

Abstract

Artisanal, small-scale fisheries (SSF) have gained high attention as they provide 56% of the world catch and 96% of the total employment of the fisheries. In Sri Lanka, ~40% of the total landings come from small-scale fisheries. A well established artisanal, SSF using ring-nets and gillnets are operated in Dodanduwa targeting large schools of Frigate tuna (*Auxis thazard*). Though the fishery operates year-round, high catches are reported during June - August. Reasons for this seasonal aggregation behaviour of Frigate schools are still unknown. Moreover, poor knowledge on the fishery; social-economic status; and institutional aspects hamper the development of economically and environmentally sustainable fishery. Seasonal variations of landings, in terms of Catch per Unit Effort (CPUE), were estimated collecting weekly random samples from ringnet and gillnet landings at Dodanduwa from April - September 2013. Past catch records, from 2011-2013, were also collected from log books of fish collectors. The socioeconomic status of fishers was evaluated through interviews and questionnaires. Stomach contents of *A. thazard* were analyzed in determining their feeding behavior and further to know whether they prove a feeding aggregation.

Three main actors were identified in the Dodanduwa fishing community as: fishermen; boat owners and fish traders. Of all, 87% are permanently engaged in fishery and fishery related activities. Two sizes of crafts were engaged in fishing: smaller canoes (10m in length; 15 Hp outboard engine) which operate gillnets at night while the larger canoes (13 m length; 25 Hp outboard engine) operate purse seines during the day time. More or less similar trends of CPUE were evident from ringnets for the last three consecutive years. Irrespective to the fishing effort, high production result in July-August period indicates a migration or aggregation of the *A. thazard* schools off the waters of Dodanduwa.

In the gut contents of *A. thazard*, zooplankton; small fish species; crustaceans; molluscs; and annelides were identified as major prey items. Crustaceans were the dominant prey category, which has the highest Index of Relative Importance (IRI), in *A. thazard* landed from both gears: ringnets and gillnets. High volume of fish species and considerable amount of molluscs were reported in *A. thazard* from gillnets suggested their opportunistic feeding behavior or distribution of age structure with

respect to the spatio-temporal differences where the commercial samples were drawn. No significant difference was observed in the length frequency distribution of *A. thazard* with respect to catches of two gears suggesting that more or less similar age structure is been targeted by both the gears. Further research, conducted over a long duration, is needed to conclude whether the observed feeding differences are due to diurnal feeding preferences of *A. thazard*. Moreover, increasing trends in CPUE despite to the decreasing fishing effort, suggests no fishing threat to *A. thazard* population off Dodanduwa, at the moment.

Keywords: small-scale fishery; frigate tuna; index of relative importance; CPUE