



PEEC and the Los Alamos Mountaineers took this crew snowshoeing along the East Fork Trail in January. Participants were able to practice a new skill and make new friends on this day-long trip.



Photo by Jean Dewart

VOLUME 20, NUMBER 2, SPRING 2020

PAJARITO ENVIRONMENTAL EDUCATION CENTER, LOS ALAMOS, NM

## Working Toward Being a More Earth-Friendly Organization

By Katherine Bruell, Executive Director

It's that time of the week when we put out our roll carts at the nature center. I always feel a sense of pride in our operations when I see three full recycle bins and only one small trashcan on the curb. But lately PEEC staff have been talking about what more we can do to make our operations even more earth-friendly. We are currently working on a set of guidelines to help us be more sustainable, and I'd love your feedback and ideas. Here's what we're thinking about so far. What do you think?

- Before you order a new product, ask yourself, do we have the products you need already? Or something similar that you could use with a few small tweaks to your planned activities?
- Ask around the office to see if anyone else is ordering something at the same time, since combined orders are more energy-efficient.
- Look for three options before ordering to see if you can find either:
  - o A more sustainable product (i.e., recycled content, made with less water, packaged with less packaging, made locally, plastic-free, can be



One sustainable practice that PEEC has already adopted is working toward making our large events zero or low waste by recycling and composting the waste generated at the event. This was a major focus of last year's Earth Day Festival! (Photo by Rachel Landman)

recycled, long use lifetime/non-consumable, used or re-purposed, bulk, etc.);

- o Or a more sustainable supplier (i.e., Certified B-Corporations, good labor practices, profit sharing, ethical sourcing, local supplier, etc.).

- Print on scrap (blank on one side) paper whenever possible. We are hoping to identify a business or office that has a regular source of this type of paper that we can use. (Please let me know if you or your workplace might be a good source: [director@peecnature.org](mailto:director@peecnature.org))

- Print in economy mode whenever possible.
- Transition to an electronic sign-in instead of our paper sign-in sheets at the front desk.
- We already pack our lunches in reusable containers, and one staff member takes our compost home to compost at her house, if we don't feed it to the worms here.
- Many staff members walk or ride bicycles to work, and walk to meetings that are downtown.
- We do have a lot of on-the-clock driving for off-site meetings and lessons at local schools, off-the-hill schools, and field sites around the Pajarito Plateau. We are working on raising \$30,000 to purchase a used electric vehicle (which we could charge at the nature center) for staff to use for these trips. Not only would this save on driving for the lesson or meeting, it would also mean staff don't have to drive their vehicles to work on the days they have these kinds of events. Please let me know if you'd like to make a contribution towards this goal. (director@peecnature.org)
- At our birthday parties and building rentals, we are considering:
  - o Forbidding single-use water bottles, balloons, and plastic confetti/glitter.
  - o Discouraging the use of single-use everything else — cutlery, plates and cups, tablecloths, streamers, etc.
  - o Encouraging the use of our in-the-works reusable party decoration kit and our existing zero waste dishes kit.
  - o Discouraging the need for extra party favors, over and above the craft that children create and take home at the parties.

This is still a work in progress, and we're looking at what other nature centers and businesses in general are doing. I'd love to hear your feedback, further suggestions, and trial and error lessons from your own attempts at living and working in a more planet-friendly way! Let's make a more sustainable future for the next generation! 🌱



*The Mexican Free-Tailed Bat (Tadarida brasiliensis) may be the most numerous bat in the Los Alamos area. (Photo Credit: USFWS/Ann Froschauer)*

## Blind As a Bat

By Marilyn Lisowski

Graceful, intelligent, amazing, frightening, evil, disease carriers — have you heard all those things about bats? What you may not know is that these amazing, nocturnal creatures spread seeds and pollen, eat tons of insects that would otherwise plague us, and are possibly the oldest living mammal species still on earth. A complete bat fossil 52 million years old, very like modern bats, was unearthed in Wyoming in 2003. They look like a combination of a pterodactyl and a mouse.

Is a bat blind? Not at all. They have good eyes, but echolocation is their primary guidance system. You may glimpse a dark missile streaking right over your head at night, or flitting through a dim forest, never colliding with anything. The bat makes high-frequency sounds, which echo back to its large ears, locating obstacles and prey. A juicy insect is doomed when a hungry bat locks onto it, unless, like some moths, it can jam the bat's sonic radar. The bat snaps up prey fluttering in midair, floating over water, or cowering under a blade of grass. A bat is only blind if you plug its ears.

Some bats eat fruit, others only insects. A few types go after frogs and fish. A few “vampire bats” drink blood from other mammals. Most eat more than 50% of their body weight each night.

Over 1,500 bat species exist everywhere in the world, except at the Poles. Sizes range from Thailand's tiny Bumblebee Bat at 1.25 inches in length, to Australia's Flying Fox with a 6-foot wingspan. Forty-seven species

live in the United States. Fifteen species have been identified around Los Alamos. The Mexican Free-Tailed Bat may be the most numerous here. At about 3.5 inches long, which is mostly tail, with large ears, it flies the highest of all bats, and is the fastest at almost 100 miles an hour. It's the only species that "sings" to attract females.

Bats are the only flying mammals. Flexible fingers evolved into frames for thin membrane wings, over twice as long as their furred bodies. When not zipping through the cool night air in search of insects, bats roost upside down, hanging from their claws in caves, rock crevices, hollow trees, attics, barns, or any place that offers shelter and safety. Meticulously, they comb and groom fur, combing with one claw and hanging by the other. All emerge at the same time at twilight, turning the sky black.

Mating occurs in autumn. The female, larger than the male, keeps the male sperm separate from her ovum until spring. Females gather in maternity roosts and bear one pup after about three months. Mothers leave pups in the nursery colony and return several times during the night to nurse them. The mother licks her baby around the lips and face before nursing and feeds it for about seven weeks until it is ready to hunt on its own.

Bats hate the cold. They migrate to warmer climates or hibernate. Bat hibernation is a state of "torpor." Body temperature drops, heart rate slows, and they use stored fat very slowly. If they don't have enough stored fat to last through hibernation, or if they are awakened too early, they die.

Gravely threatened by white nose fungus, millions of bats in the eastern United States have perished. The fungus has recently been spotted on two Los Alamos bats. This fungus wakes the bat during hibernation and it dies. Other threats include fleas, mites, and bat bugs — parasites that feed on bats' blood. Hawks and owls prey on bats. However, loss of habitat and cave incursions by humans pose the biggest threats.

Some scientists theorize that the bats' high metabolism from flight boosts their immune system and keeps them from succumbing to viruses. Those may mutate, attempting to infect the bat. Some develop genetically into a zoonotic threat, one that humans can catch, like the latest coronavirus, COVID-19. Bat viruses are sometimes passed to other mammals, and then to



*Mexican Free-Tailed Bats at the Bracken Cave Preserve near San Antonio, Texas. The preserve is protected by Bat Conservation International. (Photo by Rozelle Wright)*

humans. The SARS outbreak in 2003 originated as a bat coronavirus that passed through civet cats, as did MERS in 2007 in the Middle East through camels. The bat, of course, has no idea about all of this.

You may think of bats as evil, fascinating, dangerous, or, in the Chinese view, bringing happiness and good fortune. Although the bat indirectly endangers humans in the COVID-19 outbreak, the bat itself is seriously endangered all over the world from white nose fungus and human encroachment. A decrease in bats will mean an epidemic of insects, and the loss of an important pollinator and seed spreader, perhaps as damaging to humanity as is the coronavirus it inadvertently spreads. 🦇





The crime scene that our intrepid hikers discovered near Camp May. PEEC's birder and biologist marked the evidence as they worked on solving this mystery. (Illustration by Rachel Landman)

# A Murder in the Mountains

By Siobhan Niklasson, Education Programs Director and Detective-in-Residence

## Scene: CAMP MAY – A WINTER’S DAY

A group of snowshoe-clad adventurers are tromping through deep snow in the woods.

**HIKER 1:** Look at these tracks!

**HIKER 2:** Are they a rabbit’s?

**HIKER 1:** No, I think a squirrel. Look how they make a little “W” shape in the snow.

**HIKER 2:** Look! A feather. Wait, there are a couple more.

**HIKER 1:** There are some over there, too. Guys, I’m getting a bad feeling about this ...

The group rounds a tree trunk, and suddenly, arrayed on the snow in front of them is a grisly scene.

Back at the nature center, a phone call comes in from the hikers. There’s been a macabre wildlife incident. PEEC dispatches its crime scene investigators, including a wildlife biologist and a birder.

They quickly realize that this is a fresh kill. These tasty tidbits won’t last long in the woods before a scavenger comes to clean them up.

At first look, the feathers remind the birder of an owl. The skull, too, has a curved beak reminiscent of a raptor. But upon closer inspection, the eye sockets seem to be located closer to the sides of the head than the front. Birds that are preyed on usually have eyes on the sides of their heads to help detect predators. This skull also lacks the prominent bony ring that holds an owl’s eyes in place in its head.

# Summary of Evidence

1

Our investigators noticed that the skull had eye sockets near the sides of the head rather than the front. This is a sign of a prey bird.

2

The large feathers matched the size and patterning of a Dusky Grouse's tail feathers.

3

Fresh droppings littered the ground near the crime scene and no tracks were found. Dusky Grouse spend their winters mostly living in trees.

4

The feathers around the base of the skull matched those of a female Dusky Grouse.

5

A single conifer needle was found in the beak of our victim. Dusky Grouse munch on conifer needles throughout the winter.



*Our crime scene investigators determined that a female Dusky Grouse was the likely victim of this murder. (Photo by Mouser Williams)*

area. They are mottled brown and white, indicating a probable female.

One of the hikers thinks to look up Dusky Grouse on PEEC's nature guide page. It turns out that Dusky Grouse live in the area year-round. In the summer, they forage for food on the ground, but in winter, they mostly live in trees and feed on conifer needles.

They take a closer look at the skull and beak. What's that sticking out of the beak? A single Douglas fir needle! It appears that this Dusky Grouse was taken in the midst of her last meal.

Now the victim is identified, and the details of her last day are determined. But who was the perpetrator? One of the hikers witnessed a large, gray bird with a white underside flying out of the area shortly before the group entered the woods. But it was only a fleeting glimpse. That part of the mystery might not be solved this time. But for more, look for the next episode of *CSI: PAJARITO PLATEAU*.

***Want to start your own wildlife investigation? Check out these resources that helped us solve this real-life mystery:***

PEEC Nature Guides: [peecnature.org/learn/nature-guides/](http://peecnature.org/learn/nature-guides/)

U.S. Fish & Wildlife Service Feather Atlas: [fws.gov/lab/featheratlas/](http://fws.gov/lab/featheratlas/)

*Scats and Tracks of the Desert Southwest: A Field Guide to 70 Wildlife Species* by James Halfpenny. Available in the nature center's gift shop. 📖

The wildlife biologist checks the wider scene. Below some trees, just a small distance away, the snow is littered with piles of greenish, cylindrical droppings. It snowed last night, so these are fresh since morning. There are no tracks on the ground and there are too many droppings to have come from just one animal. They remind the biologist of a goose's droppings, but smaller. They must have come from flocking birds up in the trees. What birds flock in the trees in wintertime, and have droppings like a game bird's?

The birder comes back after checking the feather atlas from U.S. Fish and Wildlife Service's Forensics Laboratory. There's a match! The feathers have the size and patterning of a Dusky Grouse's tail feathers.

The wildlife biologist agrees. Dusky Grouse are usually seen in flocks and have been observed in this area. The investigators look up a photo of a Dusky Grouse and see the same curved, black beak, just less than an inch long. There are still some feathers attached to the skull around the beak and neck



Selvi Viswanathan and Michele Altherr have led the charge to certify Los Alamos County as a Community Wildlife Habitat with the National Wildlife Federation. (Photo by Sandra West)

## Help Us Reach 200 Backyard Wildlife Habitats!

By Rachel Landman, Marketing Manager

The Pajarito Environmental Education Center's volunteer Selvi Viswanathan and founder Michele Altherr are the force behind Los Alamos County's status as a Community Wildlife Habitat. We are able to re-certify as a community-wide habitat annually thanks to homeowners certifying their gardens as backyard wildlife habitats, certifying public places like the nature center, continuing to reach out to the community about this project, and more.

This year, our goal is to reach 200 certified yards by PEEC's 20th anniversary celebration on Earth Day. Right now, 196 yards are certified, so we just need four more to make it happen!

"I am thankful for our community who are inviting wildlife into their yards," Selvi Viswanathan said. "It is one of the easiest ways to introduce children to birds and other wildlife and makes for a great family activity right at home. The best time to take on this project is the spring, so now is a great time to go outside and have fun with this project!"

Grab the list below, walk your yard (we suggest involving your kids or grandchildren!), and do an inventory of your habitat. Then, go online to complete the application questions, which takes about 15 minutes. There is a \$20 application fee.

To become certified, your yard needs:

- Three sources of food. Berries, nectar, bird feeders, fruit, sap, nuts, twigs, and more all qualify!
- One source of water such as a birdbath, pond, or saucer of water.
- Two sources of shelter from the weather and predators. Examples include a rock pile, roosting box, wooded area, evergreens, and more.
- At least two places to raise young where wildlife can engage in courtship behavior, mate, and then bear and raise their young. Mature trees, a nesting box, dead trees or snags, host plants for caterpillars, and more all count.
- Employ at least two sustainable practices from at least two of these three categories: soil and water conservation, controlling exotic species, and organic practices. Examples include capturing rain water, using mulch, limiting water use, using native plants, reducing lawn areas, composting, and eliminating chemical pesticides or fertilizers.

The National Wildlife Federation provides more information and ideas on their website at [nwf.org/garden-for-wildlife/certify](http://nwf.org/garden-for-wildlife/certify). You can also stop by the nature center on Saturdays from 2 – 4 p.m. to talk to Selvi about this project. We hope you'll join us in this exciting project and contribute to furthering Los Alamos County's status as a Community Wildlife Habitat. 🌿



## Summer Family Evenings

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Your kids will love our fun and unique nature-based camps!

## Backpacking Adventure for Teens

Grades 9 - 12, June 2 - 5

## Living Earth Adventure Program

Grades 7 - 8, June 8 - 12 and June 15 - 19

## Nature Odyssey

Grades 4 - 6, June 8 - 12 and June 15 - 19



[peecnature.org/events/summer-camps](http://peecnature.org/events/summer-camps)



## Critter Corner

By Esta Lee Albright

**Q: Why do our lizards and salamanders have ultraviolet lights in their exhibits?**

**A: Lizards and salamanders** that live inside aren't exposed to the ultraviolet (UV) rays they would get from sunlight outside. UV rays are important for absorbing Vitamin D and calcium metabolism. Exposure to UV rays also might increase our critters' appetites and activity levels!

Many people say "but his cage is by a sunny window." True, but ultraviolet light does not penetrate normal glass. For the same reason, people do not get sunburns through a window.

Our Mission: Enriching people's lives by strengthening their connections to our canyons, mesas, mountains, and skies.

## PEEC Board of Directors

Rick Wallace, President

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Mouser Williams, Secretary

Linda Zwick, Treasurer

Directors: Jeremy Campbell, Galen Gisler, Angela Lopez, Jennifer Macke, and Hari Viswanathan

## PEEC Staff

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Siobhan Niklasson, Education Programs Director

Beth Cortright, Adventure Programs Manager

Rachel Landman, Marketing Manager

Christa Tyson, Visitor Services Manager

Ashleigh Lusher, Gift Shop & Programs Coordinator

Denise Matthews, Play-Based Education Specialist

Elizabeth Watts, Educator

Mariana Rivera Freeman, Field Science Specialist

## Making Your Events Special

*"It was fantastic! Your staff was incredibly helpful and the evening went very smoothly. It helps that we are getting very used to this beautiful space. I hope we can find additional opportunities to use this venue — we have become quite spoiled!"*

— Liddie Martinez, Enterprise Bank & Trust

## Nature Center Hours:

Monday: 10-4

Tuesday: 10-8

Wednesday: 10-4

Thursday: Closed

Friday: 10-4

Saturday: 10-4

Sunday: 1-4

## Visit us online, too!

[www.peecnature.org](http://www.peecnature.org)

[facebook.com/peecnature](https://facebook.com/peecnature)

[instagram.com/peecnature](https://instagram.com/peecnature)

[flickr.com/photos/peec\\_nature](https://flickr.com/photos/peec_nature)

Leave us a review on Trip Advisor, Google, or Yelp



**PEEC**  
Pajarito Environmental  
Education Center

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PEEC at the Los Alamos Nature Center  
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*Our Forest Explorers club has been outside enjoying the snow and our canyons in 2020! Turns out, you can have lots of fun sledding just below the nature center. (Photo by Denise Matthews)*

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## FEATURED EVENTS

- Fly Fishing Film Tour **APRIL 2**  
Jemez Mountains Geology Tour **APRIL 4**  
*Just Eat It* Film Screening **APRIL 22**  
Earth Day Festival **APRIL 25**  
PEEC's 20th Anniversary Gala **MAY 3**  
Beginner Backpacking Trip **MAY 16 - 17**
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