

Poster: Pelagic fish

WA Curriculum

K-10 Science

Region

North Coast, Gascoyne Coast, West Coast, South Coast, Indian Ocean Territories

Summary

Pelagic fish mostly live in the open ocean, although part of their lifecycle maybe spent in nearshore waters. Unlike demersal species such as pink snapper that live near the sea bed and coral trout that live around the reefs, pelagic fish can be found anywhere from the surface down to depths of more than 1,000 metres.

PELAGIC FISH - THE NEED FOR SPEED

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The best largest fish in the world – whale sharks and bluefish – are both pelagic species.

TRAVELLING FAR AND WIDE

Many of the pelagic fish species travel far and wide around the oceans of the world. Tuna and their relatives, mackerel, swordfish, sea fish and the oceanic sharks, such as great white, are identified as highly migratory species in the United Nations Convention on the Law of the Sea. Pelagic species can migrate over considerable distances across oceans, often foraging for food or searching for mates to reproduce. Therefore, they have wide geographic distributions and are found inside the 200 mile exclusive economic zones of different countries and in the high seas outside these zones.

Tuna are the fastest fish in the ocean – reaching speeds of up to 110 km per hour.

ADAPTATIONS FOR OPEN OCEAN SURVIVAL

There's nowhere to hide in the open ocean so pelagic fish have specialised adaptations to help them survive in this environment. Many species are schooling fish, finding safety in numbers. Most pelagic fish have counter shading – this means they are darkly coloured on top, and silvery below. For anything swimming above (predator or prey), they blend into the dark water below; for anything looking up at them from below, they blend into the silvery surface above.

FUSIFORM BODY SHAPE

Counter shading: the dark colour on top and the light colour underneath provide camouflage in the open ocean.

Eyes are set high to body.

Tuna comes from a Greek word meaning to race. They are not just fast, but also change their shape to swim.

Pectoral (side) fins can be retracted.

Lunate or crescent moon-shaped tails designed for maintaining high speeds for a long time.

FADS AND OTHER FLOATING OBJECTS

Pelagic fish are fascinated with floating objects – these objects seem to provide them a visual stimulus in the featureless environment of the open ocean. At times, pelagic fish aggregate (collect together) in considerable numbers around objects such as floating seaweed, sea jellies and drifting kelp. Floating objects can offer juvenile fish some protection from predators and lots of drifting seaweed or sea jellies can increase the survival rates of some juvenile species. Recreational fishers use the fascination with floating objects to increase the chances of catching pelagic fish. Fishers use objects called fish aggregating devices (FADs) to attract pelagic species to a known area. FADs are anchored rafts, buoys or objects of any type, floating on the surface or just below it. Their impact on fish stocks is uncertain.

A FEATURELESS HABITAT

The earth's largest aquatic habitat is the marine pelagic environment, occupying 1,370 million cubic kilometres. The open water and relatively featureless habitat is home to 11% of known fish species. Most pelagic fish live in the wide lit pelagic zone. This area is the water from the surface of the sea down to a depth of 200 m. This zone is also called the surface waters or the sunlit zone, and includes the photic zone, the depth to which phytoplankton can still photosynthesize. Pelagic fish are also found below 200 m in depth, in the mesopelagic (200-1,000 m) and bathypelagic (>1,000 m) zones.

BUILT FOR SPEED AND ENDURANCE

Some species of sharks (for example, mako sharks and tuna) are ectothermic (poikilothermic), allowing them to keep their body temperature warmer than the surrounding water. This gives them more energy than cold-blooded (ectothermic) fish, so they can swim faster and further in the same amount of time.

Pelagic fish vary in size from small fish like sardines, anchovies and Australian herring that inhabit coastal waters, to large ocean-going fish such as southern bluefin tuna and white sharks.

Most of these species have a torpedo-shaped, streamlined body built for speed and endurance – fisheries scientists call this body shape 'fusiform'. It enables fish to swim at medium to high speeds over long distances, to hunt their prey and escape predators.

Some pelagic fish like tuna have pectoral (side) fins that can be retracted and eyes are set flush to their body to make them as streamlined as possible. This means they create little drag as they swim through the water. Some pelagic fish also have a 'lunate' or crescent moon-shaped tail, designed for maintaining high speeds for a long time.

DIVERSE BUT NOT SO ABUNDANT

In the southern hemisphere, the Humboldt Current off the west coast of South America and the Benguela Current off Africa's west coast carry colder, nutrient-rich waters northwards – resulting in masses of plankton that provide food for very large numbers of demersal pelagic fish, such as pilchards and anchovies. These in turn are a food source for large pelagic fish. But off the west coast of Australia things are quite different, with the transport of warmer, clear, low-nutrient waters southwards by the Leeuwin Current. These conditions support an abundance of invertebrates (like lobsters and crabs) rather than pelagic fish – however, the variety (or diversity) of pelagic species is about the same.

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