



CONSERVATION EDUCATION PROGRAM *Learning on the Land*

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www.sjma.org

San Juan Mountains Association—For Lands' Sake!

Welcome to our e-Newsletter!

We hope you enjoy SJMA's newsletter created solely for educators - whether you teach in the classroom or outdoors, this newsletter is for you! In each monthly issue, you will receive helpful information on natural and cultural resources found in the Four Corners area, as well as field and classroom activities to do with your students.

The San Juan Mountains Association is the educational nonprofit partner for San Juan National Forest and Bureau of Land Management. If you received this newsletter and do not wish to continue receiving it, send an "unsubscribe teacher newsletter" email to gabi@sjma.org. If a friend or colleague sees this newsletter and is interested in receiving it, please have them send an email to gabi@sjma.org.

Raging Raptors

Who doesn't get excited at the sight of a bald eagle soaring above, or a red-tailed hawk perched on a light post? These birds of prey are not only beautiful, but also provide important functions in the natural world, keeping prey species numbers in check. Read on to learn more about these wonderful creatures.

Raptor Characteristics

Although many people probably picture a bald eagle when they think of a raptor, raptors come in all shapes and sizes. There are four main characteristics of raptors that they all share. This includes: a hooked beak, exceptional eyesight, strong legs and feet, and sharp talons.

The hooked beak is an important adaptation for raptors, as this is what allows them to eat their food. All raptors are predators, and hence eat prey (not plants, seeds, etc.). Small raptors, such as the kestrel, use their beaks to eat small mice and insects. Larger raptors may use their beaks for tearing apart anything from fish, to groundhogs, to skunks!

Eyesight is important for both the diurnal and nocturnal birds of prey. Diurnal raptors that come out during the day can see in full color, and have two sets of cones that allow them to see that color. They also have very accurate depth perception which is essential for when they are flying above, tracking and attempting to capture prey on the ground or in the water. Owls have excellent night vision as a result of extra rods in their eyes, allowing them to see well under low light conditions. Raptors also have three eyelids! One on top, one on the bottom, and a special transparent nictitating membrane that moves laterally across the eye which protects the eyes and keeps them moist. Interestingly, most birds are unable to move their eyes as we can. For this reason some can turn their heads extraordinary amounts – owls can turn their heads approximately 270 degrees – not quite all the way around as some people assume!

Raptors also regurgitate indigestible bones into pellets, or castings.

Colorado Raptor Species

Buttes:

- Red-tailed hawk,
- Swainson's hawk
- Rough-legged hawk
- Ferruginous hawk

Accipiters:

- Northern harrier (marsh hawk)
- Sharp-shinned hawk
- Cooper's hawk
- Goshawk
- Osprey

Vultures:

- Turkey vulture

Eagles:

- Bald eagle
- Golden eagle

Falcons:

- Kestrel
- Merlin
- Prairie falcon
- Gyrfalcon
- Peregrine falcon

Owls:

- Great horned owl
- Long-eared owl
- Short-eared owl
- Northern saw-whet owl
- Burrowing owl
- Pygmy owl
- Flammulated owl
- Screech owl
- Snowy owl (only occasionally in winter)
- Barn owl
- Barred owl
- Spotted owl
- Boreal owl



In general, accipiters inhabit deep woods. They have short, rounded wings and long tails that help them fly through the trees. They usually eat small birds. Buteos have broad wings and fanned tails and are often seen soaring high above, or perched on snags (dead trees) or telephone poles.

We generally see bald eagles here in Colorado in the winter, although there are at least 6 nesting pairs in western Colorado. The bald eagle is a federally threatened species, while the golden eagle is common.



Falcons are known to be fast flyers, and have long, narrow pointed wings and long, narrow tails to assist them in this. They typically feed on other birds and are able to capture them in mid-air. Some, such as the peregrine falcon, have adapted to living in cities by nesting on tall buildings and feeding on pigeons and other city-dwelling birds. There is some controversy as to whether or not vultures are considered to be raptors. They do not kill their prey and snatch them with their feet, but do eat meat. However this meat is carrion – already dead. They also do have the hooked beak and talons that all raptors have. As scientists can't seem to decide on this classification, use your own discretion.

Threats to Raptors

Like many predators, raptors have often had a hard time living with humans. One problem they have had has to do with bioaccumulation. This is simply the accumulation of chemicals in the bodies of animals, which increases exponentially as the animals get eaten. For example, a fish may eat an insect or some algae that was exposed to a pesticide or herbicide. That fish may be eaten by an osprey. While one fish affected by this chemical might not hurt the osprey much, if that osprey eats many of those fish, as it probably will, it could hurt the osprey or its offspring. This exact thing happened with the chemical DDT in the 1950s and 60s. The famous conservationist, Rachel Carson, sounded the alarm about this with her book *Silent Spring*, published in 1962. What was found to happen to the raptors was that the DDT affected the stability of their eggshells. When the mother bird sat on her eggs, the eggs were so fragile from the DDT that they simply broke, resulting in fewer offspring and therefore fewer numbers of those birds. This was especially true of eagles and peregrine falcons, both of which became endangered at least partially due to this phenomenon. Although DDT is banned in the U.S. today, other poisons, pesticides and herbicides still have the potential to bioaccumulate in raptors and hurt them or their offspring.

Other threats to raptors include habitat loss, which is true for many birds, not just raptors. Interestingly, collisions with vehicles is one of the main threats to birds of prey. Many of them are feeding on carrion that was also hit by a car, when they themselves are hit. Another potential spot for a collision with raptors is on wind farms. Because wind farms are often placed in raptor flight corridors, the potential for collisions can be high. There is much controversy surrounding wind farms for this reason – they reduce our dependence on non-renewable resources, but what is the cost in the lives of birds of prey? Raptors are also poached, or hunted illegally, in many parts of the world. Sometimes this is due to superstitions, while other times it might be simply for a hunting trophy or to collect decorative feathers. All raptors are protected under the Migratory Bird Treaty, and bald eagles have additional protection under the Bald Eagle Protection Act.

Field & Classroom Activities

Owl pellets

Examining the regurgitated pellets of birds may sound disgusting to some, but it's a great educational opportunity, and actually very sanitary. Although you can obtain your own owl pellets, the easiest and safest way to get them is from a supplier, such as www.pelletsinc.com. These pellets are collected from near barn owl nests, then are heat sterilized and wrapped and shipped to you. The owner of this company has installed over 1000 nest boxes west of the Mississippi for barn owls. Once you get the pellets, children can carefully dissect them, finding the bones of mice, birds, rats, etc. With careful observation it is possible to reconstruct an entire skeleton! Most children quickly get over the 'yuck' factor and thoroughly enjoy their investigations. You can also order, or find online, worksheets so children can match bones to the animal eaten.

Check out local raptors

Winter is approaching, and as noted above, this is when bald eagles are most numerous in our state! In southwest Colorado a great place to see bald eagles this time of year is along the upper Dolores River, north of Dolores. They can usually be spied perched in the leafless cottonwoods along the river, looking for fish swimming in the cold water below. During family drives keep your eyes open on telephone poles along the way. Many species, from red tailed hawks to golden eagles, can often be found there looking for either road killed animals or rodents scurrying in fields. On road trips keep a running tally of the number of birds of prey and the species seen. Bring a bird field guide along to help you out – these can be found at your local library.



Build a Bird

Gather materials that you can use to dress a child up as a bird – you can make this specific to raptors if you wish. Some great materials include: egg cartons for eyes, large t-shirts to cover the torso, and different colored felt to color different parts of the body, yarn to hold on the eyes and a beak which can be made out of felt, cardboard, cardstock, etc. Assign groups of children to dress up one child as a specific raptor, and have the rest of the children try to guess what bird that child is. Extend this activity to have the kids research their raptor species and write a report or create a poster about their bird of prey.

Extend the Experience

Check out <http://idahoptv.org/dialogue4kids/season5/boprey/activities.cfm> for more great raptor-related classroom activities.

Learn more about our national bird, the bald eagle, also a raptor. This website is a good place to start to check out activities: http://www.create.cett.msstate.edu/create/classroom/lplan_view.asp?articleID=193

Announcements

Einstein Fellowship - Application Now Open!

The Albert Einstein Distinguished Educator Fellowship is a paid fellowship for K-12 math, science, and technology teachers. Einstein Fellows spend a school year in Washington, DC serving in a federal agency or on Capitol Hill. To be considered for an Einstein Fellowship for the 2010-2011 school year, apply and submit three letters of recommendation online by January 13, 2010. Apply online at <http://www.einsteinfellows.org/application.html>

For more information about the Einstein Fellows program visit www.einsteinfellows.net or contact Program Manager Kathryn Culbertson at culbertsonk@triangle-coalition.org.

Mushroom Talk & Slide Show - November 19, 2009. 6:30 - 8pm.

Page Lindsey, recently retired Professor of Biology at Fort Lewis College, will discuss mushrooms of the San Juans at the Public Lands Center in Durango. She will tell us about the mushrooms commonly found in our area; how, when, and where to collect them; and how to tell if they are edible or poisonous. There will be a number of field guides on display and Page will comment on the attributes of each. Contact Gabi Morey, Education Outreach Director of San Juan Mountains Association at gabi@sjma.org or 385-1256.

Educators—Become a member of SJMA today and receive a 20% off coupon to our bookstore!

Whether you're a 'formal' K-12 school teacher or a non-formal educator, to receive your 20% off coupon valid at any of SJMA's bookstore locations, simply print this or a future newsletter and bring it and your new membership information in to one of our bookstores (Durango, Pagosa Springs, Bayfield or Dolores).

San Juan Mountains Association has been around since 1988. For 20 years, SJMA has been establishing a legacy of caring for the land. Side by side with our members and volunteers, we are helping to ensure the survival of South-west Colorado's natural glories for generations to come. SJMA also offers classroom visits, naturalist walks and talks, teacher for-credit workshops, and field trips to public lands. For more information, visit our website at www.sjma.org, or call 970-385-1256.

