

Why owls are so fascinating: well, I think they are.

Soren Bondrup-Nielsen

All organisms have interesting characteristics, but to me, the owls stand out as special. Owls figure in folklore. They are mysterious, active mainly at night, and have unique adaptations to make them superb predators.

There are several species of owls in Nova Scotia. Some are permanent residents such as Barred Owls, Great-horned Owls, and the rare Long-eared Owl and Boreal Owl. The Saw-whet Owl occurs mainly here during the spring, summer, and fall; they migrate south in late fall. They have been caught in mist-nets on Bon Portage Island during the fall migration. Short-eared Owls often show up during the late fall and winter and can be seen hunting in the late afternoon flying over the meadows near Grand-Pré. Occasionally, during some winters, Snowy Owls and even more rarely Hawk Owls can be located in the province by dedicated birders.

In some folklore, owls are considered wise. Owls have forward-facing eyes, eyelids that close from the top-down instead of other birds that close their eyes by raising the lower eyelid. The beak of the owls is just below the eyes and looks like our nose. Thus, we can relate to them in a fashion. Indeed, with their somewhat human-like face, mysterious night-time activity, and intense stare if you come across an owl during the daytime, they must be wise. However, for some North American indigenous peoples, hearing an owl call announces that someone will die, a somewhat different image than being wise, or is it? Predicting the future is wisdom.

To me, it is the various adaptations as night predators that make this group of birds so fascinating. They rely on being silent flyers and use sight and especially hearing for locating prey. Unsuspecting mice, voles, or hares minding their own business on the forest floor in the pitch dark of night are instantly killed when the owl strikes with its outstretched feet with needle-sharp talons. It doesn't even matter if a vole is moving along a tunnel under the snow. The owl can hear the prey and precisely dive into the snow to make its kill.

The silent flight is achieved by the owl's fluffy feathers and relatively large wings. The flight feathers have a velvety appearance. Along the leading edge of the primaries, there are comb-like projections that muffle the sound of the air passing over the wings. I have personal experience with the silent flight during my study of the Boreal Owl. I was frequently struck on the head by males defending their territory, and I never heard them coming.

Owls have excellent night vision, but more impressive is their ability to pinpoint the sound of prey even under the snow. Birds generally have tiny ear openings, but the Boreal owl's ear-opening extends halfway around the facial disc, encircling their eyes focusing the sound. The ear opening is a good four centimetres long flap-like crescent-shaped opening; there is lots of space for the sound waves to reach the inner ear. Also, the owls have asymmetric ears. For the Boreal and Saw-whet Owls, the bony part of the ear opening in the skull points down on one side of the skull while on the other side of the head it points up. Sound waves picked up by the owls reach the ears milliseconds apart and out of phase both in the horizontal plane and in the vertical plane. Owls can thus pinpoint the location of a mouse by only hearing one or two squeaks. Humans have symmetrical ears and can quickly tell if a sound comes from the left or right, but we have a terrible time determining whether a sound came from straight ahead or above us. To resolve this, we need to hear a sound several times and move our heads to gauge the direction. Well, the owls do not need to do that because of the asymmetry.

When an owl hunts, it typically sits on a perch and listens. Once it hears a prey, it will dive down toward the sound of the prey headfirst, but in the last second, the owl swings their outstretched feet forward, striking the prey where the impact often is deadly. Here the owls have yet another adaptation. The outer toe, which normally points forward, can also be swung around to point backward. When they strike the prey, the fourth toe points back, which means that they have a maximum spread increasing the chance of a successful strike.

There may be periods of intense cold or snowstorms during the winter when it is difficult for northern owls to hunt. But they need to eat to survive. Well, they have solved this problem by killing more prey than they can eat at one time when hunting is good and store their catch in crooks of branches. When the owl needs to eat, they retrieve the prey. Now, the smaller owls, like the Boreal Owl, will not be able to tear apart a frozen mouse. So, what do they do? They sit on the frozen prey until it thaws and then start to eat - clever.

Owls do not build nests but will use those of others. The Great-horned Owl takes over existing stick nests. The Boreal Owl finds an existing cavity in trees. The Short-eared Owl merely flattens vegetation and lays their eggs on the ground. Females are significantly larger than males. It is unclear why this is adaptable. I feel it has to do with females potentially laying up to a dozen eggs for the Boreal Owl. Others feel that large females can protect themselves against aggressive males but this to me seems an unlikely explanation. All owls nest late winter,

which means that the eggs will freeze if the female owl does not incubate right after laying the first egg. It takes about two days between the laying of each egg, the young hatch with that same interval between them, which means that the young in a nest are of different sizes. Only the female incubates the eggs, and it is the job of the male to keep the female well fed. Even when the eggs have hatched, it is the male that must supply all the food. Clutch size depends on how much food the male owl can supply the female. Therefore, when food availability is low, the clutch size will be small, or owls may not nest at all; when food abundance is high, clutch size may be substantial. Also, when the young have hatched, if for some reason, the male has a hard time supplying the female with prey, the larger young may kill and eat the smaller siblings. Since all owls live for a few to several years delaying breeding by a year or even two, this has little effect on their contribution to future generations of owls. When the young fledge, then the female also starts to hunt to supply food to the growing offspring. There is a long dependence of the young on the parents. It takes time for the young to learn to hunt on their own.

So, is it any wonder I find owls fascinating? I have written a book about my research on the Boreal Owl, *A sound like water dripping: In search of the Boreal Owl* which can be borrowed from the Wolfville Library.