

**EDITORIAL**

**CHALLENGES OF EXOTIC FISHES INVADING THE NATIVE WATERS  
OF BANGLADESH**

Exotic fishes are the locally introduced non-indigenous fish species having their origin in another geographical areas. In Bangladesh, beside agriculture various fish and shrimp species are introduced for fish culture to boost up the production and economy. In addition, exotic fishes were also introduced for public health, aesthetic and pet shop business purposes. The history of exotic fish of Bangladesh goes back to early 30's and 40's when Mosquito fish (*Gambusia* sp.) fish was introduced for mosquito control in small waterbodies to control malaria. In 50's Siamese gourami (*Trichogaster pectoralis*), Goldfish (*Carassius auratus*), Mozambique tilapia (*Oreochromis mossambicus*) and Guppy (*Poecilia reticulata*) were introduced mainly for aquarium fish purposes. In 60's, Common carp (*Cyprinus carpio*), Scale carp (*Cyprinus carpio* var *communis*), Leather carp (*Cyprinus carpio* var *nudus*), Grass carp (*Ctenopharyngodon idella*), Silver carp (*Hypophthalmichthys molitrix*), Bighead carps (*Hypophthalmichthys nobilis*) were introduced for pond fish culture, but showed no success. In early 70's some private entrepreneurs started to develop small scale aquarium fish industry at Dhaka and Khulna city area.

Just after the liberation war of Bangladesh, Mozambique Tilapia (*O. mossambicus*) was reintroduced for enhancing fish-based protein and Mosquito fish (*G. affinis*) were introduced in Dhaka city drainage system for mosquito control. In addition to exotic carp species, Thai barb (*Barbonymus gonionotus*), Nile tilapia (*O. niloticus*), Thai Pangasiid (*Pangasius* sp.), Red tilapia (*Oreochromis* sp.) and Clariid (*Clarias gariepinus*) catfishes were introduced in the country. This time they showed promise to fish culture and acceptance by the farmers. Further, some exotic species were illegally introduced by private entrepreneurs after 90's. Which included some high-priced popular food fishes like featherbacks (*Chitala* sp.), snakeheads (*Channa* sp.), giant pangasiid (*Pangasianodon gigas*), catfishes (*Ompok* sp.), etc. Some live fish importer introduced Climbing perch (*Anabas testudineus*) from other countries as local aquaculture species. It would be difficult to provide a comprehensive account of such introduction since mislabeled record has been maintained by the relevant agencies.

However, the success of breeding and culture of these fishes in mid 80's was the key to the success. The Department of Zoology, University of Dhaka under United Nation funding did some basic research on the several exotic fishes like tilapia, carps., and others in early 80's under small sized experimental pond (under mini-pond concept) at Zoological Garden, Curzon Hall campus before the Bangladesh Fisheries Research Institutes was established.

For exotic fishes, criticism for the introduction and relocation been challenged by the ecologist and the environmental activities. However, the

problem often faced on the undesirable consequences like invasion in nature. At present there been serious issue of *establishment* of three species of Armored sucker fishes (*Pterygoplichtys* sp.), Mosquito fish (*Gambusia* sp.), Croaking gourami (*Trichopsis vittate*) in openwater of Bangladesh. The farm escaped exotic carps (previously cited), Nile tilapia, Paco (*Piaractus* sp.), Crocodile gar fish (*Atractosteus* sp.) were caught from the Foodland and the rivers of Bangladesh. *So far* they failed to breed in the river or canal. However, Tilapia can breed in rice fields (pers. observation). We predict the introduced foreign strains of snakeheads, climbing perch, Butter catfish (*Pabda* sp.), etc could be established in nature, if released.

The aquarium industry so far imported 140 species (270 varieties) of live fishes in Bangladesh. Some of the imported aquarium fishes like Paco, Armored sucker fishes and Gar fishes were out in the nature. What would be the impact of the exotic invasive fishes on the local 265 freshwater fishes is not known. The interspecies hybridization of Silver carp and Bighead carp being recognized from the hatcheries of Bangladesh. Genetically, bringing same species (e.g. *Anabas* sp.) or genera (e.g. *Ompok* sp.) from other geographical locations may cause intraspecies hybridization if mixed with local fishes. That could be harmful for local species gene pool in future.

The advantageous aspects of exotic fishes in the nature should be measured as their role in nature as 'friends of foe' basis. The openwater non-breeding, ecologically beneficial fish species may be prioritized. The governmental agency has banned the import of African catfish, Armored sucker fishes and Piranha/Paco in the country. The harmful and non-beneficial fish like Thai snakeheads or Crocodile fishes, etc. should also be banned.

From the experiences from other countries, indiscriminate introductions and transplantations of various purposes showed detrimental effects on the local fauna and have contributed to the spread of diseases. The Epizootic ulcerative syndrome (EUS) in Bangladesh in late 80's was suspected to be spread from the imported live fish seed of Thai barb for aquaculture. Thus, to prevent such consequences there is a need for following appropriate national regulations, quarantine procedures/facilities and skill manpowered laboratory services. The need is to be strongly implemented for securing future aquatic biodiversity of the deltaic Bangladesh.

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Md Niamul Naser PhD

Editor in Chief, Bangladesh Journal of Zoology

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Professor, Department of Zoology, University of Dhaka, Dhaka

Bangladesh. Email: mnnaser@du.ac.bd

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