

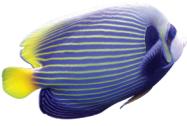
Ocean Teens

Marine Morphology

Teachers Notes

You can tell a lot about an animal just by looking at its morphology. Things such as where it might live, how it might move and even what it might eat.

Below are a number of tables illustrating the different morphologies of various body parts, and the information we can gain from looking at these.

Cross-section	Fish	Shape	Locomotion	Habitat
	 Trevally	Fusiform	Fast-Swimming in open water	Usually live in open water.
	 Emperor Angel Fish	Compressiform	Fast-Swimming in open water	Commonly live where there is plenty of places refuge like coral reefs.
	 Eagle Ray	Depressiform	Swims like a flying bird.	Normally live on sea floor.
	 Conger Eel	Filiform	Slithers through water like a snake.	Can occur in various habitats.

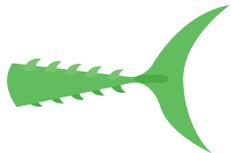
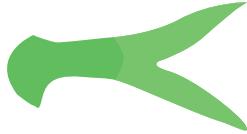
Different body shapes can tell us where a fish might live. A clear example of this is that fish with a depressed body shape (depressiform) generally live on the sea floor. For example stingrays, wobbegong sharks and flounder.

Body shapes may also give us information about how an animal might move. For example, fusiform body shapes are very streamlined and you can assume that they are fast swimming animals that live in open water.

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Body shape can tell you a lot more about the way animals might move when you look at it in connection with caudal fin morphology.

Caudal fins tell you a lot about the movement of fish. Lunate tails are common on fast moving fish that maintain a great speed over a long distance – such as tunas and sharks. There is very little drag on this shaped tail so can move very easily through the water.

Caudal Fin Shape	Speed	Distance	Manoeuvrability	Possible Location
 Lunate	Great	Great	Poor	Open Water
 Forked	Good	Good	Average	Open Water
 Square (truncate)	Average	Average	Good	Sheltered Areas
 Round	Good	Poor	Great	Sheltered Areas, Bottom Dwellers

As you move down the table the surface area gets larger and larger which increases drag. Eventually we end up with a rounded tail which has a lot of drag associated with it, so it is poor for long distances but is very good at maneuverability. The tails built for distance on the other hand, lack the ability to manoeuvre well.

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When you look at fins in association with body shapes you can decipher where an animal might live. For example, a fish with a compressiform body shape and a round tail is likely to be found around a coral reef or some similarly complex habitat. That is because the tail suggests they will not be good at swimming long distances, but will be good at maneuvering in between cracks and crevices. This particular body shape also suggests an ability to squeeze into tight areas so also supports the idea of a coral reef or other complex habitat.

Finally, we can also gain information about where and what a particular fish might be eating by looking at their mouth morphology.

Mouth Type	Possible Habitat/Feeding Location	Possible Food Type
 Superior Mouth	Surface feeder, or "lay-in-wait" predator	Insects, other small fish.
 Terminal Mouth	Mid-water feeders, capable of feeding at other locations	Anything that's available, most fish that feed on other fish have these.
 Inferior Mouth	Bottom feeders, "lay-in-wait" predators	Invertebrates, detritus, other fish.
 Elongated Mouth	Reefs and complex habitats	Algae, polyps, plankton.

There are 4 basic mouth types – superior (facing upwards), terminal (facing forwards), inferior (facing downwards) and elongated. Fish will generally consume food items that are in the direction that their mouth is pointing – for example, fish with superior mouths will consume food items that are slightly above them. Looking at the mouth orientation in combination with body shape, and caudal fin shape

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we can become even more precise with our analysis. For example, fish with a depressiform body shape, round tail and superior mouth may well be bottom dwellers that have adopted the life style of a “sit-and-wait” predator. The body shape indicates a bottom dweller, the round tail indicates little movement (except the possibility of rapid short bursts) and the superior mouth suggests grabbing food from above such as small fish that come too close.

These different morphological traits paint a picture of the animal to which they belong- looking at just one trait you get part of the picture, but when you look at them all together you can build an almost complete picture of the animal and its life style.

