



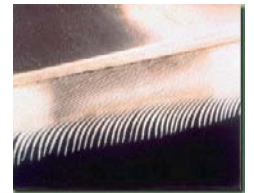
# A Teacher's Guide to: Owls



## Anatomy of Owls:

### Function of Wing Feathers:

- Primary Feathers propel an owl into flight.
- Secondary Feathers keep an owl in flight through gliding.
- On both the primary and secondary feathers, there are comb-like structures at the edge of the feather that are responsible for muffling the sound of the air going over the wing – this essentially makes an owl silent when they fly.
- Also, an owl's feathers can separate from each other on the same wing; therefore, the air flows over each of the individual feathers and their comb-like structures, which maximizes how silently an owl flies.

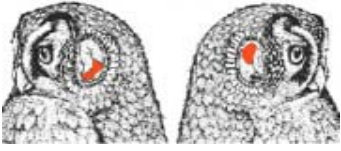


- Tail Feathers:
  - When the owl is flying, its tail feathers help it to direct itself.
- Feathered Ear Tufts:
  - They are NOT the owl's ears but rather clumps of feathers found on the heads of some owls and not on others.
  - The function of the ear tufts is unknown.
  - However, there are several suggestions as to their purpose:
    - For camouflage, which makes the owl look like a branch on a tree from a distance.
    - To help owls to distinguish each other from other species in low-light conditions.
    - To make owls look fiercer to predators or nest intruders.
    - To help owls to communicate: if an owl is alert and watchful, it's ear tufts will go up but if it's scared or angry, it's ear tufts will go down.



- Facial Disk:
  - Owls use their facial disk to adjust their hearing, allowing more sound to come into one ear than the other just by moving the feathers that are around its face.
  - The facial disk is one of the defining features of an owl.





- Ear:
  - Owl's have asymmetric ears, where one ear is higher than the other. The difference in the heights of the ears helps them to more easily locate prey in complete darkness because the sounds coming from prey are received by the ears at slightly different times.



- Eyes:
  - Unlike other birds that have eyes on the sides of their head for a greater range of sight, owl's have large eyes placed in the center of the face for greater depth perception.
  - Greater depth perception allows owls to see more at a greater distance than other birds.
  - Also, owl's eyes are locked in place and cannot move on their own; therefore, the owl must turn its head in order to see what's around it.
  - Because of their fixed eyes, owls have the ability to turn their head up to 270 degrees! In other words, if an owl turned its head to the left, it could turn its head so far that it could look over its right shoulder.

- Beak:
  - The beak is only used for an owl to eat, not to attack or hunt with.

- Talons:
  - Talons are the claspings claws on the owl's feet that are used for hunting prey and to defend against predators at the nest.



## Life Cycle:



- Nesting:
  - Owls do not build their own nests, but rather take over other bird's nests.
  - Depending on the amount of food available, female owls will:
    - Lay no eggs, because there is insufficient food to support young.
    - Lay 3 – 4 eggs if there is moderate food availability.
    - Lay 5 – 13 eggs if food is plentiful.

- Incubation:
  - The father and mother alternate sitting on the eggs and hunting for food.
  - Eggs take about 30 days to hatch.





- Early Life:
  - On average, it takes an owl anywhere from a few weeks to a few months to leave the nest.
  - In that time period, the parents are responsible for teaching the owlets how to fly and hunt for themselves.
  - The first owlet born has a much higher survival success in comparison to the other owlets in a nest, which may die or be killed if there isn't enough food.
- Adult
  - Once the owls fledge, they live on their own, ready to hunt and take care of themselves.
  - Eventually, they will look for a mate and the process will start all over again.



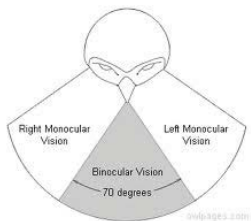
## What Owls Eat:

- Owls mostly eat: insects, moles, voles, rodents, birds, rabbits, and even young deer (if it's a Eurasian Eagle Owl, which gets to be about 3 feet tall with a wing span of about 5 feet).
- Owl Pellets:
  - Are the indigestible remains of an owl's meal, which mostly include the bones and fur of the animal it was eating.
  - Birds are NOT common in owl pellets because birds are normally awake during the day whereas owls are nocturnal; therefore, owls don't usually find birds out at night.



## Owl's Hunting:

- Owl's have four main adaptations that allow them to be excellent hunters:
  - Eyes:
    - Due to the fact that owls have excellent depth perception and such large eyes, they can see up to great distances in low light conditions, which allow them to spot and catch prey.
  - Ears:
    - The asymmetrical ears that owls have allow them to pinpoint exactly where their prey is.
    - An owl can tell if their prey is up or down in a certain direction due to the asymmetry in their ears whereas most



mammals and birds, including us, can only tell if the sound is coming from the left or to the right.

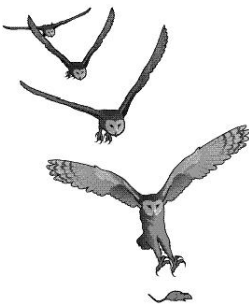
- Hearing is an owl's primary way to hunt.



- Silent wings:
  - Allow an owl to sneak up on its prey without the prey noticing, which allows an owl to catch its prey effectively by surprise.
- Talons:
  - Are an owl's primary weapon for catching its prey.
  - When an owl catches its prey, two of its talons go forward and two go backwards to ensure that when the prey is caught, it cannot escape.



- Perching/Searching:
  - Depending on the species of owl, owls hunt from perches or by actively searching for prey.
  - When an owl perches, it sits on the branch of a tree and waits until it sees or hears its prey. Great Horned Owls are an example of perching owls.
  - When an owl searches, it flies over fields or bare ground to find its prey. This is common in Short-Eared Owls and Barn Owls.



- Swooping/Dropping
  - When an owl swoops (which is what the majority of owls do if they are perching or searching), it goes at its prey headfirst and then swings up its talons to go in for the catch.
  - When an owl drops (which is common in perching owls, like the Burrowing Owl), it essentially falls from where it is perching, opening its wings last minute with talons stretched out, and catches its prey.

- Mantling
  - Once an owl has caught its prey, it will shift its body and feathers to cover its prey, so that other predators can't take what they have caught.



## Owl Behavior:



- At Roost:
  - This is where an owl rests or sleeps until it gets up.
- Morning Routine:
  - When an owl gets up, it will preen its feathers, yawn, and stretch.
- Head Bobbing:
  - Head bobbing enhances an owl's depth perception, by allowing them to view things at several angles.
- Tail Flicking:
  - Owls will flick their tails when they are excited or alarmed.
- Threat Display:
  - When threatened, owls ruffle their feathers to increase their apparent size, lower their head, and spread out their wings downward.
  - This usually occurs when they are protecting their young or defending themselves.
- Owl Calls:
  - Hooting is usually to establish territory or to court mates.
  - Bill snapping occurs when the owl is being threatened.
  - Owl's screech when they are distressed or alarmed.
  - Fun Fact: Not all owl's hoot – in fact, many screech.



## Owls That Can Be Found in Ithaca:



- Snowy Owl:
  - Easily recognized by their white feathers.
  - Migratory and come down to lower latitudes during the winter, or non-breeding season.
  - Roost and nest in the open tundra or on mountain slopes.
  - Hunt in open grasslands, farm fields, marshes, beaches, and sand dunes.
  - Hunt at all hours of the day, but are mostly daytime owls.
- Great Horned Owl:
  - Large and bulky with prominent ear tufts and large yellow eyes.



- Have an extremely plentiful pallet of food: mammals, birds, reptiles, amphibians, fish, and insects.
- Roosts are generally in trees, thick brushes, tree cavities, cliff ledges, or on buildings.
- Habitats are extremely diverse, ranging from open pastures to woodlands.
- Mainly nocturnal.



- Eastern Screech Owl:
  - One of the smaller owls in New York State.
  - Roost and nest in tree cavities and dense tree foliage or vine tangles.
  - Hunt on open forest floors.
  - Mostly nocturnal.

- Barred Owl:
  - Recognizable by their dark brown eyes, absence of ear tufts, a yellow beak, and barred plumage.
  - Roost on branches in dense foliage or tree cavities.
  - Hunt in large expanses of mature forests.
  - Mostly nocturnal, although some hunt during the day.



- Barn Owl:
  - Easily recognized by its heart-shaped face.
  - Primarily roost and nest in barns.
  - Hunt in open habitats.
  - Strictly nocturnal.
- Short-Eared Owl:
  - Named after their very short feathered ear tufts.
  - Migrate.
  - Roost and nest on the ground.
  - Hunt in open habitats.
  - Active in either the daytime or the nighttime, with a greater activity at dusk and dawn.



- Long-Eared Owl:
  - Named after their very long feathered ear tufts.
  - Roost and nest in brushy and dense vegetation.
  - Hunt in open habitats.
  - Strictly nocturnal.

## Other Resources:

**Backhouse, Frances. 2008. *Owls of North America*. Firefly Books Inc., Buffalo.**

This is a fantastic source that I personally enjoyed a lot because it explores owls strictly within North America and it allowed me to pinpoint exactly what species of owls are found in New York State. It gives a general overview of owls and then dives deeper into the natural history of each species of owl found in North America. This is a great resource for high school students and adults who are interested in owls.

**Biel, Timothy Levi. 1997. *Zoobooks: Owls*. Wildlife Education, Ltd., San Diego.**

This magazine is a great resource for elementary school children to use if they are interested in owls. In fact, when I was about 7 years old, I read from this reference as well. It is fun and interactive as well as understandable while containing a general overview on owls.

**Duncan, James R. 2003. *Owls of the World*. Firefly Books Inc., Buffalo.**

This is an excellent source for adults who are curious about owls and want a detailed introduction to what owls are as well as a brief overview of each species of owl worldwide. It is intriguing to see how many species of owls there really are and where each species resides in the world.

**Konig, Claus, Friedhelm Weick, and Jan-Hendrik Becking. 1999. *Owls: A Guide to the Owls of the World*. Yale University Press, New Haven.**

This reference is similar to Duncan's *Owls of the World*. It, too, goes into a general overview of owls and then explains in more detail each species of owl worldwide. It is a great book for adults to pick up who are more curious about the different types of owls that are spread out across the globe.

**Long, Kim. 1998. *Owls: A Wildlife Handbook*. Johnson Books, Boulder.**

This is an excellent resource for children and adults to use as first-time owl watchers. It gives a general overview on owls, and then goes over each species of owl specifically in regards to their habitat, hunting patterns, food selections, etc. Furthermore, it explains how to "owl-watch" as well as how to interact with owls more closely.

**Mead, Chris. 1987 *Owls*. Whittet Books, London.**

This book is a simplified version of a scientists look at owls, which is why I would highly recommend it for middle school and up reading levels. It has frequently placed owl cartoons that are relevant to the current topic and that help to understand and put into context what it is the author is explaining about owls.

**2010. *The Owl Pages: Home Page*. Web. < [www.owlpages.com/index.php](http://www.owlpages.com/index.php) >**

This website is an excellent source for information on owls and was frequently used by myself in putting together my presentation. It contains almost everything anyone would want to know about owls, including pictures, owl calls, mythological references, as well as pages of general information concerning owls (ie. physiology, behavior, hunting techniques, etc.). However, it is probably a bit too advanced for elementary and middle school levels.