

Fish Diversity: Outline

What is in the pan? What defines a fish?

- live in water
- vertebrates
- non mammals
- breathe with gills (except lungfish)

Contrast with shellfish, whales, etc. Emphasize that all specimens in the tray are fish, even though they may not look like a “normal fish”.

What do fish do?

- swim, eat, defend themselves, breathe, reproduce

Emphasize that we will be discussing predator/prey interactions (or how fish eat and defend themselves from being eaten), as well as some dynamic locomotion.

How do fish defend themselves? (In parentheses are examples of terrestrial animals if they are having trouble thinking of defenses, i.e.. “How do porcupines defend themselves?”)

- Cryptic coloration: scorpionfish, flatfish, picture of solidae (leaf insects)
- Countershading: shark from dissection station
- Swim away (be fast): herring, trigger fish (rabbit)
- Schooling: herring, picture of schooling fish (antelope, bison)
- Spines: balloonfish, scorpionfish (porcupine)
- Scales: armored catfish, boxfish, seahorse (turtle)
- Venom (injected): scorpionfish, stingray (rattlesnake)
- Poison (ingested): balloonfish, boxfish (skunk)
- Large size: picture of grouper, balloonfish (elephant)
- Cryptic behavior: eel, seahorse
- Mimicry: butterfly fish has a fake eye spot

Predation

How can you get food?

- go get it
- wait for it to come to you

- Some fish are herbivores: surgeonfish, damselfish
- Some fish are piscivores (fish eaters)
 - Rover predators (designed for fast steady swimming): sharks, picture of tuna
 - Lie-in-wait predators: picture of scorpion fish (gape and suck), picture of eels (burst swim)
- Some are parasites: lamprey
- Some are scavengers: catfish (ventral mouth, dorsally protected)

Locomotion

- anguilliform: eel (moves in a snake-like fashion)
- ostrachiform: boxfish (very rigid body, used only fins for movement)
- carangiform: herring (combination of both anguilliform and ostrachiform)
- Degree of oscillation or undulation of the body defines each of these types when swimming. Carangiform is optimum for speed (minimized the lateral motion of the head)
- steady, fast swimmers (herring)
 - very hydrodynamic
 - crescent shaped caudal fin/narrow caudal peduncle
 - all fins reduced or withdrawn
- burst swimmers (triggerfish)
 - hydrodynamic, but broad fins create drag
 - stiff body and scales
 - broad caudal fin = good burst swimmer, but not good for great distance