats, biological communities and ecological processes that occurs in the biosphere.

In the recent years a plethora of guidelines (Darely, 1996) approaches (Johnson, 1995) and strategies (Braatz, 1992) has been developed to help in conserving biological diversity in both terrestrial and aquatic ecosystems worldwide. Freshwater fishes are the most diverse of all vertebrate groups, but are also the most highly threatened (Duncanal and Lockwood, 2001). India is endowed with rich fish biodiversity and ranks 9<sup>th</sup> in terms of freshwater mega biodiversity. About 2118 finfish species have so far been documented from Indian waters including marine, brackish, warm and cold water ecosystem (Kapoor et al., 2003) of which about 672 fishes inhabited freshwater habitats. An international meeting on the "General state of knowledge on Biodiversity" held in Bayreuth (Germany) in October 1991 inspired international communities to undertake work on biodiversity. In order to dispense with the difficulties in evaluating the diversity and complexity of the ecosystem in this country, the direct research strategy of monitoring and collecting information about indicator groups of organism might prove to be a single panacea. Knowledge of fish diversity of a particular region is essential not only for rational management of Ichthyofauna of that region but also for their conservation strategies. However, adequate guidelines for such work are scant or completely lacking as are guidelines for selecting and surveying indicator groups in distinct types of ecosystem (Kremen, 1992).

A survey of literature revealed that no published information is available on Ichthyofauna of this region. Keeping in mind the paucity of information on consolidated account of fishes of this district the present study was

undertaken, which would be certainly helpful for fishery workers in planning the future strategies for fishery development of the region. The critical ecological conditions have made it important to examine the status of Gomti fish on the basis of their relative abundance and specific diversity. After determining their ecological status following IUCN (1994), priorities can be established for fish conservation and management. The concept of priority requirement for conservation and management on the basis of ecological status of species was first voiced during the world conservation strategy launched in 1980. However, no serious efforts have been made previously to determine the ecological status of Gomti fish in order to establish conservation priorities. The objective of the present study is to use the fishes of the river Gomti as a prime indicator for the analysis of biodiversity in India.

#### Material & Methods

Monthly fish sampling was carried out from rivers, canals, ponds and tanks of Lucknow district. Fishes were caught with gill nets (mesh 2.5x2.5 cm.; 3x3 cm.; 7x7 cm.; Length x Breadth = 75 m. x 1.3 m.; 50 m. x 1 m.), cast nets (mesh 6 x 6 mm.), drag nets (mesh 7 x 7 mm. L x B = 80 m. x 2.5 m.), fry collecting nets to analyze L-W relationship of the species (not included in the paper), and also from various local fish landing centers available in the region. The cast nets & gill nets were operated in each site and the nets were fixed for a time period of 4-7 hours and 2-3 people were engaged for each netting operation. Sampling were conducted at least 50 points covering run and riffle habitat, adjoining small canals, ditches and pools. All collected specimen were identified based on the classification system of Kapoor et. al. (2002) (based on Nelson (1994) classification) and those genera which have not been incorporated in it may be put and classified by consulting Talwar and Jhingran (1991) and Chondar (1999). Genera, which were described before 1994 but did not find place, may be fixed in the respective place (family) as per the classification adopted by Talwar and Jhingran. Scientific names, morphological characters, finformula, local names, common name, economic importance etc. of each species was studied to provide a generalized idea about the finfishes of Lucknow. The works of Day (1879), Johal and Tandon (1979, 1980), Jayaram (1991), Srivastava (1980), Dutta (2000), Talwar and Jhingran (1991) and Menon (1992) were referred. The colour, spots if any, maximum size and other characters of the fishes caught were recorded in a format developed for this purpose and samples were preserved in 10% formalin solution.

#### Results and Discussion

The species richness and number of species in each community were taken into account in establishing the biodiversity represented by the Gomti fishes of Lucknow district as given in table I. The present study indicated that the freshwater bodies of Lucknow region are rich in fish-fauna. A total of 70 species belonging to 9 orders, 21 families, and 42 genera have been recorded from this region, as shown in graph. Their morphology, fin-formula, vernacular name, common name, and their ecological status are given in table III.

Besides native fishes, some exotic fishes are also available in this region. Silver carp, *Hypophthalmichthys molitrix* and Common carp *Cyprinus carpio* are thriving best among the exotic fishes introduced in this region for their cultivation. On the basis of IUCN (1994) the ecological status of the various species of the ichthyofauna of the region have been categorized into endangered (I), vulnerable (II), indeterminate (III), not evaluated (IV). The categories I, II, III, IV include 2, 6, 12 and 50 finfishes respectively (Table II).

Various methods have been developed for the objective assessment of the conservation status of plant and animal species (Nature conservancy council 1990). The status of each species of fish in the river Gomti has been assigned on the basis of major classification system developed by International Union for the Conservation of Nature and Natural resources (IUCN, 1996). The IUCN categories of threats for any given species may be summarized as endangered, vulnerable, rare, indeterminate and not evaluated.

A survey of literature revealed that no published information is available on ichthyofauna of this region, but there are reports on the fishes of different other places of Uttar Pradesh such as Kanpur district (Verma & Saxena, 1962), eastern Uttar Pradesh (Srivastava, 1967, 1968, 1980), Muzaffarnagar (Mahajan, 1965), Meerut (Sinha & Shiromani, 1953), Indogangetic plains and Kumaon Himalayas (Menon, 1949, 1962, 1974), Kumaon Himalayas (Hora and Mukherjee, 1936b; Singh 1990; Joshi 1999), Nainital (Chaudhry & Khandelwal, 1960), Kumaon hills (Pant, 1970), eastern Doon (Hora and Mukherjee, 1936a) and Garhwal hill (Badola and Pant 1972 and Badola, 1975). Although, Garhwal, Kumaon and Doon have been recently separated from Uttar Pradesh and included in a newly created state known as Uttaranchal, there are reports (Day, 1879; Srivastava, 1968,1980; Srivastava and Venkateswarlu, 1976) of the occurrence of *Hilsa ilisha* (Hamilton), *Ilisha megaloptera* (Swainson), *Amblypharyngodon microlepis* (Bleeker), *Cirrhinus mrigala* (Hamilton), *Erethistes pussilus* Muller and Troschel, *Sisor rhabdophorus* (Hamilton), *Chaca chaca* (Hamilton), *Aplocheilus panchax* (Hamilton), *Hyporhamphus limbatus* (Valenciennes) in the freshwater bodies of eastern Uttar Pradesh but all these species were not encountered from the freshwater of this region.

According to the guideline from the world conservation strategy meeting held in 1980, following IUCN (1994) criteria for assessing status, the order of priority for the conservation of fish species of the Gomti is as follows: -

- 1) Priority should be given to species that are endangered throughout their range and to species that are the sole representative of the family or genus.
- 2) Families and genera that are monotypic i.e. consisting of only one species should receive priority over polytypic ones.
- 3) Endangered species should be given priority over a vulnerable one, a vulnerable over a indeterminate and indeterminate over not evaluated.

Based on our socioeconomic survey and interaction with local people, fishermen, social workers and NGOs, the following measures can be adopted for conservation of fish germplasm within water bodies of Gomti: -

- 1) Closure/opening of the barrage to be synchronized with the requirements of the fishes.
- 2) Cooperation of Government departments to the fishing cooperative societies to stop poisoning, use of small mesh sized nets and illegal poaching of fishes by outside people.
- 3) Control measures by the concerned Government departments to stop water pollution by local people.
- 4) Formation of core group with scientific management for regular monitoring of aquatic habitat.
- 5) Community awareness program have to be taken up for the interested perception in conservation activities.

For conservation of the Gomti fishes, the following two measures should be considered: -

- Ex-situ conservation: - In Ex-situ conservation, the seed or the stock of the individual of concerned organisms are kept outside from its natural habitat i.e. in an aquarium or culture collection. The scope of this type of conservation covers both wild and cultivated species.
- In-situ conservation: - In In-situ conservation, the stock is preserved by protecting the ecosystem in which it occurs naturally. For in-situ conservation, the concept of creation of fish sanctuaries (suggested by Sharma, 1986 and Sharma & Singh, 1989) should be maintained by the fisheries department and NBFGR, Lucknow and also be protected by strict legislation.

Efforts to conservation of freshwater fishes are very important and vital. Conservation can be done either through in-situ or ex-situ. Ex-situ conservation is the cryo-preservation of gametes, which does not conserve the fish directly, only germplasm is conserved. In-situ conservation can be divided into two parts i.e. a) habitat restoration and b) live gene banking. Though habitat restoration is very much important for conservation of fishes but it needs intensive field surveys for data generation and difficult to implement in the entire degraded habitat. Therefore, the best option is by maintaining live gene banking.

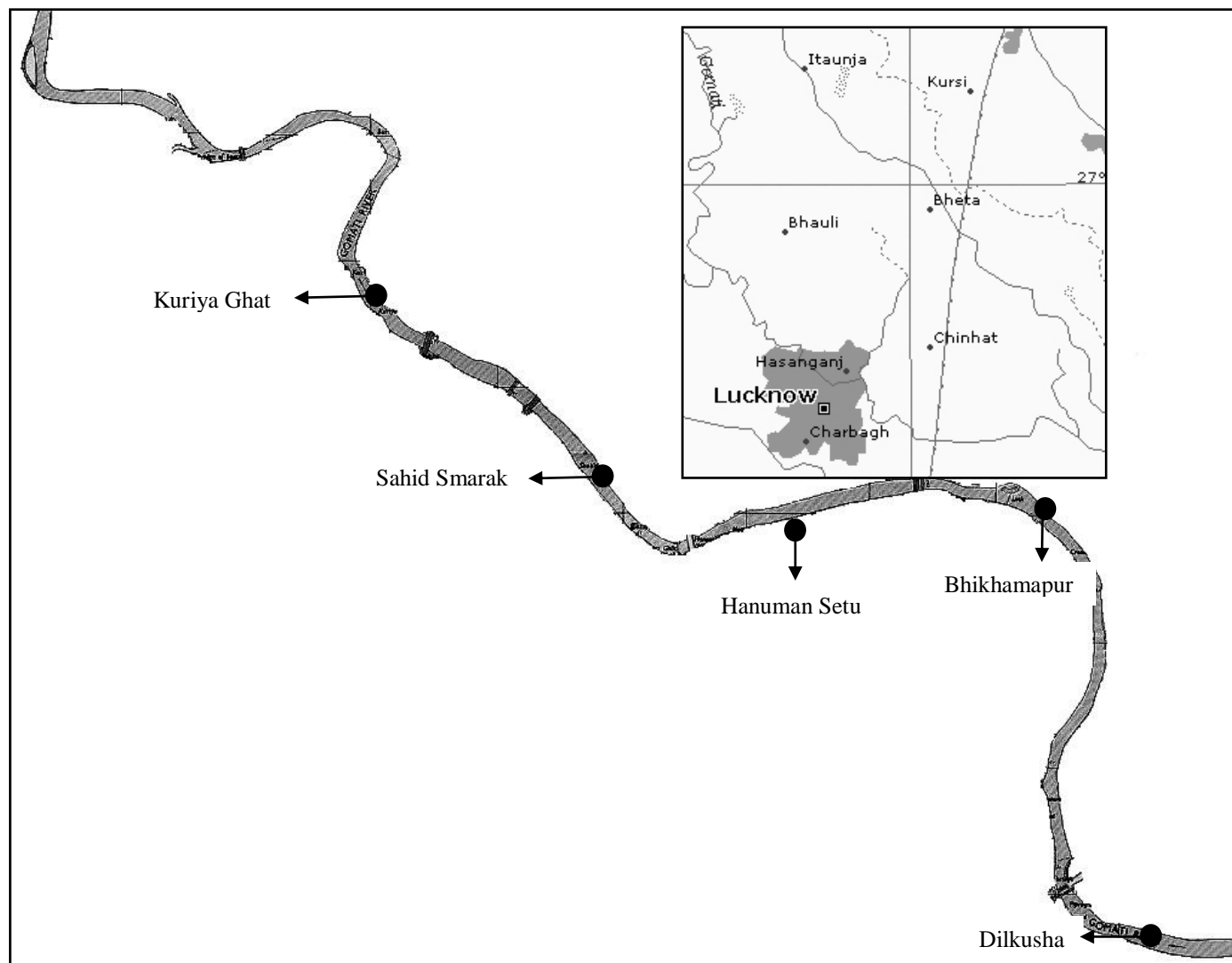
Live gene banking is to protect the species, either in its own system or reared in captivity. Under live gene banking, the fishes can be collected from wild and can be reared in ponds or tanks. Thus in this system there will be slight changes in environmental characteristics with respect to the system where the fish was actually growing, fishes will be adapted to new conditions and can be protected. The species thus protected can be bred in captivity for propagation and young ones can be reared in the system where from the parents were collected. NBFGR has already initiated the steps for stabilizing the live fish germplasm repository of freshwater fishes. Under this, NBFGR has conserved and stocked the threatened fishes as *Tor putitora*, *Labeo rohita*, *Catla catla*, *Cirrhinus mrigala*, *Labeo calbasu*, *Chitala chitala*, *Channa murulus*, *Wallago attu*, and *Darilius* species in their farm ponds.

Public education is also important to draw attention to germplasm conservation and increase general awareness of its importance. Arranging seminars and media campaigns also encourage the conservation of fish species. In addition, there is an urgent need to enhance the conservation of important fish species in the area by habitat restoration, captive breeding and trans-location (Maitland, 1993; 1995 a, b).

#### References

- Badola, S. P. & M. C. Pant (1972): Fish-fauna of Garhwal hills. Part I. Ind. J. Zool., 14. pp. 37-44.
- Badola, S. P. (1975): Fish-fauna of Garhwal hills. Part II. Ind. J. Zool., 16. pp. 57-70.
- Bratz, Susan (1992): Conserving biological diversity, A strategy for protected areas in the Asia-Pacific region. *The World Bank, Washington, DC*.
- Chaudhry, H. S. & O. P. Khandelwal (1960): Fishery survey of Nainital district. *Vigyan parishad anusandhan patrika*, 3:139-145.
- Chondar, S. L. (1999): Biology of finfishes and shell fishes, *SCSC Publisers (India)*.
- Datta, M.K. (2000): Endangered fish species of Tripura need conservation: 83-87. In: A.G. Ponniah and U.K. Sarkar (eds.) Fish biodiversity of north east India. NBFGR.NATP Publ. 2,228p.
- Darely, A.G. (1996): Draft guidelines for natural system planning for protected area. *Draft IUCN, Gland Switzerland*.

- Day, F. (1879): Fishes of India, Burma and Ceylon. William Dawson and sons, London. pp. 778.
- Ducanal, J.R. & J.L. Lockwood (2001): Extinction in a field of bullets: a search for the cause in the decline of the world's freshwater fishes. *Biological conservation* 2002: 97-105.
- Hora, S. L. & D. D. Mookherjee (1936a): Fishes of eastern Doon, united provinces with introduction and remarks on Mahasheer fisheries. *Rec. Indian Mus.*, 38: 133-146.
- Hora, S. L. & D. D. Mookherjee (1936b): Notes on fishes in Indian museum XXXIII on collection of fishes from Kumaon Himalayas. *Rec. Indian Mus.*, 39: 338-341.
- IUCN (1994): IUCN red lists categories. *The world conservation union, Gland, Switzerland.*
- IUCN (1996): IUCN red lists categories. *The world conservation union, Gland, Switzerland.*
- Jayaram, K. C. (1991): Revision of the genus *Puntius* (Hamilton) from the Indian region (Pisces: Cypriniformes, Cyprinidae, Cyprininae). *Rec. Zool. Survey India. Oce. Pap.*: 135-178.
- Johal, M. S. & K. K. Tandon (1979): Monograph on the fishes of reorganized Punjab. *Part I. Fish. Bull.* 3:1-44.
- Johal, M. S. & K. K. Tandon (1980): Monograph on the fishes of reorganized Punjab. *Part II. Fish. Bull.* 4: 37-70.
- Johnson, N. C. (1995): Biodiversity in the balanced approaches to setting geographic conservation priorities. *Biodiversity support program WWF-Washington, USA.*
- Joshi, K. D. (1999): Piscine diversity in Kumaon rivers (Central Himalaya). *J. inland fish soc. India*, 31: 20-24.
- Kapoor, D., R. Dayal & A. G. Ponniah (2002): Fish biodiversity of India, *National Bureau of Fish Genetic Resources Lucknow, India*, 775 p.
- Kremen, C (1992): Assessing the indicator properties of species assemblages for natural area's monitoring. *Ecological Applications* 2: 203-217.
- Mahajan, C. L. (1965): Fish-fauna of Muzaffarnagar district, Uttar Pradesh. *J. Bombay Nat. Hist. Soc.*, 62: 440-454.
- Maithlan, P.S. (1993): Conservation of freshwater fish in India. *Advances in Fish Research-I*: 349-364.
- Maithlan, P.S. (1995a): The role of 2005 and public aquarium in fish conservation. *International Zoo yearbook*, 34. pp. 6-14.
- Maithlan, P.S. (1995b): The conservation of freshwater fish: past and present experience. *Biological conservation*, 72. pp. 259-270.
- Menon, A. G. K. (1949): Fishes of Kumaon Himalayas. *J. Bombay Nat. Hist. Soc.*, XLVIII: 535-542.
- Menon, A. G. K. (1962): Distribution list of the Himalayas. *J. Zool. Soc. India, Calcutta*, 14: 467-493.
- Menon, A. G. K. (1974): A checklist of fishes of the Indo-Gangateiplains. Publication no. 1. Inland fisheries society of India.
- Menon, A. G. K. (1992): The fauna of India and adjacent countries. Pisces-vol. IV, Teleostei-Cobitidea, Part-II. Cobitidae. *Zoological Survey of India, Calcutta.*
- Nelson, J. S. (1994): Fishes of the world 3<sup>rd</sup> ed. John Wiley and Sons, New York. pp. 600.
- Pant, M. C. (1970): Fish-fauna of Kumaon hills. *Rec. Zool. Surv. India*, 64: 85-96.
- Sharma, R. C. & H. R. Singh (1989): Conservation and management of fish genetic resources of Garhwal Himalaya. *Himalayan research and development*, 8: 31-33.
- Sharma, R. C. (1986): Ecology and problem of survival of Mahasheer in Garhwal Himalaya. *Journal of Himalayan studies and regional development*, 9 and 10: 57-61.
- Singh, S. (1990): The lotic water fisheries of Kumaon Himalayas in Sah. N. K., S. D. Bhatia, and R. K. Pandey (eds.) *Himalaya: environment, resources and development*. Shree Almora Book Depot, Almora. pp. 278-284.
- Sinha, B.M. & P. A. Shiromani (1953): The fish of Meerut. *Rec. India Mus. L.*: 61-65.
- Srivastava, G. J. (1967): A new species of freshwater fish of the genus *Hemiramphus* Cuv. From Gorakhpur, Uttar Pradesh, India. *J. Bombay Nat. Hist. Soc.*, 64: 93-94.
- Srivastava, G. J. (1968): Fishes of eastern Uttar Pradesh. Vishwavidyalaya Prakashan, Varanasi. pp. 163.
- Srivastava, G. J. (1980): Fishes of U.P. and Bihar. Vishwavidyalaya Prakashan, Varanasi. pp. 207.
- Talwar, P. K. & A. G. Jhingran (1991): Inland fishes. Vol. I & II Oxford-IBH Publishing Co. Pvt. Ltd., New Delhi, India. pp. 1097+IX-XIX.
- Verma, N. S. & B. B. Saxena (1962): Fishes of Kanpur district. *Proc. Nat. Acad. Sci. India. XXXII, B*: 213-232.
- Survey of India.



# River Gomti In Lucknow

Courtesy: Survey of India & Microsoft  
Encarta

**Fig 1: Map showing major collection points on river Gomti at Lucknow. Besides this, collections were also done from Choti Deoria, Mahmudabad and Shardanagar areas in the outskirts and in adjoining districts of Lucknow.**



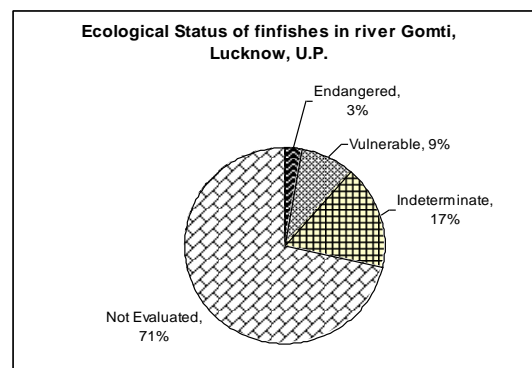
**Table I: Species richness (Biodiversity of fishes of river Gomti, Lucknow)**

Species	Count
<i>Ailia coila</i> (Hamilton-Buchanan)	215
<i>Amblypharyngodon mola</i> (Hamilton-Buchanan)	265
<i>Anabas testudineus</i> (Bloch)	55
<i>Aorichthys aor</i> (Hamilton-Buchanan)	95
<i>Aorichthys seenghala</i> (Sykes)	51
<i>Aspidoparia morar</i> (Hamilton-Buchanan)	25
<i>Bagarius bagarius</i> (Hamilton-Buchanan)	479
<i>Catla catla</i> (Hamilton-Buchanan)	125
<i>Chanda nama</i> Hamilton-Buchanan	96
<i>Chanda ranga</i> (Hamilton-Buchanan)	105
<i>Channa murulus</i> (Hamilton-Buchanan)	59
<i>Channa orientalis</i> Bloch and Schneider	32
<i>Channa punctatus</i> (Bloch)	65
<i>Channa striatus</i> (Bloch)	43
<i>Chela laubuca</i> (Hamilton-Buchanan)	162
<i>Cirrhinus mrigala</i> (Hamilton-Buchanan)	195
<i>Cirrhinus reba</i> (Hamilton-Buchanan)	279
<i>Clarias batrachus</i> (Linnaeus)	72
<i>Clupisoma garua</i> (Hamilton-Buchanan)	525
<i>Colisa fasciatus</i> (Scheider)	38
<i>Colisa lalia</i> (Hamilton-Buchanan)	32
<i>Eutropichthys vacha</i> (Hamilton-Buchanan)	766
<i>Gudusia chapra</i> (Hamilton-Buchanan)	172
<i>Heteropneustes fossilis</i> (Bloch)	95
<i>Labeo angra</i> (Hamilton-Buchanan)	10
<i>Labeo bata</i> (Hamilton-Buchanan)	288
<i>Labeo calbasu</i> (Hamilton-Buchanan)	127

Species	Count
<i>Labeo gonius</i> (Hamilton-Buchanan)	57
<i>Labeo pangusia</i> (Hamilton-Buchanan)	15
<i>Labeo rohita</i> (Hamilton-Buchanan)	147
<i>Mastacembelus armatus</i> (Lacepede)	92
<i>Monopterus cuchia</i> (Hamilton-Buchanan)	10
<i>Mystus cavasius</i> (Hamilton-Buchanan)	85
<i>Mystus tengara</i> (Hamilton-Buchanan)	49
<i>Mystus vitatus</i> (Bloch)	82
<i>Nandus nandus</i> (Hamilton-Buchanan)	48
<i>Notopterus chitala</i> (Hamilton-Buchanan)	142
<i>Notopterus nototerus</i> (Pallas)	554
<i>Ompok bimaculatus</i> (Bloch)	369
<i>Ompok pabda</i> (Hamilton-Buchanan)	76
<i>Ompok pabo</i> (Hamilton-Buchanan)	69
<i>Osteobrama cotio</i> (Hamilton-Buchanan)	18
<i>Pangasius pangasius</i> (Hamilton-Buchanan)	32
<i>Puntius conchonius</i> (Hamilton-Buchanan)	77
<i>Puntius puntio</i> (Hamilton-Buchanan)	65
<i>Puntius sarana</i> (Hamilton-Buchanan)	42
<i>Puntius sophore</i> (Hamilton-Buchanan)	73
<i>Puntius ticto</i> (Hamilton-Buchanan)	42
<i>Rita rita</i> (Hamilton-Buchanan)	110
<i>Salmostoma bacaila</i> (Hamilton-Buchanan)	1113
<i>Setipinna phasa</i> (Hamilton-Buchanan)	67
<i>Tetraodon cutcutia</i> Hamilton-Buchanan	35
<i>Wallago attu</i> (Schneider)	132
<i>Xenentodon cancila</i> (Hamilton-Buchanan)	110

**Table: II: Data source of ecological status of finfishes in river Gomti: Self survey conducted in the year Jan'2003-Apr'2005**

Ecological Status	Species Count
Endangered	2
Vulnerable	6
Indeterminate	12
Not Evaluated	50



**Table: III: Classification, Local Name, Common Name and Status of finfishes of river Gomti, Lucknow.**

Phylum	Vertebrata	Local Name	Common Name	Status
<b>Sub Phylum</b>	Craniata			
<b>Super Class</b>	Gnathostomata			
<b>Series</b>	Pisces			
<b>Class</b>	Teleostomi			
<b>Sub Class</b>	Actinopterygii			
<b>Species</b>	<b>Finformulae</b>			
<b>ORDER:</b>	BELONIFORMES			
<b>FAMILY:</b>	BELONIDAE			
<i>Xenentodon cancila</i>	D 15-18; A 16-18; P 11; V 6	Kakhya, Kankle, Thona	DWARF CHAMAEOLON FISH, FRESHWATER GARFISH	III
<b>ORDER:</b>	CLUPEIFORMES			
<b>FAMILY:</b>	CLUPEIDAE			
<i>Gudusia chapra</i>	D iv 11-13; A (ii) iii 19-22; Pi 12-13; V i 7	Suiya, Suhia	INDIAN RIVER SHAD	III
<i>Gonialosa manmina</i>	D iii-iv 11-13 ; A ii-iii 20-24; P i 14; V i 8	Majhali-Suhia, Suhia	GANGES RIVER GIZZARD SHAD	IV
<b>FAMILY:</b>	ENGRAULIDAE			
<i>Setipinna phasa</i>	D i 14-15; A iii 66-78; P i 14; V i 6	Patara, Phasia	GANGETIC HAIRFIN ANCHOVY	III
<b>ORDER:</b>	OSTEOGLOSSIFORMES			
<b>FAMILY:</b>	NOTOPTERIDAE			
<i>Notopterus chitala</i>	D 9-10; A + C 110-135; V 6	Golhi, Moh, Mohi, Moya, Patra, Pholi	HUMPED FEATHERBACK	III
<i>Notopterus notopterus</i>	D 7-9; A + C 100-110; V 5-6	Fooli	GREY FEATHERBACK	IV
<b>ORDER:</b>	CYPRINIFORMES			
<b>FAMILY:</b>	PSILORHYNCHIDAE			
<i>Psilorhynchus balitora</i>	D iii 8; A ii 5; P v-viii 7-9; Vii 7	Ngop-nogi	BALITORA MINNOW	II
<b>FAMILY:</b>	CYPRINIDAE			
<i>Puntius sarana sarana</i>	D iii-iv 8; A iii 5; P i 14-16; V i 8	Durhie, Giddi-Kaoli, Potah, Pothi	OLIVE BARB	II
<i>Labeo fimbriatus</i>	D iii-iv 15-18; A ii-iii 5; P i 15-18; V i 8	Belji, Kijan, Kammeed , Pedusi, Tambra, Chenchundan	FRINGED-LIPPED PENINSULA CARP	III
<i>Labeo gonius</i>	D ii-iii 13-16; A ii 5-6; P i 16; V i 8	Kursi, Bata	KURIA LABEO	III
<i>Puntius conchonius</i>	D iii 7-8; A ii-iii 5; P i 18; V i 8	Kharauli- Pothi, Pothi	ROSY BARB, RED BARB	III
<i>Amblypharyngodon mola</i>	D ii- iii 7; A ii-iii 5-6; P i 13-15; V i 8	Dhawai	MOLA CARPLET, PALE	IV

<i>Aspidoparia jaya</i>	D ii 7; A ii 7; P i 14; V i 7	Jaya	CARPLET	
<i>Aspidoparia morar</i>	D ii-iii 7-8; A ii 8-10; P i 14; V i 7	Pirohia	JAYA	IV
<i>Catla catla</i>	D iii-iv 14-16; A iii 5; P i 20; V i 8	Chepti, Katla	ASPIDOPARIA	IV
<i>Chela laubuca</i>	D ii 8-10; A ii 17-22; P i 8-11; V i 6	Dendula, Dennahrah	CATLA	IV
<i>Cirrhinus mrigala</i>	D iii-iv 12-13; A iii 5; P i 17; V i 8	Mirki, Mrigal	INDIAN GLASS-BARB	IV
<i>Cirrhinus reba</i>	D ii-iii 8; A iii 5; P i 15; V i 8	Rewah, Raicheng, Rewah	MRIGAL	IV
<i>Esomus danricus</i>	D ii 6; A iii 5; P i 14-15; V i 6-7	Dendu, Kurriahdehwee, Soomarah	REBA CARP	IV
			FLYING BARB	IV
<i>Labeo angra</i>	D ii-iii 10; A ii 5; P i 15; V i 8	Rewa	THUTHUNAHIA RAI	IV
<i>Labeo bata</i>	D ii-iv 9-10; A ii-iii 5; P i 15-17; V i 8	Bata, Bhagan	BATA LABEO	IV
<i>Labeo boga</i>	D ii-iii 9-10; A ii 5; P i 15; V i 8	Bhagan	BOGGUT LABEO	IV
<i>Labeo boggut</i>	D iii 8-9; A ii 5; P i 16; V i 8.	Nunia, Loi	BOGGUT LABEO	IV
<i>Labeo calbasu</i>	D iii-iv 13-16; A ii-iii 5; P i 16-18; V i 8	Kalabenise, Karnaunehar	KALBASU	IV
<i>Labeo pangusia</i>	D ii-iii 10-11; a ii 5; P i 14-15; V i 8	Boalla, Loanee, Rewa	PANGUSIA LABEO	IV
<i>Labeo rohita</i>	D iii-iv 12-14; A ii-iii 5; P i 16-18; V i 8	Bhobhari, Rohu	ROHU	IV
<i>Osteobrama cotio</i>	D. 11 (2/9); P. 14-15; V. 10; A. 33-35 (2/31-34); C. 19; L. I. 66; Ltr. 13/16.	Chendalah, Goordah, Muchnee, Urda	COTIO	IV
<i>Puntius chola</i>	D iii 8; A ii 5; P i 14; V i 8	Siddhari, Punt, Katcha- Karawa	SWAMP BARB, CHOLA BARB	IV
<i>Puntius guganio</i>	D iii 8; A ii 5; P i 10; V i 8	Siddhari, Punt, Gid-pakke, Karse, Mola Punt	GLASS-BARB	IV
<i>Puntius phutunio</i>	D ii-iii 8; A iii 5; P i 14; V i 8	Siddhari, Punt, Phutani Punt, Spottedtail Barb	DWARF BARB, PIGMY BARB	IV
<i>Puntius sophore</i>	D iii-iv 8-9; A iii 5; P i 14-16; V i 8	Katcha- Karawa Pothi, Pottiah	SPOTFIN SWAMP BARB	IV
<i>Puntius ticto</i>	D iii-iv 8; A ii-iii 5; P i 12-14; V i 8D ii 8; A	Pothia	TWO-SPOT BARB, FIREFIN BARB, TICTO BARB	IV
<i>Salmostoma bacaila</i>	D ii-iii 7; A iii 10-13; P i 11-12; V i 8	Chelhava, Chelliah, Chilwa	LARGE RAZORBELLY MINNOW	IV
<b>ORDER:</b>	MUGILIFORMES			
<b>FAMILY:</b>	MUGILIDAE			
<i>Sicamugil cascasia</i>	D I IV, D2I 8; A III 8-9; P 14-15; V I 5	Kachki	YELLOWTAIL MULLET	IV
<b>ORDER:</b>	PERCIFORMES			
<b>FAMILY:</b>	ANABANTIDAE			
<i>Anabas testudineus</i>	D XVI - XVIII 8-10; A VIII - XI 9-11; P i 13-14; V I 5	Kawai, Koi	CLIMBING PERCH	IV
<b>FAMILY:</b>	BELONTIIDAE			
<i>Colisa fasciatus</i>	D XV - XVII 9-14; A XV - XVIII 14-19; P 9-10	Khoti, Coilia	BANDED GOURAMI	IV
<i>Colisa lalia</i>	D XV - XVII 7-10; A XVII - XVIII 13-17; P 10	Khosti	DWARF GOURAMI	IV
<b>FAMILY:</b>	CHANDIDAE			
<i>Chanda nama</i>	D VII + I 15-17; A III 15-17; P ii 11-12; V I 5	Chanari, Channa, Channe	ELONGATE GLASS- PERCHLET	IV



<i>Chanda ranga</i>	D VII+I 11-14; A III 13-15; P i 11-12; V I 5	Chanari, Chandra	INDIAN GLASSY FISH	IV
<b>FAMILY:</b>	CHANNIDAE			
<i>Channa marulius</i>	D 45-55; A 28-36; P 16-18; V 6	Pumuri	GREAT SNAKEHEAD	IV
<i>Channa orientalis</i>	D 32-37; A 20-23; P 14-15; V 6	Chainga, Dheridhok	WALKING SNAKEHEAD	IV
<i>Channa punctatus</i>	D 28-33; A 20-23; P 15-18; V 6	Phook-Dhok	SPOTTED SNAKEHEAD	IV
<i>Channa striatus</i>	D 37-46; A 23-29; P 15-17; V 6	Murrel, Morool	SNAKEHEAD MURREL	IV
<b>FAMILY:</b>	NANDIDAE			
<i>Nandus nandus</i>	D XII - XIV 11-13; A III 7-9; P 15; V I 5	Dhebari, Nandus	MOTTLED NANDUS	III
<i>Badis badis</i>	D XVI - XVIII 7-10; A III 6-8; P 12; V I 5	Badis	DWARF CHAMAEOLON FISH	IV
<b>ORDER:</b>	SILURIFORMES			
<b>FAMILY:</b>	BAGRIDAE			
<i>Aorichthys aor</i>	D I 7; A iii-iv 8-10; PI 9-10; V i 5; C 17	Daryai- Tenggara	LONG-WHISKERED CATFISH	III
<i>Mystus tengara</i>	D I 7; A ii-iii 9-10; P I 8; V i 5	Kuttahrah, Tengana	TENGARA MYSTUS	III
<i>Aorichthys seenghala</i>	D I 7; A iii 8-9; P I 9; V i 5; C 19-21	Seenghala, Singara, Tengra	GIANT RIVER-CATFISH	IV
<i>Mystus bleekeri</i>	D I 7-8; A iii 6-7; P I 9-10; V i 5	Tengara	DAY'S MYSTUS	IV
<i>Mystus cavasius</i>	D I 7; A iv 7-9; P I 8; V i 5	Shingla, Singhara, Tenguah	GANGETIC MYSTUS	IV
<i>Mystus vittatus</i>	D I 7; A ii-iii 7-9; P I 9; V i 5	Tengara	STRIPED DWARF CATFISH	IV
<i>Rita rita</i>	D I 6; A ii 10-11; P I 10; V i 6-7	Chona, Choua, Hunna, Rita	RITA	IV
<b>FAMILY:</b>	CLARIIDAE			
<i>Clarias batrachus</i>	D 70-76; A 45-58; P I 8; V i 5	Mangur, Manguri, Wagur	MAGUR	IV
<b>FAMILY:</b>	HETEROPNEUSTIDAE			
<i>Heteropneustes fossilis</i>	D 6-7; A 60-70; P I 7; V i 5	Singhi	STINGING CATFISH	IV
<b>FAMILY:</b>	PANGASIIDAE			
<i>Pangasius pangasius</i>	D I 6-7; A iv-v 26-29; P I 12-13; Vi 5	Jellum, Pangash, Pangsa, Payas, Periasi	PUNGAS	III
<b>FAMILY:</b>	SCHILBEIDAE			
<i>Ailia coila</i>	A 58-75; P I 14-16; Vi 5	Banspati, Basanguti, Batansi, Minti, Patasi	GANGETIC AILIA	II
<i>Eutropiichthys vacha</i>	D   7; A iii-iv 41-52; P   13-16; V i 5D   6-7; A	Banjhoo, Katla, Neemuch	BATCHWA VACHA	II
<i>Silonia silondia</i>	D I 7; A iv 36-42; P I 10-12; V i 5	Silond	SILONIA VACHA	III
<i>Clupisoma garua</i>	D i 7; A iii 26-33; P   11; V i 5	Buchua	GARUA BACHCHA	IV
<b>FAMILY:</b>	SILURIDAE			
<i>Ompok pabda</i>	D 4-5; A ii 48-54; P I 11-13; V i 6-7	Pabda, Pahboh	PABDAH CATFISH	I
<i>Ompok pabo</i>	D 5; A iii 63-68; P I 14; V i 8-9	Pabo, Pahboh	PABO CATFISH	I
<i>Ompok bimaculatus</i>	D 4; A ii-iii 57-58; P I 12-14; V i 7-8	Chechera, Gugli, Jalkapoor, Papta	INDIAN BUTTER- CATFISH	II
<i>Pinniwallago kanpurensis</i>	D I 5-6, D2 30-36; A ii 82-87; P I 14; V i 9	Pinna Catfish, Boalee	PINNA CATFISH, WALLAGO	IV
<i>Wallago attu</i>	D 5; A iii 74-93; P   13- 15; V i 7-9	Paran, Valai, Wallah	BOAL	IV
<b>FAMILY:</b>	SISORIDAE			
<i>Bagarius bagarius</i>	D I 7; A iii 9-12; P I 9-12; V i 5	Gonch	GANGETIC GOONCH	II
<i>Gagata cenia</i>	D I 6; A ii-iii 10-14; P I 7-9; V i 5	Baghi, Tinkatiya	INDIAN GAGATA	IV

<i>Hara hara</i>	D I 6-7; A iv 7-8; P I 7; V i 5	Panahi	KOSI HARA	IV
<b>ORDER:</b>	SYNBRANCHIFORMES			
<b>FAMILY:</b>	MASTACEMBELIDAE			
<i>Mastacembelus armatus</i>	D XXXII - XL 64-92; A III 64-90; P 21-27; C 14-17	Baam	TIRE-TRACK SPINYEEL	III
<b>FAMILY:</b>	SYNBRANCHIDAE			
<i>Monopterusuchia</i>	D. Very Rudimentary P., V., A. C. absent.	Anhaya Baam	GANGETIC MUDEEL	IV
<b>ORDER:</b>	TETRAODONTIFORMES			
<b>FAMILY:</b>	TETRAODONTIDAE			
<i>Tetraodon cutcutia</i>	D 10-11; A 10; P 18-21	Galphulani	OCELLATED PUFFERFISH	IV