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**Rima Akter**

Department of Aquaculture,  
Sylhet Agricultural University,  
Sylhet, Bangladesh

**M Shahab Uddin**

Department of Aquaculture,  
Sylhet Agricultural University,  
Sylhet, Bangladesh

**MS Islam**

Department of Coastal and  
Marine Fisheries, Sylhet  
Agricultural University, Sylhet,  
Bangladesh

**Tanwi Dey**

Department of Aquaculture,  
Sylhet Agricultural University,  
Sylhet, Bangladesh

**Shahreer Hemal**

Department of Aquaculture,  
Sher-e Bangla Agricultural  
University, Dhaka, Bangladesh

**Farjana Khanam Chadnee**

Department of Aquaculture,  
Sylhet Agricultural University,  
Sylhet, Bangladesh

**Correspondence**

**Rima Akter**

Department of Aquaculture,  
Sylhet Agricultural University,  
Sylhet, Bangladesh

## Status of ornamental fishes along with health issues in Sylhet division of Bangladesh

**Rima Akter, M Shahab Uddin, MS Islam, Tanwi Dey, Shahrear Hemal  
and Farjana Khanam Chadnee**

### Abstract

The study was conducted to assess the status of ornamental fishes along with health issues in Sylhet division for a period of six months from 5 December 2017 to 4 June 2018. Data were collected from eight upazilas under four districts in Sylhet division through questionnaire interview with aquarium shop keepers and users. In total 11 aquarium shops were found in greater Sylhet. Only 26 ornamental fish species were available at different shops and all species belonged to 4 orders- Cypriniformes (42.31%), Perciformes (38.46%), Siluriformes (15.38%) and Characiformes (3.85%). All species were exotic except one which was native and these were brought from Dhaka Katabon, Chittagong and Feni. Exotic fishes were introduced to mentioned places from Thailand, China, India and Malaysia by importer mainly three sizes such as small (1 to 1.5 inch), medium (2-5 inch) and large (8 to 12 inch), respectively. Ornamental fishes fed on supplementary feed imported from Thailand, China and Singapore. Marketing channels were quite simple namely wholesaler to retailer and other was importer to trader and trader to retailer as well as finally retailer to aquarist. Price of each pair of ornamental fish ranged between BDT 50.00-1500.00. Fewer numbers of fish were found to be sold during winter months (January and February). Winter season was not suitable like other seasons for aquarium fish because of low temperature and disease incidence. Ornamental fishes also affected by various diseases like as white spot, tail and fin rot, dropsy, mouth fungus and parasitic problems. Health management systems included gradual aeration, heating or exchange of water, changes feeding frequency and use of various types of drugs like 100-gold, Potassium, Chlorine, Doxy-A, Renamycine, Oxytetracycline, Water care and Salt.

**Keywords:** Ornamental fish, status of ornamental fishes, disease and health management

### 1. Introduction

Ornamental fish are those fish which classified as aquatic organisms that are reared as pets in a glass aquarium. They are both from freshwater and marine environments; however, approximately 90% of the species from freshwater are bred in captivity while those from marine waters are mostly captured [3]. Ornamental fish keeping is very common throughout the world and is often found in many private homes and gardens of the advanced countries in the world. About ten percent peoples in the world keep the aquarium in their homes [10]. Among the thousands of fish, only a few hundred species are currently being kept as pet fish by a large number of fish hobbyists worldwide [4]. Ornamental fish keeping and their propagation have been an attractive activity for many people, which provides not only pleasure but also financial benefits. It has been estimated that over 1.5 million people are engaged in this sector, and over 3.5 million hobbyists constitute trade in the world [2].

Disease outbreak is recognized as a significant constraint in ornamental fish production and trade affecting both the economic development and socioeconomic status of the ornamental fish farming community. Various factors have been attributed to the apparent increased incidence of disease. Environmental factors and poor water quality resulting from increased self-pollution, effluent discharge and pathogen transfer through movements of aquatic organisms appear to be the important factors underlying the cause of epizootics [1].

In Sylhet (A north-eastern division of the country) division of ornamental fish keeping is also increased day by day. Study on aquarium fishes has done in other parts of Bangladesh. But only a very few or no remarkable studies have been carried out on the status of ornamental fishes along with health issues in Sylhet division. For this reason, this research was undertaken aimed to evaluate the status of ornamental fishes along with health issues in Sylhet division of Bangladesh.

## 2. Materials and Method

The study was conducted for a period of six months from 5 December 2017 to 4 June 2018. Data were collected from four districts (2 upazilas were taken from each district) of Sylhet division to accumulate information of available aquarium shops. Available shops were surveyed weekly to collect the necessary information. In order to collect the data, field survey was conducted. The simple random sampling method was used for data collection. In total 11 aquarium shop keepers, 14 aquarium users, 14 other different stakeholders were interviewed with a questionnaire. The questionnaire mainly focused on general information about aquarium shops, fish numbers, fish stocking, water management, feeding intensity, marketing issues, and finally disease and health management issues.

## 3. Results and Discussion

### 3.1 Status of ornamental fishes in Sylhet division

The collected data on the status of ornamental fishes in Sylhet division are presented below:

#### 3.1.1 Aquarium shops

Eleven aquarium shops found in Sylhet division are shown in Table. 1. Galib <sup>[8]</sup> recorded 28 aquarium shops in Katabon market area, Dhaka. Galib and Mohsin <sup>[6]</sup> also found 7 aquarium shops in Khulna city and 3 shops in Mymensingh and Rajshahi. The findings of the present study reflect that aquarium fish business is now in very good condition in the studied division.

**Table 1:** List of aquarium shops in Sylhet division

Sylhet division	Upazilas name	Shops name	Location
Sylhet district	Sylhet sadar upazila	Love & hobby world	Dupadighir par, Sylhet
		Ronggon	Dupadighir par, Sylhet
		Jalalabad aquarium	Dupadighir par, Sylhet
		Sylhet pet shop	Dupadighir par, Sylhet
		Friends birds aquarium	Jail road, Sylhet
		New pakir mela	Kadamtali, Sylhet
	Gulapganj upazila	Angel pets	Kodom gacher tol point, Gulapganj
Habiganj district	Habiganj sadar upazila	Urnee aquarium and birds centre	Kalibari cross road Habiganj
Moulabibazar district	Moulabibazar sadar upazila	Prome aquarium and thai aluminium	Syed Muztoba Ali road (Old hospital road), Moulavibazar
		Shamim aquarium and glass house	Sreemangal road
	Sreemangal upazila	Aquarium hold and hobby park	Guhor road, Sreemangal
Sunamganj district	Have no aquarium shops		

#### 3.1.2 Ornamental fish species

Twenty six (26) ornamental fish recorded in Sylhet division are presented in Table. 2. Among them, 25 species were identified as exotic and rest one was native. All of these belonged to Cypriniformes (42.31%), Perciformes (38.46%), Siluriformes (15.38%) and Characiformes (3.85%). It was also found that the order Cypriniformes emerged as the most

dominant groups. Galib and Mohsin <sup>[7]</sup> recorded 78 varieties of exotic ornamental fishes while Rahman *et al.* <sup>[11]</sup> reported twenty eight (28) species of ornamental fishes in Khulna city. Mohsin *et al.* <sup>[9]</sup> also reported only 12 species of ornamental fishes in Rajshahi city. The present study is more or less similar in southern Bangladesh.

**Table 2:** List of available aquarium fishes in Sylhet division with scientific name and local name

Ornamental fishes			Districts			
Sl. no.	Local name	Scientific name	Sylhet (22 no. fishes)	Habiganj (8 no. fishes)	Moulavibazar (23 no. fishes)	Sunamganj
1.	Goldfish	<i>Carassius auratus</i>	√	√	√	Aquarium fish shop not found
2.	Comet	<i>Carassius auratus</i>	√	√	√	
3.	Tiger barb	<i>Barbus tetrazona</i>	√	√	√	
4.	Yellow barb	<i>Labidochromis caeruleus</i>	√	X	X	
5.	Silver shark	<i>Balantiocheilos melanopterus</i>	√	X	√	
6.	Rainbow shark	<i>Epalzeorhynchus frenatus</i>	√	X	√	
7.	Discus	<i>Symphodon discus</i>	√	X	√	
8.	Koi carp	<i>Cyprinus carpio</i>	√	√	√	
9.	Zebra	<i>Brachydanio rerio</i>	√	X	√	
10.	Black moor	<i>Carassius auratus</i>	X	√	√	Aquarium fish shop not found
11.	Rosy barb	<i>Puntius conchonius</i>	X	X	√	
12.	Golden gourami	<i>Trichogaster trichopters</i>	√	X	√	
13.	Blue gourami	<i>Trichogaster trichopters</i>	√	X	√	
14.	Kissing gourami	<i>Helostoma temmincki</i>	√	X	X	
15.	Angel	<i>Pterophllum scalare</i>	√	√	√	
16.	Parrot	<i>Scarus rivulatus</i>	√	X	√	
17.	Oscar	<i>Astronotus ocellatus</i>	√	√	√	
18.	Black moly	<i>Poecilia sphenops</i>	√	X	√	
19.	Guppy	<i>Poecilia reticulata</i>	√	X	√	
20.	Butterfly	<i>Pantodon buchholzi</i>	√	X	X	
21.	Glass fish	<i>Kryptopterus bicirrhis</i>	√	X	√	
22.	Albino catfish	<i>Clarias batrachus</i>	X	X	√	

23.	Tiger shark	<i>Pangasius hypophthalmus</i>	√	√	√
24.	Sucker mouth	<i>Plecostomus punctatus</i>	√	X	√
25.	Albino tiger shark	<i>Pangasius hypophthalmus</i>	X	X	√
26.	Silver dollar	<i>Metynnis argenteus</i>	√	X	√

The order wise distribution of ornamental fish species in Sylhet division is shown in the form of bar diagram (Fig.1).

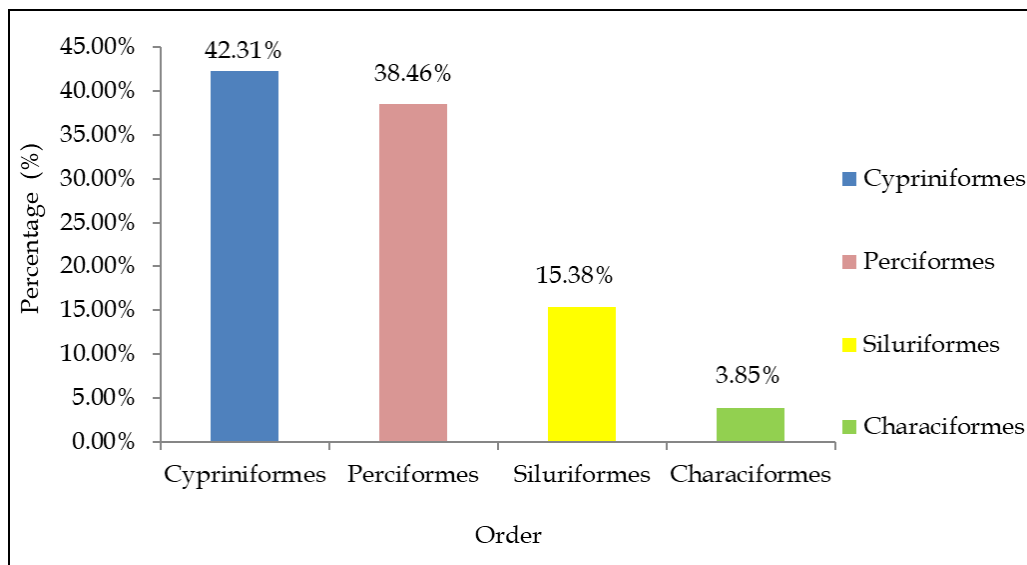


Fig 1: Diversity of orders of different ornamental fish in sylhet division

**3.1.3 Collection area of ornamental fishes and their sizes**

In Sylhet division small, medium and large sizes ornamental fishes were collected from Dhaka katabon, Feni, Chittagang (Table.3). Most of the exotic fishes were introduced these places from Thailand, China, India and Malaysia by the importer. Faruk *et al.* [4] mentioned that 20% fishes were imported from Thailand, India, Malaysia, Singapore and Australia and mainly placed in Dhaka katabon.

Table 3: Collection area of ornamental fishes and their sizes

Sylhet division	Collection area	Sizes
Sylhet district	Dhaka katabon market, Dhaka	Small: 1-1.5 inch Medium: 2-5 inch Large: 8-12 inch
	Feni	
	Chittagang	
Habiganj district	Dhaka katabon market, Dhaka	
Moulavibazar district	Dhaka katabon market, Dhaka	

**3.1.4 Sources of feeds and their prices**

It was found that all fish fed on supplementary feeds imported from Thailand, China and Singapore which was clarified by

shop owners. Live feed was not found to apply in the aquarium. During the study period several types of feeds found in the market which were Osaka, Nova and Optimum sold at a rate of BDT 120-150/200 gm (Table.4).

Table 4: Prices of feeds (BDT/200 gm)

Sl. no	Feeds name	Sylhet district	Habiganj district	Moulavibazar district
1.	Osaka green-1	130	150	140
2.	Nova	120	150	120
3.	Optimum	150	150	150
4.	Taiyo	100	X	X
5.	Tokyo	X	X	120

**3.1.5 Water quality management**

It was found that after collection of fishes, shop owners of Sylhet division stock fish in the aquarium after decoration the aquarium and filled with water. Most of the aquarist use tap and/or tube-well water for their aquarium. For water quality maintenance they do several things which are presented in Table.5.

Table 5: Water quality management

Water sources	Water change	Aerators	Water purifier / chemical
Filter water	15 days after (partially)	Water pump (Sebo, resum) Motor Air pump Power filter Spunch Sheng zhe	Water care Sea salt
Supply water	1 month later (fully)		
Deepwater	3-4 month later (fully)		

**3.1.6 Breeding**

Out of 26 aquarium fishes, only one species such as guppy sometimes breed in the aquarium but the fry could not survive and most of the time the parent fish ate their dead fry.

**3.1.7 Marketing information**

Two types of marketing channel were identified in the present study which was quite simple such as wholesaler to retailer and then retailer to the aquarist. The second one was importer

to trader and trader to a retailer and then retailer to the aquarist. Importer collected ornamental fish from Thailand, China, India and Malaysia mentioned by the respondent.

**3.1.8 Price of ornamental fish species**

The present investigation reveals that the price of ornamental fish was ranged within BDT 50.00-1500.00. The highest retail price was found for Discus fish (BDT 1500 /pair) followed by Parrot (BDT 700 /pair) and Oscar (BDT 450/pair). Galib and

Mohsin [5] recorded Silver Arowana (*Osteoglossum bicirrhosum*) as the most expensive aquarium fish species in Bangladesh costing BDT 30,000/pair. However, none of these fishes were found to be sold in the study area. Retailer price of majority fishes also varies in different districts in Sylhet division and also higher than that of Dhaka city. This may be a result of the unavailability of aquarium fish breeders in the study area and maybe for transportation cost.

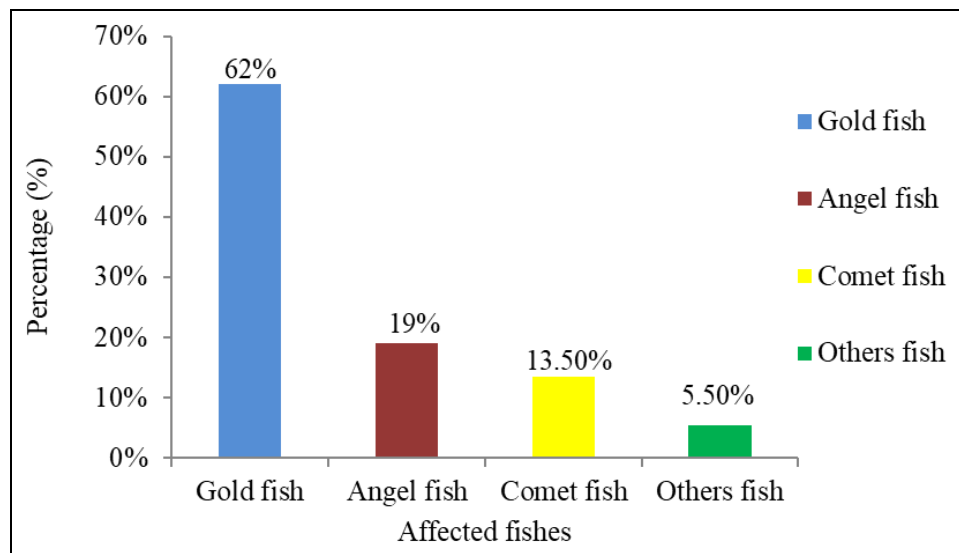
**3.2 Disease and health problems**

The disease is not so prominent in Sylhet division. Sometimes few fishes were died because of mass density in the tank or

water quality degradation. Like other captive animals, ornamental fish are vulnerable to a range of diseases. Majority of the fish affected by parasites in cooler months when the temperature is low. In summer months the intensity of the infection is lower as the parasites are unable to breed or scarcity of food particles.

**3.2.1 Disease affected species**

In the present study, it was observed that goldfish (62%) was most disease affected species followed by angel (19%), comet (13.5%) and other fishes (5.5%) (Fig.2). These findings match the findings of Faruk *et al.* [4].



**Fig 2:** Disease affected species

**3.2.2 Treatment for diseases**

Disease treatment is regular phenomena in the surveyed area. When aquarium keepers or users notice any abnormalities of fish behavior, immediately treat fish by applying drugs and

chemicals to aquarium water. A list of drugs or chemicals used for fish disease treatment in Sylhet division is shown in Table.6.

**Table 6:** A list of drugs or chemicals used for fish disease treatment in Sylhet division

Sylhet district	Sunamganj district	Habiganj district	Moulavibazar district
Potassium	No aquarium fish shop	Renamycin	Salt
100% gold		Oxytetracycline	Renamycin
100% gold + Salt mix			Use of heater
Use of water heater			Water care, Potash
Renamycin capsule			Water change
Chlorine			
Doxy-A			
Salt			

**4. Conclusions**

Ornamental fish keeping is one of the popular hobby and most of the people like this hobby because aquarium fishes really are nature's wonderful creation. But sometimes they do not make any attempt to establish an aquarium in their home due to lack of proper knowledge and essential equipment to operate an aquarium. However, the scope of this sector is vast in our country, but we cannot go ahead for unconsciousness, lack of government care and non-government support. But this sector should need to be given priority with extra care because it provides a great opportunity for entrepreneurship development and income generation.

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