August, 2003 Edition



Featured: Cottontail Rabbit

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Zoonotic Diseases ... Are You at Risk?

West Nile, Hantavirus, E.Coli, Monkey Pox, Tularemia ... the list of "new" diseases increases with every news report. What all of these infectious processes have in common is their root in animal populations. Zoonotic diseases or zoonoses (zoeuh'-no-sez') are diseases that can be transmitted from animals to humans.

Wild and domestic animals share some disease-causing organisms and either group can transmit diseases to people. Transmission can occur directly through contact with tissues or body fluids of animals. Indirect (vector) transmission can occur through insects (mosquitoes, ticks and mites) that feed on infected animals. While the source of these infectious diseases is not new -influenza strains have their beginning in animal diseases -- the frequency of eruption and spread is. Reports indicate that the frequency of these zoonotic diseases is in direct relationship to the invasion of human beings into different ecosystems. The adage "don't mess with mother nature" seems apropos when considering zoonoses.

Analyzing Your Risk

Once the leap from animal to man is made, the question becomes one of exposure and control. Everyone should be aware of zoonoses and take appropriate precautions. Often, the perceived risks of the most notorious zoonoses are much greater than the actual risks. For example, rabies is a widely known and feared deadly disease but it causes only about two deaths in the U.S. each year. Press reports often create the impression that we are in constant and imminent danger from these diseases and their primal hosts. The reality is sometimes quite different. The latest example of the problem is close to home. Newscasters reported recently on an "outbreak" of tularemia or the so-called rabbit fever. These cases were reported in the Lincoln and Bellevue areas. The infections were reported to be the result of two individuals having come into contact with a dead rabbit while mowing grass. The cases were

unusual in that tularemia is rare, but most often, contracted by hunters who skin infected rabbits. In fact, NWRI handles over one thousand rabbits annually, and in the thirty-year history of the group, there has never been an infection. Our animal care providers use gloves when handling animals. The incidence of the disease in humans is low because only 1% of the rabbit population is estimated to be infected.

Generally, risks of human exposure from zoonoses depend on the time of year and frequency of exposure to animal habitats. Although the risk of wildlife transmitted disease is usually low, pest control operators, animal control officers and wildlife managers have a higher risk than the general public since their work brings them into frequent contact with wild animals, their parasites and environments. The implications of contracting such a disease can range from a minor illness, which may be confused with a cold or flu, to debilitation or death.

A variety of wildlife diseases and parasites are at least potentially zoonotic (transmittable from animals to humans). The table on page 7 summarizes those wildlife diseases which are somewhat common and of which wildlife managers should be aware.

Risks can increase within any group when precautions are not taken. Current and accurate information about risk, symptoms, and incidences of disease is available from physicians, veterinarians and medical entomologists. State Departments of Health or Agriculture and the National Centers for Disease Control and Prevention can also provide information on understanding risks and can identify current rates of infection and geographic "hot spots."

General Precautions

Diseased wild animals often show changes in behavior. They sometimes appear docile or react unusually to humans.

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Meet Linda and Phyllis ... Wildlife Care Providers

Linda Kelsey and Phyllis Futch colead our rabbit care provider team. Linda joined in May, 2000, after she learned about the organization when she signed up to do the 5K Run. Phyllis joined NWRI in November, 2000, when urged by a Board Member to apply her skills and caring in a place where they



Linda Kelsey

could make a difference and a positive impact.

When asked why they loved rabbits, Linda said "they seem to be at everyone's

mercy especially when they are young, be it cats, dogs, mowers or small children". Phyllis became involved in wild-



Phyllis Futch

life rehabilitation in the mid-1990's when her boss' dog dug up a nest of baby bunnies. In seeking a solution for those babies, she became inter-

ested in wildlife rehab. Subsequent bunny incidents over the next few years provided an opportunity to try rehabilitating baby cottontails and evolved into her role today with NWRI.

Both care providers feel that baby cottontails are very fragile, become stressed out easily and are hard to raise. Even with the best of care, they may not survive when separated from need their mothers in their first few

days of life. The public, while attempting to help, can and do harm to these orphaned bunnies.

Phyllis oversees the rehab of more than 700 cottontails annually and for many hundreds of these, she is the direct care provider. Linda typically cares for upwards of 300 or so each year. Phyllis, also the Chair for Animal Operations, provides temporary, in-transit care for many species. Her most frequent visitors are bats and squirrels. Linda also cares for squirrels.

Both Linda and Phyllis have had many memorable experiences since joining NWRI. Linda recently handled a phone call about a rabbit with "horns" which later turned out to be a case of Shopes disease (see article on page 5). Phyllis had the rare opportunity of rehabbing an albino cottontail last summer. It is exceedingly rare to find a true albino cottontail alive since they have no camouflage for defense purposes. Additionally, this cottontail provided a multitude of rehab opportunities during his time with us starting with where to place him (since as an albino he was not releasable) all the way to his multiple broken leg incidents due to a metabolic bone disorder.

What do both Linda and Phyllis like best about being a care provider? The knowledge that their efforts matter to that bunny and its rescuer. Even with NWRI's rabbit release success rate being 53% (a good success rate for bunnies), they both enjoy the release day, and it is never very long before a new bunny litter comes in needing assistance.

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.

Bill Wilmert and Target Stores

@ 125th & W. Maple Road
Andy Spiegel and Albertson's

@ 72nd & Military
John J. Malnack Memorial
Backyard Birds

"Tootsie" Tyler Memorial
Blair Animal Shelter

Pat Rodenburg
Emma Reigle
John & Debra Shavlik
Colleen Haley
Frank & Polly Thanis
Rich Rozgay
Phyllis Futch
Lynn Kvigne

Featured: the Cottontail Rabbit

Description



The most distinctive features of the eastern cottontail are its long ears, long hind legs and short white tail. An adult cottontail is about 15 to

18 inches long and weighs between two and three pounds. It varies in color from gray to brown and has a rust-colored patch on the back of its neck

Distribution

Although eight species of cottontail rabbits occur in the United States, only two inhabit Nebraska. The eastern cottontail is the most widely occurring cottontail in the United States and is found throughout Nebraska. The desert cottontail occurs only in the western part of the state, primarily west of Ogallala. Neither species occurs in the vast dry uplands of the Sandhills, but both can be found in the bottomland habitat there.

Habitat and home

A cottontail is attracted to field and cover edges and early successional, or weedy, habitats. The eastern cottontail can be found almost anywhere two types of cover meet; however, it prefers a mixture of grass, forbs such as wildflowers or weeds, and dense thorny shrubs. It most prefers ground cover that is a mixture of open areas and dense vegetation. In Nebraska, fence rows, shelterbelts, stream sides, and road-sides are locations where this type of habitat may be found.

The Conservation Reserve Program has allowed for the development of excellent habitat in which weeds grow before planted grasses become established. However, after two years these fields become pure stands of grass which will not support many rabbits.

A cottontail must rely on shrubs or woody cover for escape cover, and the denser and thornier that cover is.

the better the rabbit likes it. Succulent forbs are also necessary for nutrition. Habitat that is capable of supporting cottontails is decreasing throughout the rabbit's range, as a result of aging and deteriorating shelterbelts, the removal of hedge rows, the farming of roadsides, and the over grazing of pastures, stream banks and lakeshores.

All habitat components needed by an animal are found in its home range. The female cottontail's home range is one to 15 acres in size, while the male's may be as much as 100 acres.

A rabbit uses above-ground structures called "fomms" and underground holes such as those of badger, prairie dog and woodchuck for escape and shelter. Fomms are pockets the rabbit creates by trampling down small areas of grass and small shrubs. It uses fomms at night and during daytime rest periods throughout the year, even during the reproductive period. After her litter is born, the female cottontail stays in a fomm near the nest, only visiting her nest at dawn and dusk. The cottontail uses underground holes for emergency escape throughout the year and during winter for shelter

A rabbit nest is a shallow depression that the female digs and lines with grass and fur. Because the female does not stay at the nest after the litter is born, she covers the young with grass and



Babies in nest

fur to help protect them from predators while she is away.

Habits

You may see a cottontail at any time of the day or night but the

rabbit is most active at dusk and dawn. Its activity during midday is greatly decreased unless the sky is heavily overcast.

Different behavior patterns are used by a threatened rabbit. If the danger is far away, it may freeze and remain motionless, using its background as camouflage. When the threat is near, the rabbit moves quickly to nearby thick cover such as a thicket or brush pile. When cornered, it may thump its pursuer with a hind foot to stun it and then make a break for freedom. A rabbit may make a shrill, high-pitched squeal when it is captured.

A cottontail may easily go into shock when captured. A person who finds it necessary to handle a cottontail should cover the captured or injured rabbit's eyes and handle it very slowly and carefully.

A cottontail produces two types of droppings -- hard and brown or soft and green. The softer pellets are eaten by the rabbit to further break down food. This is called coprophagy.

Foods

Basically a vegetarian, the cottontail eats primarily grasses and legumes, such as clover and lespedezas, during the growing season. A young rabbit consumes a considerable amount of forbs such as dandelions, ragweed and prickly lettuce. It eats numerous crops such as soybeans, wheat and corn, and during the non-growing season, young shoots and buds. When more preferred foods are scarce its diet may also include twigs and bark, and when other foods are not available, it may resort to eating non-plant foods such as snails or carrion.

Reproduction

The breeding season begins in February in Nebraska. With a gestation period of 28 days and the capability of a female to become pregnant the day after giving birth, litters can be produced on a monthly basis. By late June this efficiency breaks down and the female may not breed for several days or not at all after

Featured: the Cottontail Rabbit (continued from page 3)

have five to seven litters of four to five young in one year; therefore, many rabbits can be produced in a year that has suitable weather for food availability and nest survival. In several studies the number of juvenile cottontails taken by hunters in the fall compared to the number of adult rabbits is 80-85%, which is an indication of very high reproductive rates.

Youngeasy-to-plentiful foodpredatorweasels to birds of prey, a very importhe foodvegetative in the fall, is reduced



Baby bunny

catch and for many species from coyotes to making them tant part of chain. As habitat dries escape cover and the rab-

rabbits are an

bits become more and more exposed to predators. Many of the young produced each spring and summer are not alive by winter and even fewer are available for breeding the next spring. This is the typical reproductive strategy of such a highly preyed upon species -- produce large numbers of young quickly to ensure that some will survive to reproduce the next year.

Mortality

Predation is the primary direct cause of mortality for the cottontail. Poor habitat conditions, disease and severe weather can all increase its chances of being taken by a predator.

Numerous parasites and diseases affect rabbits. The bacterial disease tularemia can cause a rabbit to be more susceptible to predation by making it less able to detect potentially dangerous movement or to evade capture.

Severe winter storms can cover food sources to the point that a rabbit has to eat low-quality food such as tree bark. During prolonged periods of severe weather, the rabbit's physical condition may decrease to the point that it is unable to evade capture.

Importance

The cottontail rabbit is important as a game animal across its entire range. In the United States, deer are the only game more pursued by hunters than the rabbit or hare. In Nebraska more pheasants, quail and doves are harvested each year than cottontails, which may indicate that rabbits are an under utilized resource. Since the mid-1980s an average of 150,000 cottontails have been taken by approximately 26,000 hunters each year.

Unfortunately, many rabbit carcasses are needlessly discarded by hunters each year due to the presence of two parasites which do not affect man. The larvae of botflies (commonly called warbles) are sometimes found under a rabbit's skin. If the hunter encounters a warble in a rabbit or finds an abscess under the skin where a warble has recently left the rabbit, he can remove that area of the meat and still use the rest of the carcass, provided

the meat is cooked properly.

Tapeworm cysts are also found in rabbits. These are sacs of clear fluid that contain small white floating objects and are found attached to the rabbit's liver, intestines and occasionally to its lungs. These cysts are the larval stage in the life cycle of the dog tapeworm. If a dog or wild canine consumes one of these larvae it may develop into a tapeworm, but tapeworms do not develop in humans from these larvae. All of the larvae are normally removed when the rabbit is dressed, and any overlooked cysts are destroyed during the cooking process. This disease is often confused with "white spots on the liver" that are known to be indicative of tularemia.

Tularemia is a bacterial disease of rabbits that is transmittable to man, usually through openings in the skin. Hunters who notice small white or yellow spots on the surface of the rabbit's liver when they are field dressing it should discard the entire rabbit immediately. During the early stages of the disease the liver can appear normal, though the infected rabbit may behave oddly, move slowly or be easily captured. It is a good idea to wear rubber gloves when dressing a rabbit and it is important to always cook rabbit meat thoroughly. Tularemia is transmitted between rabbits by fleas and ticks. Rabbits die from the disease, so it is not a problem once there has been a good hard frost and the temperature remains cool. A hard frost kills ticks and fleas which carry the disease, and a rabbit infected prior to the freeze will normally die within a few days of contracting the disease.

Management

Management for the cottontail is habitat related. Management can be accomplished by maintaining small areas of different types of cover to develop the maximum amount of edge (places where two or more different types of vegetation meet). It is necessary to have grass in and around escape cover that is of sufficient height for the cottontail to hide its nests and build fomms. Large fields of grass are not as useful as grass intermixed with low-growing thick woody cover. It is a good idea to mow trails in areas of dense vegetation, and moderate grazing and prescribed burning are useful in suitable situations.

Planting a variety of shrub species, particularly thorny shrubs, is recommended, combined with a maintenance program to keep the shrub growing low

to the ground and spreading out from its center. If naturally growing escape cover is currently unavailable, brush piles can be used as an immediate but temporary substitute until planted cover is established. An individual brush-pile becomes useless as escape cover after a couple of years.



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Jack-a-lope? It's No Hoax ... This Rabbit Has Horns

On June 1st NWRl's Hotline received a call from a woman reporting a rabbit with "horns on its head and one eye". She was able to trap it in her hostas and transfer it to NWRl's rabbit team. Similarly, about a year ago on June 13, 2002, the Omaha World Herald shared another homeowner's strange sighting ... a horned rabbit nibbling on a flower in his back yard. Both homeowners live around 98th and Pacific streets in Omaha. The homeowner from last

summer's sighting had seen "jack-a-lopes" before in novelty stores and gift shops, but they were fake, fashioned by taxidermists who inserted small antlers from young deer into the heads of mounted rabbits. A horned, live rabbit in your yard is a sight to behold for sure.

Nature's jack-a-lopes are rabbits afflicted with a virus that produces large warts that can grow to resemble horns. The "horns" can reach four to five inches in length--hardly antelope scale, but one can easily imagine that tales about these odd critters would lend themselves to folklore. In 1933 biologists Richard E. Shope and W. W. Hurst revealed that cottontail rabbits suffered from a disease later named Shope's papilloma DNA virus (one wonders how Hurst felt about this naming sequence). Shope's papilloma virus, which is spread by fleas, ticks and mosquitoes, can cause giant skin



warts, which on the face can look like horns or beards. It is not transmissible to humans from rabbits. The virus is similar to the herpes simplex virus that impacts humans. It turns out that Shope's papilloma virus has long been present in the rabbit population of not only the mid-western U.S. but also of central Europe and Asia. There is evidence that the jack-a-lope myth evolved out of this very real virus that infects cottontail rabbits in the wild and supports the belief that many of our myths do in fact have some basis in fact.

Although horned rabbits are uncommon, they are found throughout the Great Plains. It's more of an east-central Great Plains disease, but has been seen as far west as Scottsbluff. Afflicted rabbits have been found in Kansas, Nebraska, South Dakota, Iowa, Missouri, Oklahoma, Arkansas and Minnesota. A few have already turned up this year in the Omaha area. Jackrabbits and domestic rabbits can acquire the virus, which is primarily seen in cotton (continued on page 6)

Zoonotic Diseases ... Are You at Risk? (continued from page 1)

Rabid wild and domestic dogs can react aggressively. Avoid contact with animals that appear sick, are dying or exhibiting unusual behavior. Avoid animals found outside their normal habitat or conditions. Report to officials when normally nocturnal animals are seen during the day or when domestic free-ranging pets behave unusually. Conservation officers and local, state and federal animal control agents are good contacts.

Below are two lists. The first gives general precautions for those who handle or have direct contact with wild animals. The second list gives general precautions for those entering areas where fungal and vector-borne diseases have been identified.

General Precautions for Diseased Animal Contact

- Wear protective clothing. Items like rubber or plastic gloves, boots or aprons can lessen the risk of exposure for diseases transmitted by blood, feces or saliva.
- 2. Clean animal holding and handling areas. Scrub tools, tables, reusable gloves and equipment with water and soap or detergent. Rinse the area with a disinfectant that contains bleach.
- Don't eat or drink when handling high-risk animals or materials. Wash hands thoroughly after handling
- Dispose of animals properly. Eliminate sources of disease by incineration or deep burial.
- Cook meat thoroughly before eating and dispose of tainted meat with questionable colors, odors,

or observable parasites.

- 6. Notify your physician if you are in a highrisk profession for wildlife disease. As a precaution, your doctor may recommend that a blood sample be drawn and frozen to provide baseline information. Information you provide will enable your doctor to be more alert to signs and symptoms of rarely occurring diseases.
- Educate yourself. Know the symptoms and distributions of wildlife-transmitted diseases. Not all diseases of wildlife are transmissible to humans.

General Precautions for High Risk Areas

- Apply mosquito or tick repellents. Be aware that some repellents are harmful to the skin.
- Avoid tick-infested areas or high activity periods of mosquitoes. Ticks are generally most numerous late spring to early summer. Mosquitoes are most active during summer, early evening hours.
- 3. Wear protective clothing and equipment. For the tick-borne Lyme disease, wear light-colored clothing and tape pants cuffs inside of socks or high boot tops when in high-risk areas. Equipment guards against air-borne transfer of microorganisms that can cause hantavirus and histoplasmosis. The Occupational Safety and Health Administration regulates job-

(continued on page 7)

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Jack-a-lope? It's No Hoax ... This Rabbit Has Horns (continued from page 5)

tails. The growths begin to appear in early spring and fall off by late summer. These giant warts can grow on any part of the rabbit's body, and the warts can turn cancerous and kill them. Unlike deer, which regenerate antlers each year, a rabbit affected by the virus may not re-grow its "horns". In about one-third of cases, papillomas spontaneously regress after several months. However, about 25% of infected cotton-



tails develop squamous cell carcinomas and die.

Care Providers of All Ages

Hi - my name is Talia Tene and I am going into 7th grade at Westside Middle School. I decide to get involved with this program because of my love for animals! When I was considering a volunteer program I wanted to get involved with for my Bat Mitzvah Project, animal rescue seemed perfect. It is great to watch my baby bunnies grow up before my very own eyes! Even though I have been disappointed when one (or



more) of my bunnies dies, I get so much pleasure when I release my healthy bunnies into the wild.

Please share this with your friends and neighbors. (Cut out, complete this form and send it along with your check.)

Make me a member of NWRI!

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All of it is well worth the time and effort I spend feeding, cleaning and caring for them. This has been a true learning experience for me and I want to continue working with this organization!

By Talia Tene Age 12 Omaha, NE

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

Zoonotic Diseases ... Are You at Risk? (continued from page 5)

- related activities regarding risk exposure to wildlifetransmitted diseases and may require certain clothes or equipment.)
- Recognize early symptoms. Alert your attending physician of your possible exposure. Many zoonoses are rare enough that medical professionals sometimes overlook them.
- 5. Reduce host populations. Become involved in
- community or area-wide efforts to control mosquitoes, fleas, ticks, rats or mice. Implement control methods on your property.
- Vaccinations. Vaccinate domestic animals against wildlife-transmitted diseases like rabies and Lyme disease. Contact your physician for human vaccination recommendations.

		mendations.	
	Wildlife diseases	and parasites that affor	ect humans.
Disease (Parasite)	Method of Transmission	Wildlife Hosts	Symptoms in Humans
Rabies (Virus)	Animal bite, aerosol	Striped skunk, raccoon, foxes, bats, and other mammals	Paralysis, convulsions, coma, death
Hantavirus (HPS) (Virus)	Aerosol, animal bite	Deer mice, other wild and com- mensal rodents	Fever, headache, muscle aches, nausea, vomiting, back pain, respiratory syndrome
Plague (Bacteria)		Wild rodents (prairie dogs, ground and tree squirrels, chipmunks), rabbits, carnivores	Fever, headache, severe discomfort, shak- ing, chills, pain in groin or arm pits (swollen lymph nodes), death
Leptospirosis (Bacteria)	Urine contamination, ingestion	Commensal and wild rodents, rabbits, fox, skunk, raccoon, opos- sum, deer	Fever, jaundice; pain in abdomen, joints or muscles; nausea; may be fatal
Brucellosis (Bacteria)	Contamination, ingestion (milk, etc.)	Hoofed animals, coyotes	Intermittent fever, chills, headache, body aches, weakness, weight loss
Salmonellosis (Bacteria)	Ingestion of bacteria in food contaminated with feces	Rodents, swine, cattle, wild birds, poultry, reptiles	Sudden onset of headache, fever, abdominal pain, nausea, diarrhea, vomiting
Histoplasmosis (Fungus)	Inhalation of spores	None, grows in soil enriched by feces under pigeon and bat roosts	Mild fever and flu-like illness, pneumonia, hepatitis, death
Trichinosis (Nematode worm)	Ingestion of uncooked meat containing larval cysts	Swine, bear, wild and domestic carnivores, wild and domestic rodents	Loss of appetite, nausea, diarrhea, swollen eyelids, fever, chills, muscle aches
Tularemia (Bacteria)	Contamination from skinning animals, ticks, biting insects	Wild rodents, rabbits, hares, carni- vores, birds, hoofed animals	Mild to severe. Pneumonia, ulcer at inoculation site, swollen lymph nodes, death
Baylisascaris procyonis	Fecal contamination, ingestion	Raccoons	Encephalitis, eye disease, cardiac pseudo tumor, death
Giardiaosis	Ingestion of contaminated water	Beaver (but do not transmit it di- rectly) "A reservoir species"	Diarrhea, abdominal pain, cramps
Monkey Pox	Inhalation from humans, bite from animal or contact w/ lesions	Domesticated prairie dogs and lab mice, rats, and rabbits	Fever, headache, aches, swollen lymph nodes, general discomfort & exhaustion, papular rash
Echinococcus multilocularis	Ingestion of tapeworm eggs thru hand to mouth transfer	Tapeworm found in foxes and coyotes	Abdominal pain, weakness, weight loss, cysts that can be fatal
Tick-borne			
Colorado tick fever (Virus)	Tick, Dermacentor andersoni, D. occidentals		High fever, headache, muscle ache, leth- argy
Rocky Mountain spotted fever (Rickettsia)	Tick, D.andersoni, D. variabilis, Amblyomma americanum, Hae- maphysalis leporispalustris		Rapid onset, fever, headache, muscle aches, nausea, vomiting, abdominal pain, rash, loss of muscle control, possibly fatal
Ehrlichiosis (Rickettsia)	Tick, species unknown	Unknown, possibly dogs and other carnivores	Fever, headache, nausea, vomiting, muscle aches, fleeting rash
Lyme disease (Bacteria)	Tick, Ixodes scapularis, I. pacifi- cus, A. americanum		Skin lesion, fever, headache, fatigue, mus- cle ache, arthritis, affects heart and nerv- ous system
Mosquito-borne			
Encephalitis (Virus)		birds), some rodents, bats, jack-	Fever, headache, nausea, musculo- skeletal aches, malaise, confusion and coma. High fatality rates occur in Eastern Equine Encephalitis
West Nile Virus	Mosquitoes	Have been found in birds, horses, mosquitoes, domestic dogs and squirrels.	Mild symptoms including fever, headache, and body aches, occasionally with a skin rash and swollen lymph nodes

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!!MARK THE DATE!!

NWRI Membership Meeting

@ the Nebraska Humane Society Auditorium 8929 Fort Street, Omaha on Saturday, October 11 from 11 A.M.—1 P.M.

Snacks Provided

The agenda will include a review of animal statistics, a discussion regarding organizational needs, and a presentation from Game and Parks. If you have an agenda item, please email it to nwri0@lycos.com or leave a message at NWRI's hot line number, and we will make every effort to accommodate your request. Hope to see you there.

Please help give our wild friends a second chance. All contributions are tax deductible.				
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