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NORTHWEST WILDLIFE PRESERVATION SOCIETY

Great Horned Owl

Bubo virginianus



Source: <http://jnevitt.deviantart.com/art/Great-Horned-Owl-133382>

By Aisha Uduman

The great horned owl (*Bubo virginianus*) is one of the most common owls of North America. It is also known as the cat owl, hoot owl, big-eared owl and the “tiger of the sky”, likely due to its ability to catch prey much larger than itself. It is found in a huge variety of habitats such as forests, grasslands, wetlands and deserts, as well as in close proximity to humans, being commonly seen in backyards and cities.

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Characteristics

The great horned owl is a large owl, with broad wings and a pale, tawny-brown facial disc, which sometimes has a reddish tint. They have very distinct ear tufts, which give the owl the appearance of having 'horns'. These ear tufts lay flat when the owl is in flight. The eyes are glowing yellow or orange, contrasting with its body pattern. The legs are covered in thick feathers, with only the talons exposed.

The colour of the great horned owl varies between individuals, however they are always heavily patterned on their back, often aiding to camouflage with their surroundings, and are barred on their belly. Great horned owls are mottled grey-brown, with a very prominent white patch on the throat. Owls which are found in the Great Plains and central Canada tend to be paler on average, likely to blend in with the lighter, surroundings. Owls in the far west and tropical areas are the darkest in colour, with dark red-tawny facial discs. In contrast, owls in the east tend to be more richly coloured with orange facial discs.

Adult great horned owls range in length between 43-64cm (17-25in) and have a wingspan of 1-1.5m (3-5ft). Adults weigh between 1-2kg (2-4.4lbs).



Source: <http://www.industrytap.com/owl-wing-aeroacoustic-design-quieting-wind-turbines/29828>

Male and female great horned owls look similar, with females being slightly larger in size and marked more distinctly. Juvenile great horned owls are mainly covered in down, giving them a lighter coat. They have the same glowing yellow or orange eyes as adult owls, which contrast even more with their pale downy feathers. The ear tufts are not fully developed in juveniles, and the dense barring on the underside and the camouflage pattern on their backs slowly emerge with the ear tufts as they enter adulthood.

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Life Cycle

Great horned owls usually mate for life, although they do not build their nest together. Females are able to breed at the age of one. The age of breeding may change, depending on the availability of resources and nesting sites, as these owls tend to breed when food supply is high, and established territory density is low. A sizeable number of adults are unable to establish territories, and they instead live quietly on their own. These are known as “floaters”, and owls like this neither hoot nor breed. Floaters tend to be unable to compete effectively for territory, even if they have reached sexual maturity.

Nesting begins early in year, in January or February. This usually means that snowfall will cover the incubating mother and the nest for a period of time. Occasionally, the eggs freeze beyond repair and a new clutch needs to be laid.



Source: <http://fineartamerica.com/featured/great-horned-owl-nest-dale-j-martin.html>

Incubation period is between 30-37 days, and nesting period is 42 days. The clutch size is between 1-5 eggs, which are 5.3-5.6cm in length and 4.5-4.7cm in width. The female typically lays 2-3 eggs, but will lay more if resources are abundant. The eggs are dull white with a rough surface. Interestingly, clutch size is known to vary between locations: in temperate areas, individual females may skip breeding every third year, whereas in northern forested areas, females are known to synchronize their breeding according to the cyclic nature of prey cycles. This can cause productivity to vary greatly from year to year, for example:

- Alberta: 0-1.9 range in annual productivity
- Yukon: 0-2.2 range in annual productivity
- Saskatchewan: 1.6-2.6 in annual productivity

Thus, the breeding tendencies of great horned owls may indicate changes in prey availability, and these owls could be used as indicators of changes in such resources and predatory dynamics.

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Both the male and the female incubate, however the female mostly incubates the eggs while the males hunt for food. Most of the time, extra prey is caught and stored in the nest for later consumption. Great horned owls are extremely strong, and are fiercely protective of their young!

After the chicks (or owlets) have hatched, they are quite helpless, with closed eyes, pink skin and white down feathers on their upper body parts. After about 8 days, the down plumage is replaced by mesoptile, yellow-white or greyish-buff/greyish-white plumage. After about 14 days, over 50% of their juvenile plumage will now have emerged. By 11 weeks, the facial disc and white chest are very prominent, and their mottled, ochre-buff pattern is complete by around 21 weeks. Their characteristic ear tufts appear fully grown by 26 weeks. Chicks are unable to fly until they are 10-12 weeks, but often explore and venture out onto nearby branches as early as 6 weeks. They are dependent on their parents for food until the fall.

In the wild, great horned owls usually live up to around 12-14 years of age. In captivity, however, these owls seem to live as long as 38 years! Post-fledging survival seem to be closely linked to food availability. When instances such as blood-sucking fly or blood parasite outbreaks occur alongside food shortages, survival rates may decline. A long-term banding study conducted in Saskatchewan, Canada saw that great horned owl populations had a higher annual survival rate when snowshoe hares were abundant, and a lower rate when they were not as abundant. The study focused on the 10-year population cycle of the hares.

This is a great set of videos from the University of Cornell Lab of Ornithology, from live cameras which are observing nesting behaviour: http://cams.allaboutbirds.org/channel/46/Great_Horned_Owls/

Habitat

The great horned owl is found in a variety of habitats between the northern Arctic tree line and the pampas of South America. These habitats include coniferous and deciduous forests, mixed forest, woodlands, coastal mangroves, swamps, rainforests, desert, rocky canyons, riverine aspen groves and tundra edges. They can also be found in cities, suburbs, orchards and parks. They largely live in forests, especially secondary-growth woodlands interspersed with open areas (such as fields, wetlands, pastures). However, in some areas, such as the southern Appalachians, these owls prefer old-growth stands. When living in deserts, great horned owls likely use cliffs or junipers to serve as nesting sites.

In North America, great horned owls are at highest density in eastern Colorado, Nebraska, Kansas and southern Saskatchewan, at the grassland-forest boundaries.

Here is a map of the extant (resident) range of the great horned owl, provided by the IUCN:



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Great horned owls are secondary cavity nesters, meaning that they nest in trees which have cavities or nests in them already, built by a different species. They typically nest in cottonwood, beech, pine, juniper, and other trees. Nests are made of sticks and range in size, depending on the original species that built the nest (red-tailed hawks, ravens, crows or even squirrels). Great horned owls will usually line the nest with pieces of bark, leaves and feathers, which could either come from their own body or from prey or trampled pellets. If a nest is unavailable, they will use cavities in live trees or a dead snag, cliff edges, deserted buildings or even human-made platforms to build their nest on. Pairs of owls sometimes roost together for several months before laying eggs, in close proximity to their future nest site. Interestingly, in the Yukon, these owls nest in white spruces with “witches’ broom”, a clump of dense foliage created by fungi. Great horned owls will abandon the nest at the end of the breeding season, over which time the nest has likely deteriorated and will rarely be reused.

Behaviour

Great horned owls are skilled nocturnal hunters, striking from above and using their extremely powerful talons to kill their prey. This is known as the “sit-and-wait” approach, where after spotting its prey, the owl will swoop down and seize it. The wing feathers are comb-like, with a soft fringe that reduces any noise of air flowing through the wings, allowing these owls to swoop up on their prey without being heard. Great horned owls use their keen hearing and sharp vision to identify their prey, using their deadly grip to sever the spines of their prey. An interesting fact about these owls is their large ears are covered by unique feathers, behind the feathers of its face. These feathers allow the owl to hear even the slightest sound 275m (900 ft) away. Their talons allow them to carry prey several times heavier than themselves. A modern-day raptor, great horned owls have the most diverse diet of all other raptors in North America. Their prey ranges in size significantly, from insects to other large raptors. Mammals and birds make up most of their diet, and such prey can include:

- Mammals: rabbits, hares, mice, voles, moles, shrews, rats, gophers, chipmunks, squirrels, woodchucks, marmots, prairie dogs, bats, skunks, raccoons, porcupines.
- Birds: ducks, geese, loons, mergansers, American coots, grebes, rails, owls, falcons, hawks, crows, ravens, doves and starlings.

When their usual prey isn’t available, great horned owls supplement their diet with reptiles, insects (such as scorpions), fish, invertebrates, and sometimes (though quite rarely), carrion. Whatever can’t be digested is regurgitated back up as pellets - these commonly include bones and feathers of prey. Often, entire skulls are still intact after being regurgitated!

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Great horned owl pellet being examined at a NWPS summer camp nature walk at Lynn Canyon Park, B.C. Photo: Aisha Uduman

Great horned owls are nocturnal, with activity becoming visible around dusk. At this time, you may see these owls perched on tree limbs at the edges of open areas. Sometimes, these owls have been seen to hunt in broad daylight.

Great horned owls are capable of a variety of vocalizations. These owls call in deep, muffled hoots, with about 4-5 hoots in each call. In late fall/early winter, this hooting signals that males are starting to occupy breeding territories, and the mating call carries for extremely long distances. Males and females sometimes call together, with the male calling in 4-5 hoots: “who, whoo-hoo, whooo, whooo”, and the female responding with either a higher-pitched, two-syllable call, or eight lower-pitched hoots: “who, whoo-hoo, whoo-oo, whoo-oo”. When calling, males will perch on a conspicuous branch or rock, with his body nearly horizontal and wings drooped while inflating his throat patch. If the male and female pair together, they will then roost together.

If aggravated or irritated, these owls may make a “clacking” sound with its beak. Young owls will also be heard with a shrieking, shrill scream for attention.

There is a great resource from *All About Birds*, where you can listen to the different sounds made by great horned owls. This includes juvenile calls, female squawks and calls, territorial hooting, a male-female territorial duet and more!

Threats

Occasionally, the great horned owl is preyed upon by members of its own species, or by northern goshawks, who often battle these owls for nesting sites, but they are not considered predators to the owls. Only when an owl has left its nest unattended will there be predators coming for the eggs, usually by crows and ravens. Owlets who have hatched may tumble down from their nest, and they are thus threatened by raccoons, red foxes and coyotes who may consume them as prey. Fledglings may be killed by bobcats, coyotes and lynx, especially if there is a shortage in food supply or an outbreak of disease which has weakened them. During times of prey shortage, acts of cannibalism or siblicide may occur (where the parents or siblings consume the young, respectively), though instances of such cases are very rare.

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The great horned owl has the most extensive range of any owl species, and due to its great range and population numbers, it is considered as 'least concern' as per the IUCN classification. It is considered 'secure' as per the General Status of Species in Canada. This stability of their population has a lot to do with the great horned owl's ability to adapt to habitat changes, as long as nesting sites are still available and prey density is decent.

However, they still face threats. Although not preyed upon by many other species, humans pose the biggest threat to these owls, primarily through habitat loss, forcing the owls to deal with increasing amounts of urban sprawl. The reduction of natural habitat means a reduction in nesting and hunting territories, which can shift the dynamics and interspecific relationships these owls have within their communities. We can address this by conserving land and designating more protected areas which include their hunting and nesting habitats. This will help to provide a consistently stable habitat for many generations of great horned owls to come.

Additionally, some agricultural practices such as the use of insecticides and pesticides can directly harm great horned owls by reducing its main food supply, as they feed on insects and small mammals regularly. To address this, we should aim for safer agricultural practices that restrict or ban the use of harsh chemicals, as they not only affect these owls, but other animals as well as the groundwater and soil quality. Some southern areas of Ontario, Canada have seen a small decline in great horned owl population, likely caused by the intensification of agricultural practices and a subsequent reduction of small mammalian prey.

On a smaller scale, individual great horned owls are killed by trapping, shooting, car strikes, and collision with high-tension wires. Great horned owls are extremely powerful, and will fiercely protect their young if they feel threatened. These owls have been known to attack humans to get too close to their young, so if you happen across a nest or young great horned owls, keep your distance!

What We Can Do To Help

- Be a good environmental steward! Use environmentally-friendly cleaners and pesticides. Don't throw out any trash on a road - this attracts rodents, which may cause the owl to swoop down to catch it, risking a collision with a vehicle when doing so.
- Avoid making sudden loud noises around nesting birds – this can scare them into abandoning their nests and the young birds in the nests will die.
- Get involved with conservation organizations! This could be in the form of a donation, volunteering, internships, or more.
- Spread the word around your workplace, family and friends about conservation. The more people become interested, the better the outcome will be for conservation efforts worldwide.
- If you have the means and interest, consider purchasing land to protect the habitat of great horned owls and the species it interacts with. Websites such as www.nature.org are examples of what should be considered when purchasing land for conservation efforts.
- Buy organic food – this supports farmers who are trying to preserve the environment by not using chemical pesticides and herbicides (which we know can directly cause a loss of prey for the great horned owl).
- Volunteer to help organizations like the Northwest Wildlife Preservation Society.
- Take the time to learn about wildlife. Take a walk and observe the wildlife around where you live. Get to know what local causes and impacts affect a variety of organisms - not just the great horned owl - and dive into issues of interest where you can make a difference!

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Other Interesting Facts

- Though not the biggest owl found in Canada, that is the great grey owl (*Strix nebulosa*), the great horned owl is the strongest owl in Canada!
- Sometimes, great horned owls catch more prey than they are able to eat! They actually save extra food for later use. These owls also incubate frozen food until it thaws enough to be consumed.
- Great horned owls and crows are well known to each other: these owls often prey upon both adults and nestlings, and because of this, the crows will frequently form mobs around the owls and ‘caw’ at them angrily, to discourage any further attention from the owls.
- Some cultures consider owls as symbols of wisdom and good luck, whereas other cultures fear owls as they are associated with doom and impending death.
- Although these owls can turn their head to a great extent (much greater than humans can), they can only rotate their heads 270 degrees. Fourteen neck vertebrae allow them to do this.
- If a great horned owl was the size of a human, its eyes would be the size of oranges!
- The great horned owl is the only animal that is known to frequently eat skunks!
- When clenched, a great horned owl’s talons require a force of 12.7 kgs (28 lbs) to open!
- Great horned owls can hear the heartbeat of a squirrel.

Where & When to view the animal.

Great horned owls are primarily nocturnal, so spotting them during the day may be challenging. They can sometimes be heard just after sunset or just before dawn, when you might be able to hear them from their series of “whooh, whooh-oo” calls!

Great horned owls are very common in B.C., so there is a good chance you may spot one (though they might be well camouflaged) in the woods on your next hike. The most likely time you will be able to see them is around dusk, when their activity increases. Try listening to some of their calls and imitating them - maybe you will get a reply!

Bibliography

Images:

IUCN range map: <http://maps.iucnredlist.org/map.html?id=61752071>

Cover image: <http://jnevitt.deviantart.com/art/Great-Horned-Owl-1333827>

Image of owl in flight: <http://www.industrytap.com/owl-wing-aeroacoustic-design-quieting-wind-turbines/29828>

Nesting image: <http://fineartamerica.com/featured/great-horned-owl-nest-dale-j-martin.html>

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Web Resources:

Arkive, a global initiative whose mission is "promoting the conservation of the world's threatened species, through the power of wildlife imagery". They are working on completing audio-visual profiles of over 17,000 'threatened' species on the IUCN red list!

<http://www.arkive.org/great-horned-owl/bubo-virginianus/>

The Nature Conservancy, the largest environment non-profit organization in the Americas, whose aim is to 'conserve the lands and waters on which all life depends'. A great organization to check out and explore some of the conservation projects they have initiated.

<http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/indiana/journeywithnature/the-great-horned-owl.xml>

National Geographic, a well-known resource with good animal summaries.

<http://animals.nationalgeographic.com/animals/birds/great-horned-owl/>

The Cornell Lab of Ornithology - All About Birds, a fantastic resource, part of Cornell University in Ithaca, New York, which aims to interpret and conserve Earth's biological diversity through research, education and citizen science (the focus being birds).

<http://www.birds.cornell.edu/AllAboutBirds/owlp/ghowl>

<http://www.allaboutbirds.org/page.aspx?pid=2710>

http://www.allaboutbirds.org/guide/Great_Horned_Owl/id

http://www.allaboutbirds.org/guide/Great_Horned_Owl/sounds (songs and calls)

Birds of North America Online, a great resource which details the characteristics, distribution, habitat, behaviours, breeding and conservation efforts of many species, including the great horned owl.

http://bna.birds.cornell.edu/bna/species/372/articles/introduction?_hstc=75100365.3aa66d13577fe4b467d81892e792c27f.1436472226439.1436475761105.1436477747611.3&_hssc=75100365.4.1436477747611&_hsfp=3600795663

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