

Amazing Osprey Adaptations!

Key Concepts: adaptations for survival, raptor anatomy CA Department of Education Standards 6th: Ecology 5c 7th grade: Life Sciences 5 a, c, g 9th-12th grade: Ecology g NGSS Standards 6th grade: LS1.B; ESS3.C 7th grade: LS2.A 8th: LS4.C 9th-12th grade: LS4.B, LS4.C

Ospreys are among the best fishers of all birds. They can usually catch their fish in one out of every three tries - even more successful than Bald Eagles! But which of their unique physical adaptations enable them to catch fish so well?

Watch the video on this <u>link</u> of an Osprey catching a fish.

Pause the action if you can to see exactly how it does the following:

- Hovering over the water to see the fish
- Plunging to catch the fish (note the wing and leg positions)
- Catching the fish
- · Leaving the water with the fish
- Flying with the fish (fish held pointing forwards-why?)

Can you name at least three features of the Osprey's body and behavior that help it to successfully catch fish?

1	 	 	
2	 	 	
3.			
3	 	 	

Great! Now compare your answers to the following section on Osprey Adaptations

All animals and plants have design features which help them to live in their environment. These features are known as <u>adaptations</u>. In animals they include physical features, how they function, or their behavior. Ospreys are birds of prey which hunt and catch fish for food. However catching fish is not easy.

Almost 100% of an Osprey's diet is fish and they have several adaptations to catch them. To be successful they must first be able to see the fish, then be able catch the fish in the water, and finally carry it away and eat it.

Osprey Eyes

Activity: Hold this sheet away from your face, how far away can you hold the sheet before you cannot read it?

Write this down: _____ inches

Now get your classmate to take the sheet 10 times farther away. If ospreys could read then they could read the sheet from this distance. Their eyesight is about 10 times better than yours! This allows them to hover about 300 feet above the water and still be able to see the fish below them, but this is far enough so that the fish cannot see the osprey!

The osprey lacks the prominent eye ridge common in most raptors. However, it possesses dark feathers in front of the eye which serve to reduce the glare from the water surface when the bird is hunting for fish. When Osprey dive into the water, they close their third eyelid - called a nictitating membrane - which is semi-transparent. It acts like goggles and helps them see clearly beneath the water. Click on <u>a video here</u> to watch an Osprey blink its nictitating membrane (begins at 2:00 minutes).



Activity:Label the Osprey's eye to explain how it is adapted to catch fish.

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Osprey Feet & Legs

Their legs are very long and have few feathers so they are more streamlined when plunging feet first into water. The bottoms of their feet are covered in short spines, called spicules, which helps them to grip slippery fish. They can snap their razor sharp talons together around a fish in 0.2 of a second! On each foot the outer front toe can be reversed so that they can grip with two toes forward and two back. This adaptation gives the osprey a very strong, pincher-like grip on the fish it catches and allows Osprey to carry the fish head- or tail-first, thus more aerodynamically, into the wind. This particular adaptation is known as zygodactyl toe structure. Each toe also has a long sharp curved "claw" called a talon that act like eight powerful fish hooks!

Activity: Label the drawing of an osprey's foot and toe structure to explain how it is adapted to catch fish.



Osprey Beaks

Osprey beaks, like all bird beaks, have a top part called a maxillary beak and a lower park called the mandibular beak. The maxillary beak of an Osprey curves downward to form a very sharp hook which allows the bird to easily tear apart the flesh of fish, especially when feeding its chicks.

Ospreys' nostrils or "nares" have protection against water traveling inside of them. They possess specialized nose valves that work specifically to stop water from making its way into their nostrils while they're looking for dinner. Once ospreys hit the surface of the water, these valves immediately close.

Activity: Label the drawing of an osprey's beak to explain how it is adapted to eat fish.



Osprey Feathers

Ospreys are covered in feathers, known as plumage. Ospreys have very dense plumage which makes it difficult for water to soak in. Each feather is also quite oily which helps it to keep dry. This is why Osprey can plunge three feet into the water to catch their fish—Bald Eagles can't do that! The osprey is dark on top but pale underneath. Here is a fish eye view of an osprey against the sky.



How does this coloration help the osprey to catch fish?

Many animals have coloration which helps them to blend in with their surroundings.

What is this called? _____

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Describe three other animals that have coloration which makes them blend in with their surroundings.

1.	
2.	
3.	