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# IDENTIFICATION OF ADAPTABILITY AND SURVIVAL OF BLACK RUBY BARB (*Puntius nigrofasciatus*) AND GIANT DANIO (*Danio malabaricus*) IN ARTIFICIAL ECO-SYSTEMS

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## INTRODUCTION

*Puntius nigrofasciatus* and *Danio malabaricus* are two of the endemic and endangered fresh water species in Sri Lanka. Both these species are included in the IUCN Red data book under threatened species. These species have become endangered mainly due to deforestation, colonization, biological and chemical pollution and especially due to frequent illegal exportations.

Inland aquatic plants are very widely distributed in Sri Lanka. Aquatic plants have several uses, such as food, medicines, aesthetic purposes, water purification, livestock feed and as fertilizers. *Eichhornia crassipes*, *Salvinia molesta*, *Azolla*, *Lassia spinosa*, *Hydrilla* are some of important aquatic plants, which are used for different purposes.

Since “ conservation” of natural resources is more practical than “ protection” of them, identification of their adaptability to artificial eco-systems is a good preposition for their conservation.

## MATERIALS AND METHODS

Experiment- 01 was conducted at National Agro Technological Park at Gannoruwa. After clearing the barren land using machines, a new channel was constructed as a major component of the park. A thick transparent polythene was laid on the channel bottom to avoid seepage losses and to retain water in the channel. Channel was separated into 4m length portions to rear different species of fish separately. Separation dams were constructed using river stones and mud and each dam consisted of a pipe covered with a net. The pipe allows water to flow along the channel, but prevented the fish movement from one portion to the other. A thin layer of mud and river stones were put on the polythene and introduced different species of aquatic plants along the channel. Large flowering shrubs and *Bamboosa* shrubs were planted either side of the channel in order to get a shady environment. Water samples from each portion was subjected to physico- chemical analysis and also counted the density of planktons before introducing the fish.

Experiment -02 was conducted at faculty of Agriculture, University of Peradeniya. Here an artificial stream was rehabilitated by removing excess organic matter and mud. Two eco-systems, as top-flowing water and bottom stagnant water were prepared by damming. Fish were collected from a stream of Mahaweli at Ginigathena and collected fish were separated according to species. Black ruby barb and Giant danio adults, 10 fish of each species were allocated randomly into two portions without considering the sex. Number of fish survived were counted weekly.

## RESULTS AND DISCUSSION

Black water stream at Ginigathhena, Black ruby barb and Giant danio species, which are found in abundantly.

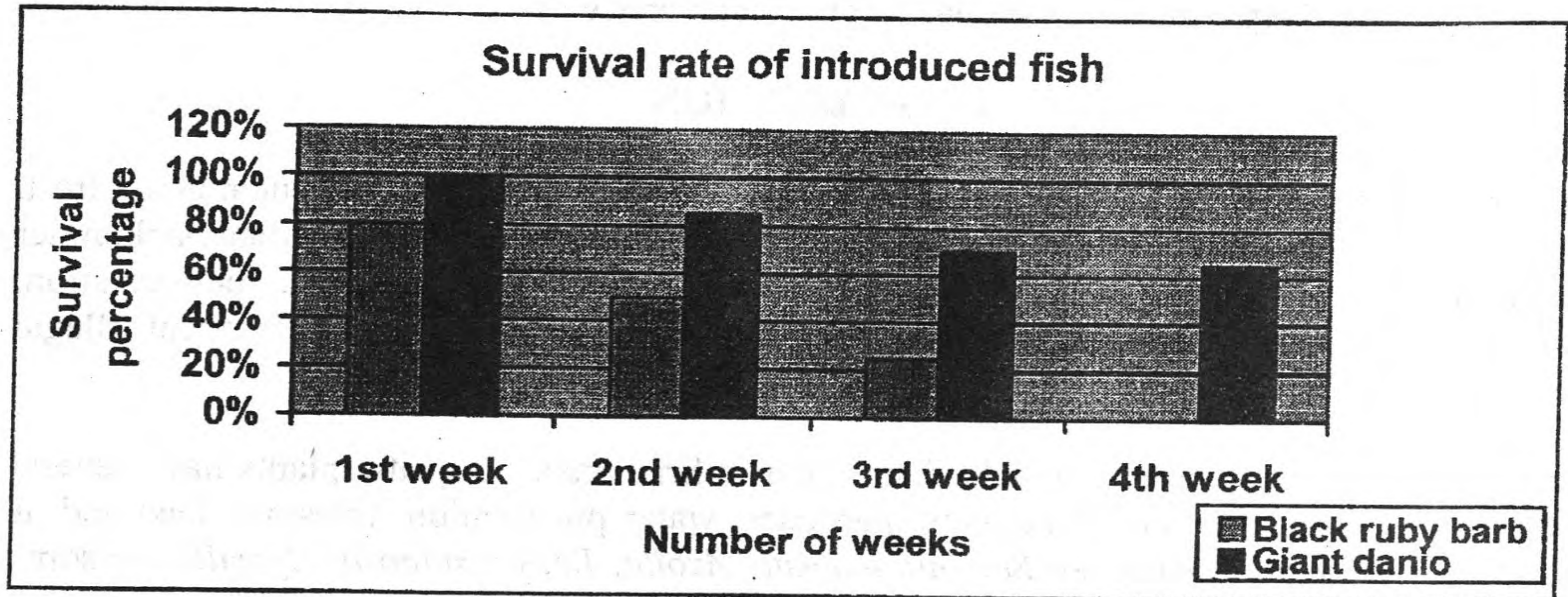


Fig: 01 Survival rate of introduced fish

When the survival rate is considered, both species showed higher value in the portion of the channel, which has high flow rate. According to Pettiyagda (1990) the lower survival of Giant danio is due to lack of fast flowing water and lower survival of Black ruby barb may be due to lack of cool, shady environment with sand and gravelly bottom may be essential for their survival.

*Eichhornia crassipes*, *Salvinia molesta*, *Allocaasia* plants thrived well in the new eco-systems because the physical and chemical conditions of water, nutrients and shade were suitable.

## CONCLUSION

Giant danio gets easy adapted to artificial eco system while Black ruby barb requires more specific habitats. "Spot conservation" is another suitable method for the conservation of these endemic and end endangered fish species.

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