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Edition



Featured: Bats

NEBRASKA WILDLIFE REHAB, INC.

The Critter Chronicle

NWRI and 'Team Wildlife'

NWRI has always been interested in the education of youth, in an attempt to give them a full appreciation of the animals that inhabit the earth with us. Recently another exciting program for our youth has been developed to open opportunities for them to become actively involved with wild animals, and ways to protect their habitat.

A science coordinator and teacher from King Science and Technology Magnet, Reenie McMains, presented a proposal to NWRI concerning a new concept for her school, Team Wildlife. This is to be an after-school club in partnership with NWRI. The activities of the club will potentially include:

- Involvement in rehabilitating and releasing animals into their natural habitats.
- Cleaning, repairing and building cages for species volunteers in the Omaha metro area.
- Planning and carrying out fundraisers for animal care.
- Working for public relations by writing articles and taking photographs for the NWRI newsletter and Web site, making presentations to classmates, teachers and community groups, writing a show to air on ETV, and creating display posters.
- Designing a kid-friendly web page for the NWRI web site.
- Being field scientists by collecting vital data on the animals in care, and reporting to state agencies.
- Going on field trips to learn more about Nebraska's native wildlife.
- Attending NWRI meetings.

Mrs. McMains has already initiated the program. The first meeting was highly successful. She reported that forty excited students attended the first after-school meeting. Committees for a variety of projects for NWRI have been developed around these initial areas of interest including a cage committee with plans to build birdhouses and cages for animals in care, a baking committee with plans to bake nutritious snacks and treats for animals in care, a field science committee with plans to collect and analyze intake data, and a public relations committee with plans to write for the school's television station.

The club is also interested in rehabilitating a species on their campus. They have a courtyard in which they could do this that is isolated and inaccessible to the public or students, unless they are accompanied by a teacher. The planned care schedule would be on-going from 7:00 AM to 4:30 PM.

It seems parents got in the act as well, as many attended the first meeting. We will be sure to include newsletter updates throughout the year as "Team Wildlife" progresses.

Inside this issue:

Meet Natasha Ferguson ... a Wildlife Care Provider	2
Thanks to our Many Friends and Donors	2
Bats of the United States	3, 4, 5
Important Bat Facts	5
Amazing Bat Trivia	5
Fox Kits ... and Golf?	6
Comments from Backpackers	7
Bobcat Sighted!	7

Meet Natasha Ferguson ... a Wildlife Care Provider

Natasha Ferguson has been a care provider with Nebraska Wildlife Rehabilitation, Inc. since early 1990. She was introduced to our predecessor organization, Wildlife Rescue Team, when she visited a booth at an Earth Day Festival in Lincoln, NE. She began her rehabilitation career like so many rehabilitators, with cottontail rabbits, and quickly began rehabilitating raccoons as well.

She began her leadership role in the organization early, becoming the Rabbit Team Leader when she was only 17 years old. Through her experiences with the animals, she realized that more information was sorely needed for the responsible and successful rehabilitation of all of Nebraska's native wildlife species. She began doing research on proper techniques, and educating herself and others on the best possible methods for the rehabilitation of wildlife. She has taken several classes offered by the International Wildlife Rehabilitation Council (IWRC), including the 1AB Basic Skills Class, and the Fluid and Nutrition Therapy Classes.

Natasha became a Raccoon Team Leader and held that position for many years. She is the co-author of the comprehensive raccoon rehabili-

tation manual that NWRI still uses today. Later, Natasha also began rehabilitating the large carnivores, and served as the Carnivore Team Co-Leader.

After much debate, Natasha decided that her most memorable wildlife rehabilitation story was when she and her fellow rehabilitators, including her sister, received a juvenile coyote on the verge of



Natasha holding an owl.

death. The coyote was admitted with a dangerously low body temperature, dehydrated, emaciated, and suffering from mange. He also was covered in abrasions, presumably from a collision with a car. He had been found by a Game and Parks officer in West Omaha, lying "dead" on the road. When he stopped to move the coyote's body off the road, he discovered that the it was still alive, and took it to Natasha. Using the skills she had recently learned in nutrition and fluid therapy classes, Natasha was able to stabilize the coyote, and start it on its long road to recovery. Although it was admitted almost dead, "four months later, he was released as a huge and beautiful coyote."

Thanks to Our Many Friends and Donors

NWRI is deeply grateful to the following individuals, foundations, and businesses for their contributions to our work in providing medical management and compassionate care for the injured, sick, and orphaned wildlife that come to our volunteers.

- Theresa Andrews
Central High School
- Thomas McGinn and Annamaria Nagy
- Tom and Suzanne Moore
- Betsy Newman for the Barnard and Margaret Fink Foundation
- Cella Quinn
- Carol Thrasher
- Dr. Christine Webster
- Kathleen Wilczewski

Amazing Bats

Introduction

Bats may be the most misunderstood animals in many cultures, although they rank among the most beneficial species in the world.

Bat Biology

Bats, like humans, are mammals. They are warm-blooded, have hair, give birth to live young, and feed their young milk from mammary glands. There are almost 1,100 species of bats worldwide, making up ¼ of all mammal species in the world



What a great grip!

today.

Worldwide, bats vary in size from only slightly over two grams (0.07 ounce - about the weight of a dime) to more than 1.5 kilograms (more than 3 pounds). The large "flying foxes" of Africa, Asia, Australia, and many Pacific Islands may have a wingspan of up to 6 feet. The bats of the United States vary in size from less than three grams (0.11 ounce) to 70 grams (2.5 ounces). The largest United States bat, the greater mastiff bat (*Eumops perotis*) ranges from central California south into Mexico, and has a wingspan of approximately 22 inches.

Bats are the only true flying mammals, and their maneuverability while capturing insects on the wing is astonishing. Bats belong to the mammalian order Chiroptera, which means "hand-wing." The bones pre-

sent in a bat's wing are the same as those of the human arm and hand, but bat finger bones are greatly elongated and connected by a double membrane of skin to form the wing. Bats primarily are nocturnal, although many fly about early in the evening, sometimes before sunset. Occasionally, especially on warm winter days in southern areas, they are observed flying during daylight hours.

Reproduction and Longevity. Most female bats produce only one offspring per year, although some species give birth to three or four babies at a time. Most United States bats breed in autumn, and the females store sperm until the following spring when fertilization takes place. The gestation period lasts only a few weeks, and baby bats are born in May or June. They develop rapidly, and most can learn to fly within two to five weeks after birth. Bats live relatively long lives for animals of their small size, with some species living as long as 30 years.

Echolocation. Although bats have relatively good eyesight, most depend on their superbly developed echolocation (or sonar) system to navigate, and capture insects in the dark. Bats emit pulses of very high-frequency sound (inaudible to human ears) at a rate of a few to 200 pulses per second. By listening to the echoes reflected back to them, they can discern objects in their path. Their echolocation ability is so acute, they can avoid obstacles no wider than a piece of thread, and capture tiny flying insects, even in complete darkness.

Feeding. Different species of bats eat a wide variety of foods, filling almost every possible feeding niche. Almost all United States bats, and

70 percent of the bat species worldwide, feed almost exclusively on insects and are thus extremely beneficial to humans. Insect-eating bats may either capture flying insects in their mouths or scoop them into their tail or wing membranes. They then reach down and take the insect into their mouth. This results in the erratic flight most people are familiar with when they observe bats flying around in the late evening, or around lights at night. A single little brown bat can eat up to 1,200 insects in an hour, or up to 10,000 insects in one night. A colony of 150 big brown bats can protect local farmers from up to 33 million or more rootworms each summer.

While most United States bat species are insectivorous, bats in other parts of the world feed on a variety of items in addition to insects. Many species feed primarily on fruit, while several types feed on nectar and pollen. Fruit bats perform an extremely important function as seed dispersers for plants. In the wild, important agricultural plants, from bananas, breadfruit and mangoes to cashews, dates, and figs rely on bats



Laura Stastny with a few friends.

for pollination and seed dispersal. Tequila is produced from agave plants, whose seed production drops to 1/3,000th of normal without bat pollinators.

Amazing Bats

(continued from page 3)

Nectar eating bats, including the federally-listed endangered Lesser Long-Nosed Bat (*Leptonycteris curasoae yerbabuena*) and Greater Mexican Long-Nosed Bats (*Leptonycteris nivalis*), are important pollinators. Many plant species depend almost entirely on bats for pollination.

Other bat species survive on diets consisting of fish, scorpions, frogs, birds, or even other bats! Fishing bats have echolocation so sophisticated that they can detect a minnow's fin as fine as a human hair, protruding only two millimeters above a pond's surface. Frog-eating bats identify edible from poisonous frogs by listening to the mating calls of male frogs. Frogs counter by hiding and using short, difficult to locate calls.

Of the 45 species of bats found in the continental United States, six are federally-listed as endangered under the Endangered Species Act of 1973, as amended. These species include the gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), Ozark Big-Eared Bat (*Corynorhinus (=Plecotus) townsendii ingens*), Virginia Big-Eared Bat (*Corynorhinus (=Plecotus) townsendii virginianus*) as well as the two long-nosed bats mentioned above. In addition to the listed continental U.S. species, the Hawaiian Hoary Bat (*Lasiurus cinereus semotus*)(Hawaii), Little Mariana Fruit Bat (*Pteropus tokudae*)(Guam) and Mariana Fruit Bat (*Pteropus mariannus mariannus*)(Guam), are also listed as endangered. Twenty other species are considered to be of special concern, and may be proposed for listing as endangered or threatened in the future. Populations of several of the remaining species, especially cave-dwelling species, also appear to be declining.

Hibernation and Migration

Because insects are not available as food during winter, temperate-zone bats survive by either migrating to warmer regions where insects are available, or by hibernating. Hibernation is a state of torpor (inactivity) during which normal metabolic ac-

tivities are greatly reduced. Body temperature is reduced and heart-rate is slowed. A hibernating bat can thus survive on only a few grams of stored fat during the approximately five-to-six month hibernation period. Bats usually lose from ¼ to ½ their body weight during hibernation.

Several bat species hibernate in dense clusters on cave walls or ceilings. Clusters may consist of hundreds of bats per square foot. Summer "maternity" colonies of pregnant or nursing females of several species also congregate and cluster together.



Most United States cave bats spend winter hibernating in caves (or mines) and move to trees or buildings during summer. A few species reside in caves year-round, although they usually use different caves in summer than winter. Most cave bats are very loyal to certain caves and return year after year to the same caves, often to the exact location in the cave where they spent the previous winter.

Tree bats seldom enter caves. They roost in trees during summer days and spend winter primarily in hollow trees. Several species make relatively long migration flights between winter and summer habitats. The millions of Brazilian (or Mexican) free-tailed bats (*Tadarida brasiliensis*) that spend the summer in southwestern United States caves, such as Carlsbad Cavern in New Mexico, migrate up to 800 miles and from their winter roosts in Mexico.

Bats In Nebraska

There are approximately 13 species of bats inhabiting the different parts

of our state. All of these species are insectivorous, and of these species, about five are commonly admitted for rehabilitation in the Omaha area. Within the city of Omaha, lacking natural habitat, many species such as big brown, little brown, and evening bats, make their homes in our homes, roosting in the spaces between walls and roofs. NWRI rehabilitates over 250 bats each year!

Reasons for Decline

Several animals, including owls, hawks, raccoons, skunks, and snakes prey on bats; yet, relatively few animals consume bats as a regular part of their diet. Man seems to be the only animal having significant impact on bat populations. Adverse human impacts include habitat destruction, direct killing, vandalism, disturbance of hibernating and maternity colonies, use of pesticides (on their food - insects), and other chemical toxicants. Drastic reductions in bat populations have occurred during recent years in the United States and worldwide.

Human disturbance to hibernation and maternity colonies is a major factor in the decline of many bat species. Even well meaning individuals such as cavers and biologists cause these disturbances. Hibernating bats arouse from hibernation when disturbed by people entering their caves. When aroused, they use up precious winter fat needed to support them until insects are again available in spring. A single arousal probably costs a bat as much energy as it would normally expend in two to three weeks of hibernation. Thus, if aroused often, hibernating bats may starve to death before spring. Disturbance to summer maternity colonies also is extremely detrimental. Maternity colonies won't tolerate disturbance, especially when flightless newborn young are present. Baby bats may be dropped to their deaths or abandoned by panicked parents if disturbance occurs during this period.

Bats of the United States

(continued from page 4)

In some parts of the world, especially in parts of Asia, Africa, and the Pacific Islands, many bat species are used as food by humans. There is concern that many food species may become extinct due to overharvest, and lack of adequate management. This is true not only for the larger "meatier" species such as fruit bats, but for smaller bats as well.

Bats are exceptionally vulnerable to extinction, in part because they are the slowest reproducing mammals on earth for their size, most producing only one young annually. More than 50% of American bat species are in severe decline or already listed as endangered. Losses are occurring at alarming rates worldwide.



Important Bat Facts

- More than 1,100 species of bats account for almost a quarter of all mammal species, and most are highly beneficial.
- Worldwide, bats are an important natural enemies of night-flying insects. A single little brown bat can catch 1,200 mosquitoes-sized insects in just one hour.
- The 20 million Mexican free-tails from Bracken Cave, Texas eat approximately 200 tons of insects nightly.
- Tropical bats are key elements in rain forest ecosystems which rely on them to pollinate flowers and disperse seeds for countless trees and shrubs.
- In the wild, important agricultural plants, from bananas, breadfruit and mangoes to cashews, dates, and figs rely on bats for pollination and seed dispersal.
- Desert ecosystems rely on nectar-feeding bats as primary pollinators of giant cacti, including the famous organ pipe and saguaro of Arizona.
- Bat droppings in caves support whole ecosystems of unique organisms, including bacteria useful in detoxifying wastes, improving detergents, and producing gasohol and antibiotics.
- An anticoagulant from vampire bat saliva may soon be used to treat human heart patients.
- Contrary to popular misconception, bats are not blind, do not become entangled in human hair, and seldom transmit disease to other animals or humans.
- All mammals can contract rabies; however, even the less than a half of one percent of bats that do, normally bite only in self-defense and pose little threat to people who do not handle them.
- Bats are exceptionally vulnerable to extinction, in part because they are the slowest reproducing mammals on earth for their size, most producing only one young annually.
- More than 50% of American bat species are in severe decline or already listed as endangered. Losses are occurring at alarming rates worldwide.
- Loss of bats increases demand for chemical pesticides, can jeopardize whole ecosystems of other animal and plant species, and can harm human economies.

Amazing Bat Trivia

- The world's smallest mammal is the bumblebee bat of Thailand, weighing less than a penny.
- Giant flying foxes that live in Indonesia have wingspans of nearly six feet.
- The common little brown bat of North America is the world's longest lived mammal for its size, with life-spans sometimes exceeding 32 years.
- Mexican free-tailed bats sometimes fly up to two miles high to feed or to catch tail-winds that carry them over long distances at speeds of more than 60 miles per hour.
- The pallid bat of western North America is immune to the stings of scorpions and even the seven-inch centipedes upon which it feeds.
- Fishing bats have echolocation so sophisticated that they can detect a minnow's fin as fine as a human hair, protruding only two millimeters above a pond's surface.
- African heart-nosed bats can hear the footsteps of a beetle walking on sand from a distance of more than six feet.
- Red bats that live in tree foliage throughout most of North America can withstand body temperatures as low as 23 degrees F. during winter hibernation.
- Tiny woolly bats in West Africa live in the large webs of colonial spiders.
- The Honduran white bat is snow white with a yellow nose and ears. It cuts large leaves to make "tents" that protect its small colonies from jungle rains.
- Disk-winged bats of Latin America have adhesive disks on both wings and feet that enable them to live in unfurling banana leaves (or even walk up a window pane!).
- Vampire bats adopt orphans and have been known to risk their lives to share food with less fortunate roost-mates.
- Male epauletted bats have pouches in their shoulders which contain large, showy patches of white fur that they flash during courtship to attract mates.
- Mother Mexican free-tailed bats find and nurse their own young, even in huge colonies where many millions of babies cluster at up to 500 per square foot.

Fox Kits ... and Golf?

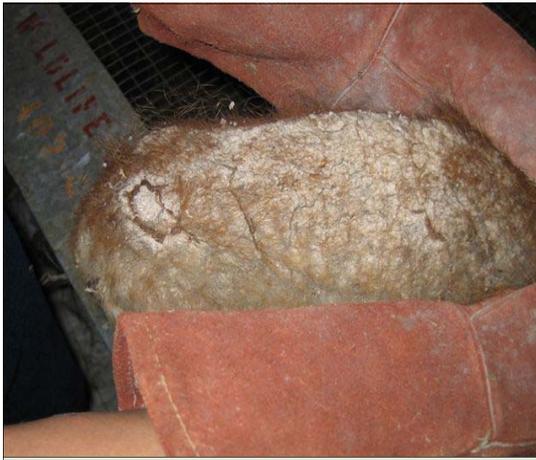
This summer in July, Nebraska Wildlife Rehab, Inc. was contacted by golfers at Shoreline Golf Course, requesting assistance with a pair of fox kits that were born on the golf course property this spring. The fox kits' parents and siblings had disappeared over the course of the summer, and the two kits were in very poor condition. Both were emaciated and covered in mange, and had lost their fear of people. They dozed openly in the tall grasses around the golf course, and begged for food at the base of a hollow tree. The employees and golfers enjoyed watching the foxes, but had become concerned for their welfare.

One afternoon, with the help of golf course employees, the young female fox was trapped in a culvert, and then netted. She was immediately taken into care at Natasha Ferguson's home, where mange treatment and antibiotics for her respiratory and skin conditions were started immediately. Traps were left at the golf course for the other kit, and that same afternoon, the

fox into a wooded area, and finally netted him as a wonderful Midwest thunderstorm rolled through to accompany the capture.



Bright eyed and bushy tailed!



Affected coat and skin



Happy and healthy once again.



Fox kit with mange.

fox was caught! Due to a trap malfunction, the fox was able to escape before being loaded into the car. Determined to secure treatment for the second fox as well, volunteers Jan Faraci and Laura Stastny followed

Both foxes have been in treatment for eight weeks, and their conditions have improved greatly. Soon they will be released back into their home territory, as requested by the people who frequent Shoreline Golf Course.

Our thanks to the employees and golfers at Shoreline for caring enough to help these foxes!

If you find an injured or orphaned animal, please call NWRI's hotline at **341-8619**.

Comments from Backpackers

These are actual comments left on Forest Service registration sheets and comment cards by backpackers completing wilderness camping trips.

- A small deer came into my camp and stole my bag of pickles. Is there a way I can get reimbursed? Please call.
- Escalators would help on steep uphill sections.
- Instead of a permit system or regulations, the Forest Service needs to reduce worldwide population growth to limit the number of visitors to wilderness.
- Trails need to be wider so people can walk while holding hands.
- Ban walking sticks in wilderness. Hikers that use walking sticks are more likely to chase animals.
- All the mile markers are missing this year.
- Found a smoldering cigarette left by a horse.
- Trails need to be reconstructed. Please avoid building trails that go uphill.
- Too many bugs and leeches and spiders and spider webs. Please spray the wilderness to rid the area of these pests.
- Please pave the trails so they can be plowed of

Bobcat Sighted!

In early spring of this year, Nebraska Wildlife Rehabilitation, Inc. released two 10-month-old bobcats back into the wild. Both cats were outfitted with bright orange ear tags for identification.

In September, one of the cats was sighted just miles from her original release site. A member of the public reported the sighting to Nebraska Game and Parks, who then reported it to NWRI. The report stated that the cat looked healthy and active, providing our care providers with reassurance that our spring release was a success!



Page 7

snow in the winter.

- Chair lifts need to be in some places so that we can get to wonderful views without having to hike to them.
- The coyotes made too much noise last night and kept me awake. Please eradicate these annoying animals.
- Reflectors need to be placed on trees every 50 feet so people can hike at night with flashlights.
- Need more signs to keep area pristine.
- A McDonald's would be nice at the trailhead.
- The places where trails do not exist are not well marked.
- Too many rocks in the mountains.

Please cut out, complete this form and send it along with your check.)

Make me a member of NWRI!

Name

Street Address

City

State

Zip

Telephone

Enclosed is a check to cover my annual membership fee.

- o \$25 general
- o \$50 patron
- o \$100 benefactor

Please make checks payable to:

**Nebraska Wildlife Rehab, Inc.
P.O. Box 24122
Omaha, NE 68124**

