

Invasive potential of exotic ornamental fish species in Sri Lanka

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The accidental releases of fish species from ornamental fish industry have become one of the top five pathways for the introduction of invasive species in the world. These accidental releases of species in to new environments are more environmentally damaging in most instances compared to intentional introductions. Seven out of 12 invasive alien animal species found in Sri Lanka are fish species and majority of them have been introduced by ornamental fish trade. This study was conducted to assess the invasive potential of exotic aquarium fish species in Gampaha, Kandy and Polonnaruwa districts in Sri Lanka. Twenty aquarium hobbyists, three pet shops and three fish breeders in each district were randomly selected and fish species present in their captivity were identified. The invasion potential of species present was evaluated using their thermal tolerance, history of invasion elsewhere, and potential propagule pressure calculated by frequency of occurrence in homes, pet shops and breeding centers. Reasons for fish releases and biosecurity measures adopted by the industry were also recorded using a questionnaire survey.

Overall 51 exotic ornamental fish species belong to 14 families Poeciliidae, Loricariidae, Characidae, Osteoglossidae, Cyprinidae, Osphronemidae, Helostomatidae, Cichlidae, Acanthuridae, Callichthyidae, Characidae, Cichlidae, Salmonidae, Scombridae were recorded during the study. *Xiphophorus maculatus*, *Pterygoplichthys pardalis*, *Poecilia reticulata*, *Cyprinus carpio*, *Osphronemus goramy*, *Trichogaster trichopterus*, *Clarias batrachus*, *Pterophyllum scalare*, *Carrasius auratus*, *Danio rerio* and *X. helleri* had high invasive potential while *Osteoglossum bicirrhosum*, *Astronotus ocellatus*, *Astronotus* sp., *Puntius tetrazona* and *Betta splendens* have moderate invasive potential in the country. *Colossoma macropomum*, *Salmo trutta*, *Pethia conchonius*, *Gymnocorymbus ternetzi*, *Hemichromis bimaculatus* and *Acanthurus dussumieri* showed low invasive potential. The reasons for releasing fish into natural environments were increasing body size, aggressive behavior, diseases, high reproduction rate, difficulty to maintain and due to unexpected floods. Fish breeders cover the ponds by a net to prevent fish escapes and to prevent predators as a biosecurity measure. Education, training and extension be used to inform general public and aquarium industrialist of invasiveness of fish species and their environmental impacts. Laws and regulations to prevent fish releases to natural environment should be introduced and implemented through intervention of the government.

Keywords: Alien invasive fish species, accidental releases, unintentional releases