

# SOUTH DAKOTA'S PRAIRIE DOG MANAGEMENT PLANNING



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**SD DEPARTMENT OF GAME,  
FISH AND PARKS**

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## PRAIRIE DOGS AND PLAGUE

During South Dakota's state prairie dog planning process, a number of people expressed concern about risks associated with sylvatic plague, particularly related to black-tailed prairie dogs. This progress report presents basic information about plague.

**What is plague, and how is it spread?** Plague is a disease caused by a bacterium (*Yersinia pestis*). Plague occurs mainly in rodents, and it can be transmitted by flea bites, by direct contact with an infected animal, or by inhaling fluids from an animal infected with plague.

Plague is not native to North America. During the Middle Ages, plague caused the deaths of millions of Europeans whose homes were inhabited by flea-infested rats. Plague first appeared on the west coast of North America at about the turn of the century and has spread eastward from there.

**How dangerous is plague to people?**  
According to the Centers for Disease

Control (CDC) an average of 13 people per year are infected with plague in the U.S. For comparison, more than 80 cases of leprosy were reported in the U.S. in 2000, and about 800,000 people were treated for dog bites during the same year.

According to Dr. Lon Kightlinger, the SD Department of Health's records date back to 1923. Since then, South Dakota has had no known human cases of plague. Nationally, from 1970-1995, 80% of reported plague cases occurred in the southwestern states of Arizona, New Mexico, and Colorado (Four Corners area), and another 9% occurred in California. More than  $\frac{3}{4}$  of the cases were caused by flea bites.

Bubonic plague is the most common human form. It is characterized by swollen and

tender lymph glands. The swollen gland is called a bubo, giving this form the name bubonic plague. Left untreated, bubonic plague can become a serious and possibly fatal disease. Bubonic plague is treated with antibiotics, usually streptomycin.

### **Has plague been found in South Dakota?**

Plague has not been documented among rodents, including black-tailed prairie dogs, in South Dakota. There have been unexplained prairie dog die-offs, but these reports have not yet been proven to be caused by plague.

Predators, such as coyotes, foxes, and badgers, have been tested in South Dakota to evaluate disease risks to black-footed ferrets. If an animal has antibodies to plague in its blood, the animal has been exposed to the disease. Such antibodies have been detected in several predators in southwestern South Dakota. Since plague has been found in the surrounding states of Nebraska, Montana, and Wyoming, it is difficult to know where the predator might have come into contact with plague.

### **Do all wildlife species contract plague?**

Wildlife species seem to have varying degrees of vulnerability to plague. Some rodents, such as prairie dogs, ground squirrels, mice, and rats, are quite susceptible. Plague can annihilate a prairie dog colony, leaving few or no survivors. Other rodent species seem less susceptible, and research continues on the role that uninfected animals play in transmitting plague. Many experts believe that predators, such as coyotes and foxes, may help transmit the disease by carrying plague-infected fleas.

Dogs and cats can also contract plague by catching and eating rodents or rabbits or by

being bitten by plague-infected fleas. Pets can then carry infected fleas home. Infected dogs or cats may transmit plague to humans by biting them.

### **What precautions can people take to avoid plague?**

The Colorado Department of Health lists the following precautions for people in plague areas:

1. Do not feed or entice rodents or rabbits into your yard, porch, or patio.
2. Eliminate rodent habitats, such as lumber piles, broken cement, trash, and weeds around your home.
3. Rodent-proof your home and buildings as much as possible by keeping foundations in good repair and eliminating overhanging trees from building roofs and windows.
4. When camping, hiking, or hunting, do not linger in rodent-infested areas. Do not feed or handle wild rodents.
5. Avoid contact with sick and dead rodents and rabbits. Be watchful for animal die-offs and report such die-offs to local and state health departments.
6. When camping, hiking, or hunting, treat pants, socks, shoe tops, arms, and legs with insect repellents containing DEET.
7. Keep dogs leashed or leave them home when camping, hiking, or hunting. Restrain cats and dogs from roaming.
8. Use insecticide powders or shampoos on cats and dogs every few days when in plague areas. However, flea-repellent collars have not been proven effective.
9. If you hunt or trap rabbits or other wildlife, such as coyotes and bobcats, protect your hands and face while skinning or handling these animals.
10. The incubation period for plague is 2-6 days. Consult a physician if a sudden unexplained illness occurs within that time period after outdoor activities.

### **Is there a way to stop plague once it is documented in a prairie dog**

**colony?** In some special situations, prairie dog burrows have been treated with an insecticide to kill fleas. This practice has been used on colonies of endangered prairie dog species, on sites with reintroduced black-footed ferrets, and in areas where people live nearby.

Some people have suggested that an active approach be taken to control plague by killing the prairie dogs, predators, and other wildlife species found in and around a plague-infected colony. The idea is to establish an extermination zone; an approach similar to that used to contain hoof-and-mouth disease outbreaks among domestic livestock.

The South Dakota Game, Fish and Parks Department contacted a variety of wildlife disease experts and wildlife biologists in plague-affected states for input on the extermination zone approach. To a person, all agreed that the idea was impractical, costly, ineffective, and potentially dangerous in terms of spreading plague more widely.

A plague-infected prairie dog colony should not be visited any more than absolutely necessary. In fact, plague-affected areas on public lands are sometimes closed to visitors, and signs are posted to discourage use, particularly by people with pets. Repeated visits to a colony to poison prairie dogs or to trap or shoot predators increase the likelihood that plague-infected fleas will be transported to other areas that aren't presently affected by plague. As mentioned before, plague dramatically reduces a prairie dog colony without the aid of poison.

Secondly, fleas need hosts. If prairie dogs are removed from a colony, plague-carrying fleas will seek out other hosts, whether they are other wild animals or dogs or cats. In fact, according to Bill Van Pelt, a wildlife biologist with the Arizona Game and Fish

Department, a recent human case of plague in Arizona was transmitted by a plague-infected cat that sneezed in its owner's face.

To be effective, an extermination zone program would require the elimination of all potential plague hosts. Plague fleas may be carried by small mammals (mice, voles, ground squirrels, rabbits, etc.), predators (coyotes, fox, skunks, raccoons, weasels, bobcats, badgers, etc.) and domestic dogs and cats. It is virtually impossible to eliminate all of these potential plague sources from the landscape.

Finally, unless a particular prairie dog colony is being monitored very closely, it is unlikely that a plague die-off will be detected early enough to try to contain it. The State of South Dakota will continue to monitor plague research and seek input from experts when needed.

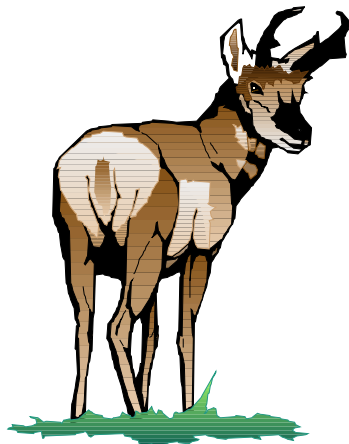
### **How will plague be addressed in the state prairie dog management plan?**

At present, the State of South Dakota proposes to adopt the plague monitoring protocol developed by the Black-tailed Prairie Dog Conservation Team, a group formed by the 11 state wildlife agencies within the range of the black-tailed prairie dog.

The protocol suggests the following actions:

1. State wildlife agencies will initiate a public information program for landowners, hunters, and members of the public regarding the need to notify the agency of die-offs of prairie dogs or ground squirrels.
2. State wildlife agencies and public health officials will inform other agencies and animal control personnel of the need for reporting die-offs.

3. State wildlife agencies and public health officials will provide information and training for other agencies, veterinarians, and animal damage control personnel about protocols for collecting, packaging, and recording dead prairie dogs and ground squirrels. (These protocols are included in the Conservation Team's plague monitoring protocol document.)
4. The state prairie dog coordinator will develop windshield survey routes throughout the prairie dog range. People who run these routes will be given instructions on how to react to suspected die-offs.
5. If plague is verified, the state prairie dog coordinator, in cooperation with public health officials and CDC, will inform landowners, government agency personnel, and animal damage control personnel in the affected area using local media sources.
6. Post-plague monitoring should be conducted annually to document recolonization rates and to verify occupied acreage.
7. State prairie dog coordinator and state prairie dog working group should evaluate the extent of the epizootic and determine if there is a need to modify prairie dog management in the plague area.



To learn more about plague and other diseases, visit the CDC's web-site:

<http://www.cdc.gov>

For more information about SD's state planning effort, visit:

<http://www.state.sd.us/doa/prairiedog.htm>