



Exploitation and Vulnerability Risk Assessment of Marine Aquarium Fishery in Eastern Sri Lanka

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Sri Lanka is among the top five exporters of marine aquarium fish (MAF) to the U.S., sourced from coral reef ecosystems. This study assesses the exploitation vulnerability risk of MAF through productivity susceptibility analysis (PSA). Data on commercial MAF catches from 90 fishers fishing at reefs in Trincomalee, Sri Lanka, were collected over two years from 2020 through bi-monthly visits to landing sites. Species were identified in situ up to a possible taxon level, and further verifications were conducted using fish identification keys. Productivity (fecundity, larval development, maximum length, and lifespan) and susceptibility (distribution, ecological niche, depth of inhabitation, and market price) attributes were considered in the analysis. Attribute data were gathered in situ and from the literature. Each attribute was scored from 1 to 5, with the highest risk being given a value of '5'. Cumulative values were computed. Only species with medium or high susceptibility risk were considered to assess vulnerability risk using the cumulative value of productivity attributes. The risk level was assessed through a scoring system. The native species were not encountered in the commercial catches. Most species were distributed in the Indo-Pacific region ($n = 194$) and had market prices between 10–99 LKR per individual ($n = 125$). A total of 17 medium-susceptibility-risk species were encountered among 188 fish and 50 invertebrate species identified during the study. Among them, the majority ($n = 8$) had a high reproductive capacity and a lifespan of 1–10 years. The maximum length of the majority ($n = 13$) ranged between 10 and 100 cm, while planktonic larval development was characteristic in most species ($n = 12$). *Amphiprion clarkii*, *A. nigripes*, *A. sebae*, and *Gymnothorax favagineus* were identified as medium-vulnerability species and are not included in Sri Lanka's protected species lists. Therefore, the present study warrants policy implications for the conservation of medium-level vulnerability-risk species towards long-term ecological sustainability.

Keywords: Marine ornamental fish, Exploitation risk, Productivity, Susceptibility, Vulnerability