



ISSN: 2278 – 0211 (Online)

“ Some Ornamental Fishes Of Jammu Region”

Alpana Vohra

Department of Zoology, G.G.M. Sc. College, J&K, India

M. K. Jyoti

Department Of Zoology, University Of Jammu, J&K, India

Kadambari Gupta

Department Of Zoology, University Of Jammu, J&K, India

Abstract:

The global trade of ornamental fish is worth \$282 million of which India's share is mere 0.4%. In spite of the vast potential offered by the rich and varied diversity, export of ornamental fish from India continues to remain negligible.

Presently an attempt has been made to generate data on some of the indigenous fish from Jammu region, with respect to their behaviour, food and feeding habits and compatibility with other fish species under captivity, with an aim to promote the so-called forage fish to the ornamental fish fora.

1.Introduction

Aquaria filled with beautiful ornamental fish not only act as stress busters but also act as a living laboratory that engenders an enduring love and awareness of nature along with adding fuel to human curiosities. The most consequential effect of aquarium is via their role as economic engines. India's share in the global trade of ornamental fish is negligible. Though it has shown an increase from Rs.3.2 crores in 2001-02 to Rs.5.6 crores in 2006-07, the growth is quite insignificant as compared to trade in food fishes which is about Rs.8000 crore/anum (MPEDA, 2008). In order to boost the industry that is in its juvenile stage, researchers in various parts of the country are working on various aspects of ornamental fishes. (Devraj (1989), Thakur (1997), Ayyappan *et al.*, (2003), Swain *et al.*, (2003), Singhal (2003), Mercy (2005), Singh (2005), Sunita (2006), Marimuthu (2009), Sinha and Asimi (2007), Swain (2008), Panigrahi *et al.*, (2009), Hina (2010) are a few of them.

Much of the work on ornamental fish is confined to north eastern and coastal parts of the country. Jammu waters have remained virgin as far as research regarding these fishes is concerned though the water bodies of the region offer a huge potential of the same. Most of the 125 species of fish that have been reported from the region (Jyoti *et al.*, 2004) fall either under the category of food fish or forage fish.

The present investigation was undertaken in order to prepare an inventory of the possible ornamental fishes inhabiting the water bodies in and around Jammu City, located between 74⁰24' & 75⁰18'E longitude and 32⁰50' and 33⁰30' N latitude at an elevation of 1073 ft. This endeavor shall lay the foundation of the ornamental fish industry in our state.

2.Materials And Methods

The fish were caught with the help of dragnets and cast nets from ponds and slow moving streams in and around Jammu from areas like Dablerh, Biaspur, Pindi sarocha, Bhalesar, Blah, Sehi, Arnia, Gondla, Gharana, (R.S Pura), Ghou Manhasan, Sari rakwal, Tawi, Marh, Flora, Chakraili.

A few samples of each species were preserved in 10% formalin. Identification of fishes was done with help of Day's vol.-I & II (1958), Malhotra *et al.*,(1975), Jayram (1981), Gunther vol. I & II (1989), Dutta *et al.*, (2001). Live specimens were transported in plastic buckets to the laboratory and transferred to glass aquaria for study of various behavioral aspects in captivity

Name	Distribution	Availability	Body	Colour	Food and Feeding	Behaviour	Compatibility	Requirements
<i>Noemachilus botia</i>	R.S. Pura, Sehi, Flora, Marh	Rare	Fin Count: D. 12-13. P.11, V.8,A.7, C.17. Elongated, Cylindrical, Snout and lips fleshy. Mouth small, with three pairs of barbules. Snout compressed and elongated. No spine on head. Dorsal fin of moderate length commencing before ventrals. Dorsal profile nearly horizontal.	Greyish with 10-14 vertical short bars on lateral line and a number of irregular blotches above it. Rows of black spots on dorsal fin. Irregular bars on caudal fin along with a black ocellus on upper portion of its base.	Bottom feeder. Accepts pellet feed, boiled egg, bread crumbs.	Very shy. Comes to surface occasionally. Usually remains hidden among aquarium accessories.	Compatible with other fish.	Shells, Pebbles, Stones.
<i>Mystus bleekeri</i>	Sehi, Dablerh, Arnia.	Not very common	Fin Count: D.17/0,P.1/9,V.6, A.3/6, C.17. Rounded abdomen. Compressed head. Obtuse snout. Sub-terminal mouth. Upper jaw extends slightly beyond lower one. Four pairs of barbules. Maxillary ones reach and fins. Eyes supra-lateral, not visible from below ventral surface. An adipose dorsal fin present behind rayed dorsal fin. Caudal forked, upper lobe larger.	Golden with longitudinal black bands on lateral sides. A black spot behind operculum. Beautiful to look at.	Accepts boiled egg, liver pieces, pellet feed	Stays huddled together in corner of the aquarium or hidden beside stones & shells. Comes out occasionally to make a very rapid and swift tour of aquarium.	Compatible with other fish.	Create places in aquarium for it to hide.
<i>Heteropneustes fossilis</i>	Sehi ponds	Very Rare	Fin Count: D.6, P8 (1/7), A 65, C.17. Elongate body, laterally compressed. Head flattened. Narrow, Transverse mouth terminal in position. Flat snout. Barbules 8 lips slightly fleshy. Jaws unequal. Dorsal fin short, without spine. Paired fins inserted horizontally. And very long, reaching	Uniform reddish brown.	Accepts boiled egg, pellet feed.	Remains hidden among roots of floating plants in a slanting position. In absence of these it stays huddled along edges of aquarium.	Compatible	Floating plants, sheels , stones.

			caudal. Latter is rounded.					
<i>Macrogathus aculeata</i>	Sehi, Deblerh, Marh	Not very common	Fin Count: D.19/47, P. 18, A.2/49, C.15. Compressed, elongated, eel-like. Long pointed head. Long, fleshy snout. Mouth inferior. Upper jaw longer. Eyes Superior, not visible from below ventral surface. Pre-dorsal spines begins far behind end of Pectoral fins. Caudal rounded.	Brownish. Three ocelli on the dorsal fin.	Bottom feeder, accepts boiled egg, pellet feed.	Remains hidden among aquarium accessories.	Compatible with other fish	Stones, Shells to hide.
<i>Mastacembellus</i>	Sehi, Arnia	Not very Common	Eel-like, elongated, compressed. Head long, pointed. Snout long. Mouth inferior, cleft narrow. Lips thin, upper jaw longer than lower. Eyes small, superior, not visible from below ventral surface. Dorsal inserted above middle of pectoral fins. Ventrals absent. Caudal rounded		Bottom feeder. Accepts boiled egg, pellet feed.	Remains hidden among aquarium accessories.	Compatible with other species.	Shells and stones to hide.
<i>Mastacembellus armatus</i>			Fin Count: D.33/75, P.23, A.3/75.	Brown. Distinct row of round black spots along base of dorsal fin.				
<i>Mastacembellus pancalus</i>			Fin Count: D.25/32, P. 19, A.3/33, C.1, 2.	Dark greenish back, yellowish beneath. Black spots on anal fin.				
<i>Trichogaster fasciatus</i>	Sehi, Blan (R.S. Pura) , Ghou Manhasan, Gharana	Rare	Compressed. Cleft of mouth small. Pre-opercle serrated. Jaws little protractile. Single dorsal and anal fin; larger portions spinous, little portions soft. Pelvic fin – a single elongate filiform ray. Males larger and more colourful than	Dorsally greenish, dirty white ventrally. A green spot on each gill cover. 14 or more oblique orange bands on	Column as well as surface feeder. Feeds on fresh as well as dried alga, roots of floating plants	It flees on slight movement near aquarium. Stays hidden most of time among roots of floating plants. In absence of the latter, remains	Compatible with other fish	Floating plants, stones, shells.

			females.	lateral sides of body. Ventral fin edged with red and variegated with black, green & white. Dorsal & caudal fins spotted with orange.	(eichhornia). Bread crumbs, boiled egg chopped earthworm.	stationary near aquarium accessories like stones or shells. If no accessory is provided in the aquarium, these fish remain huddled together in a corner.		
<i>Botia dayi</i>	Sehi	Extremely Rare	Fin Count: D .12 (3/9), P.14, V. 8, A. 7 (2/5) Abdomen rounded. Dorsal profile elevated. Barbles 8; 4 on snout, 2 on upper jaw, 2 on mandibles. Sub-orbital spine present. Dorsal fin commences before ventral. Caudal deeply forked.	Sand coloured body covered with an irregular pattern of brown bands. Fins bear brown bands.	Bottom Feeder. Loves pellet food, accepts boiled egg.	Extremely shy and hideous. Remains hidden in the aquarium accessories like shells; marbles, pebbles. Comes out very rarely. Nibbles on food half hidden in its shelter. Becomes restless if there is no place to hide.	Compatible with other fish.	Shells, Pebbles, stones.
<i>Lepidocephalichthys guntea</i>	Sehi, Dablerh, Flora, Marh	Rare	Fin Count: D . 9 (2\7), P.8, V.8, A.7 (2\5) Body elongated, moderately compressed, back not elevated. Three pairs of barbules. Mouth ventral. A fleshy flap on lower surface of mandibles. A large, erectile, bifid suborbital spine. Dorsal fin arises midway between the orbit and base of caudal fin, opposite the ventral. Caudal entire.	Dirty yellowish with a band extending from center of snout and ending in a black ocellus above the middle of the base of caudal fin. Numerous black spots on the body and fins.	Bottom feeder. Accepts boiled egg, pellet feed. Was often seen nibbling on the faecal waste of other fish.	Very shy fish. Remain hidden most of the time behind rocks, in shells or among any provided vegetation in the aquarium. If no aquarium accessory was available the fish huddle together in a corner. Swim occasionally to the surface and that too in groups.	Compatible with other fish	Rocks, Shells , Pebbles, vegetation etc.
<i>Xenentodon cncilla</i>	R.S.Pura, Flora, Marh, Chakrailli	rare	Fin Count: D.16, P.11, V.6, A.17, C.15. Body elongated, sub	Upper surface greenish,	Carnivorous. Predate	Active and graceful swimmer. But	Predates on other fish in aquarium.	Very delicate fish. Almost zero survival

			cylindrical. Head long and pointed. Eyes lateral. Jaws prolonged into a beak. Lower jaw slightly longer. Dorsal and anal fins are posteriorly situated and opposite to each other. Lateral line runs very low.	appears to be a floating slender leaf. Lower body silvery.	ous; column feeder. Never scavenges!	beware! It bites if u put your hand in the aquarium or try to catch it!		rate during transport Oxygen packing is suggested.
<i>Danio devario</i>	Slow moving streams of Sehi, R.S Pura (Aik), Arnia, Flora, Marh, Ghou Manhasan, Gharana.	Numerous	Fin Count: D. 17, P.13, V.8,A. 19, C.19, L 1.45. Compressed, abdomen rounded. Cleft of mouth shallow, directed upwards, end of lower jaw forming a portion of dorsal profile. Barbles absent. Dorsal fin commences slightly anteriorly to anal, caudal forked.	Greenish superiorly, silvery white on lateral sides. Sides of body reticulated in centre by steel blue lines separated from one another by narrow vertical yellow bands. Three horizontal bluish lines separately by yellow ones continue backwards to caudal fin where the two lower amalgamate and passing upwards become lost on superior half of caudal fin. Fins have orange tinge at times.	Natural feeding alga. In aquaria: accepts fresh as well as dried alga, pellet food, boiled egg.	Very docile, active swimmer, playful in aquaria	Very compatible with other fishes.	Very delicate fish. Clean areated water. Cannot tolerate even slight changes in temperature or water clarity.
<i>Danio rerio</i>	Very few at Sehi (R.S. Pura)	Extremely Rare	Fin Count: D.9 (2/7), P.13, V.8, A.15, C-19,	Four metallic blue lines along the sides	No Account available	Very active, fast swimmer.	Compatibility with other fish	Clean water

			Small body, L1.28 barbles present, caudal forked.	separated by three narrow silvery ones. Three bands on caudal & anal fins. Dorsal with blue edging.				
<i>Chela bacaila</i>	Sai (R.S. Pura), Seri Rakwal (Ghou Manhasan)	Numerous	Fin Count: D.9, P.11, V.9,A. 14, C.21, LI17. Elongate and compressed; abdominal edge cutting. Mouth directed somewhat upwards; lower jaw prominent. Barbles absent. Dorsal fin short, pectorals long, caudal forked. Lateral line concave.	Olive green on dorsal surface: Shiny silver on sides. Pectoral and pelvic fins get orange tinge during breeding season.	Column feeder, grabs the food as it descends down the column. Accepts almost anything ; pellet food, diced earthworm, alga, boiled egg.	Very active fish. Very graceful swimmer, looks elegant.	Compatibility with other species.	Needs very clean water and ample space to swim. Can survive well even in non-aerated water.
<i>Esomus danricus</i>	Ponds & streams of Magguaali, Dablerh (R.S.Pura), Arnia Floia, Marh, Ghou Manhasan.	good	Fin Count: D. 8, P 15, V. 9, A.8, L1.33. Abdomen rounded. Mouth narrow, directed obliquely upwards. Barbles four, rostral short, maxillary longer. Dorsal fin arises nearer the base of caudal than head. Pectoral kept expanded like a wing. Fins have branched rays too.	Silvery sides, green dorsal surface. A broad black band extending till the base of caudal fin. Sexual dimorphism present. Females larger with swollen belly. Males smaller with slender bodies and a copper tinge on caudal peduncle.	Natural Diet : Alga In Aquaria : Accepts a wide variety-pellet food, boiled egg, fresh and dried alga, boiled vegges.	Active swimmer, playful Settles at the bottom at times. Sometimes stays very still in the column.	Compatible with other species.	Not much maintenance is required. Can survive well in non aerated, slightly hazy water as well.

<i>Rasbora rasbora</i>	Sehi, Maggaaali, Dablerh, Arnia, Chakrailli Marh, Flora, Seri Rakwaal, Ghou Manhasan.	good	Fin Count: D.9, P. 9, V.9, A.8, L1-27 Abdomen rounded. Cleft of mouth oblique. Lower jaw slightly prominent. Barbles absent. Dorsal fin originates behind the origin of ventral. Fins with branched & unbranched rays.	Silvery. A dark black band extending from eyes to base of caudal fin. A purple tinge on the dorsal part of lateral sides was observed during breeding season at chirkaili.	Natural Diet : Alga In aquarium; fresh and dried alga, boiled egg, pellet feed.	Active fish, Swims about in aquarium.	Compatible with other species.	Clean Water
<i>Puntius spp</i>	Present in almost every stream and river.	Very Common	Compressed; rounded abdomen. Head short. Arched mouth. Thin lips. No barbules. Eyes moderate, dorso lateral, not visible from below ventral surface. Dorsal fin short, inserted nearly opposite pelvic fins. Dorsal spine serrated. Anal fins short. Fins with branched & unbranched rays.	Silver sides, greenish dorsally. Characteristic black spots vary in no. & position in different species. Some species show beautiful orange line along lateral line and orange tinge on fin margins during breeding season.	Natural Feed : Alga In Aquarium : Accepts almost everything : fresh alga, dried alga, pellet feed, liver, boiled egg, boiled vegges, flour pellets or flakes.	Very docile. Active swimmer.	Compatible with other species. BUT becomes cannibal cavege or even predatory if need arises!	
<i>Barilius vagra</i>	Sehi, Arnia, Chirkali, Marh.	Good	Fin Count: D. 9 (2/7), P 16. V. 9, A. 13 (2/11), C. 19, L1.44 Elongated, compressed. Abdomen rounded. Head pointed. Mouth anterior. Eyes large, superior, not visible from below ventral surface. Lips thn. Upper jaw longer than lower. Dorsal fin intrespace between	Greenish back, silvery sides. Dark vertical bars on lateral sides of body.	Accepts fresh and dried alga, pellet feed, boiled egg.	Active and graceful swimmer. Remains active in the column.	Compatible with other fish.	Not much required excepts clean water with ample column to swim in.

			pelvic and an fins. Caudal forked.					
<i>Osterobrama cotia</i>	Sai	Average	Fin Count: D.10 (1/9), P.13, V. 11, A. 32, L1.70. Abdomen rounded. Mouth anterior. Lips thin. Upper jaw slightly longer. Barbles absent. Dorsal fin commences above the interspace between ventral and anal fins. Anal fin large. Caudal forked; lower lobe slightly longer. Scales small. Lateral line passing nearly to the centre of the base of the caudal fin.	Silvery	Column feeder. Accepts fresh as well as dried alga, boiled egg, pellet food, bread crumbs.	Docile. No aggressive behaviour.	Compatible with other species	Clean aerated water.
<i>Aspidoparia morar</i>	Sehi, Amia, Dablerh (R.S. Pura)	Abundant at Sehi	Fin Count: D.10 (2/8), P.15, V 8, A. 10 (2/8), C.19, L 1.40. Elongate, subcylindrical. Rounded abdomen. Head moderate. Snout obtuse. Mouth small, inferior. Upper jaw being longer overlaps the lower.. Barbles absent. Eyes lateral, not visible from below ventral surface. Dorsal fin inserted behind pelvics. Pectorals as long as head. Caudal forked.	Back light brown, sides silvery	Accepts fresh and dried alga, boiled egg, pellet feed.	Swims actively in the column.	Compatible with other species.	Ample space to swim, clean water.













 <p><i>Botia Dayi</i></p>	 <p><i>Noemacheilus Botia</i></p>
 <p><i>Aspidoparia Morar</i></p>	 <p><i>Lepidocephalus Guntea</i></p>
 <p><i>Oetoebrama Cotio</i></p>	 <p><i>Esomus Danricus</i></p>
 <p><i>Barilius Vagra</i></p>	 <p><i>Rasbora Rasbora</i></p>
 <p><i>Danio Devario</i></p>	 <p><i>Danio Rerio</i></p>
 <p><i>Puntius Spp</i></p>	 <p><i>Chela Bacaila</i></p>

Figure 1: Cypriniformes

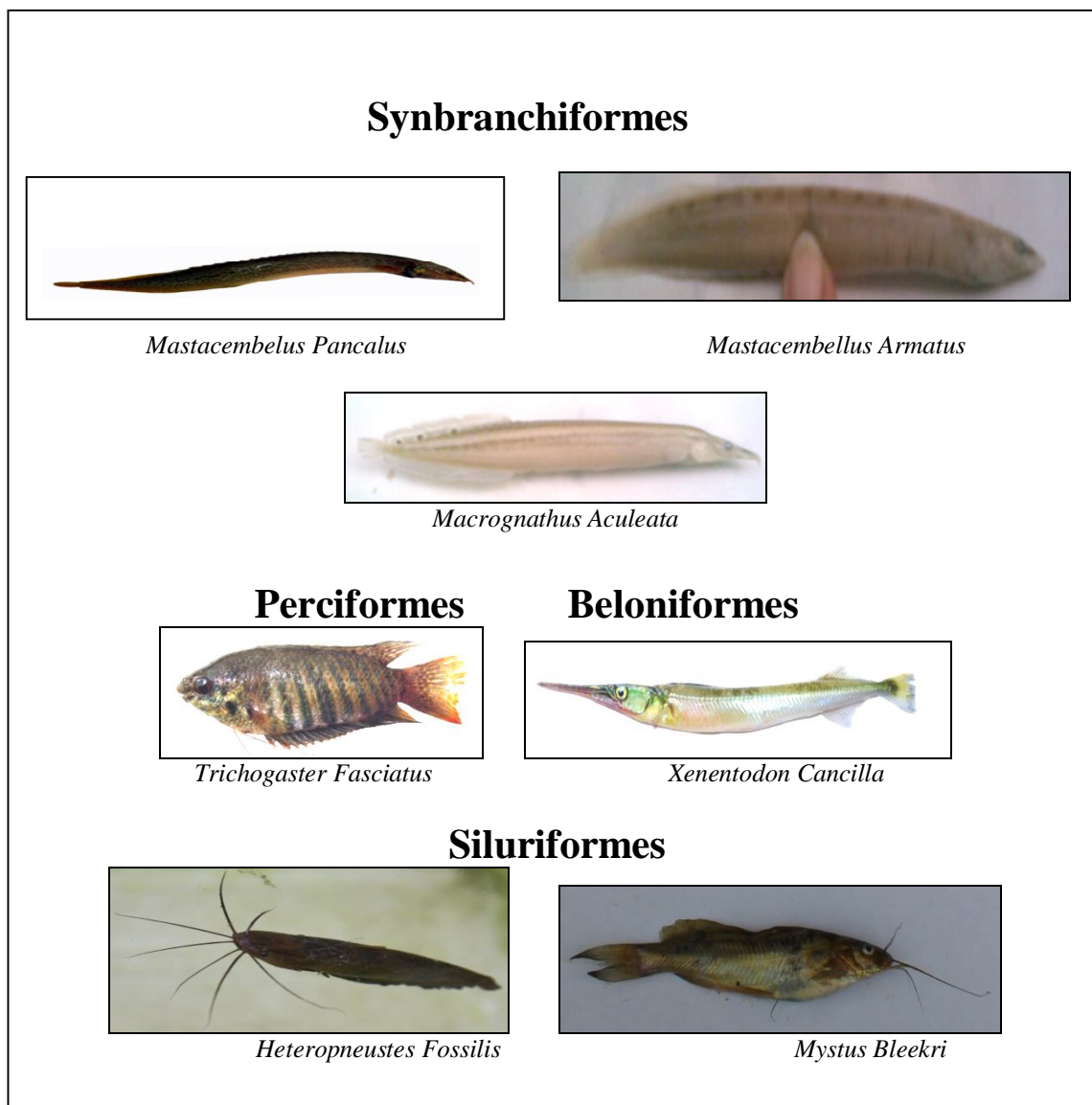


Figure 2

While most of the fishes cited above belong to order Cypriniformes, few belong to others like Synbranchiformes, Siluriformes, Perciformes and Beloniformes. Each one of these fish is unique in its own way and has the potential to drive away the stress of the beholder. The playful antics, the graceful movements, the proud postures, the hunting tactics, the coveted glances, the beautiful colours can easily enthrall any onlooker.

The fishes reported by the present author find reference in works of other authors from the region as well (Tilak, 1971; Malhotra et al., 1975; Nath, 1986; Dutta et. al., 2002, Jyoti et al., 2004; Dutta and Kaur, 2005) but they have not been recognized as ornamental fish by any of them. Due to their smaller size these fish have been generally referred either as forage fish or as links in the food chain at the best.

Review of citations on ichthyofauna of ornamental value by workers outside our state shows references to these fishes viz a viz their ornamental value in works of Nath and Day (1997), Mishra and Mirza (2001), Dutta et al., (2002), Sinha (2005) Kumar and Joshi (2008), Swain (2008) and Panjgarhi et. Al., (2009). This supports present author's checklist of ornamental fishes. The reports of MPEDA and Sinha (2005) have unveiled the identity of many fishes enlisted in the present work as internationally accepted aquarium fishes, thereby, lending a definite lift to the status of so-called forage fishes of our region to the ornamental fora.

These ornamental fishes fetch hefty prices by way of export as documented by Swain et al., (2008). This piece of information should further ring a bell in the reader's mind and entice him/her to acknowledge the hidden potentialities in the ornamental fish fauna of our region.

The present work is, therefore, not a mere inventory of ornamental fishes of the region but an eye opener to the fact that while some states of the country are way ahead of ours in the field of ornamental fish trade, Jammu Region is still staggering behind with its

dwindling populace of undermined ornamental ichthyofauna which otherwise could be a fertile field of entrepreneurship and contribute to rural development too, as is done in Assam (Ingouchouba, 2005) and West Bengal (Panigrahi, et. al., 2010) Techniques like hybridization and color manipulation through diet are known to create wonders in fishes. These can be taken up for our indigenous fish in order to enhance their ornamental value. Moreover, elaborate studies on these fishes, with regards to their habit, habitat feeding and breeding biology are also required in order to save these fishes facing depletion owing to pollution, habitat destruction, over fishing, destructive fishing and competition offered by exotic breeds.

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