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IMPACT OF STOCKING OF EXOTIC CARPS IN THE GIRITALE TANK,A MAN-MADE LAKE IN SRI LANKA

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Abstract

The dominant species in the fisheries of man-made lakes in Sri Lanka is the introduced cichlid species Oreochromis mossambicus. In the recent past, several species of carps have been stocked in some of these reservoirs. The stock and return statistics of three species of carps namely, rohu (Labeo rohita), bighead carp (Aristichthys nobillis) and mrigal (Cirrhinus mrigala) were analysed to evaluate the impact of stocking of these species in the Giritale tank, a medium sized perennial reservoir in Sri Lanka. The mean annual fish production of this tank in the post-stocking period was observed to be significantly higher than that recorded during the pre-stocking period. The contributions of rohu bighead carp and mrigal to the total catch of the reservoir were found to be 13.02%, 30.12% and 4.36% respectively. The recovery rates were observed to be 20.83%, 19.57% and 18.42% for rohu, bighead carp and mrigal respectively. Weight of the fish recovered per 100 fingerlings stocked were 26.0 kg, 24.4 kg and 23.0 kg while the financial rate of return for fingerlings stocked were 519.0%, 482.4% and 448.3% for Rohu, Bighead carp and Mrigal respectively. These observations indicate that stocking of these carp species in perennial reservoirs could be highly beneficial to the inland fisheries of Sri Lanka.

Introduction

The status of Sri Lankan reservoir fisheries has been documented in the recent past by many workers (Fernando and Indrasena 1969, Fernando 1973, Mendis 1977, Fernando and De Silva 1984, De Silva 1983, 1988 a, b, 1989). The major species contributing to the fishery is the exotic species Oreochromis mossambicus and the gear used is the gill nets.

Stocking of lacustrine water bodies with suitable species will help to optimize the yield from their fisheries (Bhukaswan 1980, 1983). However, conflicting ideas exist among scientists on the effectiveness of stocking of large water bodies as a management measure to increase their fish production (De Silva 1988b, Jayasekera 1989).

In the recent past, many perennial reservoirs in Sri Lanka have been stocked with several species of exotic Indian and Chinese carps, However, it has been stated that the success of stocking of Chinese and Indian carps in Perennial reservoirs in Sri Lanka is very unlikely since there is no natural recruitment (De Silva 1987). In this paper, an attempt is made to evaluate the effect of stocking of three species of exotic carps in the Giritale tank, a medium sized perennial reservoir in the north central region of Sri Lanka.

Materials and Methods

Giritale tank which is about 308 ha in surface area at FSL has been stocked in the recent past with three species of exotic carps, namely rohu (Labeo rohita) Bighead carp (Aristichthys nobilis) and Mrigal (Cirrhinus mrigala).

The catch statistics during the pre-stocking period of 1981-1983 and past stocking period of 1984-1988 and the details on stocking and return of the three carp species concerned were obtained from the Ministry of Fisheries. The value of the catch was estimated using a unit price of Rs. 10.00 per kg which was the selling price by fishermen at the landing site in October 1991. In the calculation of % financial rate of return cost of stocking 100 fingerlings were considered to be Rs. 42.00 (Illukkumbura 1986). In calculating the estimated number of fish returned, mean weight of landing is considered as 1.25 kg.

Results

The statistics on mean annual fish yield during the pre stocking and post stocking period are shown in Table 1. A significant increase of 110% in the mean annual yield was evident in the post stocking period of 1984-1988. In addition, the % contribution by Oreochromis mossambicus has also decreased considerably. However, the total catch of O. mossambicus has slightly increased in the post stocking period.

The details on stocking and return of the 3 carp species concerned for the period 1984-1988 are summarized in Table 2. The recovery rates of the carps ranged from 18.4% to 20.8%. The weight of the fish returned ranged from 23.0 to 26.0 kg per 100 fingerlings stocked. The financial rate of return was estimated to range from 448.3% to 519% (Table 2).

Discussion

It is evident from the catch statistics that due to stocking not only a significant