

## Unit Six: Oceanic Nekton Part Two - The Tetrapods

### Nekton

- \_\_\_\_\_ are organisms capable of sustained locomotion against the water motion. This group includes fish, mammals, reptiles and birds.
  - Tetrapods, or tetrapoda, means “\_\_\_\_\_” and include animals that have, or evolved from creatures that had, four appendages.

### Marine Reptiles

- All marine reptiles (class \_\_\_\_\_) evolved on land and have since returned to the sea. These include crocodiles, turtles, snakes, and lizards. Only one species of crocodile (giant saltwater crocodile) and one species of lizard (marine \_\_\_\_\_) spend significant time in the sea, while there are many species of sea snakes and sea turtles inhabit the ocean

### Sea Turtles

- There are \_\_\_\_\_ species of sea turtle, all of which are classified as endangered or threatened. Using a geomagnetic sensory system, female sea turtles lay their eggs on land at the same location they were born. The eggs hatch as male or female depending on the \_\_\_\_\_ of the sand.

### Seabirds

- Birds (class \_\_\_\_\_) play many roles in marine ecosystems. Many species feed and breed in coastal environments. However, the penguins (order Sphenisciformes) are by far the most adapted to the sea, spending up to 75% of their time under water. They eat krill, squid and small fish as an important link in the \_\_\_\_\_ food web.

### Penguins

- There are 17 species of penguin, all of which live in the southern hemisphere. The majority of penguins breed in large colonies, though most are monogamous or serially monogamous. Penguins are highly adapted to cold water, and will go through a catastrophic \_\_\_\_\_ rather than losing a few feathers at a time like other birds.

### Pinnipeds

- Pinnipeds, in the order Pinnipedia, include seals, sea lions and \_\_\_\_\_, although some argue that they are in fact part of the order Carnivora (which includes bears and cats)

### Seals & Sea Lions

- Seals and Sea Lions can look very similar, but there are some key differences including the presence of an external ear and skin-covered flippers in the sea lion vs. no external ear and fur-covered flippers in the seal.

### Cetaceans

- Whales, dolphins, and porpoises are classified under the order Cetacea, which is further divided into two suborders.
  - Mysticeti (\_\_\_\_\_ whales)
  - Odontoceti (\_\_\_\_\_ whales)

### Baleen

- Mysticetes are known by their use of baleen, which is a brush-like fringe that they have in place of teeth. Baleen is very efficient in filtering out krill, \_\_\_\_\_, and small fish.

### Adaptations: Buoyancy

- Tetrapods have different methods of buoyancy than fish.
  - \_\_\_\_\_ can be controlled seasonally
  - replacement of heavy ions with lighter ones
  - \_\_\_\_\_ spaces within the body

### **Adaptations: Locomotion**

- Tetrapods use two basic methods of locomotion.
  - \_\_\_\_\_ swimmers, such as turtles, birds, and pinnipeds typically have short body, short tail, long neck, small head, and hind limbs that are webbed or paddle-like.
  - \_\_\_\_\_ swimmers, such as marine iguanas, sea snakes, and cetaceans typically have more fishlike bodies with well developed tails and hindlimbs that are reduced or absent.

### **Sensory Systems**

- Most sensory information by nekton are similar to land animals. There are, however, some additional senses:
  - Marine mammals have a \_\_\_\_\_ sensory system which plays an important role in long-distance navigation.
  - Marine mammals also have the ability of \_\_\_\_\_, in which sound waves are sent out and the reflected/refracted waves are received and analyzed to determine distance and density.

### **Reproductive Generalizations**

- Marine birds and reptiles retain the reproductive characteristics of their terrestrial relatives producing \_\_\_\_\_ laid on land.
- Whales give birth in the water; pinnipeds give birth on land. The young of whales and pinnipeds both grow very rapidly.

### **Major Nekton Phyla**

- \_\_\_\_\_ (phylum)
  - Tetrapoda (superclass)
  - Mammalia (class) - mammals
  - Reptilia (class) - reptiles
  - Aves (class) - birds
- (Nekton phyla that are neither fish nor tetrapods)
  - Mollusca – \_\_\_\_\_, octopuses & nautilus
  - Arthropoda – \_\_\_\_\_