

Multidisciplinary Research for the Sustainable Exploitation of Aquatic Resources

M. J. S. Wijeyaratne

Introduction

Sri Lanka is blessed with large number of diverse aquatic habitats including lentic and lotic inland water bodies as well as marine habitats, both coastal and offshore. The freshwater habitats include, streams, rivers, flood lakes, villus, marshes, and perennial and seasonal reservoirs.

Sri Lanka has a river system comprising 103 rivers. However, exploitation of living aquatic resources from the major rivers is not well developed in Sri Lanka except for exploitation of ornamental fish from some tributaries and streams. The riverine fishery of food fish is also not well developed in Sri Lanka. Villus or the flood lakes are found mainly in the flood plains of Mahaweli river, Kala Oya and Modaragam Aru and the total extent of these are estimated to be around 40,000 ha (de Silva 1988 a). Fisheries of these flood plains are also not well exploited for commercial purposes. However, fish yields of 35 – 70 kg ha⁻¹ year⁻¹ have been recorded from some villus in the Mahaweli flood plains (Jayasinghe 2000).

Although there are no natural lakes, large number of man made lakes, both perennial and seasonal, exists in Sri Lanka. These have been constructed during the ancient times for agricultural purposes and in the recent past for hydro power generation. The perennial reservoirs which retain water throughout the year generally exceed 200 ha in surface area. The total extent of major perennial irrigation reservoirs in Sri Lanka is estimated to be around 70820 ha (Jayasinghe 2000). The seasonal reservoirs, which dry up during the latter part of the dry season cover a total area of around 56250 ha. The total area of lentic inland water bodies in Sri Lanka is estimated to be around 4 ha/km² of land. The inland reservoirs play a significant role contributing to inland fisheries. The inland fish production from these perennial and seasonal reservoirs is estimated to be around 10% of the total fish production of the country.

Freshwater Ornamental fish and ornamental aquatic plants are also harvested from some of the inland reservoirs, streams and marshes. Ornamental fish and ornamental aquatic plants have now become very important as foreign exchange earners. The demand for tropical aquarium fish and tropical aquatic plants is extremely high worldwide.

Further, freshwater aquatic habitats are sometimes important as nature tourism sites.

The major non living resource extracted from inland water bodies is river sand. However, this has caused severe environmental damage and is banned in some river systems.

The marine resources include both living and non living resources in the coastal zone and the off shore region. The exclusive economic zone, which extends for 200 nautical miles into the sea from the coast line, covers an area of about 517,000 km², which is about 8 times of the area of the land mass (NARA 2000). When the outer margin of the continental shelf is demarcated, it is estimated that Sri Lanka has a jurisdiction for benthic resources in the marine environment over an area of about 35 times of the area of the land mass.

The living resources in the marine environment, which are commercially exploited, include fish, crustaceans (shrimp and crabs), molluscs (cuttlefish, squids, mussels, etc.), sea cucumbers and sea weeds. Some fish, crustaceans, molluscs, corals and echinoderms are harvested for ornamental purposes too. The non living resources include various minerals and sand. In addition, many coastal habitats serve as the basis for tourism industry. These includes beaches, coastal seas, scenic bays, coral reefs etc, As such, the marine resources, in