

MAHSEER FISHERY OF SOME HILL STREAMS IN WESTERN HIMALAYAS

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ABSTRACT

In the hill streams of western Himalayas, the contribution of Mahseer was 26% in Alikhad, 34% in Sheerkhad and 35% in Gamberkhad, as against 6% in River Sutlej. The availability of fry and fingerlings of *T. putitora* ranged from 86 to 162/m² in these hill streams, whereas no fry was available in the main river. The *gamachha* cloth fishing, a local device in vogue was found to be much effective than cast net fishing for spawn collection as well as for catching the hill stream fishes.

Despite their world wide popularity as excellent game fish, the Mahseer could not receive adequate attention of the fishery biologists till the last decade. The National Commission on Agriculture (1976) reports a general decline in the Mahseer fishery due to indiscriminate killing of brood and juvenile fish and the adverse effect of river valley projects and suggests extensive survey and detailed ecological investigations. Though exact assessment of the catches of Mahseer is not available; whatever figures available indicate serious decline of its fishery.

Though a rapid decline of Mahseer fishery in the lakes and streams of northern uplands has been reported by Jhingran and Sehgal, 1978; Joshi *et al.*, 1978; Joshi, 1980 a,b; Das, 1983 and Sehgal, 1983, a few streams in Himalayas seem to support a sizeable fishery of *T. putitora* by small sized fishes. Hence a study on the fishery of this prized game fish was conducted and the observations are described in the present communication.

Studies on the fish and fisheries of River Sutlej in its middle stretch and three of its important tributaries Viz. Alikhad,

Gamberkhad and Sheerkhad streams were made during April, 1983 to March, 1985.

To enumerate the fish fauna, sampling was done at various places all along the streams with the help of a cast net (2 m width and 15-20 mm mesh size) and also with a square meshed *gamachha* cloth covering 2 sq. m area of the stream bed. The fishes were counted separately for analysing their numerical occurrence and catch composition. The analysis of the commercial catches was also made from the samples collected by the professional fishermen.

Though these streams are considerably rich in fish fauna, majority of fishes do not grow to a large size. Large fishes were generally collected from the deep pools and at the mouth of the streams. The commercial fishery of these hill streams is mainly constituted by the mahseers (*Tor putitora*), barils (*Barilius* sp.), minor carps (*Labeo* sp., *Garra gotyla*, *Crossocheilus* sp.) and snow trouts (*Schizothorax* sp.). In all, 34 fish species belonging to 21 genera and 7 families were recorded from River Sutlej system in its middle stretch during the present study.

NOTE

Alikhad

In all 28 species of fishes belonging to 16 genera and 6 families were recorded from Alikhad stream. The cast net catches during the experimental fishing comprised mainly *T. putitora* 29%, *G. gotyla* 23%, *Labeo dero* 19%, *Barilius*, sp. 11% and others 18%; as against 27%, 7%, 1%, 23% and 42% by *gamachha* cloth fishing. *Noemacheilus* sp. being a small sized fish, could not make any grade in the cast net fishing, but their contribution (9%) in the total catches of *gamachha* cloth fishing was conspicuous. The commercial catches of the professional fishermen comprised *Labeo dero* 39%, *T. putitora* 25%, *G. gotyla* 12%, *Glyptothorax pectinopterus* 10%, *Grossocheilus* sp. 5%, *L. dyocheilus* 4%, *Schizothorax* sp. 3% and others 2%.

Gamberkhad

The Ichthyo-fauna of Gamberkhad included 22 species belonging to 15 genera and 6 families. Most of the fishes collected during the study were smaller in size and were found to inhabit in the rapid zones of the stream. The larger fishes with least availability appeared only in the deep pool fishing. In the experimental fishing, cast net catches were dominated by *T. putitora* 33%, followed by *L. dero* 16%, *G. gotyla* 10% and *G. pectinopterus* 10%, whereas the collections of *gamachha* cloth fishing comprised *T. putitora* 51%, *Barilius* sp. 10%, *L. dero* 8% and *Noemacheilus* sp. 7%. The collections of professional fishermen included *T. putitora* 26%, *L. dero* 25%, *G. gotyla* 17%, *Crossocheilus latius* 16% and *Schizothorax plagiostomus* 7%. The miscellaneous fishes in the experimental cast net fishing, *gamachha* cloth fishing and commercial fishing constituted 26%, 24% and 9% of the total catches respectively.

Sheerkhad

Fish samples collected from the different places throughout the stream stretch included 29 species of fishes belonging to 19 genera and 7 families. The experimental fishing comprised *T. putitora* 35%, *G. gotyla* 27%,

L. dero 19% and others 19% in the cast net fishing and *T. putitora* 40%, *Barilius* sp. 17%, *G. gotyla* 8%, *Noemacheilus* sp. 8% and others 27% in the *gamachha* cloth fishing. The commercial catches of the stream included *T. putitora* 30%, *L. dero* 30%, *G. gotyla* 11%, *Crossocheilus* sp. 10%, *Glyptothorax* sp. 9%, *Schizothorax* sp. 6% and others 4%.

River Sutlej

The fishery of River Sutlej is composed of 21 species of fishes belonging to 12 genera and 4 families. The analysis of catches made by the net (operated only at the accessible places on the river banks) showed that *Schizothorax* sp. constituted the bulk of the catches (53%), followed by *Labeo* sp. 27%, *T. putitora* 6% and others 14%. Due to the depth and rapid current the cast net could not be operated in the middle of the river and moreover *gamachha* cloth fishing was also not possible. The analysis of the commercial catches could not be made due to non-availability of fish samples of the catches of professional fishermen.

TABLE 1. The average numerical percentages of the commercial and the experimental catches both by cast net and 'gamachha' cloth fishing

Fish species	Ali-khad	Gamberkhad	Sheerkhad	R. Sutlej*
<i>Tor putitora</i>	26	35	34	6
<i>Labeo dero</i>	26	19	21	27
<i>Garra gotyla</i>	13	12	14	2
<i>Schizothorax plagiostomus</i>	2	4	3	53
<i>Crossocheilus latius</i>	5	10	7	2
<i>Glyptothorax pectinopterus</i>	7	5	6	4
<i>Barilius bendelisis</i>	9	5	6	—
Others	12	10	9	6

*Includes only cast net catches.

Fish seed collection

In Alikhad the maximum number of the fry of *T. putitora* was 86/m² followed

by *Schizothorax* sp. (24/m²) and *Labeo* sp. (17/m²). The availability of fry and fingerlings in the Gamberkhad was 162, 16 and 11/m² of *T. putitora*, *Barilius* sp. and *Puntius* sp. respectively. In Sheerkhad the density of mahseer fry was 92/m² followed by *Barilius* sp. with 18/m². No fry and fingerlings could be collected from the River Sutlej.

Among the hill streams surveyed at present, the Sheerkhad stream harbours maximum number of fish species followed by Alikhad and Gamberkhad with the least in River Sutlej. The important fishes collected from the streams include *T. putitora*, *L. dero* and *S. plaglostomus*. Of these *T. putitora* has emerged as the dominant fish species of the streams, whereas the river catches were dominated by *S. plaglostomus*.

As evident from the study, these smaller streams in River Sutlej system still hold a sizeable fishery of *T. putitora*, though their drastic decline has been reported from other Himalayan waters, (Joshi, 1980 a; Das, 1983 and Sehgal, 1983). Some hill streams in the central and western Himalayas are also known to possess this prized game fish (Joshi *et al.*, 1978; and Badola and Singh, 1981). According to Rama Rao and Natarajan (1979) the autochthonous stocks of Gobindsagar reservoir (Sutlej system) probably consisted of mahseer, schizothoracids and other reophils, which have still their dominance in the original waters. While considering the fishery of the Sutlej system in its middle stretch (excluding Gobindsagar reservoir), the mahseers dominate the stream fishery, whereas *Schizothorax* sp. has emerged as the dominant species in the main river constituting more than 50% of the catches trailing *T. putitora* in the third place after *Labeo* sp. (Table 1).

While the rapids of the hill streams generally induce the fishery of the small fishes (Joshi, 1980; Sehgal, 1983), few large fishes (weighing more than 1 kg) have also appeared in the catches from the deep pools, especially during the monsoon months when the streams were flooded, Sehgal *et al.* (1971) have observed the availability of large fishes

mostly of *T. putitora* and *L. dero* in some fish sanctuaries and deep pools of the hill streams in River Beas system. In River Sutlej system also besides few specimen of mirror carp and silver carp at the mouth of the streams, large sized mahseer and *L. dero* were caught during the present study.

The *gamachha* cloth fishing, a device commonly used in the western Himalayan streams, was found to be more effective than the cast net, for collecting fish seed and small sized fishes. As apparent from the present observations the number of fishes collected by this method was more (89%) and without much variation in the species composition. Joshi (1980 a) has successfully operated the device for mahseer seed collection in Baner stream of Kangra valley in Himachal Pradesh. Jhingran and Sehgal, (1978) have also described the usefulness of the method of cloth fishing for fish seed collection in the hill streams.

Obviously, these hill streams support a sizeable fishery of the prestigious game fish, *T. putitora* which is facing threats of being extinct in near future (Das, 1983). With a view to regain the commercial status of mahseer, these hill streams can be well utilized as the nursery pockets for its seed rearing, further to rehabilitate the large waters where the catches of this prized fish have reached the alarming stage. If proper conservation measures are followed the fish can be saved from being extinct.

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