



**Viceroy on common
buttonbush**
Photo by John M. Row

Photo of the
Rusty-patched
Bumble Bee (*Bombus
affinis*) by Johanna
James-Heinz,
The Xerces Society

Plants for the Heartland

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Decline of Bumble Bee Populations

The National Academy of Science (NAS) reported losses in managed honey bee colonies in 2007. The NAS highlighted the fact that other native North American pollinators are also experiencing population declines. There are a number of threats facing bumble bees that may be leading to their decline, including disease, habitat destruction, pesticide use, invasive species, and climate change.

with an introduced disease carried by commercially-reared bumble bee colonies. Common eastern and western bumble bees were shipped to Europe in the early 1990's to be reared and then returned to the U.S. for use as commercial pollinators. Dr. Thorp suggests that while in Europe, the bumble bees were exposed to a pathogen of the European Buff-tailed Bumble Bee (*Bombus terrestris*) for which they had no prior resistance. Upon return to the U.S. the common eastern and western bumble bees may have spread a highly virulent disease to wild populations of bumble bee. The close relationship to the bees in decline to the European Buff-tailed Bumble Bee, as well as the timing, speed, and severity of the population crashes, suggest that an escaped exotic disease organism may be the cause of these wide-spread losses.

Habitat loss and fragmentation may also be playing a role in the decline of these bumble bee species. Habitat alterations which destroy, fragment, degrade, or reduce their food supplies (flowers that produce the nectar and pollen they require), nest sites (e.g., abandoned rodent burrows or undisturbed grass), and hibernation sites for over-wintering queens all can harm these species. Threats that alter bumble bee habitat include agricultural intensification, livestock grazing, urban development, and fragmentation of landscapes. As bumble bee habitats become increasingly fragmented, the size of each population diminishes and inbreeding becomes more prevalent. Inbred populations of bumble bees show decreased genetic diversity and are at a greater risk of decline.

Insecticide applications may threaten populations of bumble bees. The National Academy of Science National Research



Bumble bees are excellent crop pollinators and act as a substitute for farmers when honey bees are in short supply. In some crops such as cranberries and blueberries, bumble bees are more effective pollinators than honey bees, in part because they can fly in cooler temperatures and lower light levels. Losses of bumble bees can have far ranging impacts due to their role as pollinators. In Britain and the Netherlands, where multiple bee species have become extinct, there is evidence of a decline in the abundance of insect pollinated plants.

Bumble bee researcher Dr. Robbin Thorp, Department of Entomology, University of California, Davis, has hypothesized that wild populations of four closely related North American bumble bees were infected



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SEEKING VEGETATIVE SOLUTIONS TO CONSERVATION PROBLEMS

Photo by John M. Row

The mission of the Manhattan Plant Materials Center is to develop and deliver plant science technology to meet customer and resource needs in the Central Great Plains region.

The primary products produced by the program include the production of improved varieties of plants for commercial use and the development of plant science technology for incorporation into the electronic Field Office Technical Guide (eFOTG).

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www.plant-materials.nrcs.usda.gov

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Council's report on the Status of Pollinators in North America notes that bumble bees can be negatively affected by many pesticides. The report also points out that ground-nesting bumble bees are uniquely susceptible to pesticides that are used on lawns or turf. Insecticide application on U.S. Forest Service managed public lands for spruce budworm has been shown to cause massive kills of bumble bees and reduce pollination of nearby commercial blueberries in New Brunswick.

Broad-spectrum herbicides used to control weeds can indirectly harm bumble bees by removing the flowers that would otherwise provide the bees with pollen and nectar.

A number of other bumble bees may also be experiencing losses, although more information is needed to determine the true status of these species. Most bumble bees are only monitored in a few locations, so it is difficult to determine if a species is in decline throughout its range, or if a decline is merely local.

For additional information on the decline in bumble bees and pollinators in general, please visit the

following Web sites: www.xerces.org/bumblebees; www.pollinator.org; <http://plants.usda.gov/pollinators/NRCSdocuments.html>



Pollinator Week

The 3rd Annual National Pollinator Week is set for June 22-28, 2009. Many states require that one of their citizens request that events such as Pollinator Week be officially proclaimed. Kansas and Colorado were among the 31 states that issued an official proclamation designating National Pollinator Week in 2008. This year's events include: Don't Desert Pollinators Recipe Contest and Pollinator Photo Contest. Deadline for the contests is June 1, 2009. Go to www.pollinator.org/index.html for more information.

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