

Bees for Master Gardeners



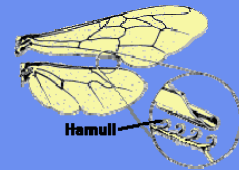
This program's goal is to assist you in educating the general public about the interaction of bees, plants, people and pollination

- Introduce you to 4 beneficial bees
- Provide you with ways to attract and maintain beneficial bees
- Address several bee related questions you are likely to receive from the public

To bee or not to bee



What is a bee?



- 2 pairs of wings vs. 2 single wings
- Ability to carry pollen

Hymenoptera =
Married or hooked wings

INSECT	FAVORITE FOOD	HABITAT	HOW TO ATTRACT	MAINTENANCE	BEHAVIOR TOWARD HUMANS	HONEY PRODUCTION
 MINER BEE	Wide variety	Soil	Base patch of soil	EASY: None	Non-aggressive.	None
 MASON BEE	Petal japonica, fruit trees, roses, radishes, strawberries.	Wood blocks, straws	Provide bundles of straws, wood blocks	EASY: Remove old nesting material yearly.	Not aggressive; lay pin prick sting, will sting if stepped or squeezed	None
 BUMBLE BEE	Tomatoes, lavender, clover, honeysuckle, asters/hibiscus	Nesting boxes, abandoned mice or rat nests	Provide nesting box with soft nesting material	EASY: Change nesting material yearly, sterilize nesting box.	Defensive: 11 feet around hive if disturbed	Just enough for colony
 HONEY BEE	Wide variety of fruits, vegetables & ornamental plants. Most important all around pollinator.	Wooden boxes containing wax comb	Previously used bee hives will attract swarms. Best method is to purchase established healthy hives.	LABOR INTENSIVE: Keeping healthy bees requires time, knowledge, physical exertion and investment.	Defensive: 10 - 15 feet around hive if disturbed. About 1% of population is allergic to stings.	Roughly 50 pounds of honey per hive, per year.

Solitary Bee aka Miner Bee



Solitary Bee aka Miner Bee



- Pollinates many plants
- Hundreds of varieties
- Slightly smaller than a honey bee
- Easiest of all the backyard bees to maintain
- NON aggressive
- No honey production

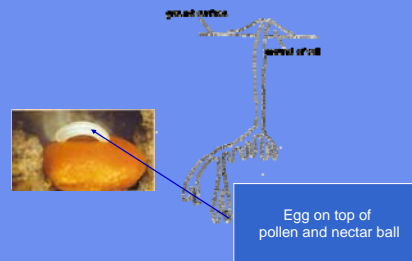
Why are they called Miner Bees?



Approaching tunnel

Emerging from tunnel

Miner Bee Underground Tunnel



Egg on top of pollen and nectar ball

Mason Bee



Gotta build, gotta build.....

Mason Bee aka Blue Orchard Bee



- Pollinates fruit trees and strawberries
- Easy to keep
- Short foraging range
- Early season
- Little smaller than a honey bee
- Rarely sting
- No honey production

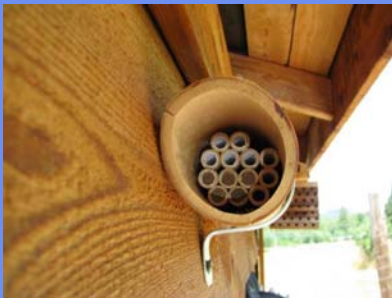
Various Mason Bee Nesting Boxes



Mason Bee Nesting Tubes



Nesting tubes in a section of bamboo



Hymenoptera Habitat



AKA Teasel


We've got customers



Wood Nesting Block



1 - 4 of 4 items:




Kit includes Mason Bees

Mason Bee Kit
ZCC162 \$80.95

1 Qty [Add to Cart](#)


[More Details »](#)



Mason Bee Nester
ZBE002 \$25.50

1 Qty [Add to Cart](#)

[More Details »](#)




Mason Bee Nesting Box
ZBE004 \$20.95

1 Qty [Add to Cart](#)

[More Details »](#)

Territorial Seed Catalog
Page 161



Replacement Liners for Mason Bee Nester
ZBE003 \$16.25

1 Qty [Add to Cart](#)

[More Details »](#)

Also Available from Territorial

1 - 2 of 2 items:



Canned Bee Starter Kit
ZBE013 \$44.95

1 Qty [Add to Cart](#)

Inside View of Mason Bee Nest



Glass Tube

Mud Partition

Pollen & Honey


Egg

Mites on a Mason Bee



Block Nest Maintenance: Shoe box

- As the Mason Bees emerge around March 15th, place a shoe box over the nest.
- At the same time, set up a new nesting block or tube with straws nearby.
- The shoe box discourages Mason bees from re-entering the same tubes.
- This breaks the mite life cycle.



Nesting Tray Maintenance: Washing cocoons

- Remove cocoons and separate from mud
- Wash with tepid water
- Wash with weak bleach solution (cap of bleach per gallon of water)
- Air dry and store in sealed container in refrigerator



Straw Maintenance: Easy mite control

•As the Mason Bees emerge around March 15th, place a shoe box over the nest.

• At the same time, set up a new nesting block or tube with straws nearby.



A Huggable Bumble



Bumble Bee



- Many varieties
- Green house tomato pollinator
- Love artichokes and lavender
- Size: variable
- Defensive 15 feet around hive
- Honey production enough for colony only

Greenhouse Specialist



Natural Habitat



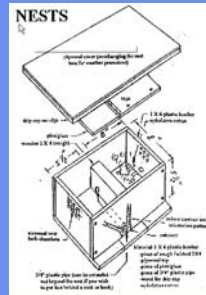
Commercial Nesting Box



Building Your Own Nesting Box



Construction Diagram



- Great winter building project
- Position in late winter
- Bait with abandoned mouse nest
- Construction instructions can be found on your additional resources sheet

Inside Bumble Bee Nest



Bumble Bee Maintenance

- After the first couple frosts the nest will be empty because the new queen bumbles have left to hibernate elsewhere and the workers and old queen have died.



- Remove the old nesting material.
- Next season you can encourage a new nest with an abandoned mouse nest.



When is a "B" is not a bee





Honeybees compared to Yellow Jackets, Paper Wasps and Hornets				
	Honeybee	Yellow Jacket	Paper Wasp	Hornet
				
Color	Varies but generally similar to brown to reddish alternating with black stripes, some are mostly black	Black and opaque bright yellow stripes	Dusky yellow to dark brown or black	Black and very white markings
Size	1/2 inch	1/2 inch	1/2 to 3/4 inch	1/2 inch
Legs	Not generally visible while flying, pollen baskets on rear legs can be seen while working	Two long legs are visible hanging down during flight, no pollen baskets	Long, no pollen baskets	No pollen baskets
Behavior toward humans and animals	Generally unless provoked	Aggressive	Varies	Aggressive
Preferred Food	Nectar and pollen from flowers	Other insects, wasps, flies, sugar, honey, human food, particularly meat	Other insects	Other insects
Stinger	Barbed, kills when used	Smooth, retractable and can be used repeatedly	Smooth, retractable and can be used repeatedly	Smooth, retractable and can be used repeatedly
Lives in	Large colonies of the same bees; honeybees hanging vertically	Colonies live in combs or paper-like structures	Small combs (the paper nest) usually hanging horizontally in protected areas, trees, walls	Large paper nest attached to wood (the nest), usually hangs from trees (the nest)

Illustration of a hornet wasp for a human trap for the bees

Honey Bee

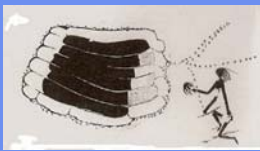


- Most important pollinator: pollinates 1/3rd of the food crops
- Several varieties
- Defensive 10-15 feet around hive if disturbed
- Honey production approximately 30 pounds per hive per year

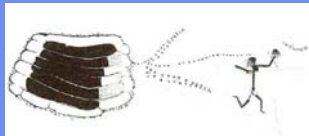
Cretaceous Corsage



Bee in Fossilized Amber

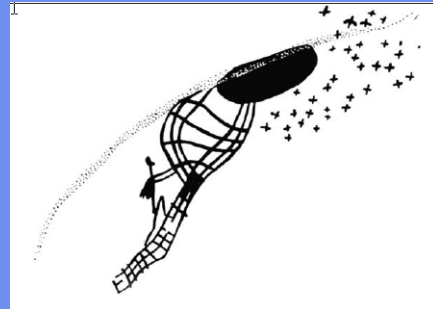


Really, REALLY
Long Time Ago



Later the Same Day:
The Atkins All Protein Diet is Invented

Spanish Cave Drawings



Approximately 8000 years ago

African Rock Painting



Honey Bees in Ancient Egypt



3000 – 4000 years ago

Honey for the Pharaohs



Beekeeping: Then and Now



3000 – 4000 years old

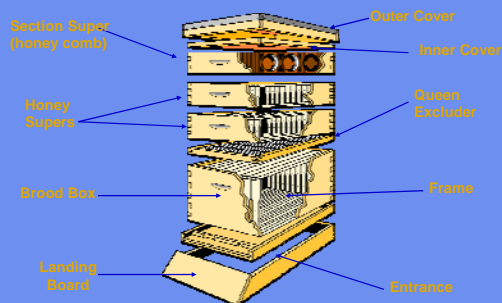


Modern Day Egypt

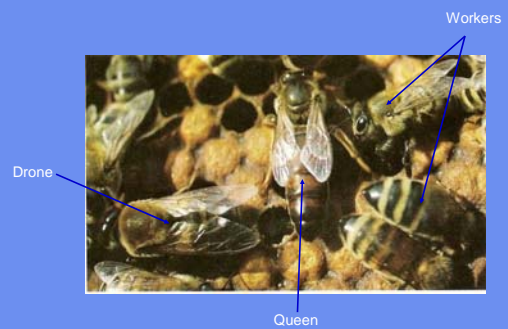
3000 Year Old Bee Hive



Modern Bee Hive



Three Bee Castes



Queen and Her Entourage



The Queen's Only Role



- Lay Eggs
- Lay Eggs
- Lay More Eggs
- Lay Even More Eggs

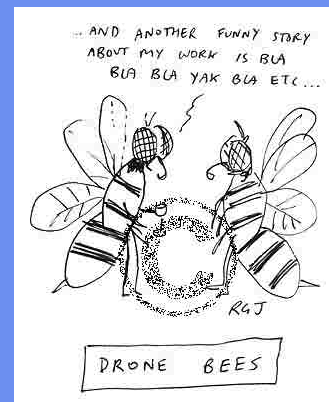
Depositing an egg in cell

Wax Comb with Eggs



Drone aka Male Bee

- Mates with Queen
- Expects to be Waited On
- Mostly Does Nothing



Worker Bees: 60,000 Strong

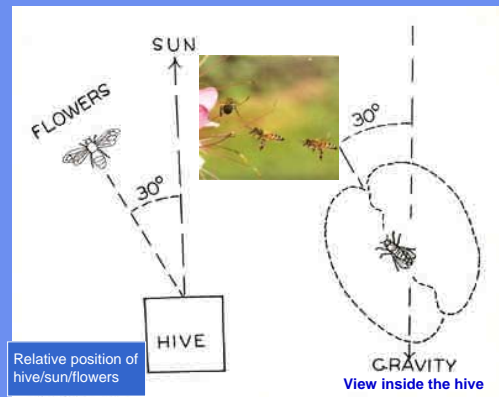


- Raise Babies
- Care for Queen
- Maintain Hive
- Build Comb
- Protect Hive
- Pollinate
- Collect Nectar
- Collect Pollen
- Work Until Their Wings Wear Out
- Infertile Females

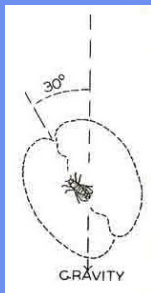
Wax Comb with Eggs



Making a Bee Line



Dancing with the Stars



Inside View of Hive



Pollination: Primary Value



If It Were Not for Pollination...



An Enduring Product



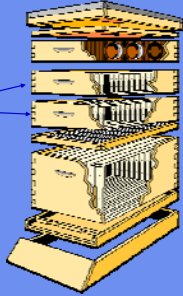
Are We Exploiting the Bees?

- Sustainable beekeeping happens when only the surplus honey is harvested

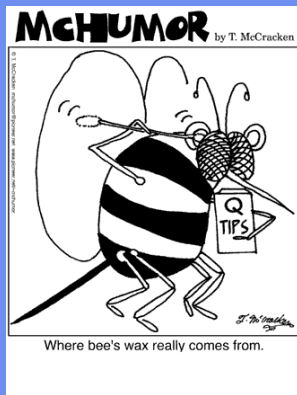
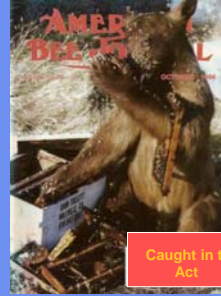


Modern Bee Hive

Surplus
Honey
Supers



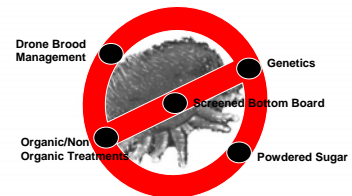
Non Sustainable Way to Harvest Honey



One of Many Uses of Bee's Wax



Varroa Mite on Adult Worker Bee



No Mites

Swarms and Purchasing Established Hives are Ways to Start Keeping Bees



If you are interested in beekeeping, contact me



The goal today is to

- Introduce you to 4 beneficial bees ←
- How to attract and maintain beneficial bees
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An Easy Way to Attract Pollinators

Flower Mix-Honey Bee

(A & P) Grow these specially selected flowers for their nectar and pollen-producing ability. The honeybees will love you for it, and so will the rest of your garden. A blend of 20 varieties, including Baby Blue Eyes, annual sunflowers, and Plains Coreopsis. Best planted spring, early summer, and fall. Planting rate: 3-6 ounces per 1000 square feet; 8-16 pounds per acre. Germination code: (4)



Territorial Seed Catalog
Page 161

Plants That Attract Pollinators

			
RED CLOVER	BLUEBERRY	PARSLEY	ASTER

Bee on Artichoke




**PLANTS ATTRACTIVE TO BEES
IN THE WILLAMETTE VALLEY**

Common Name	Pollen or Nectar	When Bloom
Artichoke	Both	Summer-Fall
Aster	Both	Summer-Fall
Big Leaf Maple	Both	April-May
Blackberry	Both	June-July
Blueberry	Nectar	Spring
Broccoli	Both	Spring-Summer
Cabbage	Both	May
Cherry Tree	Both	April
Cotton Wood	Pollen	April
Crimson Clover	Both	May
Dandelion	Both	Spring-Fall
Dill	Both	July
Fare Weed	Pollen	July-August
Fruit Trees	Pollen	April-May
Hazel Nut	Pollen	Late Winter
Madrone	Nectar	May
Manzanita	Both	May
Mint	Both	August-September
Mustard	Pollen	March
Oregon Grape	Both	April
Parsley	Nectar	Summer
Raspberries	Nectar	June
Red Clover	Both	June-August
Snow Berry	Nectar	May-June
Thistle	Both	June
Vine Maple	Nectar	May
White Clover	Both	June-July
Willow	Both	March-April

Specific Actions You Can Take to Provide Native Bees with Habitat

Provide a diverse community of plants attractive to pollinators




Specific Actions You Can Take to Provide Native Bees with Habitat

Retain dead trees or branches and leaves when safe and practical



Specific Actions You Can Take to Provide Native Bees with Habitat

- Protect sloped or exposed well drained ground sites where plants are sparse
- Leave some areas untilled and minimize weed control tillage



Specific Actions You Can Take to Provide Native Bees with Habitat

Protect grassy thickets or other areas of dense low cover from mowing or other disturbance



The goal today is to

- Introduce you to 4 beneficial bees ←
- How to attract and maintain beneficial bees ←
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Hot Line Questions



Hot Line Question



"A swarm of bees landed in my back yard. I want to get rid of them but don't want to kill them.

What can I do?"

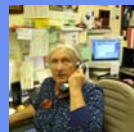


What can I do?

- Reassure caller that the swarm is valuable and NOT aggressive.
 - Caution the caller not to spray it with water or insecticide. Just leave them alone.
 - The caller can just do nothing and often the swarm will leave on its own
- OR
- Better yet call someone from the swarm list located on the wall near the clock.



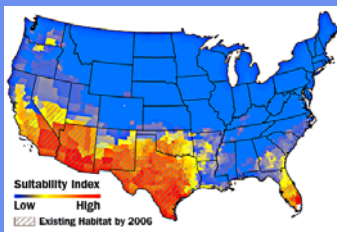
Hot Line Question



"I've heard killer bees are spreading northward. Are there killer bees in Lane County?"



No, no killer bees have been found in Lane County or in the state



Hot Line Question



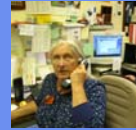
"I've been thinking about keeping honey bees.

Are there any zoning problems I should know about?"



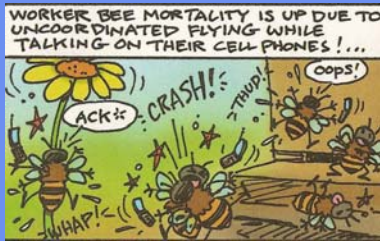
Lane County and each City have different regulations

Contact the appropriate agency for proposed location of bees



Hot Line Question

"I used to see lots of bees on my fruit trees but now it's rare. Is this because of the bees disappearing?"



Percentage of Decline of Crop Yield without Honeybees' Pollination

Crop	% Dependence on Honeybees	Crop	% Dependence on Honeybees
Almond	100	Lemon & Lime	20
Apple	90	Lettuce	10
Apricot	70	Lupine	10
Asparagus	90	Macadamia	90
Avocado	100	Mandarin	30
Bean	10	Mango	90
Blueberry	100	Nectarine	60
Broccoli	100	Onion	100
Brussels sprout	30	Orange	30
Cabbage	30	Papaya	20
Carrot	100	Peach	60
Cauliflower	100	Peanut	10
Celery	100	Pear	50
Cherries	90	Plum and prune	70
Cotton lint	20	Pumpkin	90
Cucumber	90	Strawberry	40
Grapefruit	80	Watermelon	70
Kiwi	90		

Front desk questions



Client Question



"This bee was stinging my dog and when I tried to get it out of her fur, it stung me too."

What is it?

How can I get rid of it?"



What is it?



	Honeybee	Yellow Jacket	Paper Wasp	Hornet
Color	Some but generally similar to those of honey bees with black stripes, some are mostly black.	Black and yellow stripes, yellow stripes.	Dark yellow to dark brown or black.	Black and some white markings.
Size	1/2 inch	1/2 inch	1/2 to 3/4 inch	1/2 inch
Nest	Not generally visible unless being pulled out of the hole or the nest is open while working.	Visible as a hole in the ground or in a wall.	Visible as a hole in the ground or in a wall.	Visible as a hole in the ground or in a wall.
Behavior toward humans and animals	Stings when provoked or threatened.	Aggressive.	Aggressive.	Aggressive.
Preferred Food	Honey and pollen from flowers.	Other insects, various fruits, sugar drinks, human food, particularly meat.	Other insects, various fruits, sugar drinks, human food, particularly meat.	Other insects.
Stinger	Barbed, like the yellow bee.	Smooth, needle and can be used repeatedly.	Smooth, needle and can be used repeatedly.	Smooth, needle and can be used repeatedly.
Levels of	Can colonies of 100,000-200,000 honeybees hang out during summer.	Colonies of 10,000-20,000.	Colonies of 10,000-20,000.	Colonies of 10,000-20,000.

How do I get rid of them?



• **Chemical:** Spray insecticide into nest entrance AT NIGHT.

• **Non-chemical:** Invert a large transparent container over nest AT NIGHT or just wait and the workers will die after a couple of frosts.

Hot Line Question



"Why aren't my zucchinis developing?"



DAY 1 Pollination vs non pollination



Pollinated



Non-pollinated

Day 3



Pollinated



Non-pollinated

Day 7



Pollinated



Non-pollinated

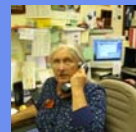
Day 11



Pollinated



Non-pollinated



Hot Line Question

“What can I do now?”

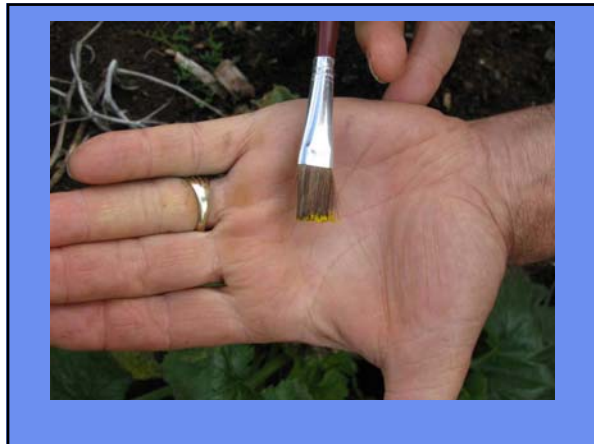


Hand Pollinate



What the caller can do now





What the caller can do long term

- Encourage pollinators
- Plant a diverse community of plants
- Provide habitat for pollinators

Successful interaction among people, plants, bees and pollinations

Save the bees – save ourselves

Additional Resources

Local Sources for Native Plants and Seeds

Duck Creek Native Plant Nursery www.DuckCreekNursery.com
 Heritage Seedlings www.HeritageSeedlings.com
 Lecane Hills Farm & Nursery 541-344-8943

General Information

USDA National Agroforestry Center www.nad.aphis.us
 Bumblebee Nest Box www.bumblebee-nest.org
 The Orchard Mason Bee by Brian L. Goffin
 Humblebee Humblebee by Brian L. Goffin
 Lane County Beekeepers www.lcbac.org
 Lane County Beekeepers Annual school: March 15, 2008
 Lane County Beekeepers Monthly Meeting: 7:30pm on 1st Tuesday at EWED
 The Beekeeper's Handbook by Diana Sammataro & Alphonse Avonville
 Source of Pollinator Information www.pollinator.org
 Online Information Source for Honeybees and other bees too www.beezone.org
 Pollinator Paradise www.pollinatorparadise.com
 Mason Bees & Supplies www.beekeepers.com
 The Xerces Society for Invertebrate Conservation www.xerces.org
 For questions about honey bees and beekeeping call Morris Ostrick at 541-685-2875 Ostrick@xerces.org



The End