



Dakota Skipper

Hesperia dacotae

The Dakota skipper is listed 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 wing is 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 the unbroken, vast grasslands of the north-central United States and south-central Canada.

Dakota skippers have been lost from Illinois and Iowa and are present only in scattered, 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 a downward trend with a more dramatic decrease after 2010. Currently, this butterfly may occur at only one quarter 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



Photo by USFWS; Phil Delphey

border between tallgrass and mixed grass prairies. Concern is growing about the status of the Dakota skipper in Minnesota; after three years extensive surveys located the butterfly at only one site.

Habitat

Dakota skippers live in two types of prairies. 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 it also uses other flowers for nectar. Both of these habitat types are unlikely to be reestablished on a site that has been plowed. Therefore, activities

that maintain the original native grass habitat are fundamental to the species' conservation.

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. 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 from pupae 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, providing both water and food, is crucial for survival of both sexes during the adult flight period, which often occurs during the hottest part of summer.

Threats

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 percent to 99 percent of their original tallgrass prairie. Small, isolated patches of native prairie are often what remain of this once-vast ecosystem; Dakota skippers survive on only some of these prairie remnants.

Dakota skippers are almost always absent from overgrazed or otherwise degraded prairies. Because of this sensitivity, historical survival of Dakota skippers probably depended on the vastness of the prairie, with immigrants available to repopulate areas if the butterfly was eliminated by intense disturbance, such as wildfire or heavy bison grazing. Today, many remaining Dakota skipper populations are isolated and are too far from each other to be recolonized if a local extinction occurs.

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 plant diversity. The future of many prairies where this butterfly persists is not secure because of threats from

conversion to row crops, herbicide use, woody and non-native plant invasion, road construction, overgrazing and gravel mining. In addition, insecticide drift from nearby agricultural areas could harm Dakota skippers. Prescribed fire, which may improve the quality of native prairie, must be used carefully because it may kill a significant number of Dakota skippers in burned areas.

Although threats are numerous, there are opportunities to address them and effectively conserve the skipper. Dakota skippers and their native prairie habitat depend on periodic disturbance, without which the prairie would become shrubby or forested. Therefore, grazing, fire or mowing (haying) is necessary for the skipper. At the same time, these practices may eliminate populations, depending on how they are carried out, so they must be managed carefully to ensure skipper survival.

What's being done to conserve Dakota skipper?

The Service and states are 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 survey 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. There are many options available for private landowners interested in conserving prairie habitat. Landowners are encouraged to contact the Service to explore these options.

Public land managers use a variety of management tools to conserve native prairie, mainly haying, prescribed

fire and grazing. Each presents a significant challenge when trying to conserve Dakota skippers. The Service encourages managers and biologists to work together using science-based adaptive management to develop and refine strategies that are practical and conserve Dakota skippers.

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 to propagate Dakota skipper. The zoo obtained Dakota skipper eggs from wild females in South Dakota in 2013 and 2014 and is now rearing the butterfly 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 Dakota skippers into high-quality habitats from which the species has been extirpated and where threats, such as insecticide drift, are minimal. 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.