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ON THE NATURAL OCCURRENCE OF *LABEO ROHITA* (HAM.) *LABEO GONIUS* (HAM.) HYBRID IN DHAURA RESERVOIR (UTTAR PRADESH) INDIA AND ITS POSSIBLE ROLE IN AQUACULTURE

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A natural interspecific fish hybrid between *Labeo rohita* (Ham.) and *L. gonius* (Ham.) was encountered during fishing operations in Dhaura reservoir (District Nainital, U. P). The hybrid exhibited faster growth than *Labeo gonius* one of the parent species In general appearance, it was in between *L rohita* and *L. gonius*. The studies on its morphometric characters and its potential role in aquaculture are presented in the paper.

INTRODUCTION

From aquaculture point of view, the fish hybrid are of immense importance for their faster growth, greater vigour, higher adaptive plasticity and more rapid sexual maturities (Nikolyukin, 1965). The subject of fish hybridization has been reviewed by Hickling (1967 & 1971), Chaudhuri (1967), Clemens (1967), de Menzes (1967), Kirpipschnikov (1967), Moav & Wohlfarth (1967) and Jhingran (1969). Slastentenko (1957) gave a list of 167 natural fish hybrids of the world, out of which about 90% were from fresh waters. Of the fresh water natural fish hybrids, about two third were from North America. The reports on a few natural fish hybrids are also on record from India (Desai & Rao, 1970; Tilak, 1970; Natrajan *et al.*, 1976; Prasad 1976; Prasad & Tilak, 1984).

The present paper deals with the studies on the natural *Labeo rohita* × *Labeo gonius*, hybrid collected from Dhaura reservoir.

Dhaura reservoir is located in district Nainital (Uttar Pradesh). The commercial fishing which remains closed during the July and August, from conservation point of view, is carried out from September to June, each year. During fishing operations a natural interspecific fish hybrid between *L. rohita* and *L. gonius* was encountered (Fig. 1). The morphometric characters of the hybrid were studied and the growth of the hybrid was compared with that of *L gonius*, which constitutes the major fishery of the reservoir.

RESULTS AND DISCUSSION

D 2/13, P 17, V 9, A 6, C 19, L. I.59, Ltr. 11/11, Length of Head 5.4, of Caudal 4 5. Height of body 4.05 in total length. Eyes-diameter 3 3 in the length of the head, 1. 10 diameter from the end of snout, 1 0 apart, dorsal profile more convex than that of the abdomen. The greatest width of the head equals its length, excluding the snout. width of mouth 3.0 in the length of head. No lateral lobe, but numerous pores on the snout. Lips thick, fringed and with distinct inner fold in their entire circumference A cartilagenous covering to inner side of both jaws. Barbles a short and thin maxillary pair present. The dorsal commences nearer the mouth than the base of the caudal fin. It is not so high as the body and its upper edge is moderately concave. Pectoral–nearly as long as the head excluding the snout. Caudal–deeply forked Lateral-line 7 rows of scales between it and base of ventral fin.

Colour : Blackish along the back becoming lighter on the sides and beneath. The scales are dark at their margins The characters indentical, inbetween and away from both the parent species are given in Table I. While identifying hybrids, the stress is mainly laid on the intermediate characters (Hubbs *et al.*, 1943), but the present studies indicate that (a) there are characters which are intermediate between both the parents (b) there are characters which either exclusively resemble with one parent or the other; (c) there are characters which resemble both the parents, and (d) there are characters which are away from both the parents.

These observations are similar to those of Prasad & Tilak (1984) on a hybrid between *L. calbasu* and *L. gonius*

It is, therefor, evident that naturally occuring hybrids, present special characteristics as enumerated above.

According to Bailey & Lagler (1938) the ecomorphological changes in

the riverine habitat, caused due to the construction of dams, are one of the several factors responsible for hybridization in nature Hubbs (1985) propounded that the predominance of one species and the scaracity of the other, facilitates and hybridization. Dhaura reservoir was constructed across river Dhaura in the year 1961. The total area of the reservoir was taken up for fisheries development in the year 1964–65. Fifteen fish species belonging to families *Notopotenidae*, *Cyprinidae*, *Siluridae*, *Ophiocephalidae*, *Mastacembelidae* and *Clupeidae*, constitute the major commercial fishery of the reservoir. *L gonius* and *L. rohita* and the parent species of the hybrid, constitute 29.12% and 0.67% of the total landing respectively, in the lake. It reveals that the ecomorphological changes caused due to the

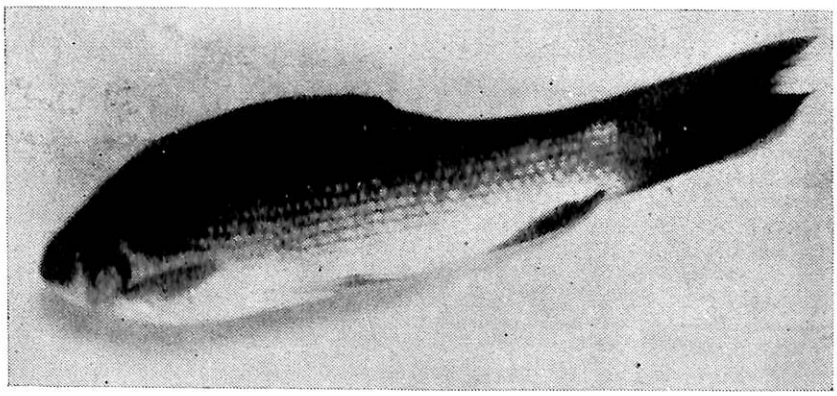

Fig. 1. Fish hybrid of *L. rohita* × *L gonius*.

construction of dam across river Dhaura and the predominance of *L gonius* over *L rohita* in the reservoir have possibly resulted in the natural interspecific fish hybridization.

The length of the hybrids between *L. rohita* and *L gonius* was recorded as 16.2 cm. while the average growth of *L gonius* one of the parent species of the same year class constituting the bulk of the fishery was recorded as 12 8 cm only. The weight of the hybrid and *L. gonius* of the same year class was recorded as 45 0 gm and 16.5 gm, respectively.

It is evident that the hybrid exhibited faster growth than *L. gonius* and in terms of weight also, it was superior to *L. gonius*.

Table 1. Characterization of fish hybrid of *L. rohita* × *L. gonius*.

Characters	*Labeo rohita*	*Labeo gonius*	Hybrid	Characters indentical to, inbetween or away from both the parents.
Length of fish/length of head	4 5--5	5–5.5	5.40	Inbetween
Length of fish/length of caudal	4.5	5–5.5	4.50	*Labeo rohita*
Length of fish/height of body	4.5	4–4.5	4.05	Inbetween
Length of head/diameter of eye	4–6	4 5–5	3.30	Away from both
Length of head/width of mouth	3.25	3 5	3.0	— do —
Dorsal fin rays	15–16	16–18	15	*Labeo rohita*
Pectoral fin rays	17	17	17	Both
Anal fin rays	7	7	6	Away from both
Ventral fin rays	9	9	9	Both
Caudal fin rays	19	19	19	Both
Number of lateral line scales	40–42	71–84	59	Inbetween
Ltr.	6.5/9	16/17	11/11	Inbetween
Number of barbels	One pair	Two pair	One pair	*Labeo rohita*

L. gonius, distı buted in fresh waters of Assam, Darjeeling District of West Bengal, Bihar, Uttar Pradesh, Orissa, as low as the Kistna, in India, is relatively less commercially important than tropical Indian major Carps.

The occurrence, in nature of the hybrid between *L.gonius* a slow growing fish and *L. rohita,* an excellent food fish and one of the fastest growing Indian Major Carps, suggests that the programme of hybridization between these two species by hybophysation under controlled conditions, may upgrade *L. gonius.* The food and feeding habit and other biological parameters of the hybrid could not be studied due to the paucity of material. There is scope of further investigations in this field of fish genetics which may lead to increase in per hactor fish yield in the reservoir of Uttar Pradesh in India.

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