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# Assess the Impact of Lionfish (*Pterois volitans* and *Pterois miles*) as an Invasive Species in the Marine Shallow Waters of Hikkaduwa, Colombo, and Trincomalee in Sri Lanka

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## Abstract

Marine invasions pose a significant threat to the Ocean's biodiversity. The lionfish species *Pterois volitans* and *Pterois miles* are among the marine invaders. Despite the global attention on lionfish, no previous studies have been conducted focusing on the presence of lionfish and their impacts on Sri Lankan waters. This is the first study in Sri Lanka focused on assessing the current status of lionfish distribution (*P. volitans* and *P. miles)*, abundance, and invasiveness in Hikkaduwa, Colombo and Trincomalee areas aiming to evaluate their impact on biodiversity. This study was carried out from June to August in 2024. It consisted of a pilot social survey in Hikkaduwa, Colombo and Trincomalee. Based on its findings, a field survey was subsequently carried out in five selected locations in marine shallow waters of Trincomalee using an underwater visual sensing method. Additionally, a qualitative study was conducted through key informant interviews. The social study results revealed a significantly higher presence of lionfish in Trincomalee than in Hikkaduwa (X2 (1,112)=7.816, $P<0.05$) where there were no significant differences in the presence of lionfish between Colombo and Hikkaduwa (X2 (1,72)=0.856, $P<0.05$) and Colombo and Trincomalee (X2 (1,102)=2.342, $P<0.05$). It further measured the public awareness of lionfish distribution and their impacts. The field survey results were calculated based on 25m long line transects (5m wide on both sides) for 2-3 minutes durations across all five locations, treating as uniform sampling areas. The results showed the presence of lionfish was very low in the locations with high biodiversity (SHDI=1.973±0.273). The areas with low biodiversity (SHDI=1.071±0.680) had high relative dominance (RD=49.02%) of lionfish *(P. volitans and P. miles*). The key informant interviews highlighted the possibility of a lionfish invasion in Sri Lanka. They emphasized the need for further exploration and investigation to gain an accurate and precise understanding of the status of lionfish distribution in Sri Lanka. The study discovered significant insights into the public awareness and distribution of lionfish. It further revealed the ecological, economic and medical impacts of lionfish. Moreover, it highlighted the need for further exploration, including temporal variations to reach more precise and accurate conclusions regarding their long-term ecological impact to determine their invasive behaviour in Sri Lankan waters.

**Keywords:** *Lionfish, P. volitans, P. miles, Invasive species, Native invaders*