



Photo by Jeff Owens

Natural Areas and Native Pollinators

Prepared by the
Xerces Society for Invertebrate Conservation

Pollinators are essential for our environment. The ecological service they provide is necessary for the reproduction of up to 90 percent of the world's flowering plants. This includes at least two-thirds of the world's crop species, whose fruits and seeds together provide 15 to 30 percent of the foods and beverages that we consume. In many places, however, the essential service of pollination is at risk. As with all wildlife, pollinators have suffered as landscapes have changed. Pesticides, urbanization, and large scale agricultural development have all had a negative impact on pollinator populations.

IMPORTANCE OF NATURAL AREAS FOR NATIVE POLLINATORS AND AGRICULTURE

Natural areas and wildlands serve as refuges for pollinators by providing forage, nest sites, and, often, protection from insecticide use in the surrounding landscape. From these natural areas, pollinators may visit crops or colonize restored habitat in the surrounding landscape. In the past, the large areas of natural habitat surrounding farms harbored important pollinators that could meet all of the pollination needs of farmers.

Recent research conducted on working farms in the Central Valley of California demonstrates that farms close to natural areas still have greater numbers and diversity of native bees, and can receive a significant amount — if not *all* — of their pollination from these wild bees. Thus, protecting areas of natural habitat is important for increasing crop pollination by native bees.



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IMPORTANCE OF POLLINATORS TO NATURAL AREAS

Pollinators are also important for natural areas themselves. Pollinators sustain plant communities that provide food and shelter for many other animals. The fruits and seeds that pollinators help produce are a major part of the diet of mammals, from red-backed voles to grizzly bears, and of approximately 25 percent of birds.

In addition to pollinating flowers, these insects help plants in other ways. The tunneling activities of ground nesting bees, for example, improves soil texture, increases water movement around roots, and mixes nutrients into the soil. Beetle larvae (many of which are pollinators) in old trees help to break down the decaying wood, returning the nutrients locked away in the tree back into the ecosystem.

MANAGING NATURAL AREAS WITH POLLINATORS IN MIND

For the most part, wildland stewards need not overhaul existing wildlife management plans and goals to address the needs of pollinators. By carefully timing management actions and avoiding or adjusting techniques that do undue harm to pollinator populations, land managers can help protect biodiversity on their land and provide an important source of pollinators for the surrounding landscape. The four land-management practices that have the most impact on pollinators are grazing, fire, herbicide use, and insecticide use.

Grazing

Some areas managed for wildlife are overgrazed by livestock, such as cattle, sheep, or goats. This can be highly damaging, reducing both the floral and structural diversity of the habitat, removing forage flowers or host plants, disturbing fragile areas, and giving invasive weeds a foothold. When grazing is used as a management tool, livestock should have limited access to sensitive areas and should be removed after a short time to allow for a long period of recovery.

Fire

Fire is a valuable technique for wildland management, but if pollinators are not considered in the management plan — especially butterflies and twig-nesting bees — their populations can be devastated. Although adult pollinator insects are mobile and some may be able to avoid fire, their eggs, larvae, and pupae cannot. In a well-designed fire-management plan that considers all of the area's species, managers will burn only a small percentage of the site in any given year, leaving unburned habitat as a source for re-colonization of insects after the fire. At some sites, an extended rotation of ten years or more may be appropriate, while in other sites rotations of every three years may be adequate.



Photo by Edward S. Ross

Herbicides

Herbicides can be a valuable tool to control invasive weed species. However, using broad-spectrum herbicides to control weeds and restore native plant communities can indirectly harm pollinators by removing either caterpillar host plants or foraging flowers that provide pollen and nectar for existing populations. Always minimize the extent of the spray area. Where possible, use wicks or handheld sprayers and only spray the target plants. Avoid using herbicides around native flowering plants, especially when they are in flower, or around butterfly larval host plants when caterpillars are present.

Insecticides

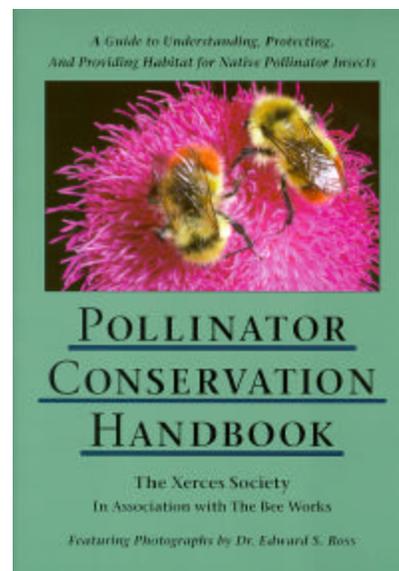
Insecticides are applied in wildlands to control both native and non-native species. In forested areas, insecticides have been used to control tussock moth and other native defoliators. On rangelands, large acreages are sprayed every year to control native grasshoppers and Mormon crickets. The presence of West Nile virus has renewed efforts to control mosquito populations by spreading insecticides in some wetland systems. Insecticides are also used to control non-native invasive species such as gypsy moth.

Foraging bees are poisoned by insecticides when they absorb the fast-acting toxins through their exoskeleton, drink toxin-tainted nectar, or gather insecticide-covered pollen or micro-encapsulated poisons. Insecticide drift from aerial spraying can kill 80 percent of foraging bees close to the source, and drift can continue to be dangerous for well over a mile.

Given the harm that insecticides inflict both directly and indirectly, we strongly oppose their use. If insecticides must be used, however, you should minimize their damage to pollinators and other beneficial insects. Apply pesticides when pollinators are not active or during those seasons when no blooms are present. Avoid spraying bee nesting areas, caterpillar host plants, and places where fly and beetle larvae are active. Also remember that insecticide labels do not take into consideration the needs of native pollinators, which are often more susceptible than honey bees to these poisons.

FOR MORE INFORMATION

To learn more about providing habitat for pollinators, please see our *Pollinator Conservation Handbook*. In addition, we are producing guidelines specifically for wildland managers. Please contact us for details.



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