

Native Bees

“Since most don’t fit the stereotyped image of a bee they are easily overlooked.” Xerces Society



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What is the Problem?



☞ The Number One Problem Facing Our Native and Non-Native Pollinators is Loss of Habitat.

☞ This is so *easy* to correct.

European Honey Bees



❧ Colony Collapse Disorder.

❧ Loss of Habitat.

❧ Management Practices.

❧ Pathogens and or Parasites.

❧ Insecticides.

Native Bees, General Pollinating Insects, Honey Bees...



- Native Bees, General Pollinating Insects, Honey Bees...
- The United States alone grows more than one hundred crops that either need or benefit from pollinators, and the economic value of these native pollinators is estimated at \$3 billion per year. www.xerces.org
- Beyond agriculture, pollinators are keystone species in most ecosystems. Fruits and seeds derived from insect pollination are a major part of the diet of approximately 25 percent of all birds, and of mammals.
- Land Conservation and management is important.

Pollinators Who are we talking about? Hymenoptera

☞ Bees.

☞ (sawflies, wasps, ants)

☞ 130,000 species. +++

☞ Range is size from very small to large insects.

☞ Highly developed mouth parts (proboscis) for drinking nectar.

☞ The name refers to the wings of the insects, and is derived from Greek (hymen): membrane and (pteron): wing. The hindwings are connected to the forewings by a series of hooks called hamuli.

Other Pollinators



- ❧ Butterflies
- ❧ Moths
- ❧ Flies
- ❧ Wasp
- ❧ Birds (hummingbirds)
- ❧ Small Mammals

Native Bees



- ❧ About **4,000 species** have been identified and catalogued, ranging in length from less than one eighth of an inch to more than one inch.
- ❧ They vary in color from dark brown or black to metallic green or blue, and may have stripes of red, white, orange, or yellow.

Native Bees



- ❧ Many common names reflect the way they build nests: plasterer bees, leafcutter bees, mason bees, wool carder bees, digger bees, and carpenter bees.
- ❧ Others are named after particular traits, such as: sweat bees that like to drink salty perspiration, or bumble bees, who got their name from the loud humming noise they make while flying.

Native Bees



- ❧ **The majority are solitary nesting.**
- ❧ They tend to create and provision a nest on their own, without cooperation with other bees.
- ❧ Although they often will nest together in great numbers when a good nesting area is found, the bees are only sharing a good nesting site

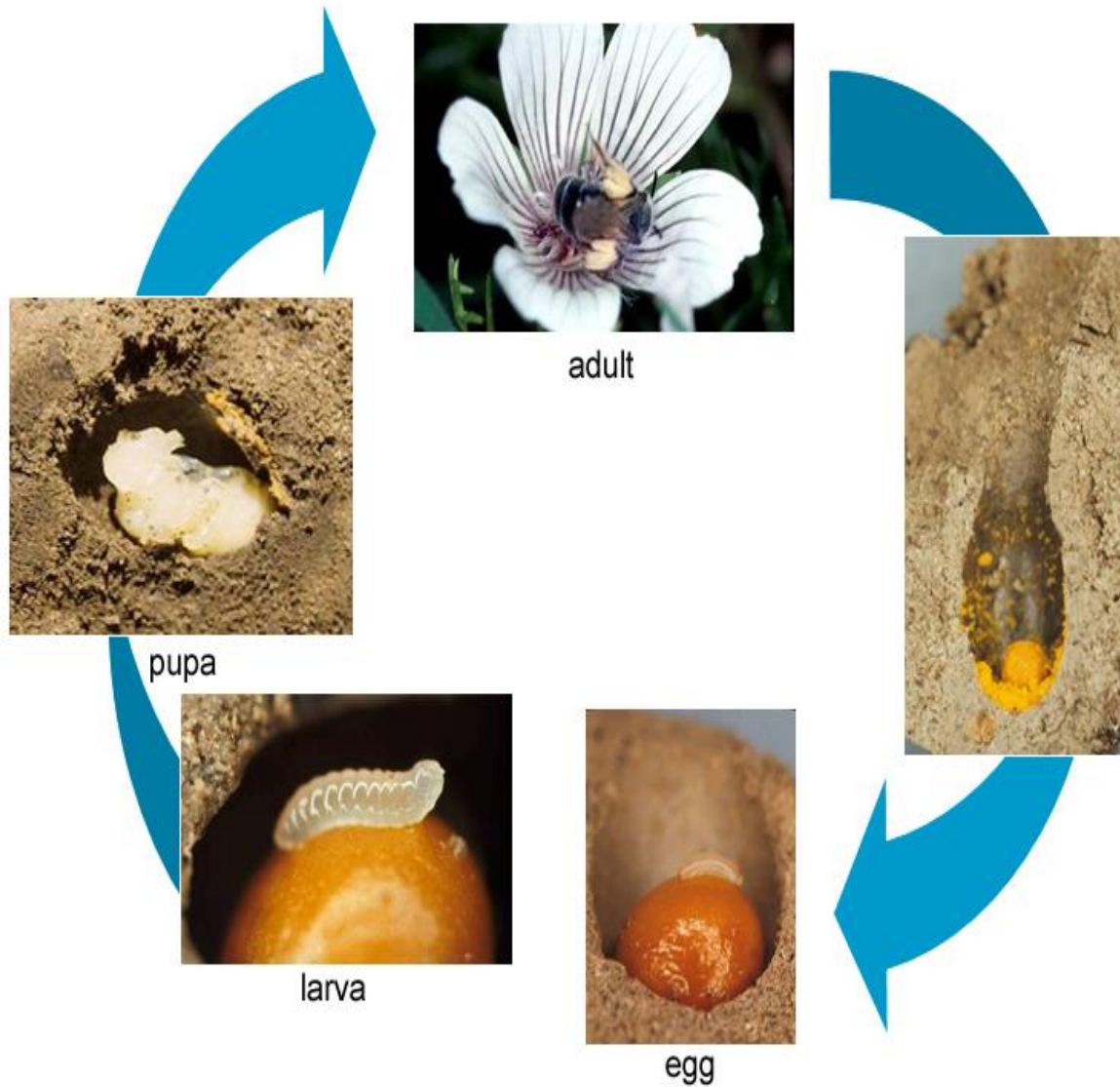
Native Bees



- ❧ Solitary bees generally live for about a year.
- ❧ Normally you only see the active, adult stage of its life, which usually lasts for only three or four weeks.
- ❧ These creatures spent the previous eleven months growing through the egg, larva, and pupa stage in the brood cell or nest.

- ❧ Very short lived creatures.
- ❧ Very sensitive to pesticides including the vapors.

Life cycle of a native bee



Native Bees



- ☞ Solitary bees can be divided into two loose groups according to their foraging habits:
- ☞ 1-Generalists are bees that gather nectar and pollen from a wide range of flower types and species. Often these are the more resilient species, able to survive in degraded environments with weedy or non-native plants.

Native Bees



- ❧ 2-Specialists, rely on a single plant species or a closely related group of plants for nectar and pollen, and are more susceptible to suffer from landscape or habitat changes.
- ❧ The life cycle of these bees species are often closely tied to their host plant, and the adults will often emerge from their brood cells just when the plant is flowering.

Squash Bees



☞ *Peponapis pruinosa*

Squash bee



- Found the first few hours after sunrise.
- Non-social.
- Floral Specialist.
 - Squash, pumpkins, gourds.

Bumble Bees



- œ Generalist.
- œ Bumble bees are the only bees native to the US that are truly social.
- œ Live in colonies, share the work, and have multiple, overlapping generations throughout the spring, summer, and fall.
- œ However, the bumble bee colony is seasonal.
- œ At the end of the summer only the fertilized queens survive to hibernate through the winter. In the spring, she will find a new nest.

Bumbles Bees

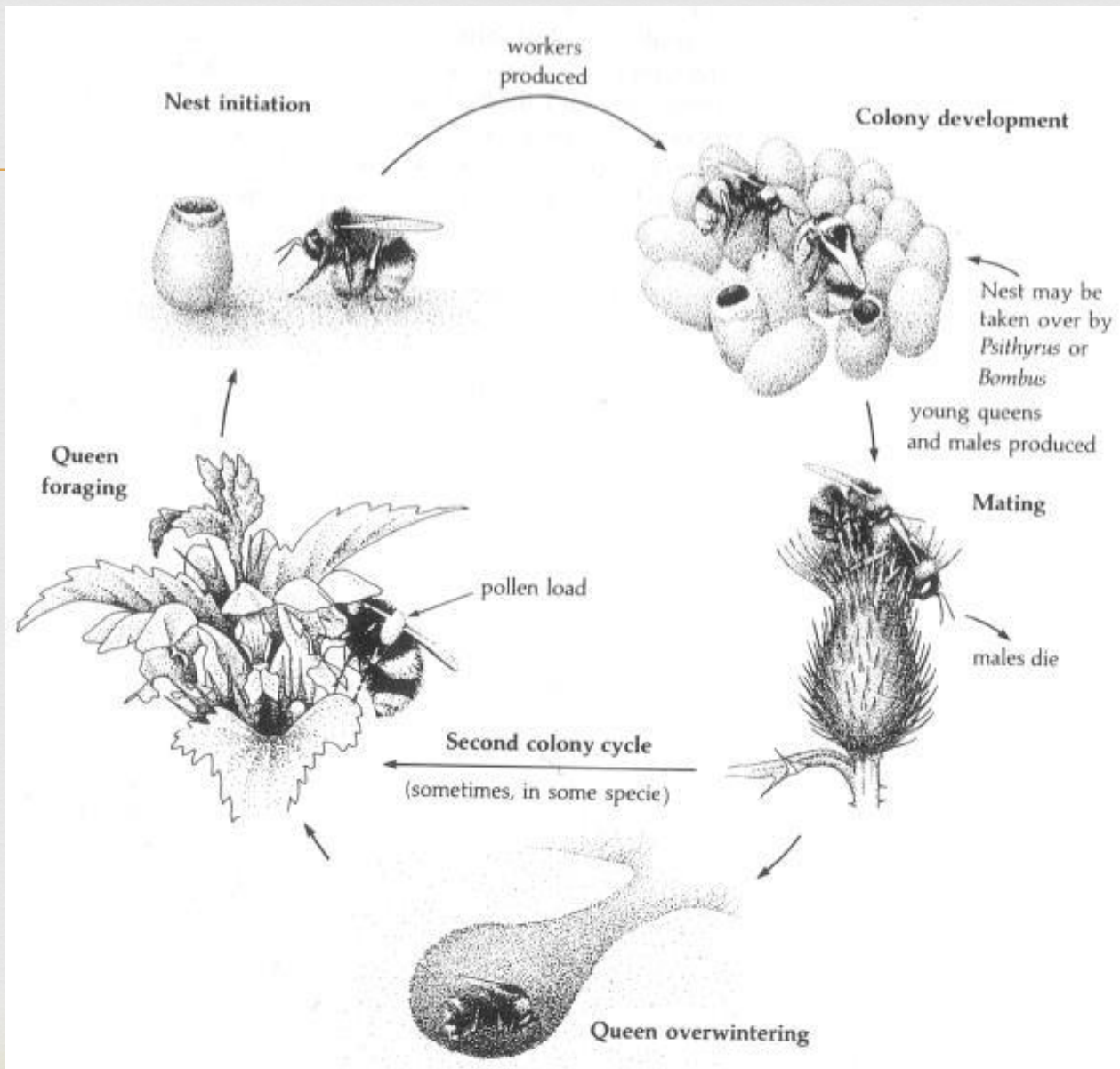


- ❧ Bumble bee larvae are milky white and look a bit like maggots.



- ❧ It takes 4 -5 weeks from egg to adult bumblebee. About half the time is spent as a larva feeding, then the rest of the time as a pupa in a cocoon.
- ❧ In a series of studies by A. D. Brian it was found that of the eggs laid by the queen only 47% of the eggs laid go on to produce adult bumblebees.

Bumble Bees



Bumble Bee



- ❧ They are generalist feeders, often the first bees active in late winter (February) and the last in fall (November).
- ❧ Forage on a wide range of plant species in a wide range of weather conditions to support a colony.
- ❧ Bumble bees do make a small amount of honey, just enough to feed the larvae and themselves for a couple of days during bad weather.

Rusty Patch Bumblebee



- ❧ Jan 11-2017 Officially on the Endangered Species List with the US Fish and Wildlife Service.
- ❧ The primary causes attributed to the decline; habitat loss, pathogens, pesticides, and small population.



Orchard Mason Bees



Orchard Mason Bees



- ❧ Will make nest in cavities under shake siding or investigating nail holes or other cavities in wood during March through early June.
- ❧ Not destructive insects, since they do not excavate holes in the wood, though they will clean out loose debris.



Orchard Mason Bees



- ❧ The orchard mason bee is usually slightly smaller than a honey bee and a shiny dark blue or green in color. The actual size of the bee depends largely upon the size of the hole in which it grew.
- ❧
- ❧ Males are smaller than females, have longer antennae and an additional tuft of light colored hairs on the face. Females have hairs on the underside of the abdomen, called the "scopa", adapted for carrying pollen.

Orchard Mason Bees



- ❧ The female orchard mason bee lives for about a month and can produce one or two eggs each day.
- ❧ The larva hatches from the egg after a few days and begins to eat its provisions.
- ❧ When the pollen-nectar mass is completely eaten in about 10 days, the larva spins a cocoon and pupates within the cell.



Orchard Mason Bees



♀ Females mate soon after emerging, then begin nesting in 3 to 4 days. The bees forage on a number of different flowers. In urban areas, dandelions are commonly visited, in addition to apples, plums and pear trees.



Orchard Mason Bees



❧ The orchard mason bee is non-aggressive and will sting only if handled roughly.

Sweat Bees



- ❧ Common name of any bees that are attracted to the salt in human sweat.
- ❧ Large Family with over 1,000 species in this family.
 - ❧ Generally small, black, brown, bright metallic green or brassy yellow.
 - ❧ Visit between four and eight flowers per minute.
 - ❧ Generalist feeders.
 - ❧ Nest underground.
- ★ ❧ Not aggressive, not likely to sting.

Sweat Bee



Bee Flies *Bombylius major*



Bee Flies



- ❧ Family of Diptera
- ❧ Adults drink nectar.
- ❧ Larvae are parasitic or predators to beetle larvae, some to grasshopper eggs and aphids.
- ❧ DON'T bit or sting completely harmless.

Alkali Bees *Nomia melanderi*



- ❧ Ground Nester
- ❧ Has been managed for 50 years for alfalfa crops.
- ❧ It is the world's only intensively managed ground-nesting bee...Minimal subsequent maintenance makes this the most cost-effective pollinator of alfalfa.“
- ❧ The alkali bee is native to the arid regions of the Rocky Mountains.

Alkali Bees *Nomia melanderi*



Leaf Cutter Bees *Megachile* species



Leaf Cutter Bees *Megachile* species



- ❧ Leafcutter bees are solitary bees.
- ❧ Adult females may live up to 2 months and lay some 35-40 eggs during this time.
- ❧ The bees cut leaves in a very distinctive manner, making a smooth semicircular cut about 3/4-in in diameter from the edge of leaves. Although many types of leaves will be cut
- ❧ Preferentially select certain types, notably rose, green ash, lilac, and Virginia creeper.
- ❧ This injury is often only a minor curiosity.

Leaf Cutter Bees



- ❧ Leaves are carried back to the nest and used to fashion nest cells within tunnels.
- ❧ Each leaf-lined cell is provisioned with a mixture of nectar and pollen.
- ❧ An egg is then laid and the cell sealed, producing a finished nest cell.
- ❧ A series of closely packed cells are produced in sequence so that a finished nest tunnel may contain a dozen or more cells forming a tube 4 to 8 inches long.
- ❧ The young bees develop and remain within the cells, emerging the next season.

Native Bees



☞ Feeding:

☞ Looking for Nectar for energy, pollen to feed their brood.

☞ Some also collect special oils from flowers that are used as both an adult and larval food source.

☞ Depending on the size of the bee it will fly from 100 feet to a mile from its nest.

Butterflies



- ❧ Need a host plant to lay eggs on and for larvae to eat.
 - ❧ Need a Nectar plant to drink from.
 - ❧ It takes 10 to 14 days for an egg to hatch into a larvae.
 - ❧ Only 1% survive.
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- ❧ For Example:
 - ❧ Dill for Swallowtail Butterfly Larvae to eat.
 - ❧ Milkweed for Monarch Butterfly.
 - ❧ Hackberry Trees

Butterflies



- ❧ Build a butterfly garden.
- ❧ Join the North American Butterfly Association.
www.naba.org

What You can do to Help.

Habitat for Bees
and other good bugs.



Bee Habitat



- Seventy percent (70) of native bees nest in the ground.
- Need access to the soil surface to dig their nest.
- Females excavates a nest tunnel for brood cells.



Bee Habitat



- ❧ Shelter and nesting requirements are different for each species, but...
- ❧ Leave some bare or partially vegetated soil in the garden.
- ❧ Don't let water pond or puddle in those areas.
- ❧ Leave some dead or hollow branches in the garden.
- ❧ Plant decorative clump grass.
- ❧ Plant a seasonal nectar garden.
- ❧ Area should remain undisturbed.

Bee house



- ☞ Thirty percent (30) make nests in old beetle tunnels (old dead wood), snags or hollow tubes.
- ☞ Nesting blocks holes $3/32''$ and $3/8''$ and 3-4'' deep . Do NOT use treated wood.
- ☞ Front holes should be facing east to south east (avoid hot afternoon sun).
- ☞ Minimum of 18 inches off the ground.

Bee Hotels



To Do in the Garden



☞ Plan for bees in the garden.

★☞ Plant Flowers and shrubs.

☞ Eliminate Pesticide Use.

What to Plant.



☞ Trees



- ☞ Little Leaf Linden, (Tilia) blooms in June, cream colored flowers, clove scented. Called Bass-wood back east. Green Spire Linden -20' x 15'
- ☞ Russian Olive, blooms in June, white flowers, can not plant them in WY.
- ☞ Willow including Pussy Willow (Salix species), provide protein rich pollen in early spring.

What to Plant



☞ Trees

- ☞ Tartarian Maples (*Acer* species) small white flowers mid spring, good source of pollen.
- ☞ Ohio Buckeye (*Aesculus glabra*) white flowers mid spring, source of pollen.
- ☞ Apples (regular and crab), white flowers, early spring.

What to Plant



Herbs

- ❧ Borage, beautiful blue flowers all summer, tastes like cucumbers.
- ❧ Basil, let some bloom for the bees
- ❧ Lavender, likes dry location protected from winter winds.
- ❧ Lemon Balm (*Melissa officinalis*).
- ❧ Thyme, small and compact does well in containers.
- ❧ Chives, blue to lavender blooms.
- ❧ Hyssop (*Agastache*) blue to purple blooms late summer.
- ❧ Roses, so many.....

What to Plant



∞ In a wild Garden

- ∞ Red and White Clover, (*Trifolium pretense*).
- ∞ Dandelion, first to bloom major food source for bees.
- ∞ Russian Sage (*Perovskia atriplicifolia*).
- ∞ Catnip (*Nepeta* species)
- ∞ Sunflowers, major food source for many pollinators.
- ∞ Buckwheat, 12" tall white flower, self seeds.
- ∞ Veronica, blues, spreads.

What to Plant



☞ In a Perennial Garden

- ☞ Milkweed, (*Asclepias* spp), pinks.
- ☞ Blanket-flowers (*Gaillardia* spp) yellow/orange.
- ☞ Goldenrod (*Solidago speciose*), yellow.
- ☞ Fall Asters, blues to lavenders.
- ☞ *Liatris*, white to blue, mid summer to fall.
- ☞ *Salvia*, pinks to purples, late spring - summer.
- ☞ *Penstemon*, pinks, reds, blues, purple - summer.
- ☞ *Sedum*

Stop using Insecticides!



- Recent studies from universities including Wyoming, show having a diverse pollinator planting brings in good bugs to help control the bad ones.
 - You may never need to use an insecticide again!
- Check the label before you buy a product.
- Some Fertilizers also have insecticides in them.
 - Rose fertilizers especially.

Books and Web Sites



- ❧ “Attracting Native Pollinators” The Xerces Society Guide.
Storey Publishing ISBN 978-1-60342-695-4
- ❧ “The Orchard Mason Bee Book”, By Knox Cellars
- ❧ <http://ournativebees.com/>
- ❧ attra.ncat.org/attra-pub/nativebee.html
- ❧ www.emmitsburg.net/gardens/articles/frederick/2008/bees.htm
- ❧ <http://www.ars.usda.gov/main>
(Carl Hayden Research Center on Bees)



Enjoy the creatures in
your garden.

CB

