

Fishery of the Victoria Reservoir: Past, Present and Future

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ABSTRACT. *Victoria is a deep upland hydropower reservoir constructed under the Accelerated Mahaweli Development Programme, with a well established fishery. Comparisons made between inception (1990) of the fishery and its present status indicate an urgent need for scientific management. The mean catch per unit effort of the fishery declined from 10.4 kg in 1990 to 2.5 kg in 2001. Fish catches in 2001 had very low species diversity compared to 1990. Illegal fishermen using small meshed gillnets below permissible mesh size increased from 18 in 1990 to 150 in 2001. In contrast to 1990, when fishing was the only source of income for 80% of the fishermen, none were full time fishermen in 2001. Since the level of income derived from fishing is totally inadequate for subsistence, fishermen now supplement their fishing income through other part time occupations. Complete cessation of fish stocking over a six year period since 1990, with only sporadic stocking thereafter, has also adversely affected fish production of this reservoir. Community-based cage culture trials initiated recently in the reservoir to remedy this situation through restocking with fingerlings did not show much promise. Drastic fluctuations in water level further aggravated the situation. The existing management approach practised has failed to address management issues of this fishery, primarily due to lack of community participation. Co-management, where both, the government and stakeholders, share responsibility in fisheries management is recommended as an alternative, for sustainable use of this fishery in the future.*

INTRODUCTION

Victoria is a recently impounded, deep, upland hydro power reservoir in Sri Lanka constructed under the accelerated Mahaweli development programme (1984). Fish production is a secondary use of the reservoir. After sealing, the reservoir was stocked with different cichlid and carp species to increase fish production. Fishing was permitted only in 1989. The fishery was well established by then, and many people depended on it for their livelihood. Little is known about the present status of the fishery of the Victoria reservoir. Therefore, this investigation focused on comparing the present status with the situation soon after inception of the fishery in 1990, with a view to identify changing trends and management problems, to propose a suitable strategy for future development.

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MATERIALS AND METHODS

Information regarding the status of the fishery soon after inception in 1990 was obtained from four publications (De Silva, 1992a, 1992b; Nathanael and Silva, 1997; Edirisinghe, 1997). The present status of the fishery was investigated over a six month period in 2001, by collecting data on the number and type of fishermen and crafts operating, species diversity of commercial fish catches, and the mean catch per unit effort (CPUE kg craft⁻¹ day⁻¹). Additional information was obtained by participant observation at some monthly meetings of the Fisheries Co-operative Society and from records maintained by the Regional Aquaculture Extension Centre, Rajawella. Data on hydraulic changes of the reservoir during 1990 and 2001 were obtained from the Mahaweli Headworks Unit, Digana.

RESULTS AND DISCUSSION

Soon after inception (1989/90), the commercial fishery of the Victoria reservoir comprised of three cichlid species (*Oreochromis mossambicus*, *O. niloticus*, and *Tilapia rendalli*), exotic carps and indigenous species such as, *Tor khudree* and *Ompok bimaculatus* (De Silva, 1992b; Nathanael and Silva, 1997). In contrast, the species diversity in fish catches was very low in 2001, and catches comprised mostly of the two cichlid species *O. mossambicus* and *O. niloticus*. The other differences between 1990 and 2001 are summarized in Table 1. In 2001, due to low fish catches all the fishermen supplemented their fishing income through other occupations. However, fishing was the only source of income for 80% of the fishermen in 1990.

Table 1. The past and present status of the Victoria reservoir.

	1990 (past status)	2001 (present status)
Active fishermen (%)	100.0	28.0
Full time fishermen (%)	80.0	00.0
Illegal fisherman (number)	18.0	150.0
Fibre glass crafts (number)	46.0	49.0
CPUE (kg craft ⁻¹ day ⁻¹)	10.4	2.5
Reservoir draw-down (m)	25.7	42.2

CPUE - Mean catch per unit effort.

The majority of the fishermen used gillnets of <9 cm mesh size (unauthorized mesh sizes) inclusive of monofilamentous nets which resulted in capture of undersized fish leading to low catches in 2001. This was a major management problem. Some other problems were damage to fishing crafts due to non availability of suitable anchoring places and snagging of gillnets on submerged aquatic vegetation.

Poor stocking was another major problem. Compared to the past where there were well organized annual fingerling stocking programmes, no such programmes were operative in 2001. Community-based cage culture trials initiated during this period to increase fish production were not very successful either. Drastic fluctuations in water level in 2001 (Table 1) further aggravated problems. Lack of community participation in fisheries management has been primarily responsible for past management failure. Hence, co-management (Amarasinghe and De Silva, 1999) through the Fisheries Cooperative Society whereby fishermen and the government actively participate in management appears to be best for future management of this fishery.

CONCLUSIONS

Comparisons made with the past indicate that the thriving commercial fishery of the Victoria reservoir is now nearing collapse, primarily due to the absence of proper management. Laws to manage the fishery under exclusive rights is mandatory, since the main problem which is overexploitation using gillnets of unauthorized mesh size, is due to the open access nature of the resource. Lack of community participation is the main cause for past management failure. Hence, co-management, where resource users and the government share responsibility in fisheries management is considered best for the Victoria reservoir, whereby the dwindling fishery can be revived at least to its former status in the future.

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