

ENDANGERED SPECIES

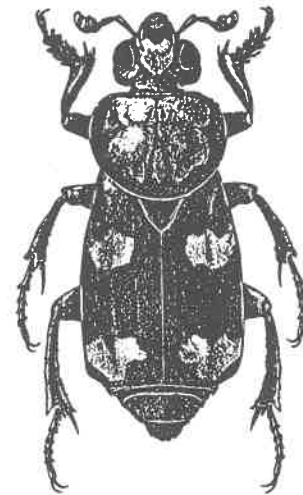
Status: **Federal Endangered**
State Endangered

AMERICAN BURYING BEETLE

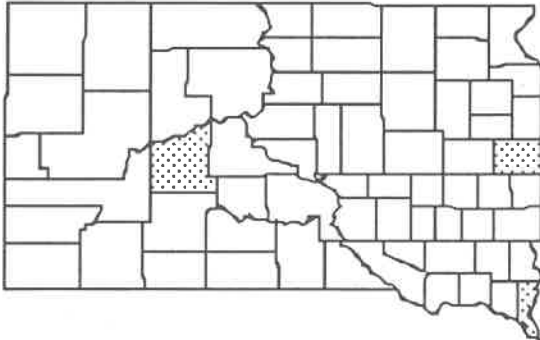
(*Nicrophorus americanus*)

Description

Burying beetles are generally black, with red, yellow or orange markings on the *elytra*, or wing covers. The American burying beetle is easy to separate from the common burying beetles. It is larger, measuring up to 1.5 inches (30-35 mm) in length. The major distinguishing feature, other than size, is the large red or reddish-orange spot on the *pronotal* disk covering the *thorax*.



Distribution



Former Occurrence for American Burying Beetles

Formerly, this species was widespread and common throughout Eastern North America. Currently, wild populations are known only from Block Island in Rhode Island, Eastern Oklahoma and on the Valentine National Wildlife Refuge in Nebraska. This species, when present, is easy to collect and is

found in many older insect collections. Specimens were collected in South Dakota in 1945 near Brookings and Elk Point. A specimen was collected at an unknown date near Nowlin in Haakon County. Recently, surveys have been conducted at widely scattered sites in South Dakota, but no new occurrences have been recorded.

Natural History

Preferred habitat of the American burying beetle is not well documented, but areas of mixed woodlands and grasslands with soils suitable for burying carcasses seem to meet the species' habitat requirements. The beetles are active at night, with peak activity occurring when nighttime temperatures remain above 60 degrees F (15 degrees C).

The habits and reproductive activities of the American burying beetle are similar to other burying beetles. Both males and females have highly sensitive *chemical receptors* in their antennae. These receptors allow the beetles to locate decomposing carcasses from long distances. A carcass may provide food for the adults or it may be used for the reproductive effort.

Reproduction occurs in June or July. A carcass of suitable size must be located. A carcass weighing from 2 to 7 ounces (50-200 grams) is preferred. An adult male and female will bury the carcass and form a chamber around it. Typical carcass species include mice, snakes, fish, and other small animals. The pair will remove feathers, fur or fly eggs and shape the carcass into a ball. A preservative in the anal and oral secretions of these insects retards decomposition of the *carrion*. Thirty or more eggs are laid near the preserved carcass. When the eggs hatch, the young are fed by the adults until they are able to feed themselves from the preserved carcass (see Figure 1). Burying beetles are among the few insects that provide parental care for their young. Parental care by at least one adult continues until the larvae disperse to *pupate*. The larvae burrow into the soil, *pupate* and emerge as adults. The entire process of brood rearing and pupation occurs over a period of 48 to 56 days. The new adults will spend the winter in the soil and breed the following summer. The older adults usually do not survive another winter.

Burying beetles have a symbiotic (mutually beneficial) relationship with a group of mites of the *genus Poecilochirus*. As many as 14 species of these mites are known to be carried by burying beetles, including the American burying beetle. The beetles provide the mites with a means of dispersal and access to food while the mites clean the beetles of microbes and fly eggs that are picked up from *carrion*.

Significance

Burying beetles are important recyclers of nutrients in terrestrial ecosystems. By burying and eating *carrion*, they remove a source of food from flies, which are often pests and health threats. Burying beetles also feed on fly eggs and larvae, helping to reduce their numbers.

Very little is known about the decline of the American burying beetle. The factor(s) responsible for its near extinction apparently have not affected other closely related species. For this reason, the usual causes of declines or extinctions, such as habitat loss, do not seem to be valid. Some experts *hypothesize* that the American burying beetle's decline began with the loss of the huge numbers of passenger pigeons and other formerly numerous birds such as prairie chickens, wild turkeys, and possibly waterfowl. The young of these species would have provided the preferred carcass size at the optimum time for burying beetle reproduction. An understanding of the cause or causes for the decline of this formerly common species may be important in preventing similar declines of other related species.

Conservation Measures

The former abundance and widespread distribution of the American burying beetle is documented in the numerous specimens in older insect collections. *Entomologists* noticed that specimens were very rare in recent collections and petitioned the U.S. Fish and Wildlife Service to list the species under the Endangered Species Act. Further field investigations confirmed that the species was near extinction. The American burying beetle was listed as endangered in 1989.

Conservation measures are difficult to plan because little is known about the habitat requirements and the reasons for the decline of this species. It may

be possible to reintroduce the species into some of its former habitat. Captive populations have produced enough beetles for reintroduction to occur on one island off the coast of Massachusetts. This reintroduction appears to be successful so far. Before reintroductions can successfully occur inland in South Dakota, biologists need to know more about the causes of the decline of the American burying beetle,

to insure that the same fate doesn't befall reintroduced populations.

Individuals can help by removing electronic bug-zappers, which provide insignificant control of the mosquitoes for which they are intended. These devices attract and kill burying beetles, as well as many other kinds of beneficial insects.

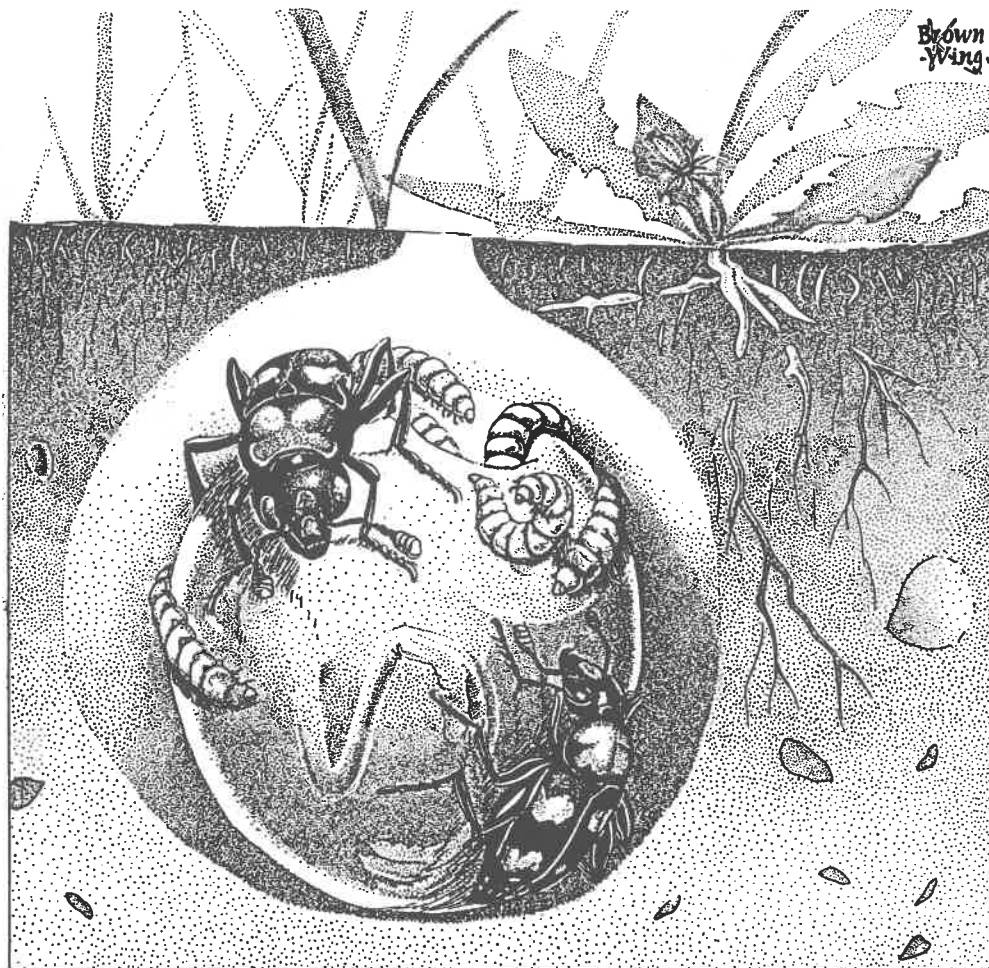


Figure 1: Adult And Larval Burying Beetles With Carrion

Glossary

Carrion - decaying flesh of a dead animal.

Chemical receptors - sensory cells that detect small concentrations of molecules from some chemical stimuli, such as carrion or sex pheromones, used to attract members of the other sex.

Elytra - the hardened front wings of insects, such as beetles, that act as a protective covering for the rear wings.

Entomologists - scientists who study insect biology.

Genus - a group of species that are closely related.

Hypothesize - to make an interpretation or assumption that has not been tested.

Pupate - entering the stage of life of an insect, between the larval and adult stage, when metamorphosis occurs. This usually occurs in a cocoon or case.

Pronotum - a hard covering over the *thorax* of some insects.

Thorax - the middle section of the three basic body sections of an insect: head, *thorax*, abdomen.

References

- Amaral, Michael and Linda Morse, 1990. Reintroducing the American Burying Beetle. *Endangered Species Bulletin* 15(10):3.
- Anderson, Robert S., 1982. On the Decreasing Abundance of *Nicrophorus americanus* Olivier (Coleoptera: Silphidae) in Eastern North America. *The Coleopterists Bulletin* 36(2):362-365.
- Raithel, Christopher, 1991. American Burying Beetle (*Nicrophorus americanus*) Recovery Plan. U.S. Fish and Wildlife Service, Region 5.
- Schweitzer, Dale F. and Lawrence L. Master, 1987. *Nicrophorus americanus*, American Burying Beetle: Results of a Global Survey. Report to the U.S. Fish and Wildlife Service.

Selected Resources For Teachers

Fragile Legacy: Endangered, Threatened, and Rare Animals of South Dakota, a booklet with color illustrations by Diane E. Ashton, and Eileen M. Dowd, 1991. South Dakota Department of Game, Fish and Parks Wildlife Division. Pierre, SD.

Guardians of the Underworld by Michelle Scott and James Traniello, 1989. *Natural History* 6:32-36.

Nature's Clean-up Crew: The Burying Beetles by Lorus J. Milne and Margory Milne, 1982. New York: Dodd, Mead.

Written by:

Doug Backlund, S.D. Natural Heritage Program, S.D. Department of Game, Fish and Parks. Pierre, SD 57501. © 1994

Illustrated by:

Mark Marcuson, University of Nebraska State Museum. (Adult beetle illustration).
Katherine Brown-Wing, 48 Golden Ave., Medford, MA 02155. (Beetles with carrion).

Reviewed by:

Diane Ashton, Biologist, Soil Conservation Service, Brookings, SD 57007.

Publication of the *American Burying Beetle* fact sheet was funded by the S.D. Department of Game, Fish and Parks, Division of Wildlife, Pierre, SD.