Skill India
कौशल भारत-कुशल भारत

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

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Participant Handbook

Sector
Agriculture and Allied

Sub-Sector
Fisheries

Occupation
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Ornamental Fish Technician

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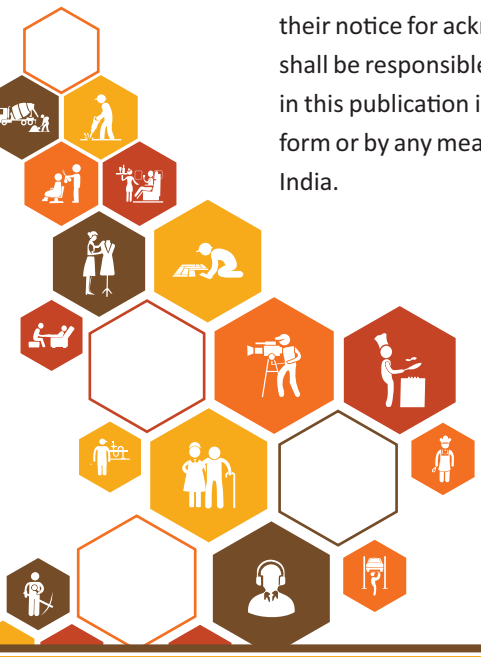

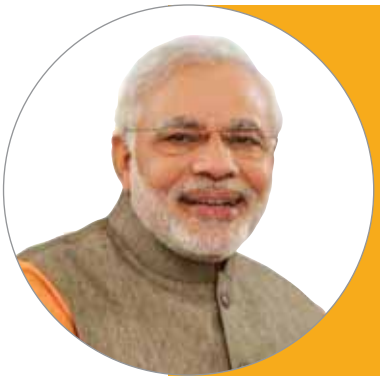

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Shri Narendra Modi
Prime Minister of India

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for

SKILLING CONTENT: PARTICIPANT HANDBOOK

Complying to National Occupational Standards of
Job Role/ Qualification Pack: **'Ornamental Fish Technician'** QP No. **'AGR/Q4910 NSQF Level 4'**

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It is expected that this publication would meet the complete requirements of QP/NOS based training delivery, we welcome the suggestions from users, Industry experts and other stakeholders for any improvement in future.

About this book

An Ornamental Fish Technician is responsible for breeding and producing seeds and rearing of the seedlings to adult size as per the Ornamental Fish Technician Qualification Pack (QP). An Ornamental Fish Technician is responsible for breeding, seed production and rearing of seeds to adult size in tanks or ponds of various fish of domestic and export value. An Ornamental Fish Technician must have a passion for ornamental fish. S/he should also have the ability to plan, organize, and prioritize the activities at farm. The individual must possess decent communication skills. In addition, the individual must have stamina and professional hygiene. The individual also should have an aesthetic sense. The trainee will enhance his/her knowledge under the guidance of the trainer in the following skills:

- **Knowledge and Understanding**: Adequate operational knowledge and understanding to perform the required task
- **Performance Criteria**: Gain the required skills through hands on training and perform the required operations within the specified standards
- **Professional Skills**: Ability to make operational decisions pertaining to the area of work.

This job-role requires the participant to work independently and be comfortable in making decisions pertaining to his/her area of work. The participant should be result oriented and responsible for his/her own working and learning. The participant should also be able to demonstrate skills of using various tools and decision making for instant problem solving.

Symbols Used


Key Learning Outcomes


Steps


Time


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1. Introduction

Unit 1.1 - Definition, status and prospect of ornamental fish culture

Unit 1.2 - Ornamental fish diversity, their classification and identification

Key Learning Outcomes

At the end of this module, you will be able to:

- Describe the role of an aquarist
- Describe acquaint with the status of ornamental fish culture in India and Globe
- Explain different types of common ornamental fishes available for culture in fresh and marine waters

UNIT 1.1: Definition, Status and Prospect of Ornamental Fish Culture

Unit Objectives

At the end of this unit, you will be able to:

- Recognize the scope to adopt of ornamental fish culture as an entrepreneur
- Describe global scenario of ornamental fish culture

1.1.1 Ornamental Fish Culture

The culture of colorful attractive fish in glass aquarium for aesthetic use is called ornamental fish culture. The beautiful, tiny, colored fishes or ornamental fishes are peaceful in nature, and suitable for keeping in captivity. These lovely fishes are usually kept in aquarium made up of glass and decorated with accessories viz. toys, plants, ceramics structures etc. for beautification. It displays the attractive fish living in natural environment decorated with aquatic plants, rocks, gravel, toys etc. and maintaining environmental parameters in tanks/aquarium by using aerators, heaters, filters, lights to control water movement, temperature, suspended organic matter, illumination etc. besides feeding. Keeping ornamental fish in glass tank is a very old and popular hobby. More and more people are getting attracted to this hobby and due to growing interest in aquarium keeping it has resulted in steady expansion in its trade in more than 125 countries. Household aquariums are more popular; therefore, less than 1% of the global market for ornamental fishes belongs to the public aquaria sector. Most of the ornamental fish is available from developing countries in the tropical and sub-tropical regions. The international trade in ornamental fish breeding and culture provides employment opportunities for thousands of rural people in developing countries. As a result of advancements in breeding, transport and aquarium technology, more and more fish species are being recognized almost every year. The ornamental fisheries is recognized by many developing countries for employment generation and livelihoods. For sustainable growth, ecologically suitable culture systems must be developed by evolving micro, small and medium enterprises.

World Scenario

According to FAO (2012), export earnings from ornamental fish trade is US $ 362 million and more than 60% of the production came from the household of developing countries. The wholesale value of the global ornamental fish trade is estimated to be US$ 1 billion while the retail value is US $ 6 billion. The entire industry, including accessories and fish feed, is estimated to be worth more than US $14 billion. The top exporting country (with percentage contribution to global trade) is Singapore (19.8%), followed by Czech Republic (7.8%), Japan (7.4%), Malaysia (7.3%), Indonesia (5.3%), Israel (4.3%), Thailand (3.9%), Sri Lanka (2.9%) and India (0.008%). The largest importer of ornamental fish is USA, followed by Europe and Japan. The emerging markets are China and South Africa.

More than 2,500 species are traded and some 30-35 species of freshwater fish dominate the market. The trade with an annual growth rate of 8 per cent offers a lot of scope for development. Individual hobbyists (home aquaria) control an overwhelming 99% of the market for ornamental fishes while only 1% of the market is controlled by public aquaria and research institutes. Global market demand is likely to grow to US $ 7 billion from present level of US $ 5.26 billion. Singapore being the largest producer of farm-bred ornamental fish handling about 50% of the available species and varieties is aptly called the "Ornamental Capital of the World". There are about 64 ornamental fish farms in Singapore that are registered – ten of these for the breeding of Dragon fish – occupying a total area of 133 ha. The Dragon Fish or "Royal" Fish that has a life span of 100 years is a protected species and can be traded only by permit; each fish could be fetching up to $ 50,000 in the retail market. Though Malaysia has entered the field only 30 years ago, Penang is already famous for Discus, Perak for Koi, Goldfish and Dwarf Gourami and Johore for live bearers like Guppy, Platy, Molly and Swordtail. Ornamental fish and aquatic plants have been assigned a priority in the Third National Agricultural Policy (1998-2010) of Malaysia with plans to produce 800 million ornamentals by 2010. In recent years, a mass propagation technique has been developed in Thailand to conserve the wild types of aquatic plants and is becoming an important industry. To promote the ornamental fish industry, Thai government has set up an Ornamental Fish Research and Development Institute to provide training and technical knowledge to the local breeders to promote the export.

Indian Scenario

India is lagging behind in ornamental fish trade and its overall domestic ornamental fish trade is worth about Rs. 300 crore and contribution to global export remains only 0.32%. Indian waters are considered as "JEWEL MINE" for domestic traders, exporters and hobbyists of ornamental fish. In India, the potential of ornamental fish is very high. As per an estimate of MPEDA India has the potential to earn about US $ 5 billion as foreign exchange by export of ornamental fishes. Ornamental fish trade started in India in 1969 with an export earning of US $ 0.04 million. At present about 210 indigenous ornamental fishes are being exported from India to different countries. Kolkata dominates in export trade, followed by Mumbai and Chennai. Registration of exporters, fishing vessels and other processing entities is one of the statutory functions of MPEDA under Section 9(2) (b) and (h) of the MPEDA Act 1972. Registration as an exporter is granted under section 9(2) (h) of Marine Products Export Development Authority (MPEDA) Act 1972 read with rules 40-42 of MPEDA Rules, 1972. Registration is done for the following categories viz. Manufacturer Exporter, Merchant, Route through Merchant & Ornamental Fish Exporter and also for entities such as Fishing Vessels, Processing Plants, Storage Premises, Conveyance, Pre-Processing Centers, Live Fish Handling Centre, Chilled Fish Handling Centre, Dried Fish Handling Centre, Independent Cold Storages And ice plants. Total 55 exporters registered for ornamental fish export, out of which the highest as 15 are from Kolkata and Chennai each, 11 from Kochi, 6 from Mumbai, 4 from Mangalore and 2 from Quilon (as on 15 July 2014).

India is known in international fish trade for its wild caught ornamental fish. The domestic market is also very good, which is mainly based on domestically bred exotic species. About 80% of ornamental fishes are exported to international market via Kolkata airport, of which major share comes from North Eastern States of India. Other states leading in the trade are Kerala and Tamil Nadu. However, there is a vast unexplored potential for production of indigenous ornamental fishes and promoting ornamental fish culture in India. The scientific and systematic exploration of these potential will be a source to provide employment to women SHGs, entrepreneurs and unemployed youth to generate income, improve their livelihoods and earn considerable foreign exchange. The world's ornamental fish trade consists of about 80% freshwater species and 20% being the marine species whose contribution is increasing by establishing their breeding and rearing technology. Presently, 95% marine fishes are collected from the wild and only 5% fish are being bred in farm. The overall contribution of the cultured species is 90%, only 10% of the fish traded being collected from the wild because most of the freshwater species can be bred and cultured, A total of over 500 species of ornamental fishes are available in India having contribution of about 300 marine and over 200 in freshwaters. Among fresh water species, around 100 species each are known from the Western Ghats and the north eastern India, while, amongst the marine ornamentals, 165 species belonging to 20 families have been intensively studied and found to hold a great promise for export. Of the freshwater ones, 53 species from northeastern India have been designated to have a great potential for domestic and international trade that would help in the development of rural economy with special opportunities for the gender sensitive region with the matriarch system.

Opportunities for women/Unemployed youth

Women and youth have shown enthusiasm and expertise in different aspects of ornamental fish trade in India.

- Capture of fishes from wild;
- Culture of fishes;
- Breeding of fishes;
- Export of fishes; and
- Marketing of accessories.

Capture of wild stock: Wild ornamental fishes are abundant in those rivers and streams, which are flowing through dense forests and mountain terrains in India. These species such as devil catfish have good export potential and are ruling the foreign market of aquarium fish and is reaping a value of about 1 to 2 $ a piece. In addition to these rivers and streams, the long coastline and several islands, which are stretching around with lagoons and coral reefs of India, abound in varieties of colorful marine fishes. These sources are presently exploited minimally at present but offer scope to enterprising persons to earn livelihood.

It is essential to create awareness among people, for them to take up capture of these fishes and market them to earn maximum. Some of our indigenous fishes, which are often called as trash fish, have been identified in the recent period as ornamental/aquarium fishes. The tiny colisa, loaches, danio, gouramis of Indian origin are dominating in the market. However, no project has been undertaken by State Fisheries Departments on identification, survey, conservation, proper exploitation and mass production of ornamental fishes.

Culture of Ornamental fishes: For culture of ornamental fish, the required infrastructure facilities have to be set up supported by the application of relevant technical knowhow. Rearing of commercial ornamental species can be undertaken in re-circulation and flow-through water systems designed and established to maintain good water quality and to stimulate natural running water conditions. Different types of live feeds and artificial feeds are available in the market to rear ornamental fishes. Several workers pursue research work on production of indigenous feed for these fishes. While in every major metropolitan city there are aquarists who own few small ponds/cement tanks where they breed many freshwater ornamental fishes exclusively for domestic markets, this industry needs to be adequately popularized. Women aquarists are more caring for the small babies of tiny fishes. It is required to encourage them by providing technical knowhow in local languages. Colorful handbooks on ornamental fish keeping and maintenance of aquarium are available for the hobbyists but the poor women entrepreneurs cannot afford that.

Breeding of ornamental fishes: The demand for ornamental fishes in domestic as well as International market is increasing rapidly. As such, sustainable exploitation of wild stocks of these fishes will not be able to meet the increasing demand. It is therefore essential to evolve appropriate breeding and rearing technology to produce both marine and freshwater ornamental fishes under controlled conditions in land-based infrastructural facilities. The technologies of breeding different varieties of ornamental fishes have now been established to such an extent that most of the aquarium fishes can not be bred as a household activity, both in rural and urban areas. Most of the aquarists breed only the common varieties of aquarium fishes like gold fish, guppys, platys, mollys, swordtails, gouramis, tetras, barbs etc., which are easy to breed. In order to enable to householders to upgrade their capabilities, the State Government should come forward to encourage aquarists and interested entrepreneurs to take up farming of these highly priced fishes. Simultaneously, technologies on the production of live fish food and nutritionally balanced dry feed in various forms such as pellets, powder, flakes, microcapsules etc., should be developed up by technologists so that they can be extended to the hobbyists and entrepreneurs.

Export of ornamental fishes: In spite of having immense natural ornamental fish resources and technology for breeding and rearing them, not much of headway has been in the country in the matter

of export of ornamental fishes to foreign countries. So as to move ahead in these endeavors, MPEDA, Kochi has prepared a directory of ornamental fish exporters in which they have identified 25 ornamental fish exporters in India especially, in Kolkata, Mumbai, Chennai and Kochi. The farmers and exporters have to be brought together, for the purpose of integrating the production and export activities in a manner that would be mutually beneficial. The establishment of such a relationship would push up the level of exports of ornamental fishes from the country, particularly to USA, Europe and Japan. It has been reported that 8% of the estimated 86 million houses in USA keep aquaria in their homes, 14% of the estimated 21 million houses in Great Britain, 4% of homes in Belgium and Holland and 5% of German and 20% of Dutch houses keep fish. China, South Africa and several other countries too have the hobby of ornamental fish keeping. In view of the huge demand for export of ornamental, it is possible to undertake mass production of ornamental fish by farmers, to be made available to exporters. In fact producers can become exporters so as to have the advantage of earning foreign exchange themselves. However, it is found that the women cooperative societies, which are breeding and rearing the ornamental fishes, are not getting justice in the market. They are not getting their reasonable share from exporters. It is due to lack of knowledge and communication problem. They are not aware of the export market and the outlets from where they can send the fishes directly. It is important to sensitized them and make aware about the marketing system

Marketing of accessories: In addition to the breeding, rearing and export of ornamental fishes, this trade has generated an ancillary business of abroad. For beautification and maintenance of aquaria, rocks and gravels, artificial toys, natural and artificial plants, dry feed, live feed, aerators, filters are in use. There is a great demand for all these accessories. Different types of decorative toys with beautiful colorations, attractive shapes that are non-toxic to fishes are gaining popularity in the market. Submerged varieties of simulated aquatic ornamental plants from the natural habitat of ornamental fishes for placement in aquaria, have a developing market. There are many aquatic plants for aquaria and some of them are costlier than ornamental fishes. Commonly available attractive aquatic plants are ribbon grass (Vallisneria spp.), arrow weed (Sagittaria spp.), spike rush (Acorus spp.), lace plant (Aponogeton spp.), faneard (Cabomba spp.), Indian water fern (Ceratopteris spp.), hornwort (Certophyllum spp.), Amazon Sword Plant (Echinoderus spp.), Hydrilla (Hydrilla spp.), Mint (Ludwigia spp.), Water Star (Hygrophila spp.), etc. Most of these plants can be grown and multiplied under controlled conditions. Artificial, non-toxic plants are also available in the market and are now increasingly attracting customers due to their blended colors and durability.

Apart from plants, a number of decorative toys are available for imparting an attractive look to an aquarium. They include plastic bubblers in the shape of mermaid, underwater diver, oyster shell, angler human skull, tortoise, frog etc. These can be efforts to improve the material used for the manufacture of these, and also quality, texture, colour and material of these toys so that their utility can be enhanced, thereby providing a diversified activities status to the trade. Women can earn considerably from it even if they take it as a part-time engagement.

Notes

UNIT 1.2: Ornamental Fish Diversity Their Classification and Identification

Unit Objectives

At the end of this unit, you will be able to:

- Identify and classify different types of ornamental fish
- Infer the behavior of various ornamental fish

1.2.1 Ornamental Fish Diversity Their Classification and Identification

- Most of the freshwater ornamental fish are belonging to the family Cyprinidae, Balitoridae and Cobitidae under the order Cypriniformes.
- There are two hotspot of freshwater ornamental fish biodiversity in India, among which, the North-east India harbor about 250 species and Western Ghats harbor about 155 species of indigenous ornamental origin.
- 261 egg layers and 27 live bearing exotic fish are very popular among the hobbyists in India.
- India offers a number of high priced fresh water ornamental fish like Barca snakehead,Channabarca, Kerala queen, Puntiusdenisoni etc.

Freshwater exotic ornamental fishes: Neon tetra, Angel fish, Betta, Gold fish, Gourami, Discus, Arowana, Oscar, Barb, Danio are popular in ornamental trade. Except Arowana, all of these exotic ornamental fishes are commonly bred in India.

Marine ornamental fishes : Common clown (Amphiprionpercula), False clown (A. ocellaris), Orange anemone fish (A. sandaracinos), three spot damsel (Dascyllustrimaculatus), Humbug damsel (D. aruvanus), Blue damsel (Pomacentruscaeruleus), Peacock damselfish (P. pavo).

Freshwater Ornamental Fishes

Ornamental fishes can be classifies into two groups, namely

- Live bearers &
- Egg layers.
-

Common live-bearer fishes

1. Guppy (Poecilia reticulata)

Its origin is in South America, north of Amazon, but now it is enjoying worldwide distribution. It devours mosquito larvae thereby helping in control of mosquitoes. These are tiny fishes with bright colours, looking very beautiful in groups. Male fish are more colorful than females and may reach up to 2.5 to 3.5 cm in length, while the female are usually larger in size when fully grown. They grow better in the water having temperature ranges 20-25 oC .

2. Sword tail (Xiphophorus helleri)

It is originated from Central and North-Eastern South America. The identifying character is the magnificent sword like extension formed by the lower rays of the caudal fin in the male fish, which serves the purpose as an adornment. The fish prefers slightly saline water and voraciously devours live feed. The usual length of the female fish is 12 cm while that of male is 8 cm. Phenomenon of sex reversal is observed in this species.

3. Platy (Xiphophorus maculatus)

Platys are of many types-namely red platy, orange platy, green platy and duckcido platy according to the colour. It is also originated from Central and North-Eastern South America. The usual length of male platy ranges from 4- 4.5 cm and that of female from 5 to 5.5 cm. They bred once in three weeks and deliver about 75 young ones every time.

4. Mollies (Poecilia reticulata)

Origin of the fish is same as that of platy and swordtail. These fishes are easily bred and the usual length reaches 9-10 cm. They prefer saline water and breed every month, delivering around 250 young ones at a time. They reach marketable size within two months.

Common egg layer fishes

Most of the aquarium species are egg layers showing external fertilization. Fishes of this group can be further divided in to five sub-groups

Egg scatters

These species scatter their adhesive or non-adhesive eggs to the substrate viz. plants or allow them to float on the surface. The egg-scatters either spawn in pairs or in groups. There is no parental care given and even they eat their own eggs. They produce good number of eggs. eg. Goldfish (Carrasius auratus) and tetras.

Egg depositors

In this case the eggs are either laid on a substrate, like a stone or plant leaf or even individually placed among fine leafed plants like java moss. Egg depositors can be categorized into two groups- one that care for their eggs and another that do not care. The egg depositors that care for their eggs are cichlids and some catfishes. Cyprinids and various catfishes come under the egg-depositors group that does not care for their young ones. These species lays their eggs on a surface and the eggs are abandoned. These species usually do not eat their eggs. eg. Angel (Pterophyllum scalare), Discuss (Symphysodon discuss) and some catfishes.

Egg Buriers

Fishes in this group usually lives in the seasonal waters that dry up at some time of the year. The majority of eggs burrier lay their eggs in mud. The maturity time for parents is very short and they lay eggs before dying when the water dries up. The eggs remain in a dormant stage until rains stimulate hatching. eg. Annual killfish.

Mouth Brooders

Mouth-brooders, as name suggests, carry their eggs or larvae in their mouth. Mouth brooders can be grouped into ovophiles and larvophiles. Ovophiles are egg loving mouth brooder. They lay their eggs in pits and then female sucked up into the mouth. The small numbers of large eggs hatch in the mother's mouth and the fry remain there for some time. Many cichlids and some labyrinth fish are the example of ovophiles mouth-brooders. In contrast, Larvophile or larvae loving mouth-brooder fish lay their eggs on a substrate and guard them until the eggs hatch. After hatching the female picks up the fry and keeps them in her mouth. When the fry can feed for themselves, they are released. eg. Cichlids.

Nest builders

There are some fish species that build different types of nest for their eggs. The nest ranges from a simple pit dug into the gravel to the elaborate bubble nest formed with saliva coated bubbles eg. Gouramis, Anabantids and some catfishes.

Fig 1.2.1 Black angel

Fig 1.2.2 Goldfish

Fig 1.2.3 Guppy

Fig 1.2.4 Rosy barb

Fig 1.2.5 Tiger barb

Fig 1.2.6 Sword tail

Fresh water ornamental fishes

Fig 1.2.7 Siamese fighter

Fig 1.2.8 Blue gourami

Fig 1.2.9 Devil catfish

Fig 1.2.10 Suckerfish

Fig 1.2.11 Loach

Fig 1.2.12 Blue danio

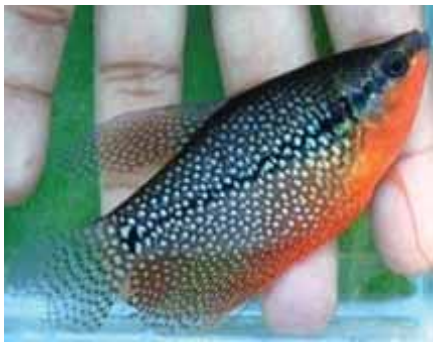

Fig 1.2.13 Pearl gourami

Fig 1.2.14 Fighter fish

Marine ornamental fishes

Fig 1.2.15 Fighter fish

Fig 1.2.16 Blennis

Fig 1.2.17 Trigger fish

Fig 1.2.18 Gobi

Fig 1.2.19 Bi color angel fish

Fig 1.2.20 Lion fish

Commercially Important Ornamental Fish

The top ten groups of ornamental fishes are the tetra, guppy, goldfish, catfish, molly, gourami, platy, loach, cichlid and the barb. Of the 30-35 favorite's species of aquarists, only a few are Asian in origin. The most common are Brachydanio rerio and Puntius conchonius. Now a day's preference is being given for keeping large-sized fishes in the aquaria probably due to their hardy nature and attracting visibility. National Bureau of Fish Genetic Resources (NBFGR) organized a workshop at Cochin in 1998 in which about 30 species of highly priced ornamental fishes were identified for culture including Puntius denisoni. The hill stream fishes belonging to the genera Balitora, Barilius, Garra, Homaloptera, Lepidocephalus, Nemacheilus and Psilorhynchus are considered to be coldwater ornamental fish species. These are generally found in warmer waters too and could be easily acclimated to the stagnant water conditions found in the aquaria. Some of the other endemic species from the south are Aplocheilus lineatus, A. blockii, Danio malabaricus, D. aequipinnatus, Macropodus cupanus, Oryzias melastigma, Pristolepis marginata, Puntius melanampyx, P. mahecola, P.arulius, P. narayani, P. setnai, Etroplus maculatus and E. canarensis that are known to have an immense potential for export.

A report shows that a few of the indigenous freshwater fish has also been bred. They are Colisa sota, C. fasciata, Oreichthys cosuatis, Gagata cenia, Danio dangila, Nandus nandus, Puntius melanampyx, Puntius melanostigma, Puntius filamentosus, P. vittatus, Parluciosoma daniconius, Pristolepis marginata, Garra mullya, Nemacheilus triangularis, Danio malabaricus, Esomus danricus, Etroplus maculatus and Macropodus cupanus. Of the marine species, the clown fish and sea horses are of considerable importance.

Characteristics of Ornamental Fishes

1800 species of ornamental species are recorded from Indian waters and majority of the global trade is based on freshwater exotic ornamental fishes including both classified and non-classified types.

Classified ornamental fishes: The small fishes like Botia dario, Danio dangila, Puntius shalynius and Schisturareticulo fasciatus, which can be reared in aquarium throughout their life span are called classified ornamental fishes.

Non-classified ornamental fishes: Larger food fishes like Neolissocheilus hexagonolepis, Labeo gonius, Channa marulius and Rita rita which are treated as ornamental fish only in their juvenile stages are non-classified ornamental fishes.

Fig 1.2.21 Large ornamental fish

Ornamental Characteristics

Aquarium fishes are attractive due to their diversified ornamental values such as:

- Beautiful colour (e.g. Tetradoncutcutia, Colisalalia),
- Stripes and banding pattern (e.g. Botiadario, Botiastriata)
- Attractive appearance (e.g. Notopteruschitala),
- Keeled abdomen (e.gChela laubuca),
- Peaceful nature and calm behaviour (e.g. Ctenopsnobilis),
- Transparent body (e.g. Pseudambassisbaculis),
- Hardiness (e.g. Daniodangila, Brachydaniorerio),
- Compatibility (e.g. Puntiusshalynius),
- Beautiful jumping behaviour (e.g. Esomusdanricus),
- Chameleonic habit (e.g. Badisbadis),
- Charming predatory habit (e.g. Glossogobiusgiuris) and
- Longevity (e.g, Anabas testudineous, Channaorientalis).

Exercise

Multiple Choice Question (MCQ)

I. Select the right answer

1)	Origin of ornamental fish culture	
	a) **China**	b) Japan
	c) England	d) UAE
2)	Modern aquarium fish keeping began in the year	
	a) 1990	b) 1760
	c) **1805**	d) 1899
3)	First public display aquarium opened at Regent's Park in	
	a) 1993	b) 1960
	c) **1853**	d) 1800
4)	One of the best ornamental fish keeping facilities in the world exists at Singapore, which is called	
	a) Aquarium	b) Gallery
	c) Pendalium	d) **Oceanarium**

II. Identify the fish:

a

b

c

5)	In India, the first public Aquaria in India was established in middle of the 20th century at	
	a) Vishakhapatnam	b) Kolkata
	c) Cochin	d) **Mumbai**
6)	Small fishes like *Botiadario, Daniodangila, Puntiusshalynius* and *Schisturareticulofasciatus* which can be reared in aquarium throughout their life span are called	
	a) Young ornamentals	**b) Classified ornamental fishes**
	c) Coloured ornamentals	d) Split ornamentals
7)	Larger food fishes like *Neolissocheilushexagonolepis, Labeogonius, Channamarulius* and *Rita rita* which are treated as ornamental fish in their juvenile stages are called	
	a) Young ornamentals	b) **Non Classified ornamental fishes**
	c) Coloured ornamentals	d) Split ornamentals
8)	Keeled abdomen is an ornamental characteristic that exists in the fish	
	a) Notopteruschitala	b) Badisbadis
	c) ***Chela laubuca***	d) Labeorohita
9)	In India, this region is a biodiversity hotspot	
	a) **Western Ghats**	b) Eastern Ghats
	c) North India	d) Karnataka
10)	High priced fresh water native ornamental fish in India	
	a) Arowana	b) Goldfish
	c) **Barca snakehead**	d) Angel fish

Notes