# Native Plant and Pollinator Conservation


Photo by Jeff Mitton

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Studies of pollinator declines around the world have created concerns about an impending pollination crisis.



Since the 1990s, declines and local been reported in various places around the globe.

Pollinators are *required* to produce much of the food that you eat.

About 35% of food crops are insect pollinated.

150 US food crops depend on pollination.

But we rarely hear that about 90 percent of native flowering plants require pollinators for fruit and seed production.

Loss of pollination services affects these native plants, and consequently entire natural communities.

## Loss of pollination services affects the entire natural community.

Photo by Jeff Mitton

Without pollinators, fruit and seed production may stop.

Fruits and seeds provide food for animals in the community, and represent future generations of plants. These plants provide food and shelter for other organisms.

Thus, disruption of pollination can result in cascading effects throughout a community.

Globally, over 100,000 species of invertebrates and over 1000 species of vertebrates serve as pollinators.

## Gecko Pollinators Help "Save" Rare Flower

Scott Norris
for National Geographic News

On the island of Mauritius in the Indian Ocean, a brilliant green lizard and a palmlike shrub are helping to save a rare flowering plant from extinction.….

# Bees

Number of bee species globally:  20,000

Number of bee species in Colorado: 946

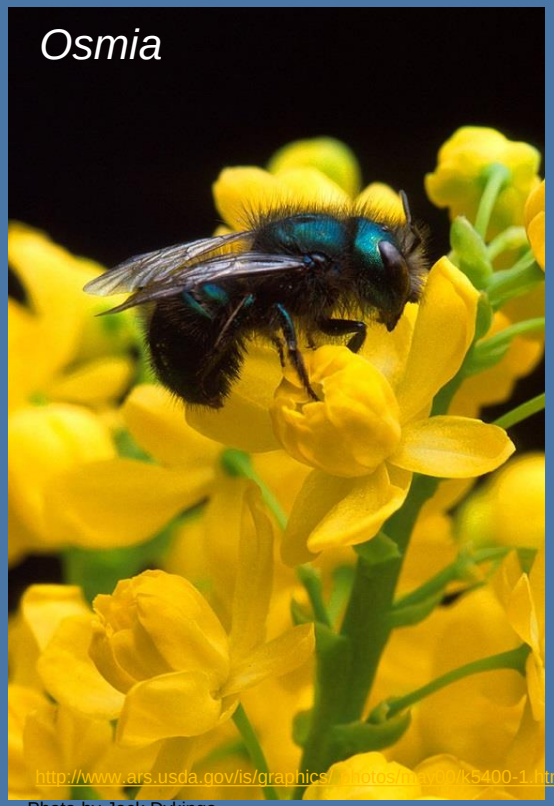
(compare to 8,600 birds globally
3,500 mammals)

**23 species** of ***bumblebees*** alone **in Colorado!**


Photo by Ken Keefover-Ring


David Cappaert, , www.Bugwood.org
UGA2107020

**Buzz Pollination video**




http://www.ars.usda.gov/is/graphics/photos/mar00/k5400-1.htm

Photo by Jack Dykinga.


wikipedia.org/wiki/Image:Halictid6265.JPG



http://en.wikipedia.org/wiki/Anthidium

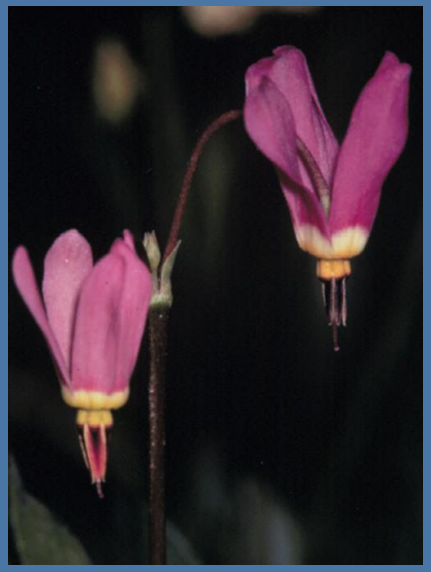


wikipedia.org/wiki/File:Sphecodes_albilabris_fg02.jpg


http://en.wikipedia.org/wiki/File:Ceratina_WG.jpg

# Bumblebees

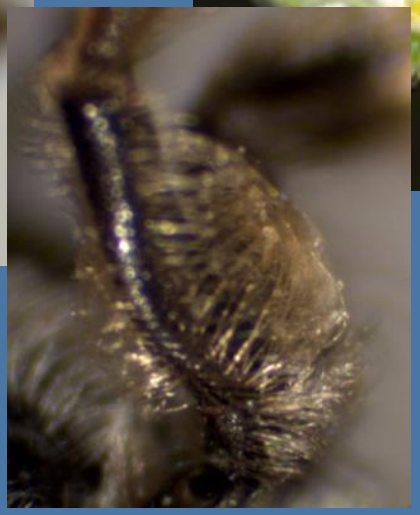
Bumblebees are important pollinators of native plants, ranging from open flowers like flax to flowers with deep corolla tubes like larkspur.



In addition, they can buzz-pollinate flowers such as shooting star, which other pollinators cannot pollinate.  Crop plants requiring buzz pollination include peppers, tomatoes, blueberries, eggplant, and more.

*Megachilid*


*Lasioglossum*




*Melissodes*

# Flies

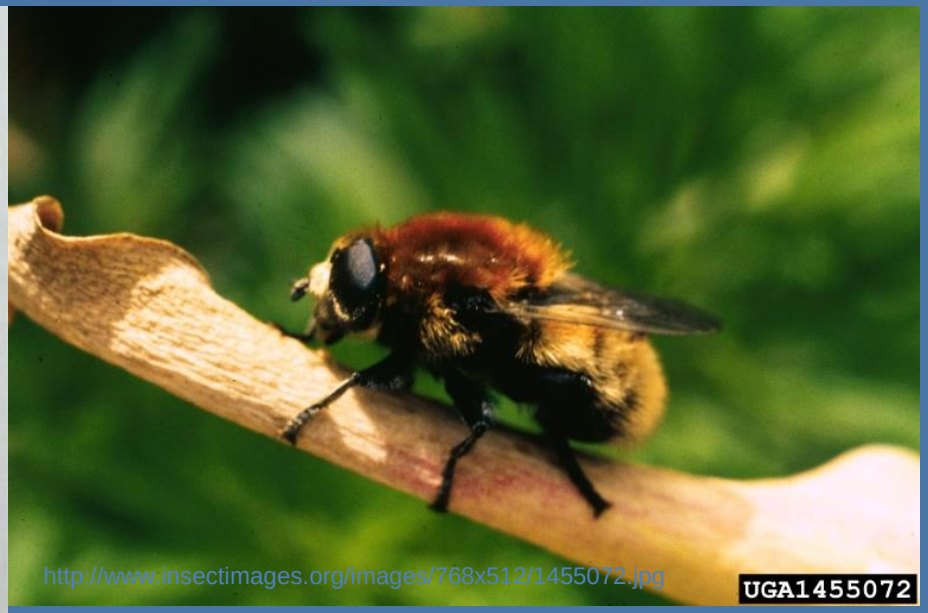
# Diptera





Food

syrphus.atz.jp/syrphidae3/ tribe3/eristali_e.htm





# Mimicry

# Syrphid flies

Heat

www.rmrp.com/Photo%20Pages/ RR/Ranuculus%20ado...

Photo by David Inouye, Rocky Mt Biological Lab

# Threats to pollinators

Loss of natural habitat

Pesticides

Pathogens

Low genetic diversity within some species

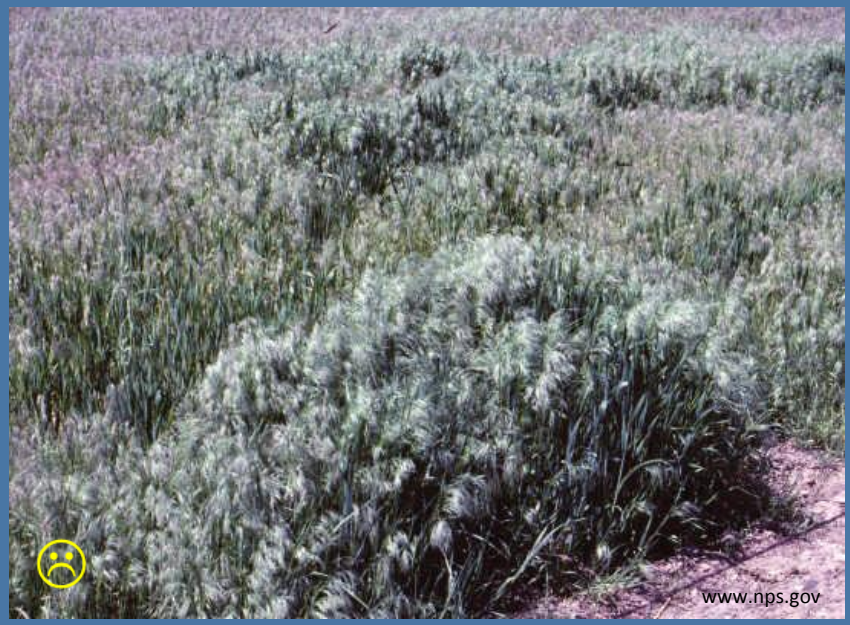
# Loss of natural habitat

http://www.tfhrc.gov/pubrds/septoct01/images/I25_colorado.jpg

http://insects.about.com

Loss of nesting sites, overwintering habitat and floral resources

# Loss of natural habitat



bouldercolorado.gov/osmp/tips-for-growing-native-plants

Avoid using pesticides and herbicides.

Phone or write to your local, state and federal government representatives about the importance of pollinators and the dangers of neonicotinoid pesticides.

Plant gardens attractive to pollinators. Use native plant species. When using cultivars, be sure they are good nectar and pollen sources.

Provide nesting habitat for pollinators.

Encourage golf courses, power companies, business campuses and cities to make pollinator-friendly choices.

Get involved with an organization that supports pollinator\ conservation (Xerces, North American Pollinator Protection Campaign, Sierra Club, etc.)


# Don’t let native pollinators disappear into the sunset!

www.mnn.com/earth-matters/animals/blogs/vanishing-bumblebee-defies-extinction-in-virginia#ixzz3Z6MovUCY

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Jeff Mitton, Ken Keefover-Ring, David Inouye for photos

# Parasites

7 May 2013. Photograph: Phil Gates – The Guardian

Mites – external mites

Conopid fly larvae ➔ **VIDEO**

An adult conopid fly (Photo credit: Rosemary Malfi)

*Crithidia* –trypanosome, intestinal parasite

*Nosema* – microsporidian, intracellular parasite

Without pollinators, fruit and seed production may stop.

Fruits and seeds provide food for animals in the community, and represent future generations of plants.


Plants  also shelter other organisms. Thus disruption of pollination can result in cascading effects throughout a community.


Photo by Jeff Mitton

# Pesticides

Leviticus Web's Photostream
www.flickr.com/photos/levijwebb/

Neonicotinoids affect bumblebees as well as honeybees. Flight cages exposed to imidocloprid field spray resulted in death of all bees within 48 hours. 10 -20 ppb in sugar-water stops colony reproduction.

Sublethal doses decrease foraging and food intake, decrease reproduction and lower worker survival.

# Bumblebee life cycle

Queen

Worker

Male