

UNIT 3 TYPES OF FISH

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1.0 INTRODUCTION

Fishes vary not only in their habitat characteristics such as water source and type, but also in body skeleton. Thus, fish can be either temperate or tropical types, freshwater or saltwater types, or bony and cartilaginous types. Each sub-group consists of a large and variable number of fish types and distinguishing characteristics.

2.0 OBJECTIVES

By the end of this unit, you should be able to explain:

- the various ways of grouping fish species, and
- the fish species found in different groups.

3.0 Main Content

Fish are classified using various schemes. These bases of classification include

3.1 Water Source: Fish are classified as

3.1.1 Tropical fish

These are the fish that live in either salt or freshwater but which need a warm (tropical) medium or temperature to live. The types can be Tropical Freshwater species or Tropical Marine species.

3.1.2 Coldwater fish

These fish can be salt or fresh water fish that need colder water temperatures. Like tropical fish, coldwater fish can also be Coldwater Fresh water species or Coldwater Marine species.

3.2 Type of Water Body: Fish are classified

3.2.1 Freshwater Fish

These are the fish that live in freshwater, usually found in inland rivers and streams of most continents. They can be as colourful as marine fish and yet need less care. Most freshwater fish in the ornamental hobby are tropical fish, which require a heater. Freshwater fish can be further grouped on the basis of temperament, lighting needs, habitat needs and swimming level, as shown below:

Fish type	Temperament	Lighting needs	Habitat	Swimming level	Size (cm)
Shovelnose (catfish)	peaceful	reduced	plants/rocks	bottom	2.8''
Bristlenose(algal eater)	peaceful	reduced	plants/rocks	bottom	2''
Giant (crab)	peaceful	bright	plants/rocks	all	4.75''
Butterfish	peaceful	reduced	plants/rocks	top	4.75''
Pacu	peaceful	bright	plants/rocks	middle	20''
Spotted Puffer	aggressive	bright	plants/rocks	all	6''

Culled from: Starting a Fish Tank

Fresh water fish can also be classified on the basis of shared characteristics of categories as

- i. killifishers and livebearers- livebearers, killi fishes, mosquito fishes, gambusies, pup fishes;
- ii. darters and sculpins- darters, sculpins, longperches;
- iii. flatfishes, sunfishes and perchlike fishes- flounders, sunfish, perches, basses, crappies;
- iv. elongate fishes with long snouts- paddle fish, sturgeons, pikes, pickerels, gars;
- v. eel-like fishes and catfishes- lampreys, eels, bowfins, catfish, bullheads;
- vi. minnows and shiners- daces, shiners, long minnows, shads;
- vii. trouts and salmons- whitefishes, trouts, salmons, graylings;

3.2.2 Marinefish

These are the fish that live in salty seawater. Most commonly, marine fishes need tropical climate.

Saltwater types of fish are also categorized as above into

- i. sharklike fishes- sharks, dogfishes, ratfishes;
- ii. skates and raylike fishes- rays, mantas, stringrays, skates
- iii. eellike fishes and long dorsal-finned fishes- hagfishes, morays, wolffishes, eelpouts, midshipmen;
- iv. drumlike fishes, cods, trouts and catfishes- trouts, drums, sea catfishes, clds, cobias;
- v. sticklebacks- sticklebacks;
- vi. long, slender fishes- cutlass fishes, flying fishes, needlefishes, pipefishes, trumpetfishes;
- vii. seahorses- seahorses;
- viii. fishes with spiny rays or tapering bodies- rockfishes, scorpion fishes, lizard fishes, sculpins;
- ix. basslike fishes, grunts and snappers- temperate basses, seaperches, grunts, snappers;
- x. angelfishes and disc-like fishes- angelfishes, opaleyes, spadefishes, surgeonfishes, butterflyfishes;
- xi. parrotfishes and wrasses- parrotfishes, wrasses;
- xii. spindle-shaped fishes and large, robust fishes- jacks, whitefishes, tunas, bonefish, bonitos;
- xiii. flatfishes- sanddabs, halibuts, flounders, soles; and
- xiv. puffers, boxfishes and fishes with lures- goosefishes, boxfishes, filefishes, puffers, lunpfish.

3.3 Basis of Body Skeleton

Fish can be divided into three groups.

3.3.1 Jawless Fish

These include the lampreys (Class Cephalaspidomorphi) and hagfish (Class Myxini/Hyperotreti).

3.3.2 Lampreys

A lamprey (lamprey eel; Family Petromyzontidae) is a jawless fish with toothed, funnel-like sucking mouth. They are known for boring into the flesh of other fish to suck their blood; they constitute a minority and have vastly different morphology and physiology. They have no scales but measure up to 13-100 cm. Also, they have no paired fins but have large eyes, one nostril on the top of the head and seven gills on each side. They have cartilaginous skeleton and are regarded as the sister taxon of jawed vertebrates (gnathostomes) hence, not classified within the Vertebrata itself. Lampreys live mostly in coastal and fresh waters, and are found in most temperate regions except Africa, because of their low tolerance to high water temperatures. Lampreys begin life as burrowing freshwater larvae (ammocoetes) but transform in a metamorphosis into adults after 5-7 years, which exhibit efficient predatory/parasitic life. The adult attaches its mouth to a fish, secreting an anticoagulant to the host and feeding on the blood and tissues of the host. This phase lasts about 18 months. There are 40 recorded species in nine genera and three sub-families, namely Geotriinae, Mordaciinae, and Petromyzontinae.

3.3.3 Hagfish

These are primitive marine vertebrates. They exhibit unusual feeding habits and slime-producing capabilities. They are long (1/2 m in average length), vermiform and can exude copious quantities of a sticky slime or mucus, which finds use as escape strategy. An adult hagfish can secrete enough slime to turn a large bucket into gel in a matter of minutes. Hagfish have elongated, 'eel-like' bodies and paddle-like tails. Their colours depend on the species and range from pink to blue-grey, with or without black or white mottling. Eyes may be vestigial or absent. They have no true fins or jaws, but there are six barbells around their mouth and a single nostril. Unlike Gnathostomata, they have a pair of horizontally moving structures with tooth-like projections for pulling off food. The hagfish enter both living and dead fish, feeding on the insides, and polychaete marine worms. They cannot enter through the skin but

they often enter through mouth, gills or anus. Like leeches, they have a sluggish metabolism and can go months between feedings.

3.3.4 Cartilaginous Fish

This consists of fishes that belong to the Class Chondrichthyes. The characteristics are presence of internal jaws (palatoquadrate), paired appendages (pectoral, pelvic fins) supported by an internal skeleton which provide more efficient locomotion, three semi-circular canals; teeth-modified dermal scales; more proficient predators than the jawless fish; internal skeleton composed of cartilage, which may be prismatically calcified, placoid scales, second gill arch (hyoid) involved in jaw suspension, swim bladder or lung absent, have oil filled liver to provide natural buoyancy, claspers (modified pelvic fins) present in males (internal fertilization), persistent notochord; ventral mouth; and replacement teeth rows. There are two subclasses, namely Subclass Elasmobranchii (comprising the rays, skates, and sharks) and Subclass Holocephali (consisting the Chimaeras/rayfishes). The categories of ray fishes are Subcategories Pristiformes (sawfishes), Rajiformes (common rays and skates), and Torpendiniformes (electric rays).

3.3.5 Bony Fish

This consists of fishes found in the Class Osteichthyes. Like all fishes, the fishes are cold-blooded vertebrates that breathe through gills and use fins for swimming. Bony fishes have several distinguishing features, namely a skeleton of bone, scale, paired fins, one pair of gill openings, jaws and paired nostrils. The class includes the largest number (23, 500) of living species of all scientific classes of vertebrates. It consists of 73 fish families ranging from the Sturgeons, Herring and Tarpon to the Deep Sea Anglers. They account for about 96% of all fish species, except the Chondrichthyes, the Myxini (hagfishes) and the Cephalaspidomorphi (lampreys). The subclasses are

- i) **Subclass Dipnoi (lungfishes)**, which have an upper jaw fused to the brain case, fused teeth, and the presence of an air-breathing organ that opens to the oesophagus. A lungfish's canal fin is continuous with its dorsal and anal fins. The pelvic and pectoral fins are long and tubular.
- ii) **Subclass Crossopterygii (coelacanth)**, which have cosmoid scales, two dorsal fins and fleshy paired fins that contain skeletal elements.
- iii) **Subclass Actinopterygii** (all other living bony fishes), which are characterized by rayed fins.

4.0 CONCLUSION

In this unit, you have learned that fish differ widely in their type, depending on water source, type of water body and body skeleton.

5.0 SUMMARY

Fish types are differentiated by the location of water source used as habitat (warm tropical, cold temperate), type of water (freshwater, saltwater or marine) and body skeleton, whereby fish can be jawless, bony or cartilaginous.

6.0 TUTOR-MARKED ASSIGNMENT

- 1) List the bases for classifying fish.
- 2) Differentiate coldwater and tropical fish types.
- 3) Write short notes on bony fish.

7.0 REFERENCES/FURTHER READING

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UNIT 4 IMPORTANCE OF FOREST

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