



Dakota Skipper

Hesperia dacotae

The Dakota skipper has been proposed for listing as threatened under the Endangered Species Act. It is a small butterfly with a 1-inch wingspan. Like other skippers, it has a thick body and a faster, more powerful flight than most butterflies. The upper side of the male's wings range from tawny-orange to brown with a prominent mark on the forewing; the lower surface is dusty yellow-orange. The upper side of the female's wing is darker brown with tawny-orange spots and a few white spots on the forewing margin; the lower side is gray-brown with a faint white spot band across the middle.

Range

Historically, scientists recorded Dakota skippers from northeast Illinois to southern Saskatchewan. However, their actual historical range is not known because extensive destruction of native prairie preceded widespread biological surveys in the central United States. Dakota skippers likely lived throughout a relatively unbroken and vast area of grassland in the north-central U.S. and south-central Canada. Today, they have been lost from Illinois and Iowa and are present only in scattered and mostly isolated sites in Minnesota, the Dakotas and southern Canada. Since 2002, the number of sites where Dakota skippers can be found has been on an overall downward trend with a more dramatic decrease after 2010. Currently it can be found at only half of the sites where it was previously recorded. The most significant populations may be in western Minnesota, northeastern South Dakota, north-central North Dakota and southern Manitoba; an area that straddles the border between tallgrass and mixed grass prairies.



Photo by USFWS; Phil Delphey

Concern is growing about the status of the Dakota skipper in Minnesota, however, after two years in which extensive surveys located the species at only one site.

Habitat

Dakota skippers are found in two types of habitat. One type is moist bluestem prairie in which three wildflower species are usually blooming when Dakota skippers are adults: wood lily (*Lilium philadelphicum*), harebell (*Campanula rotundifolia*) and smooth camas (*Zygadenus elegans*). The second type is upland prairie that is relatively dry and often found on ridges and hillsides. Bluestem grasses and needlegrasses dominate these prairies; purple coneflower (*Echinacea angustifolia*) is typical of high quality sites that support this skipper, although the Dakota skipper also uses other flowers for nectar.

Ecology and Life History

Dakota skippers have four basic life stages: egg, larva, pupa, and adult. During the brief adult period

in June and July, females lay eggs on the underside of leaves 1 to 2 inches above the ground. Eggs take about 10 days to hatch into larvae (caterpillar). After hatching, larvae build shelters at or below the ground surface and emerge at night to feed on grass leaves. This continues until fall when larvae become dormant. They overwinter in shelters at or just below ground level, usually in the base of native bunchgrasses. The following spring, larvae emerge to continue developing. Pupation takes about 10 days and usually happens in June. Adult males emerge about five days before females and the adults live for three weeks, at most. This brief period is the only time that Dakota skippers can reproduce.

If a female Dakota skipper lives for the full three weeks and adequate flowers for nectar are available, she may lay up to 250 eggs. Nectar provides Dakota skippers with both water and food and is crucial for the survival of both sexes during the adult flight period.

Reasons for current status

Dakota skipper populations declined historically because of widespread conversion of native prairie to farms, ranches and other land uses. They may persist on ranches where grazing is not too intense, but are lost from sites where native vegetation is plowed or killed with herbicides. States and Canadian provinces in the historical range of Dakota skipper have lost 85% to 99% of their original tallgrass prairie. Small, isolated patches of native prairie are what remains of this once vast ecosystem; Dakota skippers persist on only some of these prairie remnants.

Dakota skippers are sensitive to several types of disturbances and are almost always absent from overgrazed or otherwise degraded remnant prairies. Because of this sensitivity, historical persistence of Dakota skippers probably depended on the vastness of the prairie and availability of immigrants to repopulate habitats where the species had been eliminated by intense disturbance, such as wildfire or heavy bison grazing. Many remaining populations of Dakota skipper are now isolated. Habitats occupied by these populations are too far from other occupied sites to be recolonized after one or more factors results in the species local extinction. Even if they persist at isolated sites, the lack of interaction with other populations is likely to reduce genetic diversity and lead to a diminished ability to adapt to environmental changes.

Although some native prairie plants and animals have adaptations that allow them to survive in modern agricultural landscapes, the Dakota skipper does not. Dakota skippers need high-quality prairie that has retained a large part of its original native plant diversity. The future of many prairies where this butterfly persists is not secure because of threats from over-grazing, conversion to row crops, herbicide use, woody and non-native plant invasion, road

construction, and gravel mining. Prescribed fire, which may improve the quality of the native prairie, must be used carefully because it may kill a significant number of Dakota skippers in the burned area.

Although threats are numerous, there are opportunities to address them to effectively conserve the skipper. Dakota skippers and their native prairie habitat depend on some type of periodic disturbance, without which the prairie would become shrubby or forested. Therefore, grazing, fire, or mowing is necessary for the skipper to persist. Because these practices may also eliminate populations, depending on the specifics of how they are carried out, however, they must be used carefully to ensure skipper survival.

What's being done to conserve Dakota skipper?

The Service, states, and others have been working with private landowners and other partners in North Dakota, South Dakota and Minnesota to conserve the Dakota skipper's native prairie habitat. With cooperation from many landowners, we are able to survey for and study Dakota skippers and have entered into cooperative agreements to conserve their native prairie habitat. Conservation of the Dakota skipper depends on land stewardship carried out by private landowners because, excluding lands owned by conservation organizations such as The Nature Conservancy, about 50 percent of all known populations are on private lands. Public agencies are actively seeking private landowners who are willing to sell easements or secure conservation agreements that promote land use practices that help conserve the Dakota skipper and other native prairie species. These easements often simply ensure continuation of existing land uses that are compatible with prairie conservation.

Public land managers use a variety of management tools to conserve

native prairie on lands with Dakota skippers; mainly prescribed fire and grazing. Each presents a significant challenge when trying to conserve Dakota skipper. The Service will encourage managers and biologists to work together using science-based adaptive management methods, such as Strategic Habitat Conservation, to develop and refine management strategies that are practical and conserve Dakota skippers.

On tribal lands in South Dakota – on the Lake Traverse Reservation of the Sisseton-Wahpeton Oyate – several sites with Dakota skippers are hayed after the flight period. This management maintains native prairie and appears to work well for Dakota skippers, although haying should not be conducted too soon after the flight period. Not all Dakota skipper habitats are amenable to haying; sites that are too rocky or hilly may need to be managed with fire, grazing, or a combination of the two.

The Minnesota Zoo's Prairie Butterfly program is beginning experiments with propagation of Dakota skipper. The zoo obtained Dakota skipper eggs from wild females in South Dakota in 2013 and is now rearing the species at the zoo. Propagation could become a valuable conservation tool if efficient methods are developed and if sufficient numbers with appropriate levels of genetic diversity are produced. The final test, of course, would be to release into high quality habitats from which the species has been extirpated. In the meantime, the ability to propagate Dakota skipper in captivity could provide an important hedge against extinction in the wild.

Finally, research is ongoing to better understand Dakota skippers, such as the species genetic diversity, and surveys for the species are ongoing to locate populations yet undiscovered.