

SAVE THE BEES



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There are over 25,000 varieties of bees, about 4,000 species in the United States and about 250 species in Britain, these bees include but are not limited to; honey bees, bumblebees, solitary, sweat bees, leafcutters, mason ,digger, mining and carpenter bees. Of these 9 varieties there are many sub species or families

In this lesson we will talk mainly about honey bees since these are the main honey making pollinators we are all familiar with even though there are **many types** of pollinators such as wild bees, ants, beetles, wasps, lizards, birds and bats.

We must take action to save and protect our honey bees and wild bees for their benefit and **our** food sources. Honey bees contribute an estimated \$ 20 billion annually to agricultural production through pollination so you can imagine the financial trouble our farmers would be in if the bee perdition stays at the rate it is now.

Japan has such a bad bee perdition rate that only 20% of bees are alive to pollinate crops, the Japanese fruit growers are having to manually pollinate 80% of their crops by hand, it takes 2 people 1 day to pollinate 1 tree by using a fluffy ball of cotton to collect and deposit it in each flower on the tree or bush.

U.S. beekeepers have reported hive deaths of 30% annually for the last 10 years, but in 2013 as many as 40 to 50 % are wiped out mainly because of habitat loss, ¾ of our food—fruit, nuts, vegetables and herbs need pollinators to reproduce, by creating a bee friendly garden you can triple your yield of fruits and vegetables .

Choose a variety of flowering plants and trees with staggered bloom times to ensure there is always food available when they are on the hunt. Flowers that please us are usually of little use to pollinators as those plants are usually sterile.

Native plants are four times more attractive to wild bees, native and exotic plants attract native and honeybees and butterflies for pollination.

Showy flowers are best to attract bees especially those with blue, purple, violet, white and yellow flowers since they have good color vision. Planted in large clusters of one species instead of scattering those same plants around the garden attracts more pollinators, include plants of different shapes as different species of bees and other pollinators have different tongue lengths.

Many vegetable plants don't have flowers that are showy enough to attract pollinator but by adding flowers to your vegetables gardens you can help attract bees to pollinate your vegetables.

If you only like a manicured lawn please at least plant some trees to help our pollinators.

We must take steps to protect our honey bees and wild bee population with such steps as improve habitat, protect from pesticides and use environmentally safe pesticides if you need to use pesticides but a better way is to provide your gardens with beneficial insects, provide plenty of food sources with clusters of plants with staggered bloom times, native plants are best.

Bees and other pollinators need shelter, leave some dead trees or plants for them to nest in and provide year around clean water sources, **shallow** water sources can provide bees with enough water for their needs without the problem of the bees drowning and without creating a breeding ground for mosquitoes.

How many bees in a colony?

Do you know how many bees are in the average colony?

1 queen, 50,00 workers, 300 drones, 9,000 hungry larvae needing food, 20,00 older larvae and pupae in sealed cells needing to be kept warm, 6,000 eggs from which new larvae will hatch

Honey bees- Roles within the colony

To ensure the survival of the colony honey bees have a caste system, just as in human society, bees have different job descriptions that together ensure a well functioning unit.

Queen

A newly hatched queen begins life in a duel to the death with any other queens in the colony, she must protect her position as the queen by killing all potential rivals that have not hatched, after all rivals are dead she makes her virgin mating flight, she will mate with at least a dozen drones who will all die after mating. She will fertilize all the eggs she needs for her lifetime during this mating flight. She lays her eggs and secretes a pheromone that keeps all other females sterile. She will lay up to 1,500 eggs per day and may lay up to 1 million during her lifetime which is usually 3-5 years.

Queen's attendant

Since the queen is so busy laying eggs, she has no time for chores so her attendant bathes and feeds her.

Drones

Drones have no stingers to help defend the hive and do not have a body structure for collecting pollen and nectar and cannot contribute to feeding the community. The drone's sole purpose in life is to mate with the queen, after mating the drone dies.

Workers bees:

Females accomplish every chore unrelated to reproduction. These busy bees are kept busy by building the comb for storing honey and where the eggs are laid which they tend. Workers collect pollen and nectar and evaporate the nectar to make honey for times when food is scarce.

Nurse bees: Care for the larvae and the young.

Fanners: Since large amounts of honey can heat up the hive, their job is to keep the hive cool, they fan their wings to cool the hive and they can expand their chest muscles and flap their wings to generate heat when temperatures get too cool. This is usually the humming noise you hear when you are near a hive.

Guards stand watch at the door to keep predators out of the hive and to oust the drones in the fall.

Construction workers keep busy by building the bees wax comb for storing honey

Foragers A single bee produces about 1/12th of a teaspoon of honey in her lifetime. From spring until fall they must bring back enough pollen and nectar to feed the entire community this takes about 60 # and takes thousands of bees to get this job done. They will travel up to four miles in a day and visit several thousand flowers, they will travel 4-5 hundred miles in their lifetime using vector radar and visual clues to return to the hive. Since the average hive has at least 40,000 of all ages, they have the bee power to accomplish this job.

Undertaker bees are kept very busy carrying out the dead to keep a healthy hive, 300-400 hundred bees die every day and over a 4 month period they are all replaced so there is a constant turnover.

Water carriers this is a dangerous activity since sometimes they fall into the water and drown, since the hive needs 5-6 quarts a day in midsummer they are very busy, some pollen carriers double as water carriers

Royal Jelly

A substance produced from a gland in the head by worker bees to feed all larvae initially, it is called royal jelly because if a new queen is needed for the hive, one larvae is fed nothing but large quantities for the first four days of its growth which triggers the formation of ovaries, the queen is the only one with ovaries.

Nectar contains 50% humidity, it is gradually dehydrated and becomes honey when the water content drops to 17%.

The decline of the honey bee

Loss of habitat and nesting sites: With building, urbanization and intensive farming practices, we have lost at least 70 % of flowering plant species world -wide. Habitat is important for food and to ensure genetic diversity, when nesting sites are reduced this increases competition between bee colonies for safe nesting sites. Delays in finding safe nesting sites means later starting in the season which can greatly impact the bee populations.

Pesticides: Is it realistic to believe that insecticides only kill “bad” insects and leave the “good” insects alone?

Insecticides are not discriminating they will kill any thing they touch and also gets into the ground water through run off, pesticide regulatory efforts are very inadequate.

Please don't use pesticides, go organic wherever possible such as leaving the good bugs alone and let them do their jobs .[see Member handout]

If you feel you must use pesticides use the least toxic type and avoid applying on blooming plants and blooming weeds that attract bees and avoid drift and apply in late afternoon, most honey bees stop foraging and return to their hive by 3 p.m.

Sprays are usually safer for bees, dusts almost always drift, granular types are generally least likely to drift so consider granules to destroy the target pests Talk to your local garden center for the safest type of pesticides.

If you raise bees near an area where pesticides are commonly used, identify yourself as a beekeeper to neighbors who use those pesticides and explain the importance of **your** bees to the value of **their** crops and that the pesticides interfere with the bees' vector radar to get back to the hive and in time kill them.

Get involved with regulatory agencies and politicians and local councils to improve how your city handles their green spaces.

There are ongoing studies to explore the pros and cons of pesticides by several agencies who estimate that 30-40% of crops would be lost without pesticides, they are working on safer pesticides.

Diseases:

Varroa mites affect only **honey bees** not the wild bees, Varroa mites feed on the body fluids and leave openings on the bee body to allow viruses into the bee and cause a multitude of diseases these diseases have killed billions of bees, so think twice about buying commercially raised bees as they can transmit these diseases.

Climate Changes:

The affects of climate change can impact bees such as the flowering times of plants or plants not flowering at all from extreme weather conditions, prolonged winters and flooding.

During droughts we can help our bees by planting native plants and providing shallow water and damp mud

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Written for Oregon FCE

by Sandie Bolyard and Phyllis McIntire

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Member Handout

Think of your garden as a feeding station and safe haven for bees and consider these plants for your yard.

Annual Plants

Arroyo Lupine
Baby's Breath
Bachelor's Buttons
Barley
Basils
Bee
Bird's Eyes
Birdsfoot Trefoil
Blue Lace Flower
Borage
Calendula
California Poppy
Candytuft
Celery
Chervil
Coriander
Corn
Corn Poppy
Cosmos
Crimson Clover
Dill
Goldfields
Gopher Stopper
Johnny Jump-Up
Lobelia
Meadow Foam
Mexican Sunflower
Pincushion Flower
Rye
Subterranean Clover
Sunflowers
Sweet Alyssum
Sweet Marjoram
Tidy Tips
Triticale
White Sweetclover
Yarrow

Perennial Plants

Angelica
Anise Hyssop
Asters
Blanketflowers
Blue Cardinal Flower
Blue Wild Rye
Bog Rosemary
Boneset
California Lilac
California Brome
Canada anenome
Carpet Bugleweed
Catmint
Comfrey
Cornflowers
Coral Vine
Coreopsis
Crimson Thyme
Crocus
Culver Root
Deergrass
Elderberry
Evening Primrose
Fennel
Feverfew
Garlic Chives
Golden marguerite
Green Lace Flower
Jerusalem Artichoke
Lavender Globe Lily
Lavenders
Lovage
Lupines
Milkweed
Mints
New England asters
Paleleaf Sunflower

Penstemon
Peonies
Pincushion Flower
Purple mallow
Queen Anne's Lace
Riddell's Goldenrod
Sand Coreopsis
Sea Lavender
Shrubby Cinquefoil
Soapbark Tree
St. Catherine's Lace
Stonegrass
Swamp Milkweed
Teasel
White Lace Flower
Wild Bergamot
Wild Strawberry
Willow
Wood Betony
Yarrow
Yellow Cornflower
Yellow Giant Hyssop
Yolo slender Wheatgrass

TREES and SHRUBS

Burning Bush
California Lilac
Firethorn
Golden Bells(forsythia)
Potentilla Texas Sage
Willow

Beneficial insects, learn to recognize them, it will be easier to appreciate the work they do and understand why it is best to not use a broad spectrum herbicide.



Ground beetle



Praying mantis



Big Eyed bugs



Minute Pirate Bugs



Damsel Bugs



Assassin Bugs



Lady Beetles



Predatory Stink Bugs

Ground Beetles:

The adults usually hang out under rocks, the larvae is the one that does the pest control, they prey on slugs, root maggots, cutworms and other ground pests, sometimes they venture up the stems in hunt for caterpillars or insect eggs.

Big-eyed Bugs:

They are quite small reaching an average of just 1/8th of an inch, despite their small size both adults and nymphs feed voraciously on mites, aphids, and insect eggs.

Damsel Bugs:

They dine on aphids, caterpillars, thrips, leafhopper, and other soft-bodied insects, the nymphs feed on small insects and their eggs. With their coloring Damsel bugs blend in well, they look similar to assassin bugs but are smaller.

Lady Beetles:

Everyone also knows them as lady bugs, they eat aphids, scale insects, thrips, mealybugs and mites. The lady beetle larvae look like tiny colorful alligators, don't mistake them for pests.

Praying Mantis:

They can handle even the largest pests in your garden, their coloration makes them blend in well among garden plants, when the nymph are hungry they sometimes eat their siblings. A mantis is such a predator they may also eat a helpful lady beetle as they are to eat a caterpillar.

Minute Pirate Bugs:

These predators are so tiny you may miss seeing them they are only 1/16th of an inch. But they can eat a large number of mites, aphids and thrips. They are hard to find, look for a black body with a chevron pattern on their backs.

Assassin Bugs:

These bugs can use trickery, disguises or just brute force to capture their food, as a group they feed on everything from beetles to caterpillars. Be careful not to handle them, they bite-hard.

Predatory Stink Bugs:

Although many stink bugs can be a pest, some help keep pests under control, the spined soldier bug feeds on caterpillars, sawfly larvae, and grubs since they are a predator they may also eat your lady beetles or even their own kin. They have a shield shaped and marked body, they produce a pungent odor when disturbed.

The decline of the honey bee

Loss of habitat and nesting sites: With building, urbanization and intensive farming practices, we have lost at least 70 % of flowering plant species world -wide. Habitat is important for food and to ensure genetic diversity, if habitats become too isolated species are forced to in-breed.

When nesting sites are reduced this increases competition between bee colonies for safe nesting sites. Delays in finding safe nesting sites means later starting in the season which can greatly impact the bee populations. In bumble bees this can cause the production of more males instead of female workers this increases the decline of this species since drones don't do any of the work.

Pesticides: Is it realistic to believe that insecticides only kill "bad" insects and leave the "good" insects alone such as bees, butterflies, lace wings and ladybugs?

Insecticides are not discriminating they will kill any thing they touch and also gets into the ground water through run off, pesticide regulatory efforts are very inadequate.

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