

Unit Five: Oceanic Nekton Part One - The Fishes

Nekton

- Nekton are organisms capable of sustained _____ against the water motion. This group includes fish, mammals, reptiles and birds.
 - Holoepipelagic organisms spend their entire lives in the _____
 - blue shark, marlins, tunas
 - Meroepipelagic organisms spend only part of their lives in the epipelagic, usually spawning in _____ waters
 - herring, whale shark, salmon

Adaptations: Buoyancy

- The upward force of a fluid is the buoyant force. The buoyant force on an object is equal to the _____ of the fluid displaced by the object. This is called Archimedes Principle.
- The most significant adaptation of nektonic animals is that which keeps the animals suspended.
 - most fishes have _____ (gas) bladders, in which they can regulate the amount of gas to change their buoyancy
 - in physostome systems, swim bladders are filled via fish gulping air through a direct duct to the _____
 - in physoclist systems, swim bladders are filled through a network of blood vessels called the rete mirabile.

Adaptations: Locomotion

- The adaptations of nekton related to moving through the water fall into two categories:
 - creation of propulsive force
 - reduction of frictional resistance and _____.
- Fast swimming fishes typically have a fusiform body with lunate (deeply forked) tail and small caudal peduncle. The speed is generated by muscle contraction waves pass down the body.
- Slow swimming fishes typically have a deep and laterally compressed body with _____ tail and large caudal peduncle.

Defense and Camouflage

- Camouflage is the most common defense mechanism in nekton. Cryptic coloration often involves a blending of colors to match the background of the organism. _____ involves lighter colors on the ventral (bottom) side and darker colors on the dorsal (top) side.

Sensory Systems

- Most sensory information by nekton are similar to land animals. There are, however, some additional senses:
 - All fish have _____ lines, which are sensitive to pressure changes in the water.
 - Sharks and rays have the ampullae of Lorenzini, which are sensitive to minute _____ currents.

Reproductive Generalizations

- Most pelagic bony fish are _____ spawners, producing immense numbers of eggs that float and are subject to huge losses.
- Sharks and rays have internal fertilization. After fertilization, there are three developmental paths
 - ovoviparous, meaning eggs hatch within the mother
 - (ex. nurse sharks)
 - _____, laying eggs in the water
 - (ex. hornshark)
 - viviparous, with a placental link, akin to mammals
 - (ex. hammerhead sharks)

Trophic Structure of the Pelagic Zone: Polar Waters

- In cold polar waters, the top carnivores are marine mammals.

Trophic Structure of the Pelagic Zone: Tropical Waters

- In warm tropical waters, the top carnivores are various fishes.

Trophic Structure of the Pelagic Zone: Temperate Waters

- In temperate waters, the top carnivores are sharks and marine birds and mammals.

Major Nekton Phyla

- _____ (phylum)
 - Pisces (superclass)
 - Actinopterygii (class) – ray-finned fishes
 - Elasmobranchii (class) – _____, rays & skates
 - Holocephali (class) - chimaeras
 - Sarcopterygii (class) – lobe-finned fishes

Fish Fins To Know

Dorsal Fin Pectoral Fin Pelvic Fin Anal Fin Caudal Fin