

A Review of Export Trade of Indigenous Freshwater Fish Species in Sri Lanka and Their Conservation Issues

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Introduction

The ornamental fish trading in Sri Lanka has come a long way over the last 85 years of its existence to develop in to a valuable foreign exchange earner for Sri Lanka. Ornamental fish are exported to 71 countries around the world. Exporters have shown an increasing trend over the last decade particularly since price has become more competitive. Many species of fresh water fish in Sri Lanka are collected from wild habitat for ornamental fish export trade which causes a series conservation issue on the particular endemic freshwater fishes. The effect of selective over collection are exacerbated by the habitat degradation that is taking place independently of aquarium trade activities but which would inevitably affect the sustainability of endemic fish aquarium trade (Ekaratne, 2000). Therefore some of the freshwater endemic species require urgent measurement for their protection and sustainable management. Present study was intended to analyze and evaluate the trade of freshwater fish in Sri Lanka with a particular focus on endemic species. Determining exported species and their quantities, evaluate the actual foreign exchange earnings from the endemic fish trade , identify annual fluctuation of exported quantities with biological data of endemic fish species and identify the conservation issues related to endemic fish were the main objectives of present study.

Methodology

Data on the freshwater fish species subjected to ornamental export trade and their quantities were extracted from the Customs Goods Declaration Forms (CusDec) submitted by the ornamental fish exporters to the Air Cargo (Exports) Terminal in Katunayake under the Department of Sri Lanka Customs. A total of 3037 Customs Goods Declaration Forms submitted during the period of one year from 1 September 2012 to 31 August 2013 were analyzed and some part of the data were extracted from Data Base Management System of Sri Lanka Customs. A questionnaire was also used to gather additional information from ornamental fish exporters and having face to face interviews with local villagers, laborers of export oriented fish farms , ecologists and specialists on relevant field. A literature survey was also conducted to gather relevant background information.

Results and Discussion

During the one year period from 1 Sep 2012 to 31 Aug in 2013, a total of 29 species of fish in 15 families were collected from freshwater habitats for the export from Sri Lanka. Among the total, 18 species were indigenous, 10 species Endemic, 3 salt dispersants and one was exotic.

When considering the total quantities of exported freshwater fish during the one year period the most common species exported was the endemic fish *Garra ceylonensis* (28551 individuals), followed by Indigenous salt water dispersants *Monodactylus argenteus* (15617 individuals) and the endemic fish *Dawkinsia singhala* (6322 individuals). *Anguilla bicolor* was the species exported in least quantities (14 individuals). During the one year study period, 63419 individuals had been exported from Sri Lanka as wild collected freshwater fishes. As shown in

Figure 1, when considering the proportions of species exported during one year period, the exotics consist of 0.28% (176 individuals) while the endemics consist of 63.84% (40,487 individuals) and other indigenous species consist of 35.88% (22,756 individuals).

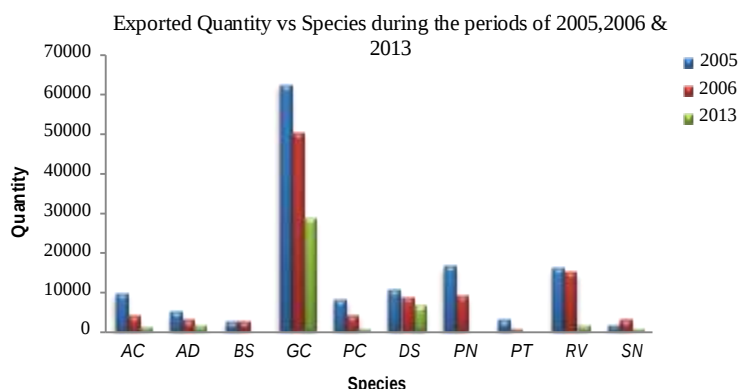


Figure 1. Total quantities (numbers) of endemic freshwater fishes which exported in 2005, 2006 and 2013.

AC- *Acanthocobitis urophthalmus*, AD- *Aplocheilus dayi*, BS- *Belontia signata*, GC- *Garra ceylonensis*, PC- *Pethiya cuningii*, DS- *Dawkinsia sinhala*, PN- *Pethiya nigrofasciatus*, PT- *Puntius titteya*, RV- *Rasbora vaterifloris*, SN- *Schistura notostigma*

When considering the foreign exchange earnings from endemics *G. ceylonensis* has earned highest amount (Sri Lankan Rs. 855,927.28) while *Devario pathirana* has brought in the least earning (SL Rs. 9,906) during the concerned time period. Total income generated from the ornamental fish trade during one year period was SL Rs.1, 069,066,413 (US \$ 8,201,947.27). When considering the earnings, contribution of endemic freshwater fish was SL Rs. 1,191,591.77 and it was 0.001% from total export of ornamental fish. This is a negligible amount when considering the total earning which is generated from ornamental fish trade.

There are more than 200 exporters registered in Sri Lanka Customs for export of ornamental fish but only 70 exporters physically exported live ornamental fish and from that 70, only 15 exporters export endemic freshwater fishes. When comparing 2005 and 2006 exported quantity data (Gunasekara, 2011) with 2013 data there was a drastic reduction of total quantity of endemic fishes (Figure 1). Especially *B. signata*, *P. titteya* and *P. nigrofasciatus* were highly exported during 2005 - 2006 period, but data in 2013 doesn't show any individuals of above three species. Also *R. vaterifloris* and *P. cuningii* quantities have reduced by more than 90% compare to 2006 quantities. Though the quantity has reduced in 2013, *G. ceylonensis* and *D. sinhala* had been regularly exported in considerable quantities.

One of the objectives of the present study was to identify whether exporters are practicing captive breeding or totally dependent on wild collection for exporting endemic freshwater fishes during the concerned time period. According to findings there are no exporters who practice captive breeding and they are 100% depends on wild collection of endemic fishes.

87% of exporters said that the legal status behind the export of restricted endemic fishes is problematic. They are in the opinion that permission should be granted for exporting captive bred endemic fish. Species such as *Malpulutta kretseri* and *Channa orientalis* have a high demand from but due to the prohibition of export those species under the Fisheries and Aquatic Resources Act No 02 of 1996, the opportunity is lost to earn foreign exchange. The exporters insist on amending the by facilitating export of prohibited species through captive breeding.

Deforestation (47%), excess usage of agrochemicals (32%) and gem mining (15%) are identified as the major threats to the conservation of endemic fishes. This may cause disappearance of some rare, colorful endemic fish species such as *R. vaterifloris*, *P. titteya*, *P. nigrofaciatus*, *B. signata*, *D. pathirana* which have attractive colorations, from the natural habitats due to selective over exploitation. Overexploitation of colourful fish selectively, will lead to inbreeding of dull coloured varieties and reduction of quality of gene pool.

Conclusions

Sustainability of the ornamental fish industry depends on the conservation of endemic fishes. Hence, the government authorities and ornamental fish exporters should cooperate in a better manner to develop the industry. Technology of captive breeding of high demand species should be developed by NARA and NAQDA and transferred to responsible ornamental fish farmers. However, it is advisable to closely monitor the breeding of high demand species by the ornamental.

References

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