

## Short Communication

# Status of ornamental fish import, research and scope in Nepal

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## Abstract

*In this paper, status of ornamental fish species, its trade and research in Nepal has briefly summarized and also way forward for the future prospects. Annual import of ornamental fish was 318.1 metric ton in 2009 and increased to 1233.0 metric ton in 2017. Imported ornamental fish value was NRs.13.3 million in 2009 and increased to NRs.153.4 million in 2017. Total 43 ornamental fish shops were found in the Kathmandu and Pokhara valley, which sales 27 exotic ornamental fish species. 15 native fish species of Nepal possess attractive color and attributes to be a potential candidates for ornamental fish. These native fish species should be domesticated and its breeding and nursing technologies should be developed. If these species are promoted, the import of ornamental fish could be lessen in the near future.*

**Keywords:** Ornamental fish, import, native fish, exotic, trade.

## Introduction

Ornamental fish describe as aquatic animals kept in the aquarium hobby, including fishes, invertebrates such as corals, crustaceans, mollusks, and also live rock<sup>1</sup>. For mind relaxation and as a hobby, now ornamental fish keeping is becoming popular<sup>2</sup>. Therefore, global trade of ornamental fish is known to be increasing day by day. Globally, Ornamental fish production is emerging as a big industry<sup>3</sup>. Developing countries are the main supplier of ornamental fish in the tropical and sub-tropical regions. More species of ornamental fish have been increased due to advancements in breeding, transport and aquarium technology in recent year. In the global ornamental fish industry, moreover 2500 fish species are included among which 60% are of freshwater origin. 30 freshwater fish species dominate in the global market of ornamental fish<sup>4</sup>. The updated list was 232 native fish species which dwells in the river, lakes, and other water resources of Nepal<sup>5</sup>, among them some native fish have ornamental value<sup>6</sup>. From 43 ornamental fish shops, ornamental fish were traded and annually about 20-25 millions of ornamental fish imported in Nepal<sup>7,8</sup>. This paper highlighted status of ornamental fish species, its trade and research in Nepal and way forward for future prospects.

## Materials and methods

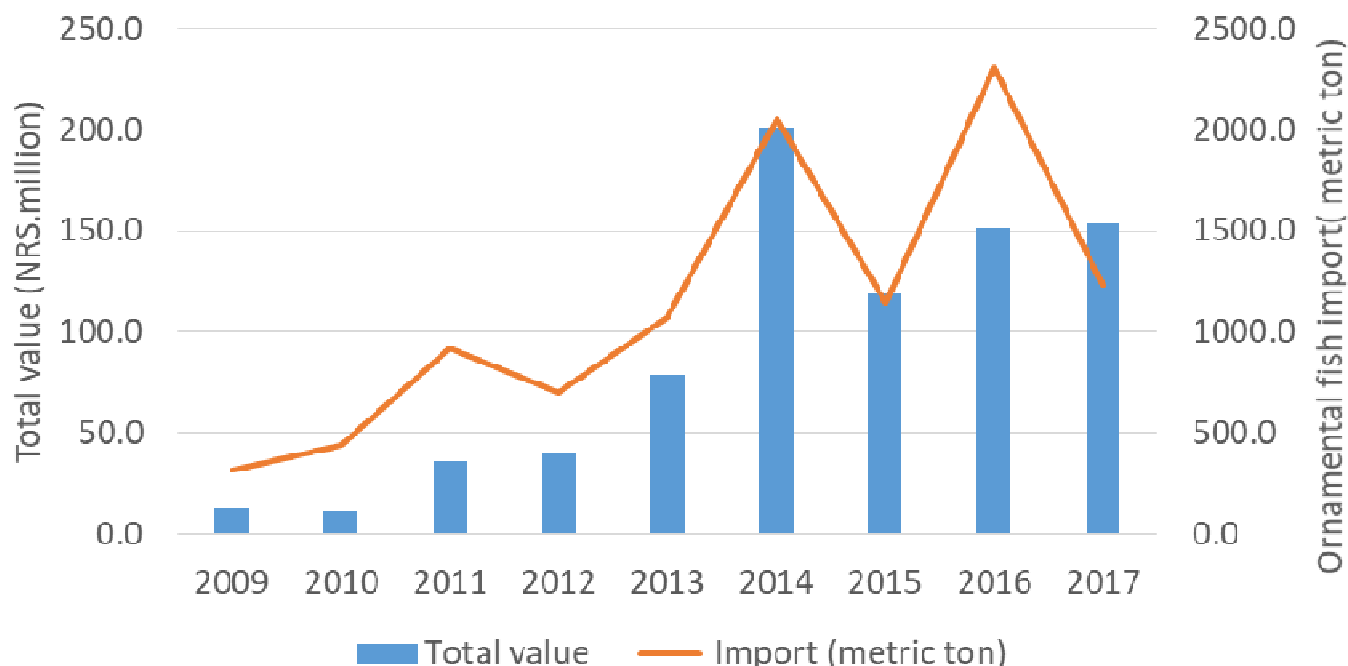
Structured interviews with 20 aquarium shops manager and 5 traders of Kathmandu and Pokhara valley were conducted from August 2018-September 2018 to know the ornamental fish species available and its price in the market. The research findings of FRS, Pokhara were compiled to know the status of ornamental fish research in Nepal. Potential species for including in ornamental fish industry were explored through field survey and literature review. The information relating to

the present status of the ornamental industry in Nepal was collected by literature surveys from published article in the journals proceedings, booklets, leaflets, national statistical reports and from online export import data bank version 1.5. Published on the website of Trade and Export Promotion Centre (TEPC), Pulchowk, Nepal.

## Results and discussion

**Status of ornamental fish import:** Most of the ornamental fish sale in the country is imported from foreign country. The ornamental fish import constitute 85% from India and 15% from Thailand, china and other countries. Import of ornamental fish is in increasing trend. Annual import of ornamental fish was 318.1 metric ton in 2009 and increased to 1233.0 metric ton in 2017 (Figure-1). The value (in Nepalese rupees) of imported ornamental fish was 13.3 million in 2009 and increased to 153.4 million in 2017 (Figure-1)<sup>9</sup>. The traders imported and distributed the ornamental fish species to the shop owner and from these shop, customer purchase fish. 27 exotic ornamental fish species were found in the aquarium shops of Katmandu and Pokhara valley (Table-1). The market price of ornamental fish range are given in the Table-1. The prices of ornamental fish varies in the market. The most sold fish were molly, guppy, gold fish, platy, sword tail, and red carp. 37 exotic aquarium fish had listed in their book “An inventory of aquarium fish of Nepal”<sup>10</sup>.

**Research status and potential ornamental native fish species:** Breeding and nursing technology of six exotic fish species and one native fish species have been developed at Fishery Research Station (FRS), Pokhara, Nepal (Table-2). In the fiscal year 2016/17, 60,810 fry of ornamental fish including fancy carp, guppy, swordtail, platy, molly and Kolisa were produced at FRS, Pokhara<sup>11</sup>.



**Figure-1:** Annual import of ornamental fish (metric ton) and their value (Nepalese rupees) in million<sup>8</sup>.

**Table-1:** Market price of ornamental fish species in aquarium shops of Kathmandu and Pokhara valley.

Fish species	Range of market prices
Dollor fish ( <i>Metynnisargenteus</i> ), Silver shark ( <i>Balantiocheilos melanopterus</i> ), Guppy ( <i>Poecilia reticulata</i> ), Bubble eye gold fish ( <i>Carassius auratus</i> ), Red tail black shark ( <i>Epalzeorhynchos bicolor</i> ), Platy ( <i>Xiphophorus maculatus</i> ), Serpae tetra ( <i>Hyphessobrycon eques</i> ), Ballonmolly ( <i>Poecilia latipinna</i> ), Sword tail ( <i>Xiphophorus hellerii</i> ), Molly ( <i>Poecilia sphenops</i> ), Bala Shark ( <i>Balantiocheilus melanopterus</i> ), Red eye tetra ( <i>Moenkhausia sanctaefilomenae</i> ), Texas cichlid ( <i>Herichthys cyanoguttatus</i> ), Glowlight Tetra ( <i>Hemigrammus erythrozonus</i> ), Siamese fighter ( <i>Betta splendens</i> )	NRs.150-200 / pair
Green tiger barb ( <i>Puntius tetrazona</i> ), Zebra fish ( <i>Brachydanio rerio</i> ), Tinfoil barb ( <i>Barbonymus schwanenfeldii</i> ), White goldfish ( <i>Carassius auratus</i> ), Brown gold fish ( <i>Carassius auratus</i> ), Red carp oranda ( <i>Carassius auratus</i> ), Lionhead Goldfish( <i>Carassius auratus</i> )	NRs. 300-500 / pair
Flower horn ( <i>Cichlasomatriamaculatum</i> ), Rayukin gold fish ( <i>Carassius auratus auratus</i> ), Oscar ( <i>Astronotus ocellatus</i> ), Angel fish ( <i>Pterophyllum scalare</i> ), Green terror ( <i>Andinoacara rivulatus</i> )	NRs.1000-3000/pair

**Table-2:** Domesticated native and exotic ornamental fish in Nepal.

Common name	Scientific name	Status
Guppy	<i>Poecilia reticulata</i>	Breeding and nursing technology developed
Sword tail	<i>Xiphophorus hellerii</i>	Breeding and nursing technology developed
Platy	<i>Xiphophorus maculatus</i>	Breeding and nursing technology developed
Koi carp	<i>Cyprinus carpio</i>	Breeding and nursing technology developed
Molly	<i>Poecilia sphenops</i>	Breeding and nursing technology developed
Gold fish	<i>Carassius auratus</i>	Breeding and nursing technology developed
Kolisa	<i>Colisa faciatus</i>	Breeding and nursing technology developed

Some native fish of Nepal possess beautiful look, attractive color and therefore, it could be a potential candidate for ornamental fish. There are 15 native fish species which possess attributes to be selected as ornamental fish and it should be domesticated for the development of ornamental fish enterprises in Nepal (Table-3). An eco-friendly process should be followed for the wild ornamental fish collection<sup>12</sup>. These native fish species should be domesticated and its breeding and nursing technologies should be developed. If these species are promoted, the import of ornamental fish could be lessen in the future.

**Development of ornamental fish agribusiness:** Training on ornamental fish breeding and farming is a prerequisite to gain knowledge and market potential for beginner in this enterprises<sup>13</sup>. Systematic marketing, provision of infrastructure and access to market information needed for proper development of agribusiness of ornamental fish. Additionally, providing incentive by the government like to establish ornamental fish production unit, considerable private investment could be attracted to this industry, which would generate additional employment opportunities to the fish growing farmers<sup>14</sup>. The ornamental fish business provides huge scope for the market for the some selected ornamental fishes<sup>15</sup>. The up-scaling of successfully developed breeding and nursing technologies of some ornamental fish species and domestication of new potential ornamental fish species will ensure to develop ornamental fish agribusiness in Nepal.

**Table-3:** Potential native fish species for ornamental fish farming in Nepal.

Common name	Scientific name	Local name
Zebra fish	<i>Brachydanio rerio</i>	Chitriopothi
Glassy perchlet / glass fish	<i>Pseudambassis ranga</i>	Cahnerbijuwa
Highfin glassy perchlet	<i>Pseudambassis lala</i>	Cahnerbijuwa
Y-loach/ Tiger loach	<i>Botia lohachata</i>	Baghi
Almorha loach	<i>Botia almorhae</i>	Baghi
Golden barb	<i>Puntius gelius</i>	Pothi
Paradise fish	<i>Ctenops nobilis</i>	Pothi
Dangila danio	<i>Danio dangila</i>	Pothi
Reticulate loach	<i>Botia geto</i>	Baghi
Mottled loach	<i>Acanthocobotis botia</i>	Pate gadela
Striped gourami	<i>Colisa lalia</i>	Kotre
Rosy barb	<i>Puntius conchionus</i>	Pothi/bhitte/sidre
Spotted snakehead	<i>Channa orientalis</i>	Bhoti
Freshwater garfish	<i>Xenontodon cancila</i>	Chuche bam
Vagra barill	<i>Barilius vagra</i>	Fageta

**Scope in Nepal:** There is huge demand of ornamental fish in the urban area of Nepal. Demand for tropical fish breeds were high by costumer and over all ornamental fish demand was in increasing trend<sup>16</sup>. It is due to hobby of peoples which is

increasing to keeping aquarium in their home for decoration and relaxation of mind. Currently, most of the offices, hotel and restaurants having an aquarium in their place. Mostly middle class household is considered to possible buyers of consumer's goods<sup>17</sup>. A total of 22 per cent of the Nepali population falls in the middle-class category<sup>18</sup>, it could be positive for the ornamental fish agribusiness. To fulfill the demand, ornamental fish has been imported from other country in Nepal. There is also huge scope of export in many countries of world such as USA, UK, Germany, Singapore, Japan, and China/Hong Kong. This ornamental fish industry could give employment opportunities for women as breeding and nursing of ornamental fish could be done successfully at the backyard of their home. More than 15 native fish species of Nepal possess ornamental fish characteristics and its potential should to be evaluated.

### Conclusion

The main reason behind to not lure farmers for ornamental fish farming is due to lack of technical knowledge. Basic training of breeding and nursing should be given to interested farmers. Strong research and development activities covering breeding and development of new ornamental fish species (native and exotic), nutrition and feeds, control of diseases and improved management of farms are needed. The network of farmers to ornamental fish traders should be developed for the smooth marketing of ornamental fish. Establishment of ornamental fish nurseries in private sector needed to promote this sector. Subsidies should be provided by government to start the enterprise.

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