

#1



BY: Ashlee Cook

An Eastern Fox squirrel (*Sciurus niger*) observed outside in front of Bragdon Dormitory (picture taken October 3, 2018).

This fox squirrel was observed in several foraging behaviors. In this picture, the squirrel is seen sniffing at the ground near a tree. Squirrels use their olfactory senses for both foraging behavior and identifying kin. In this instance, the squirrel was using its nose to identify a nutty smell that would indicate the presence of a nut. Squirrels are capable of finding nuts that are deeply buried even under snow through the use of their sense of smell.

#2

Just Hanging Out



BY: Justyne Wyr

Female eastern grey squirrel on the Reed College campus Great Lawn (Sept. 17, 2018).

The squirrel is pictured hanging upside down by its hind feet from the trunk of a large tree. It is eating a nut that it foraged from the grass beneath the trees moments earlier. Squirrels are unique from other rodents in that they have swiveling ankle joints, allowing their feet to rotate 180 degrees. Combined with the squirrel's extremely sharp claws, this enables it to hang flat against the tree as observed with their feet facing one direction and their body facing the other. These rotating joints likely evolved as a means of improving climbing ability. Many animals, after climbing up, must climb slowly back down tail first. Squirrels on the other hand can go up and down head first, making a much more efficient descent thanks to their feet and claws which point upward, allowing for a secure grip on the climbing surface.

#3

Hidden Gray Squirrel



BY: Eva Licht

This western gray squirrel, *Sciurus griseus*, was perched amongst the fall leaves outside of ODB. This squirrel was partaking in foraging behaviors, specifically eating and searching. The squirrel would pick a nut from the tree and nibble at it, then either drop the object and continue in the searching behavior, or it would begin its eating behavior. Searching behaviors have great adaptive value as animals can gather information about the foods their environments contain.

This squirrel was photographed on November 20th 2018, at around 1:20 pm in an area highly populated with people; however, for about five minutes no people walked near the squirrel, and the animal was able to partake in its foraging behavior without interruption.



BY: Student Alec Lobnitz

These three hens are all foraging the wet ground for potential food sources. The hens use their beaks to peck the ground in an attempt to either find food particles such as insects, slugs, worms, grains, and they also ingest small amounts of pebbles and dirt to help process the food they do accumulate. While strutting around slowly, the hens will peck multiple times in succession at seemingly random spots on the ground.

These hens were found near Louisville Park, and the photo was taken at 3:14 p.m. November 22nd, 2018. The surrounding areas were largely grassy areas and forests with a slight rain fall.



BY: Andrew Harman

This picture shows two Northwestern crows (*Corvus caurinus*) engaging in foraging behavior. The rightward crow can be seen actively foraging while the leftward crow is keeping its eye on the photographer. Crows regularly engage in foraging on the ground, and sometime in trees and shallow water.

This picture was taken at 3:56 pm on November 21st, 2018. The location was near the intersection of 43rd street and Ramona street. It was a cool, cloudy day with light drizzle.

Heron hunting

#6



BY: Eli Sobel

Here we see a Great Blue Heron (*Ardea herodias*) hunting, most likely for small fish or other small animals. Herons hunt by standing still in shallow waters for long periods of time and then quickly spearing their prey with their long, sharp beaks when they come within range. This behavior likely evolved because it is an efficient, low-cost way of hunting small animals in wetland habits. Foraging strategies that minimize energy expenditure while maintaining prey capture rates are evolutionarily favorable, because they result in greater energy availability. The lack of ability of herons' prey to effectively detect predators above the surface resulted in herons evolving this behavior to hunt efficiently in shallow waters.

This picture was taken on the afternoon of November 15th on the north shore of the Reed College canyon. It is common to see this heron when walking around the canyon.

Title: Spider Snack

#7

Create



BY: Gabe Preising

This photo depicts *Araneus diadematus*, otherwise known as the European garden spider, wrapping a fruit fly in silk before consuming it. The spider initially bites to both immobilize and poison its prey. This allows the spider to more easily embalm its prey and avoid any harm from the prey's retaliations.

This picture was taken on October 26th, 2018 at 11:26 AM in front of the east side of the GCC. It was a damp, cold day and was just about to rain.

Title: Common Side Blotched Lizard ~*Uta stansburiana*~

#8



BY: Xochitl Berns

Title: Island Fox

#9



BY: Xochitl Berns

Title: Bonhomie Bee

#10



BY: Xochitl Berns

A**B**

Title: Bird in Flight

#11

BY: Senta Wiederholt

This photograph was taken as a house sparrow (*Passer domesticus*) was in the process of taking flight. (A) The sparrow is seen just after its feet have left the metal table on which it was perched, and the observer can see that the bird has its feet tucked inwards towards its body for maximum velocity. In this photo, the bird's wings are not yet open for flight. (B) The sparrow is seen while in flight, with its wings open while flying down to perch on a chair. Flying behaviors are present in many avian species, and likely developed first in dinosaur ancestors with gliding structures, or from the action of leaping, wherein wings provided more velocity. The function of this behavior for the individual (and its ancestors) may include escaping predators and use in mating displays, and the individual likely developed flight at an early age (about 2 weeks) due to a combination of flight instinct and parental reinforcement of this behavior. Structures which help the sparrow fly include the thin bones of the ulna and the radius in its wings and the feathers which allow the bird to propel itself through the air. Taken on October 15th, 2018 in Union Square (a busy, urban area), San Francisco, California with an iPhone camera, and the time period between the two photos is only a few seconds.



Sol Taylor-Brill

Three honey bees (*Apis mellifera*) gather in the center of a rose. The bees seemed to be extracting nectar, which they do by inserting their proboscis into the flower's nectaries.. These bees are foragers, one of the four types of labor subdivision within the hive. The separation of "jobs" is a type of intra-species cooperation and allows the hive to thrive. Foraging behavior is controlled by gene expression which can be "switched on" when female bees reach 2-3 weeks of age. Bees often forage in groups and rely on the use of a sun compass and communicative dances to share flower locations with other foragers in the hive.

This photo was taken at the International Rose Test Garden in Portland, OR on September 2nd at 1:40pm. It was a clear sunny day with a temperature in the mid 70s, and there were many people walking around. While there were bees throughout the garden, they seemed to prefer certain types of roses over others. Shortly after the picture was taken, two of the bees moved on to adjacent flowers.



BY: Maddy Doak

Pictured is *Meleagris gallopavo*, the wild or domestic turkey, perched on the deck near a wooded area of a suburb of southeast Michigan. No other turkeys were witnessed nearby, but there is a dense wooded region near the property (pictured) that could contain more. This photograph was taken on August 19, during a particularly warm and humid stretch of weather, prior to this semester, but felt very appropriate given the timing. The perching behavior could have been in an attempt to avoid predators (coyotes also live in the woods); turkeys apparently roost in tall trees for this same reason, which is highly adaptive and most likely has been selected for, with optimal perching behavior resulting in greater rates of predator avoidance and greater fitness overall. The turkey left soon after, making it difficult to further examine behavior as it ventured deeper back into the woods.



BY: Isaac Schuman

A male Cooper's hawk (*Accipiter cooperii*) searches for a norway rat (*Rattus norvegicus*). This picture was taken at 2:00 pm in a residential neighborhood in Seattle on October 18, 2018. There is a chicken coop nearby which frequently attracts rats.

Cooper's hawks largely predate other birds, even in urban areas, but have been known to shift their diet to mammals when mammals are in excess (Cava et al. 2012). Chicken coops provide a consistent source of food for urban rat populations and so attract rat predators as well. Cooper's hawks are one of the most common birds of prey in urban areas and must demonstrate plasticity in finding nesting sites and prey sources in novel habitats. The non-urban habitat of these hawks largely consists of dense forest and their most successful bird hunting strategy involves surprise attacks from close range and behind cover (Roth and Lima 2003). An attack was not attempted in this situation, likely because the hawk was aware of the photographer's presence, but the positioning suggests an adaptation of the surprise attack strategy to urban architecture and mammal prey items. The presence of novel food sources for primary consumers, such as bird feeders and pet food, has effects up the food chain and it is not impossible to predict the effect on migratory patterns and lifestyles of secondary consumers.

References:

Roth, Timothy C. and Lima, Steven L. 2003. Hunting Behavior and Diet of Cooper's Hawks: An Urban View of the Small-Bird-In-Winter Paradigm. *The Condor* [Internet]. Accessed 11/19/18; 105(3):474-483. Available from <https://doi.org/10.1650/7219>

Cava, Jenna A., Stewart, Andrew C., Rosenfield, Robert N. 2012. Introduced Species Dominate the Diet of Breeding Urban Cooper's Hawks in British Columbia. *The Wilson Journal of Ornithology* [Internet]. Accessed 11/19/18; 124(4):775-782. Available from <https://www.jstor.org/stable/23324528>



Suzy Renn

Curiously, this particular flower (species unknown) was being visited by these flies in addition to bees but the flies ignore most other flowers in the garden. The flowers must produce a different odor or image that attracts flies specifically.

This image was taken ~ 10:00 AM in mid september in a residential garden in S.E. portland. The insects had just started visiting the flowers as the temperature was too cold earlier in the day. There were tomatos, tomatillos, and egg plant in addition to cosmos, geraniums, jasmine, lillies, dahlias and other garden flowers nearby.

Fly species is unknown



BY: Suzy Renn

This image was taken ~ 10:00 AM in mid September in a residential garden in S.E. Portland. The insects had just started visiting the flowers as the temperature was too cold earlier in the day. There were tomatoes, tomatillos, and egg plant in addition to cosmos, geraniums, jasmine, lilies, dahlias and other garden flowers nearby.

Bee species unknown but it was larger than the small bees that were also seen frequently at this same site at the same time. This species attended cosmos, sunflowers, and dahlias more frequently than the vegetable plants.



BY: Suzy Renn

This image was taken ~ 10:00 AM in mid September in a residential garden in S.E. Portland. The insects had just started visiting the flowers as the temperature was too cold earlier in the day. There were tomatoes, tomatillos, and egg plant in addition to cosmos, geraniums, jasmine, lilies, dahlias and other garden flowers nearby.

Bee species unknown but it was smaller than the bumblebees that were also seen frequently at this same site at the same time. This species visited both vegetable plants and flowers frequently.



BY: Celia Morell-Borgstrom

These photographs were taken in late November outside of the loading dock of the Gray Campus Center. The upper image shows feral cats who have found shelter in the Reed college canyon. These cats resemble domestic cats and may have adapted to an outside existence after being abandoned or lost by human owners.

This first image shows the cats claw marks on the base of the trees behind the GCC, suggesting that they share the post scratching instinct seen in both common domesticated cats and larger felines such as tigers. As part of their adaptation to living outside, they have formed a symbiotic relationship with the human inhabitants of the GCC.

The lower picture shows one such interaction where a cafeteria worker is setting out food purchased specifically for the cats, and in return the cats provide a release of dopamine associated with the human instinct to call things "cute" or form bonds with other species. The sharing of resources on the part of the human in exchange for the positive feeling associated with caretaking of the cats suggests that this is a mutualistic relationship.



BY: Xavier Gonzalez

Gold Dust geckos are part of the genus *Phelsuma* or day geckos. These geckos are more active during the day as opposed to most other species of gecko.

This photo was taken around 9 am in early July 2017 in Hawaii. It was a hot, humid, sunny day.

Title: A Single Snow Goose

#20



BY: Olivia Dao

There was a single white goose in the middle of a large gaggle of greylag geese. It is presumably a snow goose (*Anser caerulescens*). While the greylag geese were engaging in foraging behavior, the snow goose remained sitting down and watching the others.

This picture was taken at 1:14 pm on November 16, 2018. It took place on campus in the grass area between Anna Mann and the performing arts building. The weather was sunny and around 55° Fahrenheit. Earlier in the day, the gaggle had been foraging on the Great Lawn, but had gradually moved into the area behind Anna Mann.



BY: Susa Oram

This photo shows a non-native Eastern Gray squirrel (*Sciurus carolinensis*) eating a nut after foraging beneath a tree. According to the Oregon Department of Fish and Wildlife, Eastern Gray squirrels in Oregon are found almost exclusively in urban areas and are primarily active during the day. Like many squirrel species, Eastern Gray squirrels forage for their food and cache food to consume during winter. Foraging behaviors involve a trade-off between the nutritional value of the food and the costs of obtaining it, such as energy spent and decreased vigilance against predators.

This photo was taken on August 29th, 2018 in the afternoon. The squirrel was foraging at the edge of the Reed College Canyon near the pedestrian bridge by Aspen House. The weather was warm and mostly sunny.



This photo shows two male wild turkeys patrolling their roost in a Minneapolis neighborhood. The turkey on the left is a younger, less dominant male known as a Jake. While the turkey on the right is a slightly larger, older and more dominant male known as a Tom. The distinction can be seen in the lengths of their beards which are tufts of hair that hang off their chest, as well as the size of their tail plumage. These turkeys migrate in groups, and during the day they forage for food on foot and patrol for trees to roost in. Turkeys continuously switch which trees they roost in, but this group tends to stay within the northeast neighborhoods of Minneapolis. These turkeys are finishing their daily foraging and would later roost in the front yard tree several blocks away and this photo was taken at 6pm in August.

Submitted by Tyler Boente

#22



By: Julia Yuan

This moth larva was moving towards a drop of what appeared to be tree sap. It is possible that this larva consumes tree sap for nutrients, and this chemotactic ability would be very useful for the larva to find food. This behavior would have been inherited because caterpillars that can find more food would be more likely to reproduce. The mechanism behind this behavior involves the caterpillar somehow moving its stomach first, followed by the rest of the body.

This photo was taken on September 10, 2018, on the fence bordering the Eastmoreland Golf Course and Bybee Blvd in Portland.

I am not a lepidopterist, but I believe this is a fall webworm moth (*Hyphantria cunea*) larva.



By Leenise Blair

The worm was moving slowly across the pavement towards the grass in the same direction that the water was flowing.

This photo was taken near the Grove on a rainy day in October. There were many other worms, but this one was exceptionally bigger than the others I had seen.



BY: Sammi Goldberg

These two raccoons (*Procyon lotor*) were initially digging about in the dumpster most likely foraging for food but were caught off guard by an intrusive human. Though they did not completely retreat they were alert and ready. They exhibited no 'vicious' behaviors such as growling, hissing, howling or spitting which likely indicates they were more curious than threatened.

This photo was taken November 19 at 8:37 pm outside of the Scholz dorm bike storage entrance. It had just rained so everything was wet and it was cold.



BY: Sammi Goldberg

A young female chameleon (*Trioceros jacksonii*) hanging out on a dead fern stem. Chameleons are able to manipulate their coloration this change in coloration is usually for communicating rather than camouflage. Patricia Edmonds from National Geographic claims that chameleon colors reflect their emotional states. This chameleon was exhibiting a darker almost black color which I was not familiar with. According to Edmonds, "A chameleon turns darker when it needs to demonstrate that it's not a threat such as after losing a fight by dispersing melanin, a dark pigment, into its upper skin layers." However this chameleon still had a lot of green coloration which is indicative of a neutral state.

This photo was taken in July 2018 on the Hawaii island in the middle of the day.



A female African Elephant (*Loxodonta*) makes her way behind the herd towards an adjacent watering hole. Larger older elephants typically travel on the perimeter of the group. Groups are typically comprised of multiple females and their offspring, with perhaps one bachelor male. Other males will sometimes form a bachelor herd of their own, or travel solo. Elephants will passively forage through most of their waking hours, which often extend well into the night. They use their trunks to strip the bark or leaves off small trees, bushes, and shrubbery. When this elephant reaches the water, she will drink by pulling it into her trunk and then letting it run out into her mouth. Elephants will make their way to water once a day if closely available, or up to every 3rd day if water is scarce. Next to poaching, predation, and disease, drought poses one of the most serious risks to large populations and is purported to be the third leading cause of mortality of elephants in Zimbabwe national parks. Locating and navigating to water is a critically important for all animals in sub saharan Africa, and is accomplished by elephants primarily via olfaction, as they are able to smell fresh water sources up to 12 miles away.



By: Amy Rose Lazarte

California Sea lions (*Zalophus californianus*) seen on Pier 39 in San Francisco, California on October 19, 2018 at 3:35 pm. A large group of sea lions were soaking up the sun on the pier. The sea lion pictured in this photo is arching its back as it makes a loud bark. The bark was repeated rapidly with increasing frequency between each call. While not clearly visible in this photograph, the crest on the top of the sea lion's head distinguishes this as a male sea lion, or a bull. Territorial bulls often communicate in barks to defend their territory, even going as far as to fight with other bulls.



BY: Natasha Baas-Thomas

Banded woolly bear (*Pyrrharctia isabella*) moving across a path in Barton Park in Boring, OR on Oct. 13, 2018 at 3:30pm. The path was made of small pebbles and was surrounded by a grassy field. To view a 3 second movie of the woolly bear's movement, click on the link embedded in the photo.

These caterpillars emerge from eggs in the Fall season, hence why there is often an increase in sightings around the time that this picture was taken. The caterpillar form is advantageous for these animals because it will enable the animal to survive over the winter while its body freezes over, before it emerges as the Isabella tiger moth in the Spring.

The movement consisted of a "inching" motion, in which different segments of the animal contracted at coordinating times, thus enabling it to inch forward. This is an example of a fixed action pattern, since it is an instinctive and repeatable behavior that runs to completion.