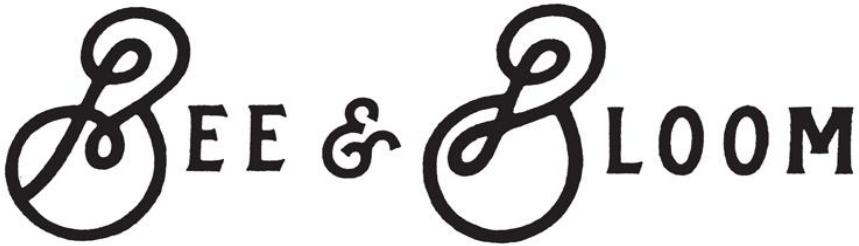
Bee-ing a Friend

What, why, where, who, and how



www.beeandbloom.com

Let's discuss:

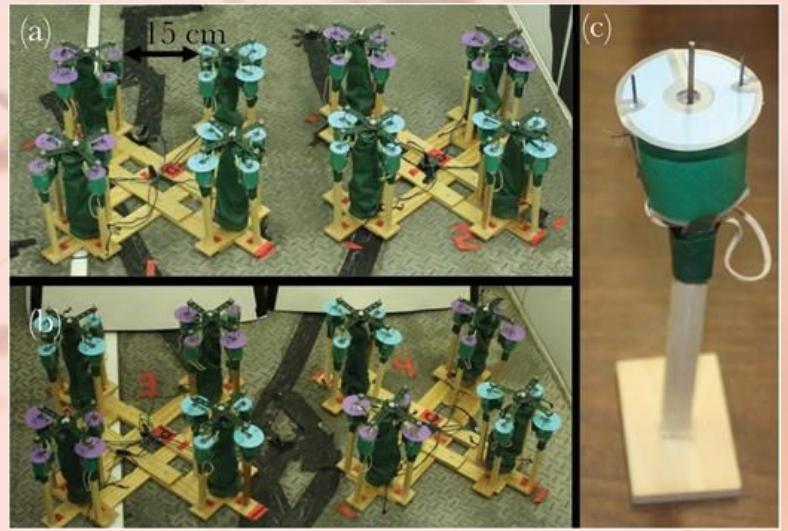
1. Brief history of bees in North America
2. Honey bees
3. Native bee conservation
4. Active pollinator protection legislation
5. P's for protecting pollinators

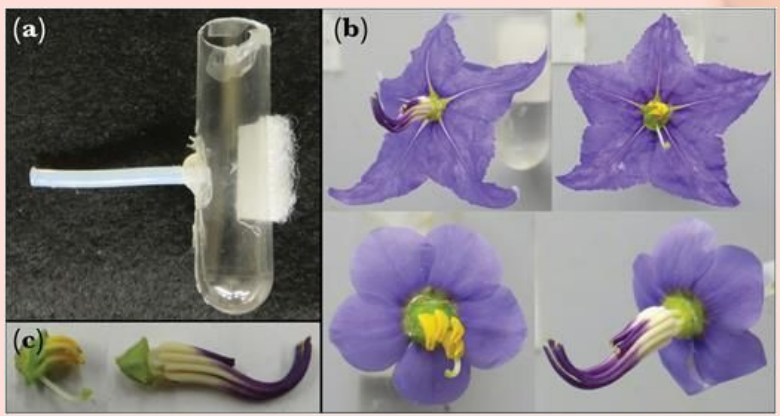
Bee-coming a “Beek”

University of Arizona

Studies in bumble bee behavior:

- Information in floral cues: bees learn floral size cues only when they are important
  - Bees can learn a floral trait is or is not indicative of a nectar reward
- Bees learn preferences for flowers that offer only pollen as a reward
  - Bees develop preferences for flowers that have only pollen and not nectar
- The roles of anthers and corollas in the complex floral display in eliciting foraging behavior from bumble bees
  - Bees use cues from both the petals and the anthers of a flower to learn preferences





Bringing people & pollinators together



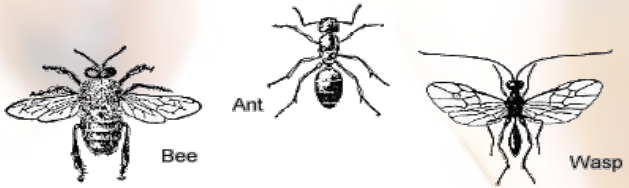





A Brief History of Bees in America

What is a bee?

- **Insect**
  closely related to wasps and ants



- **Florivore**
  that get all of their sugars from nectar and proteins from pollen

- **Pollinator**
  responsible for the effective production of seeds and fruit

Bees are diverse

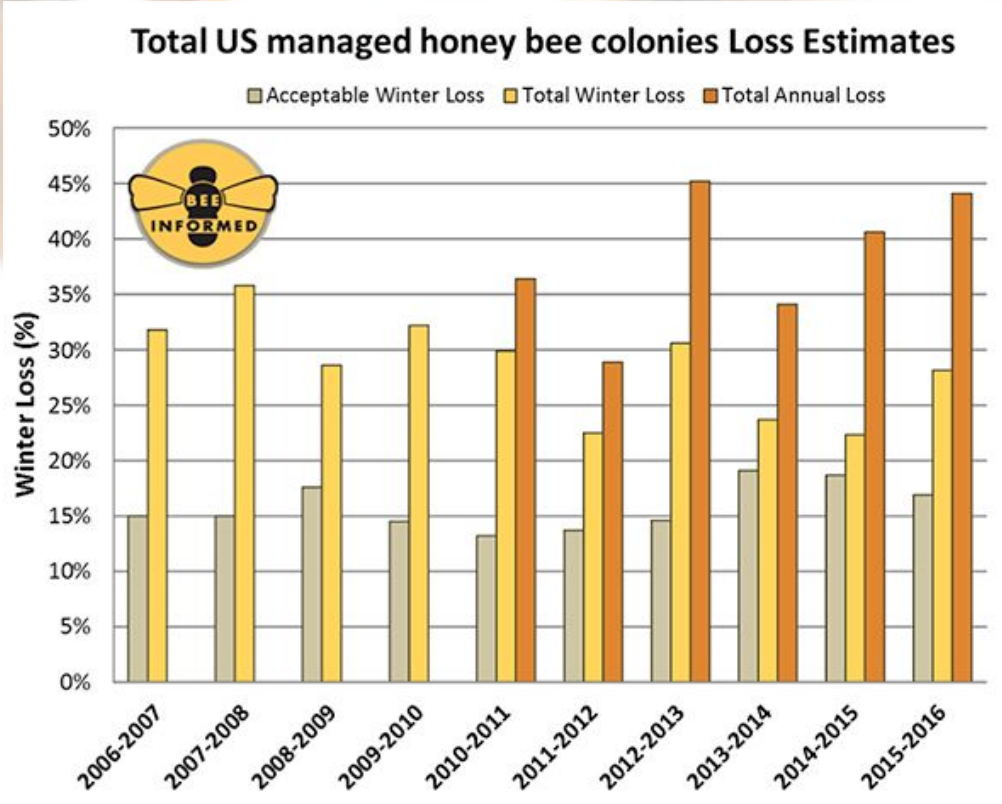
Honey bees

- European species *Apis mellifera*
  - Introduced in the 1600's for honey and wax
- Only honey-producing bee in NA
- Managed pollinators of 15-30% of food crops (~$30 billion)
- Social bees in colonies with thousands of individuals
  - Only bee with barbed stinger that dies after stinging

Commercial pollination

Almond fields in California require two thirds of the nation’s honey bees

2006, Colony Collapse Disorder (CCD)



Public awareness

Blamed for honey bee collapse, Monsanto buys leading bee research firm

April 22, 2012

After 50,000 dead bees found in Wilsonville, more dead bees discovered in Hillsboro

A third of the nation's honeybee colonies died last year. Why you should care

USA TODAY NETWORK Sean Rossman , USA TODAY Published 11:41 a.m. ET May 26, 2017 | Updated 8:29 p.m. ET May 26, 2017

A common neonicotinoid pesticide, thiamethoxam, impairs honey bee flight ability.

- GreenMedInfo Summary

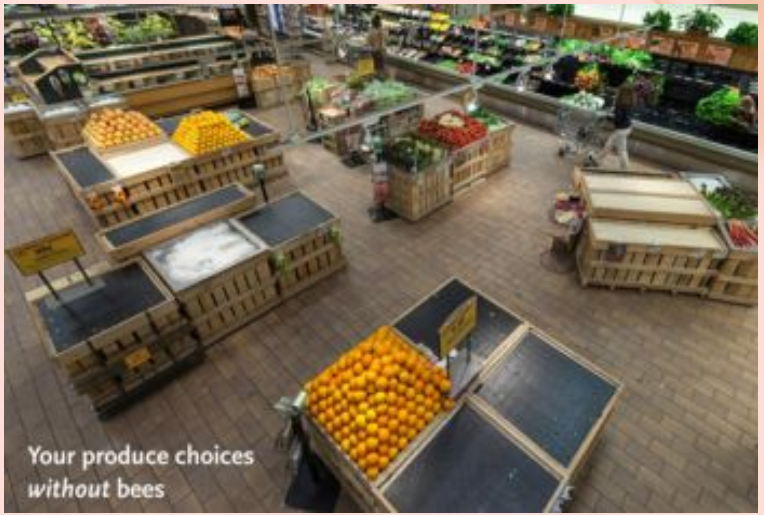
Honeybees are in trouble. Here's how you can help

USA TODAY NETWORK Sean Rossman , USA TODAY Published 1:03 p.m. ET June 23, 2017 | Updated 5:26 p.m. ET June 23, 2017

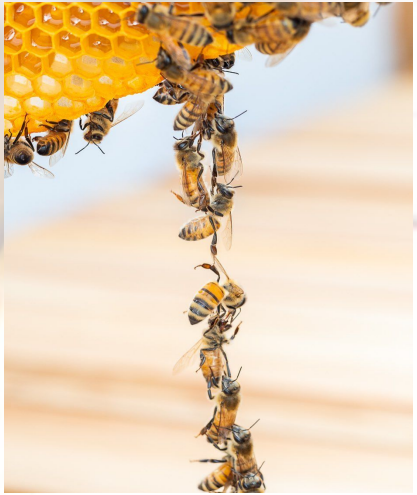
Pesticides damage survival of bee colonies, landmark study shows

US fears over honey bee collapse

March 26, 2008 by Infinite



Should I Get a Hive?



Why keep honey bees?

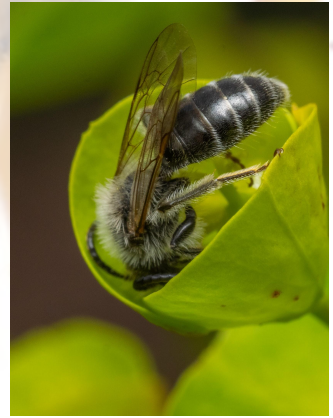
- Culture
- Honey
- Learning/teaching
- FUN!
- Conservation…
- Pollination…
  - Valid?

Invasive plants & non-native pollinators

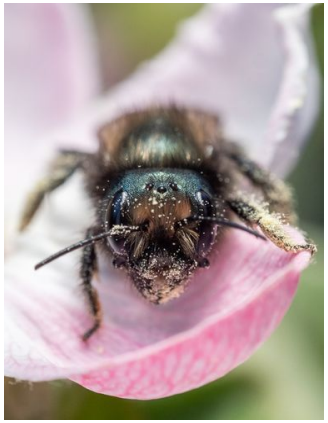
Do honey bees negatively impact native bees?

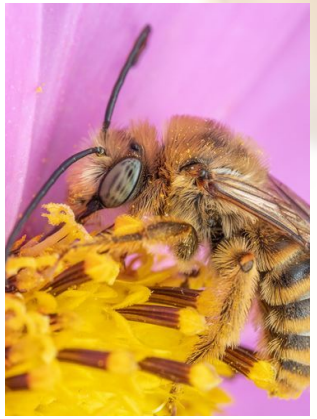
Native Bees Need Our Help

Conservation is more about these guys!







Hawaiian yellow faced bees

Image by Steve Buchanan (USDA)

Image by Jason Graham (University of Hawaii Manoa)

Bombus affinis (rusty patched bumble bee)

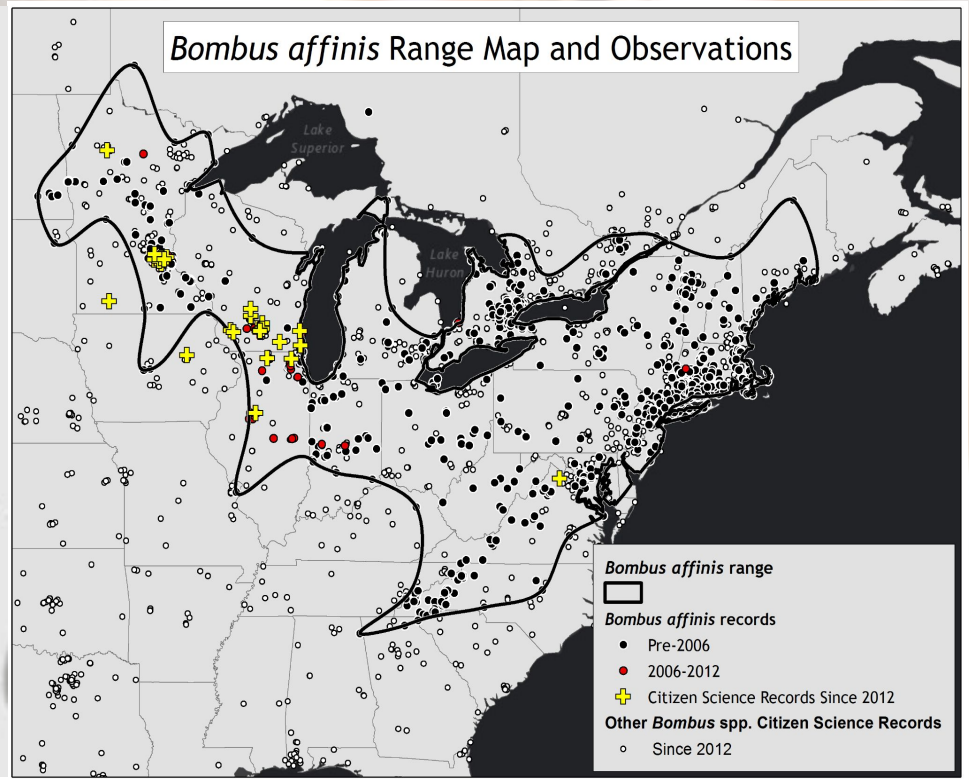


Image and figure from Xerces Society Endangered Species Profile

What's Bee-ing Done?

2015 National strategy to promote pollinator health

I've put together a task force to:

1. Reduce honey bee colony losses to less than 15% by 2025
2. Restore or enhance 7 million acres for pollinators by 2020
3. Increase eastern monarch population to 225 million by 2020

States to the Rescue!

MN DNR critical habitat license plate

https://www.dnr.state.mn.us/features/plates/index.html

Bee lawns

your yard
CAN BEE
the CHANGE
#Lawns2Legumes




Individual support grants available to Minnesotans! Apply at:
https://bluethumb.org/lawns-to-legumes/apply-for-lawns-to-legumes-assistance/

UMN Bee Lab resources

- Spivak lab
  - Research honey bee health and hygienic behaviors
- Cariveau lab
  - Research restoration ecology, native bee monitoring, invasive plants, and pollination biology
- Bee squad
  - Outreach and public support

Find out more at: https://beelab.umn.edu/

MN Bee Atlas

Get involved

Phase two of the Bee Atlas will begin in spring 2022. This project will use DNA analysis to identify the plants used by stem-nesting bees to construct their nests. Volunteers will be needed to host and observe stem nests from April to October.

In the meantime, you can share your photos of bees on **iNaturalist**. You don't have to be a bee expert. Just upload your photo with an accurate date and location and other users will help you identify what you have seen.

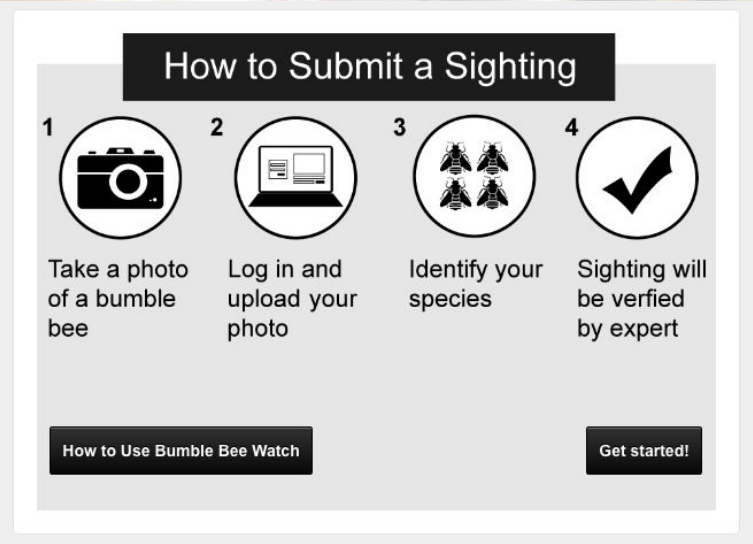
Learn more about **how to identify bumble bees to the species level**.

Sign up to be notified of this and other volunteer opportunities with native bees.

Sign up

https://extension.umn.edu/natural-resources-volunteers/minnesota-bee-atlas

Citizen science apps



iNaturalist

BugGuide

THE GREAT SUNFLOWER PROJECT

P's for Protecting Pollinators

Plant natives

Bloom Period		Common Name	Scientific Name	Life Cycle*	Flower Color	Max. Height†	Water Needs	Notes
		Forbs				(Feet)	L: low; M: medium; H: high	*Life Cycle abbreviations: A: annual; P: perennial; B: biennial. †Max. Height is an average, individual plants may vary.
Early	1	Lanceleaf coreopsis	*Coreopsis lanceolata*	P	yellow	2	L	This early bloomer can hold its own among grasses and taller species; bees and syrphid flies are common visitors
	2	Smooth penstemon	*Penstemon digitalis*	P	white	2	M	Semi-evergreen; prolific nectar producer; visited by a huge diversity of butterflies, moths, and bees, including honey bees
	3	Wild lupine	*Lupinus perennis*	P	blue	2	L	Larval host plant for the endangered Karner blue butterfly (*Lycaeides melissa samuelis*; shown), and various other blue butterflies
Mid	4	Butterfly milkweed	*Asclepias tuberosa*	P	orange	3	L	Milkweeds (*Asclepias* spp.) are host plants for the monarch butterfly (*Danaus plexippus*), and nectar sources for many bees
	5	Dotted mint	*Monarda punctata*	A, B, P	purple	3	M	Tolerates dry, sandy soils; blooms prolifically; highly attractive to beneficial wasps and bees, including honey bees
	6	Great blue lobelia	*Lobelia siphilitica*	P	blue	3	H	Great blue lobelia is an exceptional bumble bee plant, and is excellent for rain gardens
	7	Purple coneflower	*Echinacea purpurea*	P	purple	4	M	Visitors include bees in the genera *Bombus*, *Melissodes*, and *Svastra*, and the leafcutter bee (*Megachile pugnata*)
	8	Purple prairie clover	*Dalea purpurea*	P	purple	2	L	Honey bees and bumble bees are voracious visitors, as well as several specialist polyester bees (*Colletes* spp.)
	9	Virginia mountain mint	*Pycnanthemum virginianum*	P	white	3	M	This and related species have fragrant foliage, and are visited by blue and copper butterflies, honey bees, and more
	10	Wild bergamot	*Monarda fistulosa*	P	purple	4	M	Hawk moths, hummingbirds, and long-tongued bumble bees (such as *Bombus pensylvanicus*) are common visitors
Mid–Late	11	Cup plant	*Silphium perfoliatum*	P	yellow	8	M	Attracts many bees and butterflies; thick hollow stems make excellent nests for leafcutter bees and small carpenter bees (*Ceratina* spp.)
	12	Prairie blazing star	*Liatris pycnostachya*	P	purple	5	M	Blazingstars (*Liatris* spp.) support a broad community of butterflies including monarchs, swallowtails, skippers, and sulfurs
	13	Purple giant hyssop	*Agastache scrophulariifolia*	P	purple	6	M	This and other wild hyssops (*Agastache* spp.) provide long-lasting, nectar-rich flowers and mint-like foliage
	14	Rattlesnake master	*Eryngium yuccifolium*	P	white	5	M	Attracts incredible insect diversity and is the host plant for the rattlesnake master borer moth (*Papaipema eryngii*)
	15	Joe Pye weed	*Eutrochium fistulosum*	P	pink	7	H	Primarily known as a butterfly plant, Joe Pye weed also attracts bees; tolerant of partial shade and wet soils
	16	Wingstem	*Verbesina alternifolia*	P	yellow	6	H	A major honey producer; great as a shade-tolerant rain garden or wetland edge plant; may be hard to find in nurseries

This list of pollinator plants for the Great Lakes Region was produced by the Xerces® Society. For more information about pollinator conservation, please visit www.xerces.org.

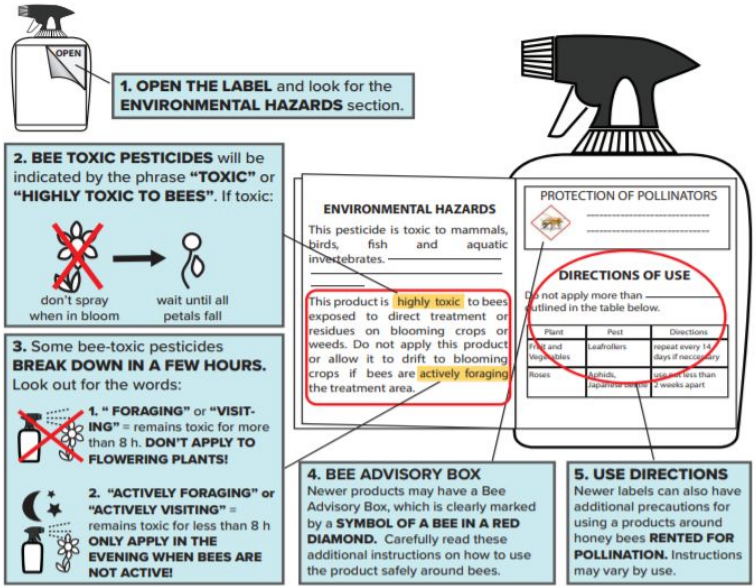
XERCES SOCIETY for Invertebrate Conservation

https://xerces.org/sites/default/files/2018-05/17-047_03_XercesSoc_Pollinator-Plants_Great-Lakes-Region_web-3page_0.pdf

Prevent pesticide poisoning

PROTECT BEES
READ PESTICIDE LABELS

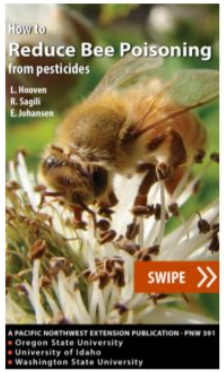
Five steps to reading a pesticide label to determine how risky a treatment is to bees.



www.oregonbeeproject.org

Graphic by Iris Kormann, Andony Melathopoulos - Oregon State University and Gilbert Uribe - Oregon Department of Agriculture

FOR FAST INFORMATION ON PESTICIDES AND BEES
Download the Free App



Get it on iTunes
type: "how to reduce bee poisoining"

GET IT ON Google Play
type: "bee safety"

Oregon State University Extension Service

The Oregon Bee Project has a mission of bringing together Oregonians around a science-based strategy for protecting and promoting wild and managed bees through education, pollinator-friendly practices, and research.

Follow Oregon Bee Project on **Twitter @oregonbeeproj** and **Facebook @oregonbeeproject**
Contact Oregon Bee Project cooperators at **info@oregonbeeproject.org**.
Sarah Kincaid ODA Insect Pest Prevention and Management, (503) 986-6459
Andony Melathopoulos OSU Extension Service, (541) 737-3464
Gilbert Uribe ODA Pesticides Program, (503) 986-4752

This infographic was funded by:
Western SARE Sustainable Agriculture Research & Education
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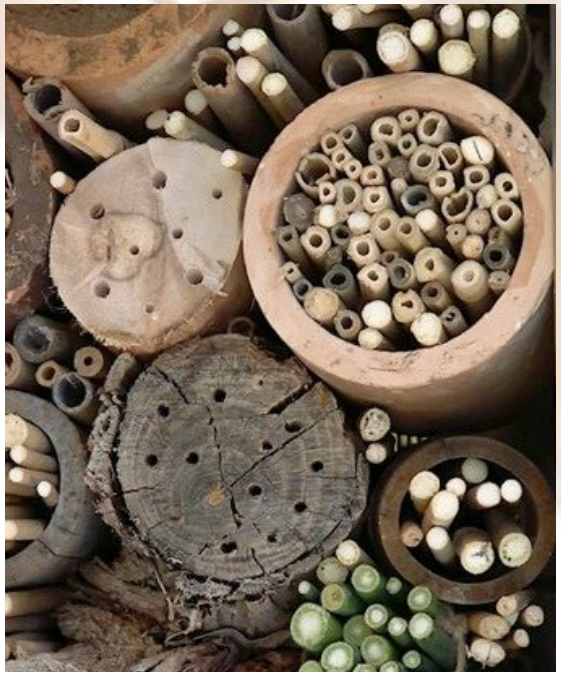
Provide nesting sites



Provide nesting sites

Preach stewardship

Questions??