

# Native Yards for Native Pollinators

(And all the other species that make this ecosystem go 'round)

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## Practical Ways to Reconnect Your Space With Nature

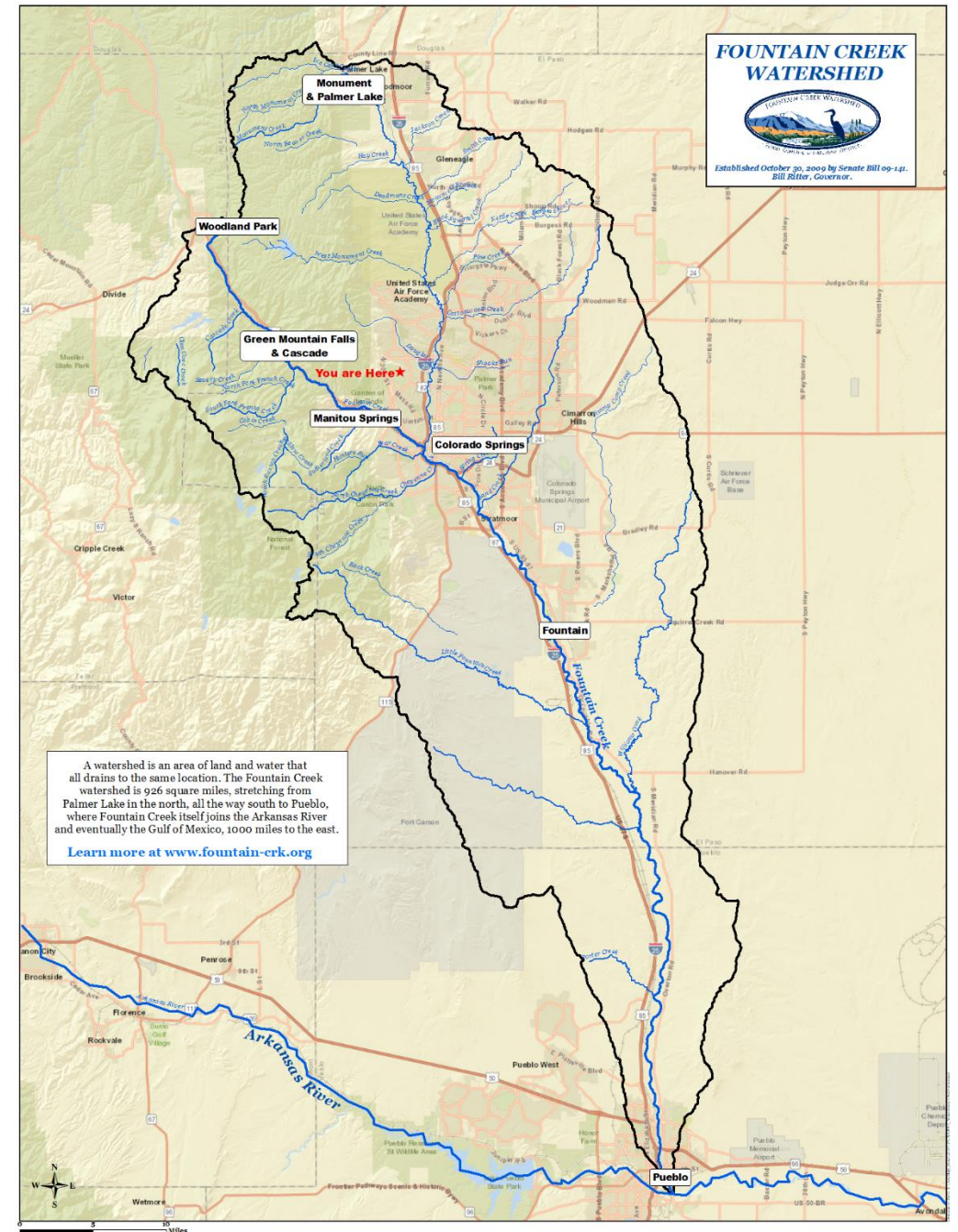
David Woolley. Manitou Seed Library.



*Megachile sp.*

# Fountain Creek Watershed District

- A watershed is an area of land that drains into a common point such as a river, stream, lake or the ocean.
- The Fountain Creek Watershed encompasses 927 miles of land and water from Palmer Lake to Pueblo, including Pike's Peak.
- In 2009, Watershed District was established as a Special District under Title 32 of the Colorado Revised Statutes to preserve and protect the Fountain Creek Watershed.
- The District's collaborative, multi-jurisdictional work focuses on enhancing our waterways and greenways for the benefit of citizens and wildlife alike for today and for future generations.



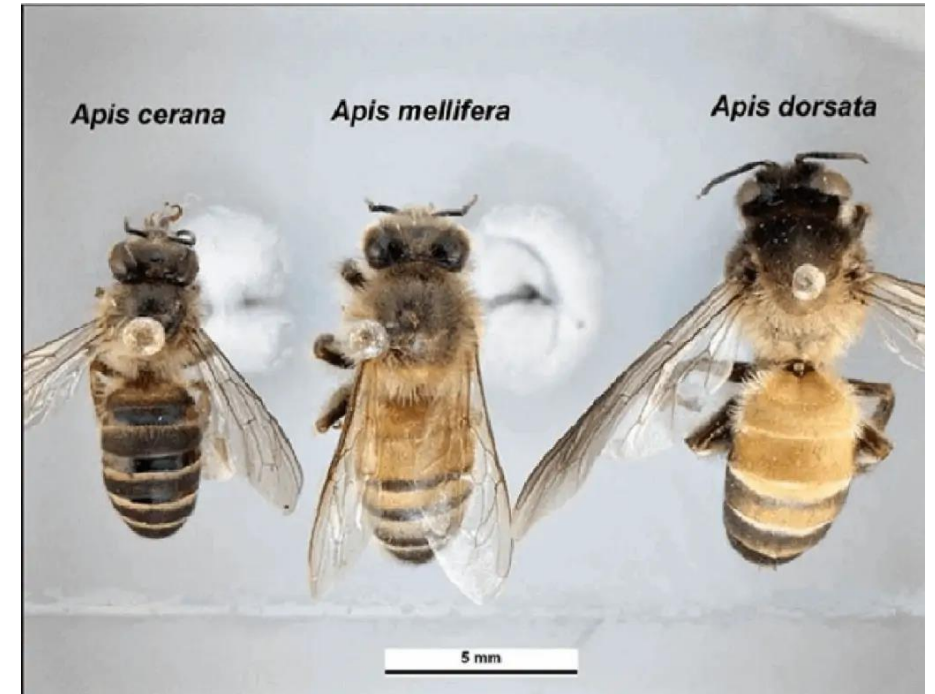
**“In the past, we have asked one thing of our gardens: that they be pretty. Now they have to support life, sequester carbon, feed pollinators and manage water.”**

**– Doug Tallamy**

# First, let's talk about honeybees.

There are 8 species worldwide. The biggest is the Asian Giant honeybee, roughly twice the size of *Apis mellifera*, the European honeybee we all know.

The European honeybee was brought here in the 1600's and is not part of **anything** native in North America.



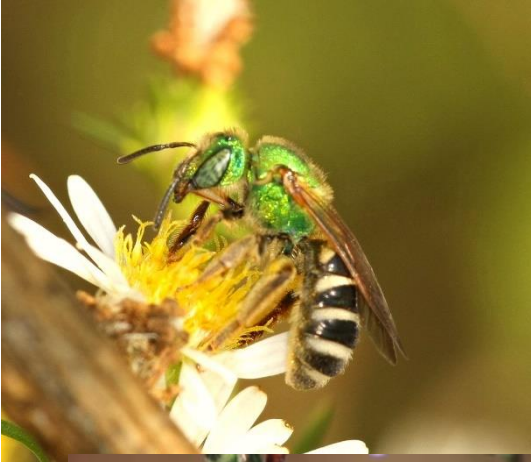
**“Protecting pollinators by getting a honeybee hive is like trying to protect birds by getting chickens”.**

-Scott Hoffman Black, Executive Director Xerces Society for Invertebrate Conservation.

# Meet Your Watershed Pollinators - the insects

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Bees - 56 sp.



Flies - 54 sp.



Butterflies - 18 sp.



Wasps - 36 sp.



Moths - 81 sp.



Beetles - 78 sp.

# Bees

- Bees are a monophyletic lineage within the superfamily Apoidea. They are presently considered a clade, called **Anthophila**.
- More than 20,000 species worldwide.
  - About 4,000 in North America
  - 956 in Colorado. More than the entire eastern half of the United States.
- Bees descended from wasps about 125 million years ago.
- 90% of all bees are solitary.
- All bees are pollinators.
- 75% in Colorado nest in the ground.



U.S.'s smallest bee (*Perdita minima*) face to face with a female large carpenter bee (*Xylocopa varipuncta*).



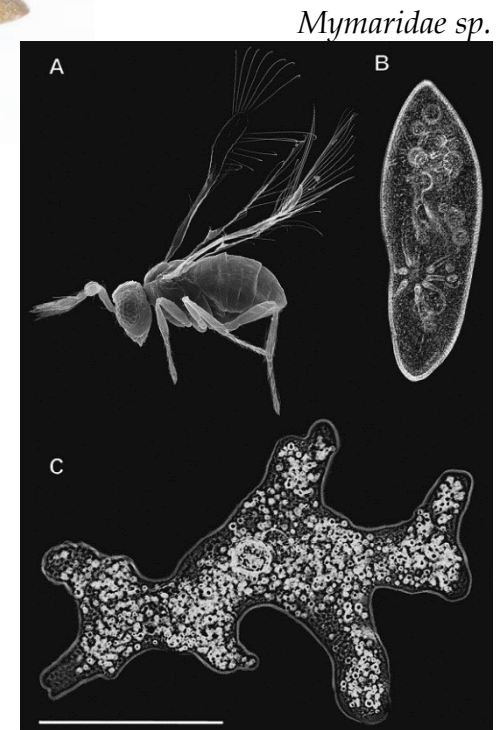
# Wasps

- A **wasp** is any insect of the narrow-waisted suborder Apocrita of the order Hymenoptera which is neither a bee nor an ant; this excludes the broad-waisted sawflies (Symphyta)
- How many species? Depends on who you ask. Estimates range from 30-100K.
- Wasps have been around for about 240 million years.
- Wasps are astonishingly diverse. Many are predators, many more are pollinators, and a large number are efficient insect predators and parasites.
- We could spend the rest of the month talking about wasps.
- They are not, in fact, jerks.



Tarantula Hawk. *Pepsis thisbe*

“Just lie down and scream”  
– Justin Schmidt



*Mymaridae* sp.

# Flies

- Flies are the only group of insects with just one set of wings.
- More than 110,000 species worldwide.
- Amazing mimics of bees, wasps, and others.
- Hugely important as pollinators but roles only starting to be understood. Hoverflies migrate by the billions, often outnumber honeybees, and appear to be extremely efficient pollinators.
  - In North America they pollinate goldenrod, wild carrot, and pawpaw, among others.
- Far more tolerant of variable conditions- heat, cold, and light levels- than bees which is vital for a changing climate.



*Hoverfly sp.*





# Meet Your Watershed Pollinators - not insects

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Hummingbirds



Bats



Lemurs.

Ok. Maybe not lemurs.



# Audubon Rockies

## 5 principles for Wildscaping

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1. Create diverse layers and shelter
2. Grow natural food
3. Provide water for drinking and bathing
4. Control invasive species
5. Conserve: water, energy and chemicals

# Plan(t) for the Layers.

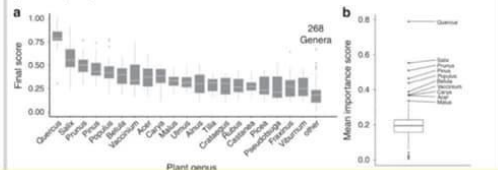
Physical layers, seasonal layers, food chain layers.



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## KEYSTONE PLANTS THAT SUPPORT THE MAJORITY OF BUTTERFLIES AND MOTHS

Fig. 2: Some plant genera are disproportionately important for supporting host plant- Lepidoptera interaction networks.



### LISTED IN ORDER OF POWER TO HOST THE MOST CATERPILLARS SPECIES

- Quercus - Oak Native To Your Area
- Salix - Willow Native To Your Area
- Prunus - Cherry Native To Your Area
- Pinus - Pine Native To Your Area
- Populus - Poplar Native To Your Area
- Betula - Birch Native To Your Area
- Vaccinium - Blueberry Native To Your Area
- Acer - Maple Native To Your Area
- Carya - Hickory Native To Your Area
- Malus - Crabapple Native To Your Area
- Ulmus - Elm Native To Your Area
- Alnus - Alder Native To Your Area
- Tilia - Basswood Native To Your Area
- Crataegus - Hawthorn Native To Your Area
- Rubus - Blackberry Native To Your Area
- Castanea - Chinkapin Native To Your Area
- Picea - Spruce Native To Your Area
- Pseudotsuga - Fir Native To Your Area
- Fraxinus - Ash Native To Your Area
- Viburnum - Viburnum Native To Your Area



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Rank	plant genus		supported species	
			specialist bees	lepidopteran caterpillars
1	Goldenrod	<i>Solidago</i>	11	115
2	Aster	<i>Symphotrichum</i>	7	112
3	Sunflower	<i>Helianthus</i>	7	73

From The Work Of Dr. Doug Tallamy  
learn more on pollinator friendly yards on facebook

**A single pair of chickadees has to catch 7,500 caterpillars to raise ONE brood of chicks.**

# Food and Water

- We like to eat all year round.
  - So do pollinators. If you can, plant something for spring, summer, and fall.
  - If you can't, aim for early spring blooms or late fall. Climate change is extending our seasons and pollinators that hatch earlier or stay active later, need food.
- Appropriate floral resources for foraging adults. This means native plants.
  - Preferably straight species, not cultivars and definitely nothing with double flowers.
- Appropriate woody or herbaceous resources for larval young. This also means native plants.
  - But not always the same ones.



**Water-** a shallow bowl or birdbath with rocks and gravel is ideal & fits anywhere.

Change it every 2-3 days.

# Bringing Up Baby

- 70% of our native bees are ground nesters.
- Most solitary wasps are as well.
  - Many pollinating wasps are also specialist hunters that rely on specific prey items to feed their larvae.
- Females dig burrows and lay a single egg on a ball of pollen (or a paralyzed prey item) in a brood chamber as far as a foot down.
- Leaving areas of bare sand and gravel is key.
  - Even a small areas will get used.
  - Underground nesters often use bare patches near the base of native plants. It's the bee equivalent of having your apartment next to the grocery.
  - Make sure there's no landscape paper or plastic below.
- Most Sphinx moths pupate underground in a few inches of damp soil.



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# Bumblebee Nests

- Queen bumbles emerge in early spring and scout for cavities in the ground, often current or former mouse nests.
  - There's conjecture that young queens use the scent to locate good nesting sites.
- Providing secure nest sites may be helpful to declining numbers. The science isn't clear yet.
- Bumbles form a small colony for the year, with only the fertile females born in the late summer living to emerge as new queens the following spring.

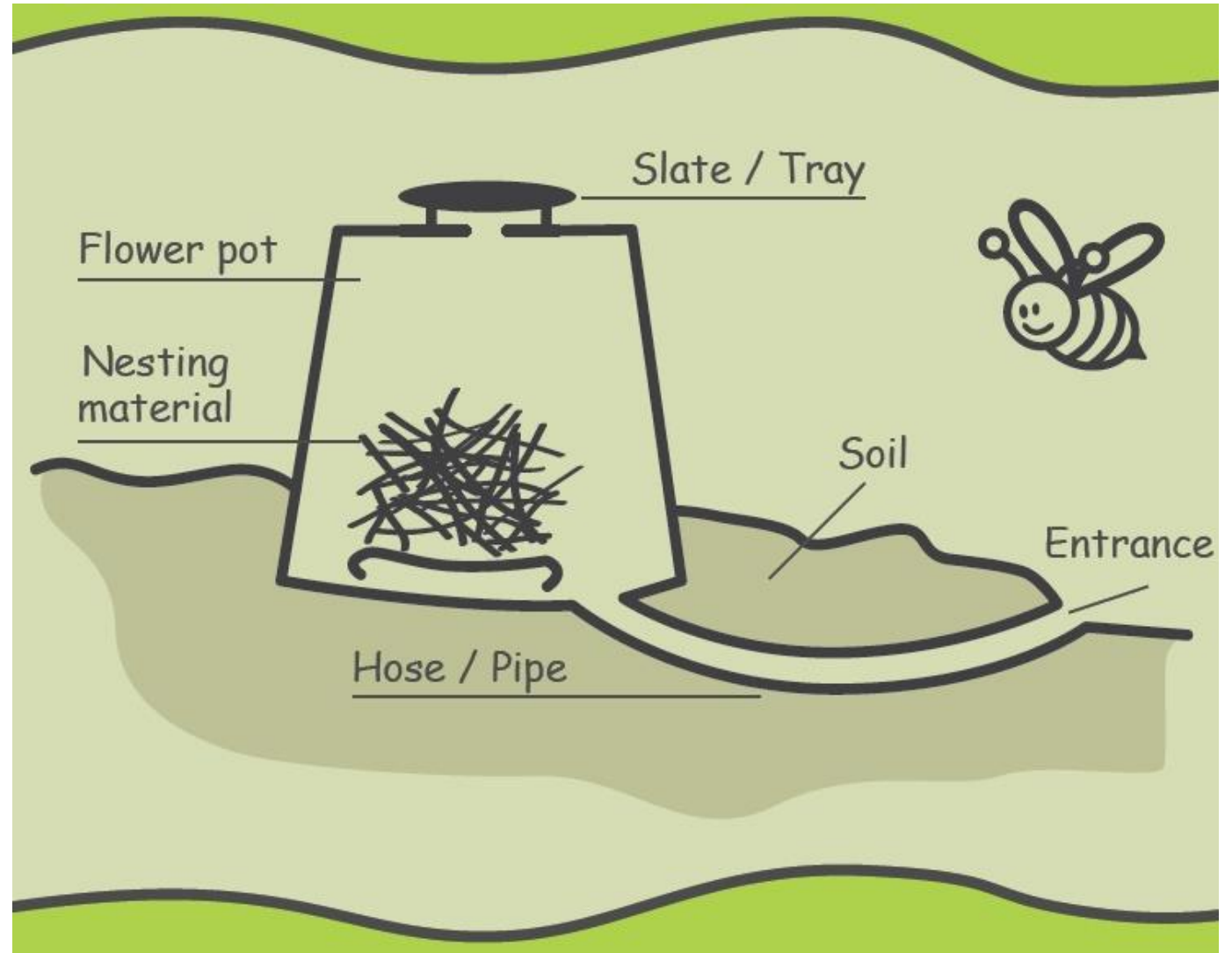


Image source: [bumblebeeconservation.org/bumblebee-nests](http://bumblebeeconservation.org/bumblebee-nests)

# Carpenters, Cavity Nesters, and Cocoons



30% of bees nest above ground in hollow twigs, tunnels in soft wood, or even stone.

- Many butterflies rely heavily on specific host plants for chrysalis and caterpillar habitat, not just for flowers.
- Leave your raspberry stems, your Joe-pye Weed, your sunflower stalks, and other canes when fall comes around.
- Leave your leaves in the fall. Don't deadhead your flowers either!

Inspired by Colin Purrington's tips. Good houses need:

**1. Removable tubes or trays.** For example, in October mason bee cocoons need a bath to reduce bee deaths by keeping parasite numbers low and preventing disease spread. If the tubes are glued in, you won't be able to harvest and clean bee cocoons .

**2. Nesting tubes that close at one end** (at the back of the house). This will stop another access for parasites.

**3. Nesting tubes about 15 cm long.** Shorter and you'll end up with a skewed sex ratio. Females are in the deeper chambers. The hole diameter for mason bees should be 0.79 centimetres

**4. No splinters or sharp edges!** Check tubes for inside splinters that will damage bee wings and bodies. (When bees emerge in spring, exiting the tubes should not be a death-defying feat!)

**5. A roof with an overhang.** Too much water can cause mould, as it could in our own homes!

**6. A solid attachment or mount.** Homes should not dangle from a string or wire. Luckily, this is something you can easily fix.

**7. Breathable nesting tubes.** Avoid glass and plastic. They can mean more condensation and mould. The preference is for paper tubes. Or natural plant stems (close the end off).

**8. Instructions.** If the home doesn't come with details about which species it will help, how to hang it and how to care for bees, it may be best to leave it on the shelf.

**9. To be alone.** Avoid those that look like condos. It just attracts more parasites to one area.



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## Mason Bee Houses



# Remember...

It's easy to feel overwhelmed by the scale of the task.

Your space alone can't solve the whole problem.

So don't worry about trying to do it all.

Your space, however small, can be part of the fix.

And enjoy yourself!

# Pollinator Resources

Manitou Seed Library FCWD Liquid Lecture 19 Jan 2022

## Insects

[Bee Basics: An Introduction to North American Bees. USDA. Moisset, B. and S. Buchmann. 48pps.](#)

[How Much Do Flies Help with Pollination? S. Pain. Smithsonian Magazine. 2021.](#)

[iNaturalist. A joint initiative of the California Academy of Sciences and the National Geographic Society.](#)

[Mason Bee Houses. Choosing/Making the House and Caring for the Cocoons.](#)

[Native Bee Watch Community Science Program. Colorado State Cooperative Extension.](#)

[Xerces Society for Invertebrate Conservation: Pollinator Conservation in Yards and Gardens](#)

[Wasps: the Astonishing Diversity of a Misunderstood Insect. E. Eaton. Princeton Univ. Press. 256 pps.](#)

## Plants and Landscape

[Colorado Native Plant Society.](#)

[HomeGrown National Park. Douglas Tallamy.](#)

[National Wildlife Federation: Food For Caterpillars](#)

[Wild Ones: Front Range Chapter.](#)

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Thank you!

