Present status and future prospects of ornamental fishes at Chattogram region in Bangladesh

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Abstract: The study was conducted on present status of ornamental fishes and its future prospects from January, 2018 to December, 2018 where thirteen (13) aquarium shops were found in Chattogram. Through a well-designed research framework and questionnaire thirty six (36) aquarium species were enlisted in the study among which thirty four (34) were freshwater species and two (2) of them were marine origins. Order 'Cypriniformes'(44.12%) and family 'Cyprinidae'(38.24%) were most popular among ornamental fish market. In our survey, *Cyprinus carpio* and *Carassius auratus (Orenda)* were most abundantly found to sell in aquarium shops. *Cichlasoma Citrinellum* (1200 BDT) of order 'Perciformes' was the highest while *Pangasius pangasius* (20 BDT) of order 'Siluiriformes' was the lowest valuable aquarium species in Chattogram. Poor quality of local species and insufficient local hatchery was marked as the major constraint in ornamental fish business. Marketing channel no. 2 was found most popular where aquarium species reach to keepers from Kataban market via traders of Chattogram. 47% of customers in Chattogram didn't face any major problem and 50% of them were recorded to purchase ornamental species and other necessaries from traders of Chattogram. Major problems of aquarium business in Chattogram were sorted out through this study and some recommendations were made which may be useful for future enrichment of aquarium business in Chattogram.

Key Words: Present status, future prospects, ornamental fish, Chattogram, marketing channel

1. Introduction

Different sorts of fishes from varieties of sources contribute to the national economy of Bangladesh. But the most valuable fish are the aquarium fish or ornamental fish based on cost per unit, length and weight (Saxena, 2003; Galib and Mohsin, 2010). Generally freshwater fish farming, prawn, shrimp, crab and snail culture along with their marketing are seen across our country. But

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now-a-days it is seen that farmers are getting interested in pearl culture, crocodile culture and ornamental fish culture and trade. Globally ornamental fish keeping is treated as an industry due to its high market demand and profitability as well as it is a hobby that has been identified as second most popular and most popular type of pet in industrialized country (Olivier K. 2001). FAO estimated that approximately 16% of Australian, 13% of UK and 10% of USA households keep ornamental fish in their houses (FAO, 1998). The main suppliers of marine species are Philippine and Indonesia and they usually trade around 1450 species worldwide. The top five exporting countries are Singapore Hong Kong, USA, The Netherlands and Germany. The ornamental fish industry has been producing an average annual growth rate of 14% since 1985 (Wood, 2001). Most recently, it was estimated that 1,471 marine ornamental fish and more than 4,000 species of ornamental freshwater fish were trade globally each year (Whittington & Chong, 2007). An estimate carried out by Marine Products Export Development Authority of India shows that there are one million fish hobby is in India. The internal trade is estimated to be about U.S.$ 3.26 million and the export trade is in the vicinity of U.S.$ 0.38 million. The annual growth rate of this trade is 14% (Ghosh et al., 2003). The ornamental fish business results in rapid cash production. It has turned out a preferable one because it is easy to operate and the production and handling cost is low. Ornamental fish culture was introduced in mid of 1980 at Kataban, Dhaka (Mostafizur et al., 2009). We have so many limitations and problems. It is not easy to expand and make ornamental fish business popular overnight. But the sector is an important source of income for rural, coastal and insular communities in developing countries and is frequently a welcome provider of employment opportunities and export revenues. In spite of having availability of limited data of ornamental fish business in Bangladesh, it can be confidently said that it has already become a profitable business in almost all the big cities. This research work will highlight present status and future prospects of ornamental fishes at Chattogram region in Bangladesh.

2. Methodology

The study was conducted from January, 2018 to December, 2018 in Chattogram region and was focused on Chattogram City Corporation area. To gather specific information we selected seven points under our study area. Bayejid Bostami, Chandgaon, Pahartali, Panchlaish, Khulshi, Halishahar, Kotwali, Bakalia, Bandar, Patenga, Double Mooring areas of Chattogram City Corporation (red circle marked) were the focus areas of our study. Moreover, aquarium shops in Kataban area of Dhaka were brought under study for better understanding of marketing channel of aquarium business.

(1) (2)

Figure 1 Study area (1) Chattogram City Corporation (2) Kataban Market, Dhaka

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The research work was designed according to particular timeframe. The questionnaire was designed both in closed and open form based on species availability, demand, market price, market channel, major problems and suggestions. Data was collected through Questionnaire interviews, market study, photographs, key informative interviews and secondary literature. Several data collection parameters were set before data collection. All the Collected data obtained from the survey was accumulated, edited and finalized carefully and recorded.

3. Results

3.1 Availability of Ornamental fish shops and aquarium species in

Thirteen (13) aquarium shops were found operating in Chattogram city corporation area during the study period. Thirty six (36) aquarium fish species were found to sell during study period. Thirty four (34) species of them were freshwater species. Alam *et al.*,(2016) found Among 7shops were found in the Barisal city, 3 shops in Patuakhali town, 4 shops in Bhola town, 2 shops Pirojpur town, 1 shop in Jalokhati town and 2 shops in Borguna town. Galib *et al.*, (2013) found only 3 aquarium shops in Jessore city.

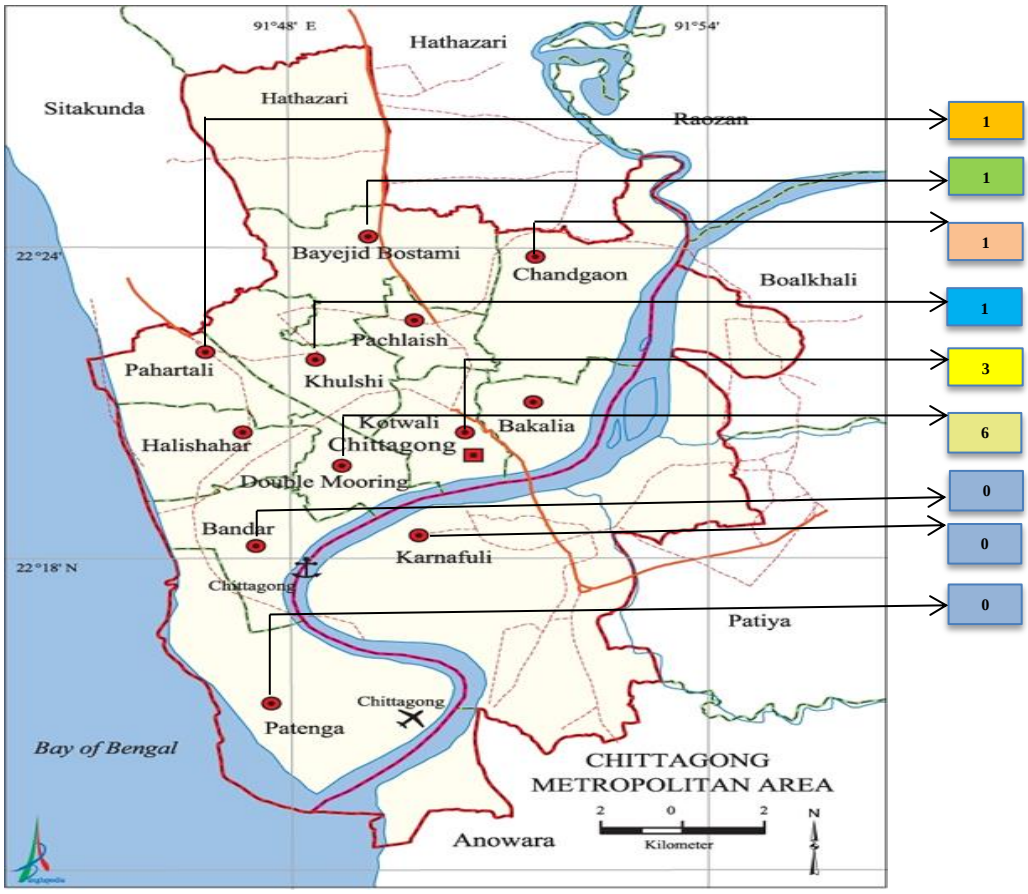

Figure 2 Location of ornamental shops in Chattogram

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Table 1 Classification of ornamental species found in Chattogram

English Name/ Common name	Scientific Name	Order	Family
1) Tiger bulb	*Puntigrus tetrazona*	Cypriniformes	Cyprinidae
2) Comet	*Carassius auratus*	Cypriniformes	Cyprinidae
3) Tiger Shark	*Sarcocheilichthys sinensis*	Cypriniformes	Cyprinidae
4) Algae Sucker	*Gyrinocheilus pustulosus*	Cypriniformes	Gyrinocheilidae
5) Black Moor	*Carassius auratus*	Cypriniformes	Cyprinidae
6) Orenda	*Carassius auratus*	Cypriniformes	Cyprinidae
7) Zebra Danio	*Danio rerio*	Cypriniformes	Cyprinidae
8) Koi Carp	*Cyprinus carpio*	Cypriniformes	Cyprinidae
9) Amur koi carp	*Cyprinus rubrofuscus*	Cypriniformes	Cyprinidae
10) Rainbow Shark	*Epalzeorhynchos frenatum*	Cypriniformes	Cyprinidae
11) Silver Shark	*Balantiocheilos melanopterus*	Cypriniformes	Cyprinidae
12) Bala Shark	*Balantiocheilos melanopterus*	Cypriniformes	Cyprinidae
13) Ticto barb	*Puntius ticto*	Cypriniformes	Cyprinidae
14) Chinese sucker	*Gyrinocheilus aymonieri*	Cypriniformes	Gyrinocheilidae
15) Chinese Carp	*Myxocyprinus asiaticus*	Cypriniformes	Catostomidae
16) Platy	*Xiphophorus maculatus*	Cyprinodontiformes	Poeciliidae
17) Guppy	*Lebistes reticulatus*	Cyprinodontiformes	Poeciliidae
18) Molly	*Poecilia sphenops*	Cyprinodontiformes	Poeciliidae
19) Sword Tail	*Xiphophorus helleri*	Cyprinodontiformes	Poeciliidae
20) Cichlid	*Aulonocara hansbaenschi*	Perciformes	Cichlidae
21) Parrot	*Cichlasoma Citrinellum*	Perciformes	Cichlidae
22) Angel fish	*Platax scalaris*	Perciformes	Ephippidae
23) Tiger fish (Local)	*Pangasius pangasius*	Siluriformes	Pangasiidae
24) Tiger Fish (Outer)	*Pangasianodon hypophthalmus*	Siluriformes	Pangasiidae
25) Pangus	*Pangasius sanitwongsei*	Siluriformes	Pangasiidae
26) Sucker	*Hypostomus plecostomus*	Siluriformes	Loricariidae
27) Albino	*Corydoras Aeneus*	Siluriformes	Callichthyidae
28) Gourami (Blue)	*Trichopodus trichopterus*	Anabantiformes	Osphronemidae
29) Gourami(Gold)	*Trichopodus trichopterus*	Anabantiformes	Osphronemidae
30) Red Gourami	*Trichogaster lalius*	Anabantiformes	Osphronemidae
31) Pacu	*Piaractus brachypomus*	Characiformes	Serrasalmidae
32) Silver Ruji (Punti)	*Metynnis argenteus*	Characiformes	Serrasalmidae
33) Oscar	*Astronotus ocellatus*	Cichliformes	Cichlidae
34) Black Angel	*Pterophyllum sp*	Cichliformes	Cichlidae
35) Yellowtail damselfish	*Chrysiptera parasema*	Perciformes	Pomacentridae
36) Bluespotted angelfish	*Chaetodontoplus caeruleopunctatus*	Perciformes	Pomacanthidae

*Number (1-34): Freshwater species

*Number (35-36): Marine water species

Alam *et al.,* (2016) found 29 varieties in Barisal Division; 20 of these were exotic and the rest were indigenous. On the other hand, Faruk *et al.*, (2012) found 26 ornamental fish species in Kataban Market, Dhaka in their study. Rahman *et al.,* (2009) found 30 species during their study in Khulna District. Galib *et al.*, (2012) also found 17 ornamental fish species in different shops in Jessore District

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while Mohsin *et al.,* (2007) listed 17 ornamental fish species in different aquarium shops in Rajshahi. So, species availability in Chattogram is richer than any other regional area.

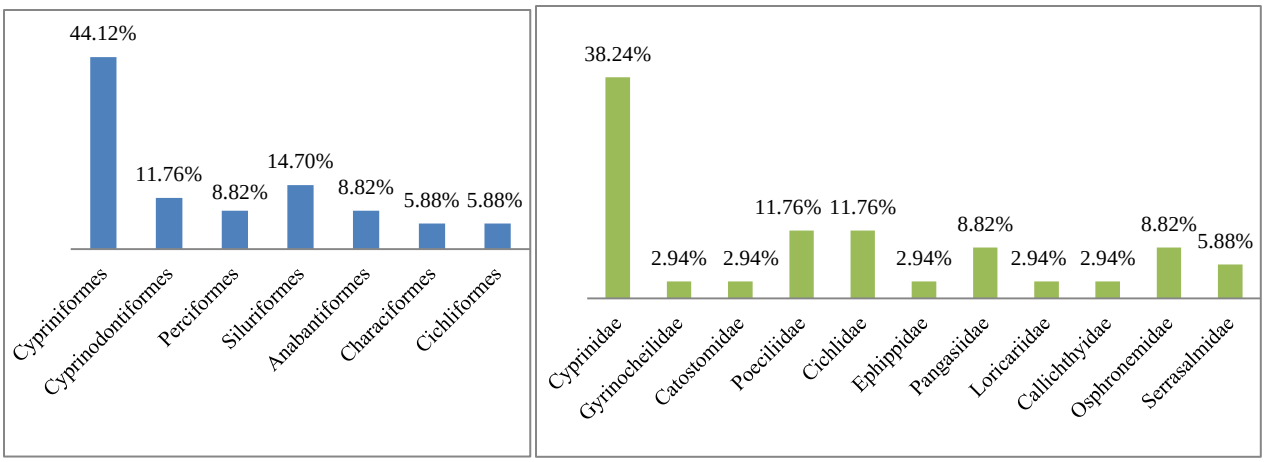

Figure 3 Availability of ornamental species according to their 'Family' and 'Order'

Alam *et al.,* (2016) reported 'Cypriniformes' as the most dominant that covered 54% of total ornamental fish species in Barisal Division. Galib *at al.,* (2012) recorded the availability of order 'Cypriniformes'(52.94%), Perciformes (23.53%) and Siluriformes (23.53%) in Jessore District. Panigrahi *et al.,* (2009) conducted a survey on indigenous ornamental fish species in market of West Bengal and found family 'Cyprinidae' as the most dominant. Mandal et al.,(2007) found the major species having a large number of ornamental fishes belong to the Order 'Cypriniformes', followed by 'Siluriformes' and 'Perciformes' North-Eastern Region of India. Both '*Carassius auratus'* and *'Cyprinus Carpio'* was equally most dominant species in ornamental fish market in Chattogram . Faruk *et al.,* (2012) found gold fish, comet fish, koi carp, angel fish, platy, guppy, fighter fish, parrot fish, and discuss fish were the most demandable species of ornamental fish in Kataban market. Mohsin *et al.,* (2012) reported Gold fish found is almost 82%, Tiger shark and Suckerfish were found in 42% and 24% aquarium orderly in aquarium market in Rajshahi. Both species availability and variety in ornammetal fish market in Chattogram are abundant than other regions of Bangladesh.

3.2 Market price of available ornamental species in Chattogram region

The price of Cichlasoma Citrinellum (1200 BDT) was found as the highest and the price of Pangasius pangasius (20 BDT) was found as the lowest among freshwater aquarium species in Chattogram in study period. The average price of order 'Siluiriformes' was the highest (434.17 BDT) and the aerage price of order 'Cyprinidontiformes' (29.25 BDT) was the lowest among freshwater ornamnetal fish species in Chattogram region.

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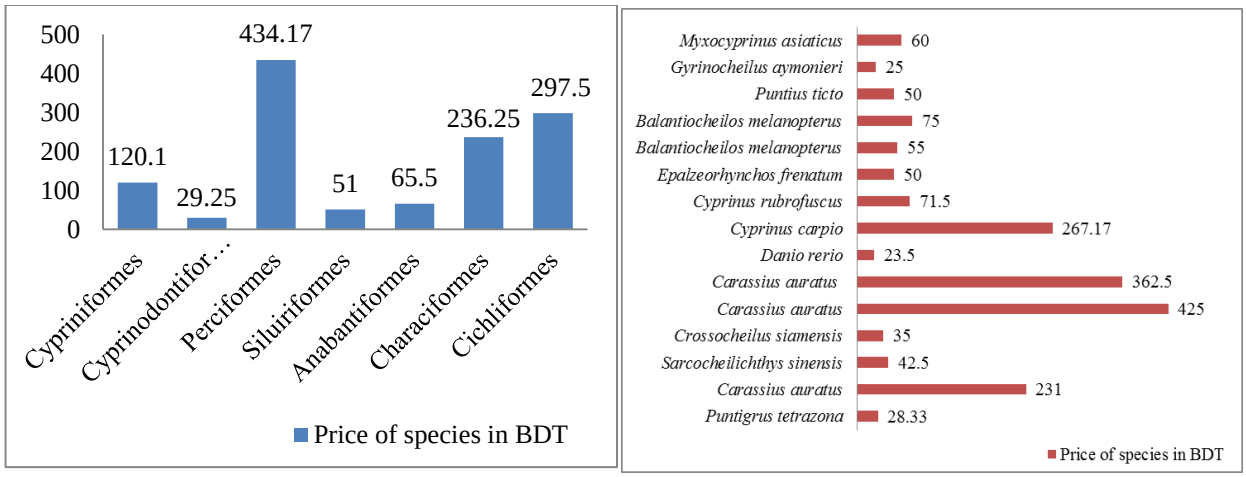

Figure 4 Price status of ornamnetal species according to their order and speceis prices of order 'Cypriniformes'

Alam *et al.,* (2016) said that Size of fish is an important indicator for pricing of ornamental fishes. The market value was varied due to size variation. Faruk *et al.,* (2012) noted the price range of ornamental species from BDT 60 to BDT 10,000 per pair where Black ghost had the highest price of BDT 10,000 per pair in Kataban market area. Alam *et al.,* (2016) found that five to six inches size Oranda (*Carassius auratus*) was found as high valued and sold at the rate BDT 600 per pair. Indigenous fish Rosy barb was sold at least price in aquarium market in Barisal. Mohsin *et al.,* (2007) reported the price range or ornamental species from BDT 30-300/pair in Rajshahi city. Galib *et al.,* (2013) found the highest retail price for large silver shark (123.33±40.41 BDT/pair) followed by goldfish (106.67±11.54 BDT/pair) and black moor (105.00±39.05 BDT/pair); Large sucker mouth catfish made the highest profit (38.33±02.89 BDT/pair) to the retails. Rahman *et al.,* (2013) reported the price range or ornamental fishes in Khulna district from BDT 10 to 1500 where Red parrot was found as the highest valued species followed by Discus (800-1000 BDT) and Oscar (400-600 BDT).

3.3 Marketing channels of ornamental fish species in Chattogram region:

The study found total three (3) marketing channels operating in Chattogram. At the same time the study found total four (4) marketing channels operating in Kataban ornamental fish market, Dhaka.

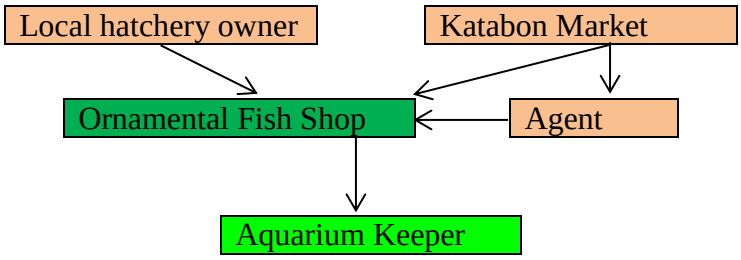

Figure 5 Marketing channel of ornamental fishes in Chattogram region

In Chattogram, most of the retailers /aquarium traders were found to purchase species directly from Kataban area. No local breeder was found during study period. Galib *et al.,* (2013) also did not find any local breeder in Jessore town throughout their study. Faruk *et al.,* (2012) also stated that 80% of the ornamental fish were supplied by the ornamental fish breeders to the wholesalers of Kataban area. Rahman *et al.,* (2009) also found few local breeders in Khulna.

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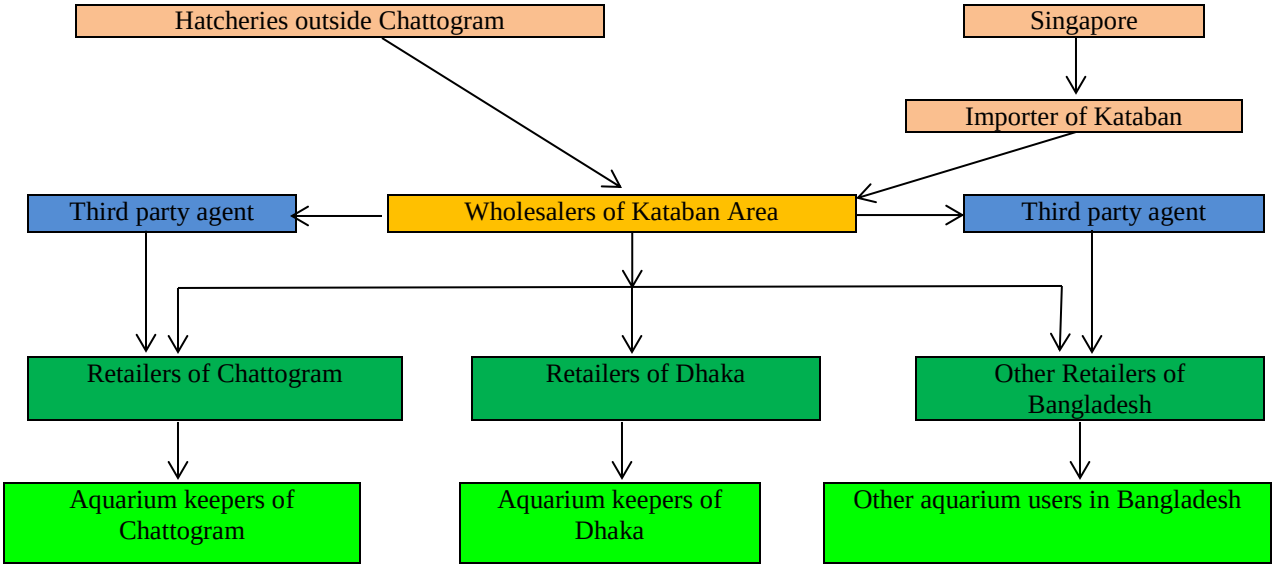

Figure 6 Marketing channel of ornamental fishes in Kataban Market, Dhaka

On the other side, four (4) marketing channel were found in Dhaka throughout study. Faruk *et al.*, (2012) stated that throughout their study they found four (4) marketing channels in Kataban area. But they did not find the presence of third party/agent in marketing channel of aquarium business in Kataban. Ornamental fish retailers throughout the country were largely dependent a lot on Kataban aquarium fish market for exported fancy ornamental species. In Chattogram, 57% aquarium traders were found to purchase ornamental species from only Kataban followed by both Rokomari Hatchery and Kataban (29%) and both Kataban and other hatchery (14%). Jayalal and Ramachandran (2012) found 287 indigenous fish species, 92 exotic fish species and 44 ornamental shrimps have been found to get exported from India. Laskar *et al.*, (2016) conducted a study on aquarium business in Agartala, India in which about 71.43% were doing retail business and 28.57% were performing as wholesaler-cum- retailer.

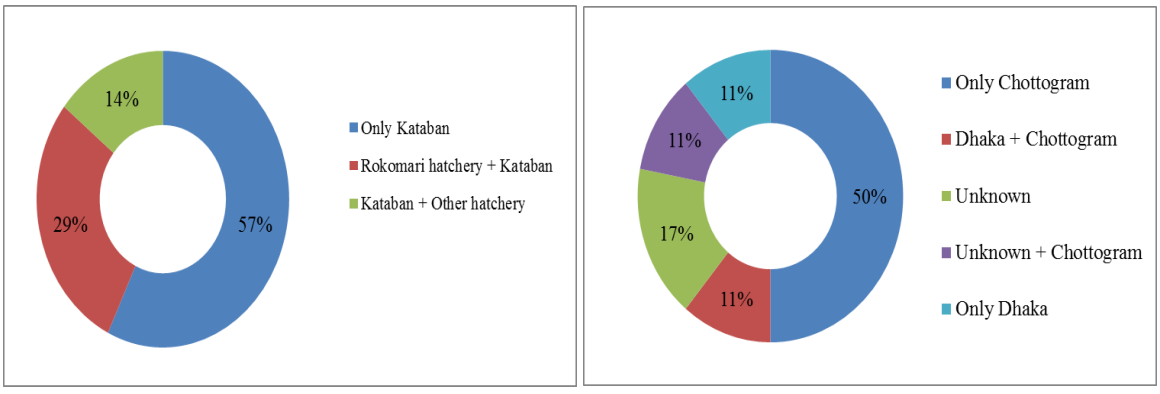

Figure7 Market sharing or ornamental fish business from traders and customers point of view

Alam *et al.*, (2016) stated that in Barisal most of the retailers were found to purchase aquarium species directly from Kataban area but some indigenous ornamental species were caught from haor, baor, river, sundarban etc. Rahman *et al.*, (2009) said that all the aquarium species in Khulna town were imported from international markets via Kataban market.

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3.5 Constraints of ornamental fish business in Chattogram region

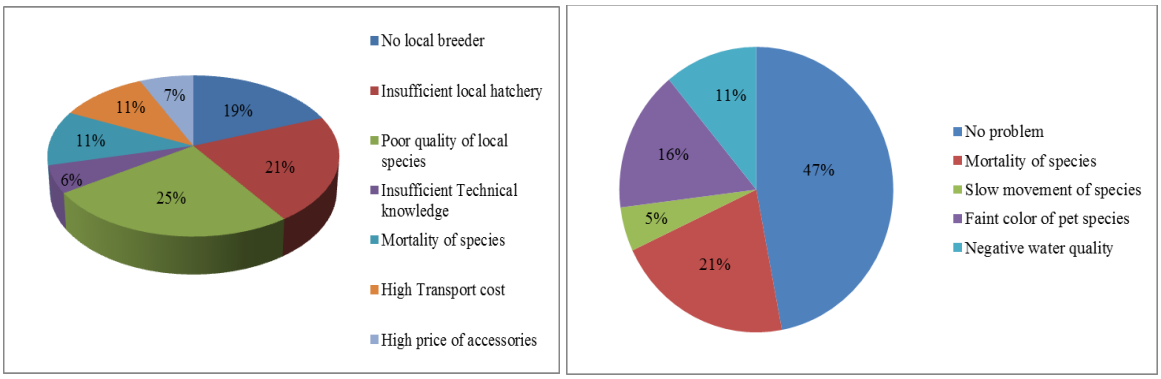

Figure 8 Major constraints of ornamental fish business from traders and customers point of view

Seven (7) major constraints were identified in aquarium business in Chattogram. According to priority marking, poor quality of species obtained the highest priority followed by insufficient local hatchery and no local breeder. 25% of total aquarium traders in Chattogram marked poor quality of species as the most major problem. About 56% of total aquarium traders in Chattogram didn't provide any type of technical support. Das *et al.,* (2013) stated that inadequate infrastructural facilities (65.62%), heavy investment in the initial stage (60.12%), lack of government incentives (57.5%) and non-availability of good quality brood fish (54.25%) were major constraints of aquarium business in Tripura, India. In our study 47% of aquarium keepers didn't face any problem followed by mortality of species (21%), faint color of pet species (16%), negative water quality (11%) and slow movement of species (5%). Mahfuz *et al.,* (2012) stated that larval rearing is a crucial part for extending the survivability rate of aquarium species. Smith *et al.,* (2012) conducted a survey where sequences from their water samples were most closely related to eleven (11) bacterial species that have the potential to cause disease in aquarium fishes. Watson *et al.,* (2002) stated that it is tough to identify particular disease in ornamental industry and also added that proper disease management is an important part of aquarium sector.

4. Conclusion

Ornamental fish business is a flourishing sector in modern business world. Many customers were found to purchase our indigenous ornamental species. But some constraints were recorded from retailers during study which should be solved as soon as possible for better enrichment of ornamental fish business in Chattogram. A good support from govt. may be a plus point for the expansion of this business. But considering all the data surveyed and comparing with other secondary data's we can hope to have a better future for ornamental fish business in Chattogram.

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