



Arizona's Raptor Experience, LLC

April 2019

~Newsletter~

Greetings from Chino Valley!

A lot is happening here now that spring has arrived. The birds have begun to molt, which means an end to the hunting season until fall. Andromeda (Eurasian Eagle-owl) has had a birthday! She is now four years old (sexually mature) and has produced her first three eggs. The eggs are infertile as she does not have a mate in her enclosure, but it is important to let her incubate them if she chooses to do so – we want to encourage natural behaviors.

In our yard, the Roadrunner has been courting his mate which is fun to watch – he waves his huge tail back and forth in a large arc to get her attention and offer her a food morsel. The Gambel's Quail have paired up for the breeding season, although there are still many altercations between the males. The songbird's are singing, and the first flowers are starting to bloom. Happy days!

All the birds, the raptors and backyard birds, are focused on food – molting and

breeding use a lot of calories! After eating, the raptors produce pellets... which are the focus of this newsletter. We hope you enjoy it!



Andromeda in her nesting tray with one of her eggs.

Pellets – The Secrets That They Share

Of all the birds that produce pellets, including grebes, cormorants, herons, kingfishers, crows, gulls, shrikes, eagles, hawks, falcons and owls, those of the owls have been studied the most. As a result, the diet of owls is the best understood aspect of their biology. In fact, the analysis of owl pellets is also a great way to study local populations of small mammals because owls typically swallow them whole, preserving their bones, skulls and teeth for later examination.

So, how are pellets produced? Well, when an owl swallows its prey, it passes through the first part of the stomach called the proventriculus where glands produce acids and digestive enzymes that act on the prey. The second part of the stomach is the gizzard, which is very muscular, where the prey is physically broken down. Any liquid nutrients flow to the small intestine where they are absorbed, and indigestible materials left in the gizzard are compacted and later regurgitated as a pellet.

Most owls produce one to two pellets a day, depending on the amount they eat. A pellet can take roughly seven to 22 hours to form. If the prey is easily digestible or has a lot of fur and feathers, pellets can be produced faster. When the gizzard is full, it's full! Also, if the owl is eating more food, pellets are made faster. An offer of more food can induce the bird to regurgitate a pellet. I've seen this first hand with Marlee (Barn Owl). At feeding time, she will sometimes take a mouse readily from my hand with her beak, but then hold it with her foot instead of eating it. Within minutes she will bring up a pellet and then consume the mouse.

Cool Fact:

It is common for adult owls (like the Great Gray Owl) to consume pellets produced by their young in the nest. The benefit of this is not clear, but perhaps this is an effort to keep the nest clean. Owl chicks start producing pellets at 8-10 days old.

Besides the number of pellets produced, another neat thing to consider is how the size of pellets differs. In general, larger owls (birds) produce larger pellets. Apparently, one of the largest pellets ever measured came from a Snowy Owl and was 6 inches in length! Below you will see a photographic comparison of pellets produced here at our facility by the owls and some of the other birds.



How do owl pellets differ from those of the diurnal birds of prey? One huge factor is the percentage of bones contained in each. An owl pellet is roughly 45% bones, while most hawk pellets are only about 6% bones. First, owls tend to swallow their food whole, while the diurnal birds tear theirs into pieces and may not consume all the bones. Second, the pH in the stomach of an owl is less acidic than that of a hawk. Owls tend to have a pH from 2.2 to 2.5, whereas diurnal raptors range from 0.2 to 1.2. Remember, the pH scale is logarithmic, so a drop from 2 to 1 represents a 10-fold increase in acidity. So,

the digestive fluids in the stomach of a diurnal raptor can be anywhere from 10 to 5,000 times more acidic than an owl's.

One question that may come to mind, is how can these birds regurgitate such an acidic item two or more times a day without causing damage? Well, as an owl pellet moves up from the stomach towards the throat and mouth, it is coated with a pH neutral film that protects the lining from the acidity of the pellet and probably lubricates it to make it easier to regurgitate.

Cool Fact:

The Bone Eating Bearded Vulture, or Lammergeier, has a diet consisting mostly of bone (up to 90%), sometimes very large pieces of bone, which are digested amazingly fast (50% digested in 24 hours) in their extremely acidic stomach. Interestingly, these birds have been known to consume owl pellets to obtain the bones inside.

Owl pellets can be used not only to study the diet of the owl and the small mammal population in a given area, but also to reveal the location of a roosting owl – another secret shared! Owls can be difficult to find because they are camouflaged during the day and move silently at night. Pellets, along with the bird's white excrement on trees, can reveal roosting sites.

Some owls, like Short-eared Owls, roost communally in winter. Each bird produces 1-2 pellets per day; therefore, a large number of pellets will be located beneath their roosting site. Some owls, like Barn Owls, use the same roosting sites for years and leave huge numbers of pellets on the ground. This is due to the fact, in part, that owl pellets do not break down easily and can remain intact for years.

Besides identifying piles of pellets and whitewash on trees, owls can be located at night using taped calls. This works the best in mid-winter and spring when owls are most likely to sing – at these times they are establishing territories and trying to attract mates. If you try using taped calls, there are a few **important rules to follow**. Typically, start with the calls of smaller species. They are less likely to return a call or move closer to investigate if they've already heard the call of a larger species that is a potential predator (yes, big owls eat little owls!). Once a small owl has returned your call, **STOP** calling it. Each time the bird returns your call it divulges its location to potential

predators. Also, if you continue to play their call over and over, they may abandon their territory if the “intruder” (YOU!) is too vocal. Once you have located a spot where owls will return your calls, try to limit the number of people returning to that sight. Too many visitors night after night reduces the time the bird spends hunting and they may choose to leave their territory.

If you find an owl pellet and want to investigate it’s contents, simply soak it in warm water and the fur will fall away leaving the bones, skulls and teeth behind. Do keep in mind that unsterilized pellets may contain bacteria like *Salmonella* – wear gloves or wash your hands after handling the pellet and its contents!



Northern Saw-whet Owl and pellet



Barn Owl and pellet

Bird Photos by Jim Haege