

## **Diversity of Fish**

**Fish are widely diverse and can be categorized in many ways; write them?**

- 1- Species
- 2- Habitat
- 3-Life span
- 4-Size
- 5- Breeding behaviour
- 6- Brooding behaviour
- 7- Feeding behaviour
- 8- Vision
- 9- Locomotion
- 10- Toxicity
- 11- Human use

### **5. Breeding behaviour**

Normally, in very deep waters, fish cannot find a mate easily. There is no light, so some species depend on bioluminescence. Others are hermaphrodites, which doubles their chances of producing both eggs and sperm when an encounter does occur.

#### **5.1 Grouper fish;**

Female groupers change their sex to male if no male is available. Grouper are protogynous hermaphrodites, who school in harems of three to fifteen females. When no male is available, the most aggressive and largest females change their sex to male

#### **5.2 Toadfish;**

Male toadfish sing at up to 100 decibels with their swim bladders to attract mates.

#### **5.3 Angler female;**

The female anglerfish releases pheromones to attract tiny males. When a male finds her, he bites on to her and never leaves. The male atrophies into nothing more than a pair of gonads.

## **5.4 Hammerheads Sharks;**

Hammerhead Sharks are able to breed parthenogenetically, that is asexually where the growth and development of embryos occur without fertilization.

## **6. Brooding behaviour**

Fish adopt a variety of strategies for nurturing their brood. Sharks, for example, variously follow three protocols with their brood. Most sharks, including lamniformes are ovoviviparous, bearing their young after they nourish themselves after hatching and before birth, by consuming the remnants of the yolk and other available nutrients. Some animals, predominantly fish such as cardinal fish practice mouthbrooding, caring for their offspring by holding them in the mouth of a parent for extended periods of time.

### **6.1 Chain catshark;**

The chain catshark is oviparous, laying its eggs to hatch in the water.

### **6.2 Great white shark;**

The great white shark is ovoviviparous, gestating eggs in the uterus for 11 months before giving birth.

### **6.3Female of cichlid;**

Mouthbrooding fry which can be seen by looking out her mouth, Fish from the cichlid's family native to Lake Tanganyika in East Africa.

## **7. Feeding behaviour**

There are three basic methods by which food is gathered into the mouths of fish: by suction feeding, by ram feeding, and by manipulation or biting. Early fish families had inflexible jaws limited to little more than opening and closing. Many fish capture their prey using both suction pressures combined with a forward motion of the body or jaw.

### **7.1 Archerfish;**

Fish catch prey on land-based insects and other small animals by accurately shooting them down with water droplets from their specialized mouths. Archerfish are remarkably accurate; adults almost always hit the target on the first shot. They can bring down insects such as grasshoppers, spiders and butterflies on a branch of an overhanging tree, 3 meter above the water's

surface. This is partially due to good eyesight, but also the ability to compensate for light refraction.

### **7.2 Silver arowana;**

Silver arowana, also called monkey fish, can leap two meters out of the water to capture prey. They usually swim near the surface of the water waiting for potential prey. Their main diets consist of crustaceans, insects, smaller fishes and other animals that float on the water surface. The remains of small birds, bats, and snakes have also been found in their stomachs.

### **7.3 Cookie-cutter shark;**

The cookie-cutter shark is a small dogfish, the cookie-cutter attaches to its larger prey with its suctional lips, and then protrudes its teeth to remove a symmetrical scoop of flesh, is a pomfret with bite wounds from a cookie cutter shark.

### **7.4 Stripped bass;**

Striped bass eats smaller fish.

### **7.5 Chinese algae eaters;**

Chinese algae eaters are kept in aquaria to control algae.

### **7.6 Mangrove jack fish;**

The mangrove jack eats crustaceans

### **7.7 Puffer fish;**

Many puffer fish species crush the shells of molluscs

### **7.8 Bucktoothed tetra;**

The bucktoothed tetra eats scales off other fishes and Molluscs.

### **7.9 Cleaner fish;**

Cleaner fish are fish that provide a service to other fish species by removing dead skin and ectoparasites. Also, cleaner fish eat parasites off other fish such as blue streak cleaner wrasse and Caribbean cleaning goby. Similar behaviour is found in a number of species of cleaner shrimp.

### **7.10 Doctor fish;**

Doctor fish nibbling on the disease skin of patients. Doctor fish (nibble fish) live and breed in the outdoor pools of some Turkish spas, where they feed on the skin of patients with psoriasis. The cleaner fish is only consuming the affected and dead areas of the skin, leaving the healthy skin to recover.

## **8. Vision**

Many species of fish can see the ultraviolet end of the spectrum, beyond the violet. Mesopelagic fishes live in deeper waters, in the twilight zone down to depths of 1000 metres, where the amount of sunlight available is not sufficient to support photosynthesis. These fish are adapted for an active life under low light conditions.

### **8.1 Four-eyed fish;**

Four-eyed fish have eyes raised above the top of the head and divided in two different parts, so that they can see under and above water surface at the same time. They actually have only two eyes, but their eyes are specially adapted for their surface-dwelling lifestyle. The eyes are positioned on the top of the head, and the fish floats at the water surface with only the lower half of each eye underwater. The upper half of the eye is adapted for vision in air, the lower half for vision in water. These fish spend most of their time at the surface of the water.

### **8.2 Two strip damselfish;**

The two-stripe damselfish can signal secret alarms by reflecting ultraviolet to other fish of its species. The two-stripe damselfish has ultraviolet-reflecting colouration which they use as an alarm signal to other fish of their species. Predatory species cannot see this signal if their vision is not sensitive to ultraviolet, while yet other species use ultraviolet to make social or sexual signals.

## **9. Locomotion**

### **9.1 Dwarf seahorse;**

Slowest-moving fishes are the sea horses. The slowest of these, the tiny dwarf seahorse, attains about five feet per hour.

## **9.2 Atlantic Bluefin tuna;**

Atlantic bluefin tuna is capable of sustained high-speed cruising, and maintains high muscle temperatures so it can cruise in relatively cold waters.

## **9.3 Indo- Pacific sailfish;**

Among the fasted sprinters are the Indo-Pacific sailfish and the black marlin. Both have been recorded in a burst at over 110 kilometres per hour. For the sailfish, that is equivalent to 12 to 15 times their own length per second.

# **10. Toxicity**

Toxic fish produce strong poisons in their bodies. Both poisonous fish and venomous fish, contain toxins, but deliver them differently.

-Venomous fish bite, sting, or stab, causing an envenomation. Venomous fish don't necessarily cause poisoning if they are eaten, since the digestive system often destroys the venom.

-But poisonous fish do not bite, sting, or stab to deliver their toxins, but they are poisonous to eat because they contain toxins in their body that the digestive system does not destroy.

There are about 1200 species of venomous fish. There are more venomous fish than venomous snakes. In fact, there are more venomous fish than the combined total of all other venomous vertebrates. Venomous fish are found in almost all habitats around the world, but mostly in tropical waters. They wound over 50,000 people every year.

## **10.1 Puffer fish;**

Puffer fish is the most poisonous fish in the world. It is the second most poisonous vertebrate after the golden dart frog. It paralyzes the diaphragm muscles of human victims, who can die from suffocation.

## **10.2 Spotted trunkfish;**

Spotted trunkfish secretes a ciguatera toxin from glands on its skin. The spotted trunkfish is a reef fish which secretes a colourless ciguatera toxin. Predators as large as nurse sharks can die as a result of eating a trunkfish.

## **10.3 Lionfish;**

Head on view of the beautiful lionfish, a venomous coral reef fish. Unlike stonefish, a lionfish can only release venom if something strikes its spines. Although not native to the U.S. coast, lionfish have appeared around Florida

and have spread up the coast to New York. They are attractive aquarium fish, sometimes used to stock ponds, and may have been washed into the sea during a hurricane. Lionfish can aggressively dart at scuba divers and attempt to puncture their facemask with their venomous spines.

#### **10.4 Stingray;**

Can sting with their stinger, such envenomation can occur to people who wade in shallow water and tread on them. This can be avoided by shuffling through the sand or stamping on the bottom, as the rays detect this and swim away.

### **11. Human use;**

Fish are required by humans for their value as commercial food fish, recreational sport fish, and decorative aquarium fish and in tourism attracting snorkelers and SCUBA divers. There are fish for;

- Food fish, Oily fish, whitefish
- Farmed fish
- Fish used for medicinal purposes

Fish keeping is another popular, and there is a large international trade for aquarium fish. Snorkelling and SCUBA diving attract millions of people to beaches, coral reefs, lakes, and other water bodies to view and look at fish and other marine life.

#### **Some example for human use**

**11.1 Yellowfin tuna;** are now being fished as a replacement for the depleted southern bluefin tuna.

**11.2 Anchovy;** these schooling anchovies are forage fish.

**11.3 Atlantic cod;** fisheries have collapsed.

**11.4 Goldfish;** Such as goldfish have been kept in decorative ponds for centuries in China and Japan.