

ABSTRACT

The present multidisciplinary study on the demersal fishery in the Negombo area on the west coast of Sri Lanka was based on the data collected from 1992 to 1999. The prime objective of this study was to identify an appropriate management strategy for the sustainable development of the resources as well as the fishery. Assessments of fishery, fishery resources, economics of fishing, marketing and the social aspects of the fishing community were studied in detail. The status of economically important fish stocks in the shallow and deep waters were assessed through indicator species, *Lethrinus lentjan* and *Lethrinus nebulosus*.

The demersal fishery in the area is highly diverse and the maximum fishing effort is deployed by handline combined with drift gillnet boats followed by bait cage traditional handline with outboard motor boats, bottom trammel net, bottom longline, bait cage handline with inboard motor boats, with a more limited effort by bottom set gillnet and spear fishing. Handline with inboard motor boats, bottom set gillnets and spear fishing only operate during the non-monsoon season, but effort is also high during this period by all gears. The multigear demersal fishery in the area is predominately conducted in the shallow waters less than 40 m and only handline and bottom longline fishing are deployed in depths greater than 40m. The CPUE realised from shallow waters are low for all gears but improved with increasing fishing depth.

A total of 139 fish species belonging to 68 families have been recorded in the catches but the most important families are Lethrinidae, Carangidae, Lutjanidae, Serranidae and Scombridae. *L. nebulosus* and *L. lentjan* are the dominant species. Recently the contribution of squid and cuttlefish to the total demersal catch has increased. Lethrinds replaced the catches of Carangids as dominant fish. The three important gears, traditional bait cage handline, bottom longline and bottom trammel net fisheries are highly interactive, harvesting the same stocks of economically important species of different but overlapping sizes. Both traditional handline and bottom trammel nets catch large quantities of juveniles of the indicator species inhabiting the shallow waters while bottom longlines catch adults in deeper waters. A decline of CPUE of these interactive gears has been observed over time.

The present fishing effort of the multispecies demersal fishery has come close to the optimum, which produces the maximum sustainable yield (MSY), but has long exceeded the maximum economic yield (MEY). The economically important fish resources in the shallow waters are being overexploited and have long exceeded the optimum exploitation of 0.5 by all three main gears. The exploitation of bottom longline fishing has exceeded the optimum effort which produces MSY for *L. nebulosus* and both handline and bottom longline has exceeded the optimum effort for *L. lentjan*. The economics of exploitation of these two species has exceeded the MEY by all gears. The yield or the value of the catch of these two indicator species could only be improved by a 50% reduction of current effort of either bottom trammel nets or traditional handline fishery, but over 60% of the households engaged in these fisheries depend entirely on fishing income.

All boat/gear combinations involved in demersal fishing exhibited good performance and generated a positive net profit, but the economic performance among them is highly variable. Profitability is highest for modern gears rather than traditional bait cage handline fishing. The seasonal change in fishing, according to the seasonal abundance of resources, is economically rewarding. Relatively low fixed costs plus a competitive market, high demand and low indebtedness to middlemen results in a high net profit. Furthermore socio-cultural and technological barriers enable them to maintain resource rent for all fisheries.