

Bony and Cartilaginous Fishes

Biological Classification Series

Grade Levels:

Grades 5-10

Subject Areas:

Science

Life Sciences

Biology

Synopsis:

Life action film footage introduces several species of flatfish including turbot, brill, sole, and plaice. These side-swimmers are shown camouflaging themselves on the ocean floor. The stingray provides a transition to the characteristics of symmetrical cartilaginous fishes with gill slits. The cameras move to the washed-up remains of ray and dogfish eggs, each protected by a solid capsule promoting embryo development. Species statistics include 850 species of cartilaginous fish and 25,000 species of bony fish or half the vertebrate species.

Learning Objectives: Students will:

Explain the differences between bony and cartilaginous fishes.

Explain how flatfish are able to camouflage themselves on ocean bottoms.

Describe the migration of the flatfishes' eye as the embryo develops into an adult.

Explain why stingrays are closer to sharks than they are to flatfish.

Suggest why bony fish have been dominating the oceans for about 130 million years.

Vocabulary:

camouflage, turbot, brill, migrates, sole, plaice, dragonet, stingray, differentiates, dorsal, symmetrical, cartilaginous, undulate ray, embryo

Pre-Viewing Discussion:

Have you ever seen a stingray? Where? Where were its eyes and mouth located? Did it have a bony skeleton?

How do flatfish differ from other fishes? Can you name some species of flatfish?

Do stingrays or dogfish give birth to live young?

Why is it difficult to see flatfish in shallow waters?

Post-Viewing Discussion:

How do the turbot and the brill avoid being detected by their enemies?

Where are the eyes of flatfish located?

How do stingrays differ from turbot or sole? Are stingrays bony or cartilaginous fishes?

How are dogfish eggs protected?

What happens as the larvae of flatfish become adults?

Further Activities:

Find out which of the five major classification groups bony and cartilaginous fishes are in (i.e. Kingdom, Phylum, Class, Order, Family). Chart the relationships of animals in the largest to the smallest taxonomic groups around them. What characteristics make this group similar to and different from the other groups to which they are related? Then, pick one species from the program and determine its genus and species name, writing them in the proper scientific terminology. Find out why the genus and species name is written the way it is.

Investigate the species of sole that becomes filet of sole for human consumption. Why aren't the American soles suitable as a food source for human beings? Basically, how do species of sole vary from one another?

American plaice is a commercially viable species. At what ocean depth does it live? How large is the typical American plaice? What does it feed on? What characteristics make it a good meal?

Investigate why freshwater stingrays have become a popular aquarium fish. What species are particularly suitable for aquariums? What are the characteristics of each of these species?

Related New Dimension Media Titles:

Animal Babies Born Wild series

Habitats series

Biological Movement series

