

# Where have all the fishes gone?

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Tragedy struck the creatures of river Kumaradhara in the picturesque hillscape of Dakshina Kannada on 26<sup>th</sup> of May five years ago. A long stretch of two kilometers of this river had been strictly protected as sacred to god Shishileshwara since time immemorial and teemed with life, presided over by huge Mahseers, of a size to be rarely seen today anywhere else in India. But on this fateful day every one of these great fish was floating belly up, dead, poisoned with some pesticide. Dead too were many other species of fish, large and small, a mass estimated at over four big lorry loads. People suspected the hand of three men who had been caught fishing in the river under cover of darkness three days before this dastardly act. They had been apprehended, taken to the Shishileshwara temple and made to apologise before the god.

In the special case of Kumaradhara there was a legal basis to apprehend the miscreants. For there exists an official order of 22<sup>nd</sup> October, 1930 protecting this river stretch. This was issued by a British official who had been tempted to angle in this river, the fast swimming Mahseer being considered a prime sport fish. The official reportedly suffered some misfortune which he attributed to his violation of the sanctity of the river, and in repentance promulgated the order. So two kilometers of Kumaradhara at Shishila are one of the very few places in India, outside of wild life sanctuaries and national parks where fish enjoy any measure of protection. Even within the Sanctuaries and National Parks the focus is on the deer and the tiger and the elephant, with the only explicit mention of fishing being in the section 50 of the Wildlife Protection Act of 1972: "provided that where a fisherman, residing within ten kilometers of a sanctuary or a National Park inadvertently enters on a boat not used for commercial fishing in the territorial waters in that sanctuary or national park, a fishing tackle or net on such boat shall not be seized". No fish are listed in the schedules of protected species in the

Wildlife Protection Act. The fisheries Act of India of 1897 focuses exclusively on management of edible fishes. Thus the Tamil Nadu Fisheries Act forbids fishing within 200 m on either side of the dam; the dams being stocked with edible fish. The international trade in wild collected ornamental fishes throughout the country is not regulated by the Wild Life Conservation Wing of the Forest Department or by the Fisheries Department; instead it is in the hands of the Marine Products Export Development Authority.

Evidently freshwaters of India have been viewed from a single perspective; that of economic production. They are to be sources of irrigation or urban-industrial water supply or of hydel power; they are to receive sewage and industrial waste; they may produce edible fish. In this strictly utilitarian framework there is no space for conserving the rich heritage of freshwater fish diversity of the country; nor for sustainable use of fish as a protein source for the weaker segments of the society.

But neither of these are trivial concerns. Talwar and Jhingran's standard work on inland fishes of India lists 930 species, quite comparable to the diversity of inland bird species. In range of size and form they are even more diverse than the birds. The smallest of our freshwater fish grow to about 25 mm, the largest Mahseer is known to reach 2.7 m. Our image of a typical fish is that of a Carp or a Barb with a laterally flattened, long leaf-like body ending in a forked tail and bearing a high fin on the back. Such fish dwell in mid-waters. Surface feeders like Rice Fishes and Panchaxes have a flat head and back, while bottom dwellers like many catfishes and loaches have a pale, flat belly and an arched back. Highly predatory fish like Snakeheads have a torpedo shaped body. Eels that hide in cavities and crevices have snake-like bodies. Fishes living in underground springs and caves can be colourless and blind; one such blind catfish (*Horaglanis krishnai*) dwells in wells of Kerala. Others, resplendent with colours, such as the striking black striped orange-pink Melon Barb (*Puntius fasciatus*) are favoured as aquarium fishes.

Freshwaters of India can thus boast of a diversity rivaling that of its winged denizens. But everywhere this diversity is on a decline; out of our sight, out of our minds. A recent study of rivers of Pune in Maharashtra concludes that as many as 17 out of 110 species ever recorded from the locality have gone locally extinct within last few decades. They identify three major forces driving these extinctions; overharvest, competition by newly introduced exotic fishes and pollution. The Pune species suffering overharvest include some of the largest present in the locality such as the Indian Longfin Eel (*Anguilla bengalensis*) that may reach 120 cm in length, the Deccan Mahseer which may reach 100 cm and a very popular food fish, the catfish *Rita parvimentata* that may grow to 26 cm. *Notopterus chitala* (featherback) and *Semiplotus semiplotus* which used to be abundant in the large rivers of Assam, Bihar and U.P., and attaining large sizes are very rare now. *Thynnichthys sandhkhol*, *Osteocheilus* and *Ostebrama* spp. of the Godavari and Krishna rivers are steadily declining *Bagarius bagarius*, *Pangasius pangasius* and *Silonia childreni* are also heavily overfished in the Indian Peninsula. All over the rest of India, too, freshwater fishes are falling a prey to overharvest, with demand skyrocketing, not only for bigger fish for human consumption, but even smaller fish like the Indian Hatchet Fish (*Chela laubuca*), the Blackline Rasbora (*Rasbora daniconius*) and Day's Loach (*Nemacheilus denisoni*), Scarlet-banded Barb (*Puntius amphibius*), Aruli Barb (*Puntius arulius*), Indian Tiger Barb (*Puntius filamentosus*), Blackline Rasbora (*Parluciosoma daniconius*), all between 5 to 10 cm in size for preparation of poultry feed.



The Deccan Mahseer (*Tor Khudree*)

The indiscriminate harvest takes many routes. At the time of over-flow of waterbodies, fishes are trapped on a large scale near dams. The Cauvery White Carp (*Cirrhinus cirrhosa*), Ticto Barb (*Puntius ticto*), Gaint Danio (*Danio aequipinnatus*), Razorbelly minnow (*Salmostoma* spp.), Blackline Rasbora (*Parluciosoma daniconius*), Flying Barb (*Esomus danrica*), for instance, has greatly suffered in this fashion in Karnataka. All species of fishes get into irrigation canals with the water let into them from the reservoirs. At the time of stoppage of water in the canals all of these get trapped near the gate and are fished out. The nets used for fishing have often very small mesh and catch everything. In the Tungabhadra reservoir in Karnataka, for instance, the "alivi-net", a big shore-seine with small mesh scoops out almost the entire fish available in the dam waters. The shallower streams and pools, such as those at the base of waterfalls are victims of the easy availability of dynamite ever since quarrying and road construction began on a grand scale in the country. The shock waves of the blast destroy each and every fish in the vicinity.

India's freshwaters are increasingly polluted by sewage, industrial effluents, chemical fertilizers and pesticides. Several active mid-water fishes such as carps and barb, as well as freshwater prawns are highly susceptible to pollution. The Pune study attributes, several extinctions, Gangetic Latia (*Crossocheilus latius*), Khandalla Minnow (*Parapsilorhynchus tentaculatus*), Gogra Rita (*Rita parvimentata*), Pabo Catfish (*Ompok pabo*), Stinging Catfish (*Heteropneustes fossilis*) and Corsula Mullet (*Rhinomugil corsula*) at least in part to pollution. Pretty much the only fish to survive in the highly polluted stretch of Kali river downstream of the industrial township of Dandeli is the small 'X-ray' or Glass Fish (*Parambassis thomassi*). The Mosquito Fish (*Gambusia*) and some of the murrels and catfishes can also withstand pollution.

The overall deterioration of the habitat has rendered many fishes susceptible to diseases. One of the most serious is the epizootic, ulcerative syndrome disease that has led to mass mortalities of two giants of Indian rivers, the Shark catfish (*Wallago attu*) and the Giant Snakehead (*Channa marulius*) as also of the medium sized Banded Snakehead (*Channa striatus*).

## Some undisturbed fish habitats



None rivals Tilapia (*Oreochromis mossambicus*) amongst the many exotics introduced to freshwaters of India in the havoc it has wrought on native species. Its prolific breeding permits it to crowd out its local competitors. Other dangerous exotics include the Grass Carp, the Silver Carp and the African Catfish. The Pune study attributes the extinction of two carps, *Labeo fimbriatus* and *L. kawrus* to competition by exotics.



## Some introduced exotic carp species



Common Carp (*Cyprinus carpio*)



Grass Carp (*Ctenopharygodon idella*)



Silver Carp (*Hysophthalmichthys molitrix*)

The drastic modification of the freshwater habitats by damming of streams and rivers, and siltation leading to reduction in their depth has also profoundly affected many fish species. Several fish species ascent upstream to breed during the early manson floods. The Indian Shad (*Hilsa ilisha*) is well known to ascend in shoals Ganga-Brahmaputra, Mahanadi, Godavari, Krishna, Cauvery, Narmada and other streams. But

many other species do so as well. Some of the more prominent examples from Peninsular India include the Indian Longfin Eel (*Anguilla bengalensis*), the carps, *Labeo calbasu*, *L. fimbriatus* and the catfish *Bagarius bagarius*. With no provisions such as fish ladders the life cycles of these species have been seriously disrupted.

### **View of the Bhadra reservoir (on the Tungabhadra river)**



This decimation has serious social implications for natural populations of freshwater fish are an important source of protein for the weaker sections of the Indian society. While foodgrain production has kept pace with the growth of India's population, the production of pulses, the basic source of vegetable protein has remained stagnant. With prices skyrocketing the poor have been able to access less and less of pulses over the years. Fish caught from streams and lakes was their other important protein source. This has eroded as the natural fish populations have declined. It is true, of course, that there has been considerable growth in the production of cultured fish such as Catla, Rohu, Mrigal and Grass Carp. But these are produced in the commercial mode and channelised to urban markets, poorer people cannot access them through subsistence fishing. It is surely important to protect and sustainably harvest natural populations of freshwater fish to meet the protein needs of these people.

## Some common popular edible fish



Rohu (*Labeo rohita*)



Mrigal (*Cirrhinus mrigala*)



Catla (*Catla catla*)

Indian cosmology tells us that the first incarnation of Lord Vishnu was in the form of a fish. Indeed modern evolutionary biology confirms that fish are the earliest of the



vertebrates and therefore ancestors of all snakes and crocodiles, birds and bats, monkeys, apes and all of us human beings as well. Traditionally they were revered and protected in many a sacred pools and sacred ponds attached to temples. These refugia would have greatly helped maintain the fish populations in other habitats subject to harvest.

Obviously this ancient reverence for life is not an adequate basis of fish conservation in modern times. We must therefore come up with new practical ways of conserving and sustainably using India's rich heritage of fish diversity. This will require new initiatives on part of Wildlife Conservation Agencies, Fisheries Department, Municipalities and Panchayat Raj Institutions. New institutions such as the National Bureau of Fish Genetic Resources will have to take the lead in furthering such efforts. The initiative will also have to involve the civil society at large with active involvement of many more NGOs like the Matsya Hita Rakshana Vedike - Forum for Protecting the Welfare of Fishes in Shishila that has ensured continued protection of Kumaradhara river after the tragedy of 1996.

**Further reading:**

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