



**Biotica
Research
Today**
Vol 3:9 **749**
2021 **751**

Kerala Queen (*Sahyadria denisonii*): A Promising Candidate for Aquariculture

Mahadevi*, K. Ravanewaran, Cheryl
Antony, B. Ahilan and P. Yuvarajan

Tamil Nadu Dr. J. Jayalalithaa Fisheries University,
Nagapattinam, Tamil Nadu (611 002), India

 Open Access

Corresponding Author

Mahadevi
e-mail: mahadevi@tnfu.ac.in

Keywords

Aquariculture, Candidate species, Kerala queen, *Sahyadria denisonii*

Article History

Received in 30th August 2021
Received in revised form 11th September 2021
Accepted in final form 12th September 2021

E-mail: bioticapublications@gmail.com

How to cite this article?

Mahadevi *et al.*, 2021. Kerala Queen (*Sahyadria denisonii*): A Promising Candidate for Aquariculture. *Biotica Research Today* 3(9): 749-751.

Abstract

S*ahyadria denisonii* (Miss Kerala) is a much sought-after fish in the international ornamental fish trade. It has been continuously exploited from natural resources for its high export value, due to which, it has reached the endangered status. Some of the promising attempts have been made to breed this species under captivity but even though not yet reached the commercialization. This article would like to emphasize on the species demand, captive breeding technologies and practical difficulties in commercialization of the *S. denisonii*.

Introduction

Aquariculture is an upcoming sector in aquaculture and has its importance worldwide. The ornamental aspect of fish culture is gradually emerging as a universally accepted hobby. The global trade of ornamental fish market is US\$ 8 billion and the industry growing at an average annual rate of 9%. India is blessed with the rich fish biodiversity, geographic location and access through air connectivity to the international markets. However, the contribution of India to the world decorative fish trade is merely at a tune of US\$ 1.7 million. It clearly shows that India has not tapped the resources effectively, which could have propelled exports and would have taken the country to a prominent position in the global ornamental fish trade (Karthick *et al.*, 2019). The current article explains in brief on importance of native ornamental fishes with special reference to *Sahyadria denisonii*.

Native Ornamental Fish Biodiversity of India

India is one of the megadiversity hot spots which are contributing to the world's biological resources through the greater Himalayan range on the Northern plain to the long stretches of the East, as well as the Western Ghats in the West. The Western Ghats harbour rich biodiversity and is aptly classified as one of the 25 richest mega biodiversity hotspots of the world. The Western Ghats portrays rich freshwater fish diversity with about 290 species belonging to 106 genera, 33 families and 11 orders. The Western Ghats also portrays rich endemic fish fauna of 189 species, belonging to 69 genera, 23 families and 7 orders. About 110 species of fishes reported from the Western Ghats have ornamental value out of 290 freshwater species from Western Ghats merely 114 species are exported. Western Ghats of India is a goldmine of tropical ornamental fishes. Due to high demand and pricing of many indigenous ornamental fishes, they are being harvested at greater volumes and sold at higher rates, which threatens the viability and sustainability of the resources.

The Indian ornamental fish industry is focused mainly on exotic species such as live bearers, neon tetra, angel fish, gold fish, zebra danio and discus due to its high demand in local markets. India's is blessed with rich fish biodiversity, geographic location and access through air connectivity to the international markets. However, the contribution of India to the world decorative fish trade is merely around of US\$ 1.7 million. It clearly shows that India has not tapped the resources effectively, but still India is considered as the "sleeping giant", which can accelerate the exports and may take the country to a prominent position in the global ornamental fish trade. The country exported decorative fish to the tune of around Rs. 5.65 crores in 2015-16. However, it has reached Rs. 9.5 crores in 2016-17, with an increase of 40% over last year. Hence, India has wide opportunity in terms of the natural resources and wide climatic conditions to enhance export and culture practices in decorative fish culture.



Figure 1: *Sahyadria denisonii* (Miss Kerala)

Sahyadria denisonii (Miss Kerala) is a much sought-after fish in the international ornamental fish trade. *S. denisonii* is endemic to Western Ghats where it occurs in fragmented populations in states of Kerala and Karnataka. It is reported from the rivers Chandragiri Valapatnam, Karyangod, Chaliyar, Bharatapuza, Kuppam, iritti, Anjarakandipuza and Bhavaniriver, Chalakudi, Periyar, Manimala, Thejaswini, Achenkovil and Pampa. This species is characterized by a torpedo shaped body with silver scales, a horizontal red line running from the snout through eye about half way down the body and below the red line, black line that runs the length of the fish from their snout to caudal peduncle. This slender barb has a forked tail with the black or yellow spots. The mouth is sub-terminal with pair of barbell. As they mature, develops a distinctive greenish blue marking on top of the head. The fish grows to a maximum of 15 cm and has longevity of 5-8 years (Menon et al., 1999). It received a fame after this beautiful fish won an award in the "New Species" category at Aquarama exhibition of Singapore in 1997.

S. denisonii is an active schooling fish, thrives well in subtropical climatic condition and more active at dawn and dusk than the day time hours. It prefers a water with a pH range of 6.5-7.3, hardness of 100-400 mg/L, dissolved oxygen level of 5 mg/L and above and temperature range of 18-26 °C. *S. denisonii* is omnivore in nature. It feed on worms, insects, crustaceans, plants material and organic debris. It also accepts formulated flakes, pellets and another processed feeds. Red pigmentation can be intensified by a diet rich in carotenoids. Miss Kerala constituted about 60-65% of the total live ornamental fish exported from India worth US\$ 1.54 million in the year 2008-2010. Over the last few decades wild population of *S. denisonii* has been found declining due to various reasons. In connection with the over exploitation, international union for conservation of Nature and Natural resources (IUCN) has categorized this fish as vulnerable species in 2007 and recently it is listed under endangered (EN) because of intense exploitation, deterioration of habitat and decline in number of adult individuals due to high demand.

Captive breeding and propagation could be a possible way to get revenue as well as to enhance the natural resources by ranching. The captive breeding technique for *S. denisonii* has been developed by Mercy et al. (2010b) in Kerala in its natural environment though hormonal inducement. The similar hormonal inducement technique was adopted by Mahadevi et al. (2020a) under captive condition at Chennai. Even though technique was developed couldn't able to commercialize due to practical difficulties such as;

- Non-availability of brood stock.
- Since, there is no proper established hatchery for purchase of brood stock farmers has to depend on wild stock, which is highly infected with the parasites which leads to poor survival rate of collected brooders.
- Sensitivity of fish towards water quality especially total dissolved solids and hardness.
- Poor understanding of farmers regarding the handling of fish.
- Fishes do not breed naturally under captivity even after hormonal inducement, artificial fertilization need to be carried out which needs knowledge and experience. Hence, most of the farmers hesitate to undertake breeding of the Kerala queen.
- Lack of awareness regarding culture of Native beautiful ornamental fishes.

If all the above practical difficulties are rightly addressed by the scientific community the commercialization of breeding and propagation of Kerala queen is not far. The commercialization of breeding and propagation of Kerala queen will help the Aquaculture farmers to reach international market and generate high value revenue. The commercialization of the available technique may help the women self-help groups and rural youth to get additional revenue through mono-

culture of Kerala queen in their free time. The training and demonstration programme on breeding and propagation of Kerala queen is most necessary to create awareness on importance and demand of native beautiful ornamental fishes.

Conclusion

Although there is a scope in culture and trade of *S. denisonii*, the practical difficulties need to be addressed by the research community. If the technical and practical difficulties are addressed there is no doubt in commercialization of the techniques available and could expect higher export value through native species trade.

References

Karthick, R., Aanand, P., Padmavathy, S., Stephen, S.J., 2019. Present and future market trends of Indian ornamental fish sector. *International Journal of Fisheries and Aquatic Studies* 7(2), 06-15.

Mahadevi, Felix S., Ahilan, B., Rajagopalasamy, C.B.T., Samuel Moses, T.L.S., 2020a, Induced Breeding and Developmental Biology of Endemic Western Ghats Fish *Dawkinsia filamentosa* (Valenciennes, 1844) under Captive Conditions. *Indian Journal of Animal Research* 54(9), 1069-1077.

Menon, A.G.K., Rema Devi, K., Thobias, M.P., 1999. *Puntius chalakkudiensis*, a new colourful species of *Puntius* (Family: Cyprinidae) fish from Kerala, South India. *Records of the Zoological Survey of India* 97(4), 61-64.

Mercy, T.V.A., Malika, V., Sajan, S., 2010b. Breakthrough in breeding of *Puntius denisonii*. *INFOFISH* 3(4), 13-17.