

## **Adaptations of The Barred Owl**

Barred Owls are large birds of prey native to BC. These majestic hunters are masters in their environment, using their unique adaptations to flourish. Like most owls, Barred Owls are nocturnal. This means that they're inactive during the day, and wait to hunt until after dark. This kind of living requires many special traits, such as specialized eyes, wings, and necks.

Barred Owls are covered by special brown-and-white spots, or "bars", found on their feathers. These markings range from longer stripes on their stomach feathers to tiny dashes on their coverts. The variation in their markings helps the owls to blend in with the trees of their habitat, their bars mimicking the shadows created by bark. This allows the owls to stay hidden from potential prey until an ambush, and keeps them safe from any predators.

The vision of the Barred Owls is excellent - as it has to be to detect prey hidden in the bushes during the night. The owl's eyes are large and forward-facing, allowing for an extended field of vision. Their eyes are so big, they can account for up to 5% of the owl's total body weight! These huge eyes give the owl a field of vision of around 110 degrees, 70 degrees being binocular vision. This means that almost 65% of their vision is binocular, a remarkable amount for animals. The owl's eyes are large because in order to improve efficiency, especially in low-light conditions, there must be a lot of room for light to get into the eye. In fact, the Barred Owl's eyes are so well adapted, they aren't even considered eyeballs - more like elongated tubes that stretch back into the owl's head. The eyes are held in place by sclerotic rings; ridges of bone in the owl's skull. As these rings keep the eyes in place, an owl can't rotate it's eyes like most animals can - it can only turn it's head.

To make up for this, a Barred Owl can turn it's head up to 270 degrees left and right, as well as almost upside down. This is possible due to the additional vertebrae in the owl's neck, a total of 14 bones; twice as many as a human. The owls also only have one vertebrae that's directly on top of their backbones, allowing for far more movement. Their neck muscles are arranged to accommodate the extended range of motion, and are partnered with specially composed veins and arteries to make sure neck rotation isn't an impediment to blood circulation.

Being nocturnal, Barred Owls need to be masters at the art of the ambush. In order to do this, they have adapted specialized wings tailored to silent flying. Unlike the wings of most birds, where air flowing over the wing makes a kind of rushing sound, owls have found ways to reduce

the turbulence that makes noise. The owl's primary feathers are arranged in comb formation; tiny hooks cover the edge of those feathers, diverting the air into tiny airstreams. The other side of the feathers change the angle of the air, letting it flow towards the wing's trailing edge. That edge of the wing is composed of a flexible fringe, which breaks the airstreams up further. As the tiny micro-turbulences roll off the end of the wings, there's barely any force left to make a noise. The airstreams that are left are softened by the downy feathers of the owl's legs and body. The feathers absorb any leftover high-frequency sounds that might alert the owl's prey of its whereabouts. These traits are most effective when the owl's wing is held at a steep angle, as it is when the owl is diving for prey. There is also a theory that the owl's specialized wings actually change the frequency of the sound to a pitch their prey can't detect.

The talons and feet of the Barred Owl are also specially adapted to its niche. The owl's feet are arranged in a raptorial formation - three talons at the front of the foot and one at the back. The back talon, called the hallux, is longer than the front talons, allowing the owl to get a secure grip on its prey before taking off. In addition to this, Barred Owls can also rotate one of their forward-facing talons so it lines up with their hallux. This means that if a prey animal is struggling, the owl can move its toes so that there is an equal amount of grip on each side, making it easier for the owl to control its prey.

Hearing is essential to the Barred Owl in finding its prey at night. Their acute hearing allows the owls to pinpoint the exact location of their prey without moving or giving away their hunting position. Their ears contain a large quantity of auditory neurons, which increases their hearing abilities. These ears also help the owls to distinguish calls from other members of their species. Barred Owls have many distinct calls to communicate with one another. Their mating call, a shriek that sounds somewhat like "who cooks for you!" is different enough from other bird calls to be distinguished by their potential mate.

Barred Owls have evolved many specialized traits to survive in their forest environment. They've adapted to be masters at the aerial ambush, using silent wings and sharp talons to pick off prey. They're nocturnal hunters, huge eyes and specialized hearing helping them thrive in their habitat. Apart from all these things that make Barred Owls so extraordinary is that they live here, in the city, finding tiny patches of habitat in which to flourish. Not many birds of prey are that resourceful or present in our urban lives; or have managed to raise a healthy family in such an environment, as these owls have. They've moved from their natural habitat of woodland and forest into the city; one of the hardest transitions an animal can make, and they're still thriving.