

OUR
NATIVE
BEES

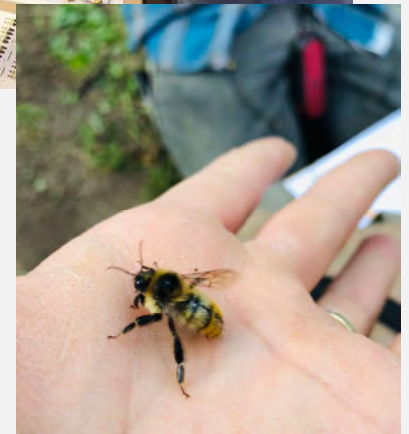
**Nature's
Essential
Workers**



Midwest Native Bee Alliance



Mission: Committed to boots on the ground education and advocacy on behalf of our native bees



Red-belted Bumble Bee Drone
Bombus rufocinctus



THE GATEWAY BEE

Beekeeping trends in McHenry County, IL

Year	# Apiaries	# Colonies
2020	239	1700
2018	192	1420
2010	84	717

Honeybee keeping has **INCREASED** 45% worldwide over the last 50 years!

185% INCREASE in McHenry County in 10 years



TABLE 2
Illinois Beekeeper and Colony Statistics from 2001 through 2020
as of July 1 of each year.

Year	Number of Registered Beekeepers	Number of Apiaries	Number of Colonies	Colonies/ Beekeeper	Colonies/ Apiary
2020	4,799	6,429	32,877	6.85	5.1
2019	4,551	6,202	32,877	6.85	5.1
2018	4,308	6,000	30,017	7.0	5.0
2017	4,009	5,652	28,864	7.2	5.1
2016	3,522	5,136	25,339	7.2	4.9
2015	3,114	4,517	24,690	7.9	5.5
2014	2,766	4,023	26,004	9.4	6.5
2013	2,519	3,705	24,382	9.7	6.5
2012	1,825	2,849	21,231	11.6	7.5
2011	1,815	2,786	21,266	11.7	7.6
2010	1,631	2,565	20,547	12.6	8.0
2009	1,433	2,325	19,680	13.7	8.5
2008	1,366	2,303	19,556	14.3	8.5
2007	1,329	2,216	18,821	14.2	8.5
2006	1,264	2,157	20,217	16.0	9.4
2005	1,213	2,054	27,646	22.8	13.5
2004	1,141	1,940	19,572	17.2	10.1
2003	1,117	1,926	18,649	16.7	9.7
2002	1,107	1,914	17,963	16.3	9.4
2001	1,160	2,038	19,627	16.9	9.6

* Data available on Illinois.gov



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

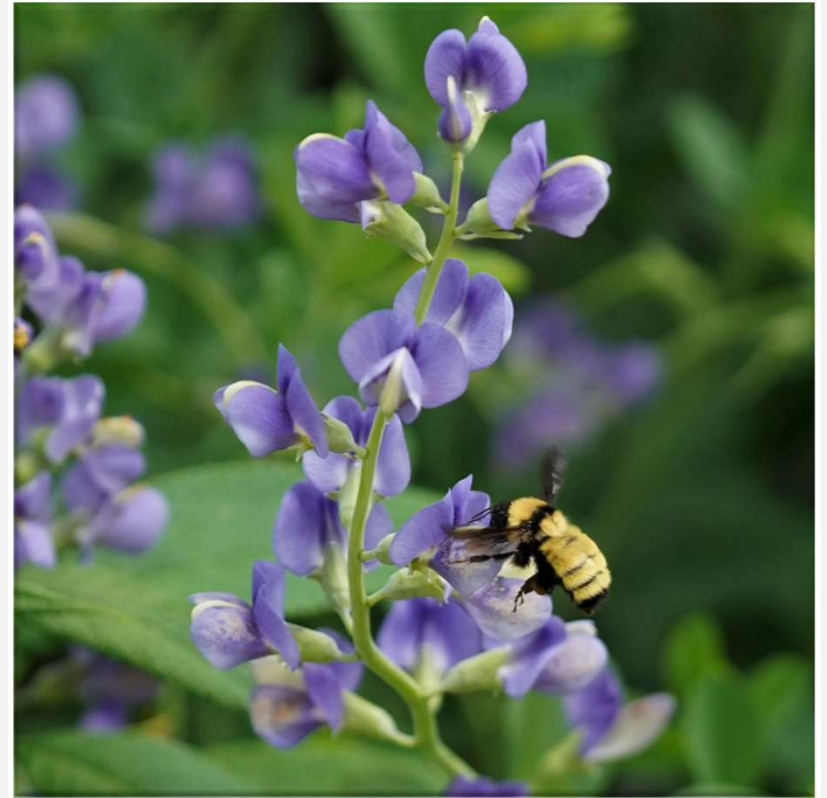
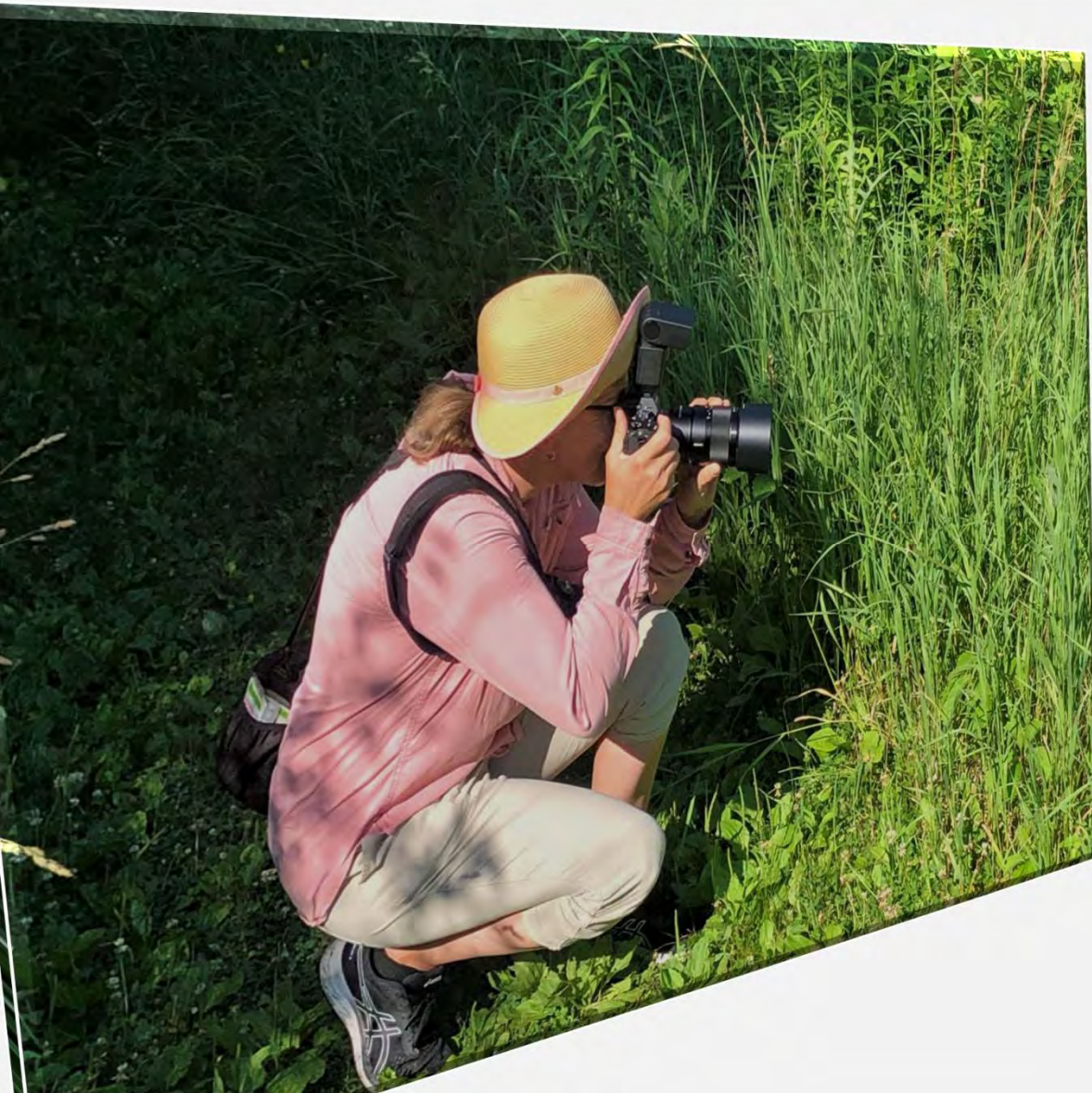
Conservationist Scott Hoffman Black, Xerces Society



Confusing Bumble Bee

Bombus perplexus

**BEEES ARE
DIVERSE!**



Bombus fervidus
Golden Northern Bumble Bee
On *Baptisia australis*
My front yard





You must have the bird (**BUMBLE BEE!**) in your heart before you can find it in the bush. The eye must have purpose and aim. – John Burroughs
“The Art of Seeing Things”

B. fervidus
Pasture Thistle
Pat Sullivan-Schroyer's
backyard

**CITIZEN
SCIENCE!**

[BeeSpotter.org](https://www.beespotter.org/)

[BumbleBeeWatch.org](https://www.bumblebeewatch.org/)

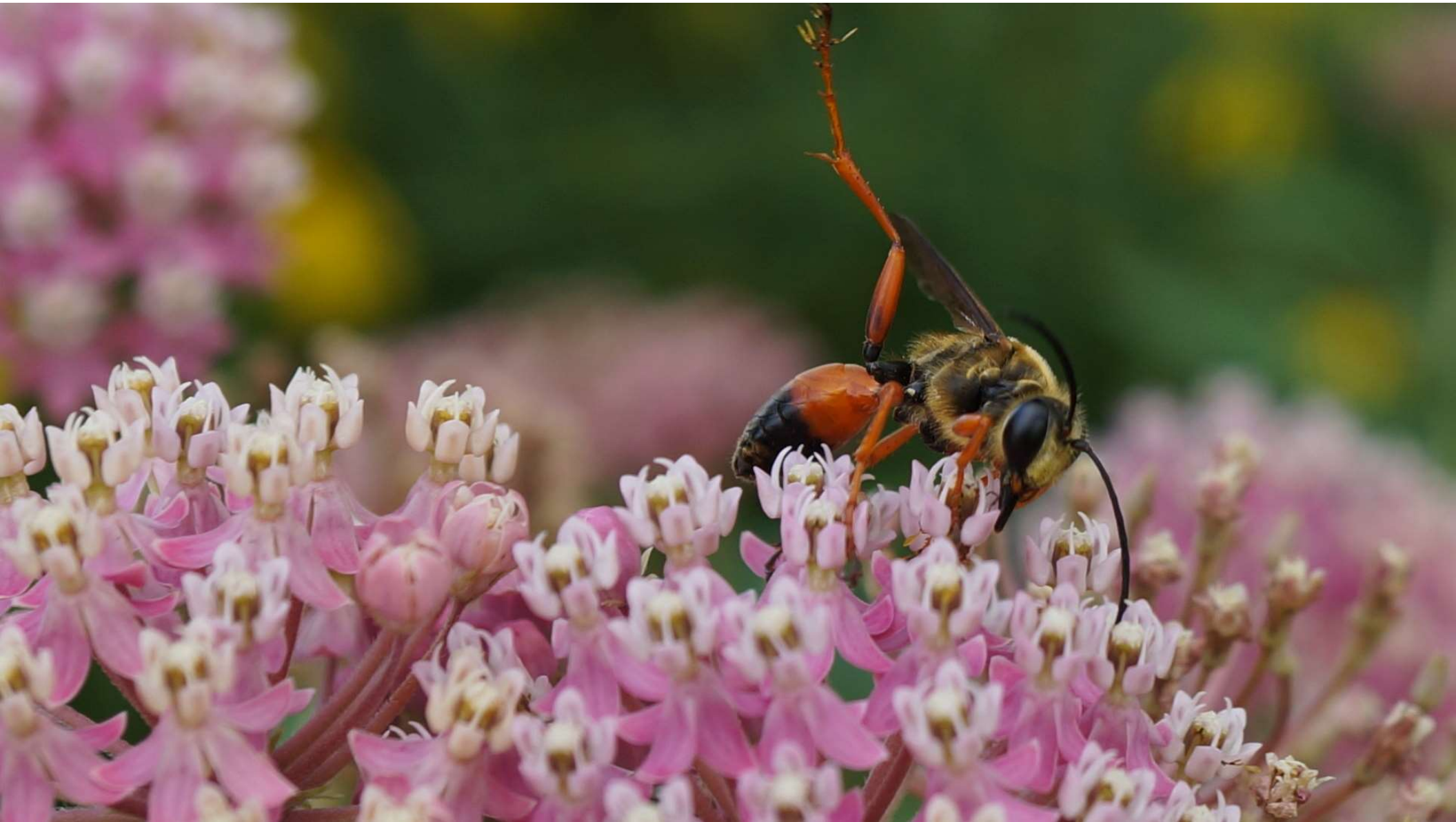
[iNaturalist.org](https://www.inaturalist.org/)



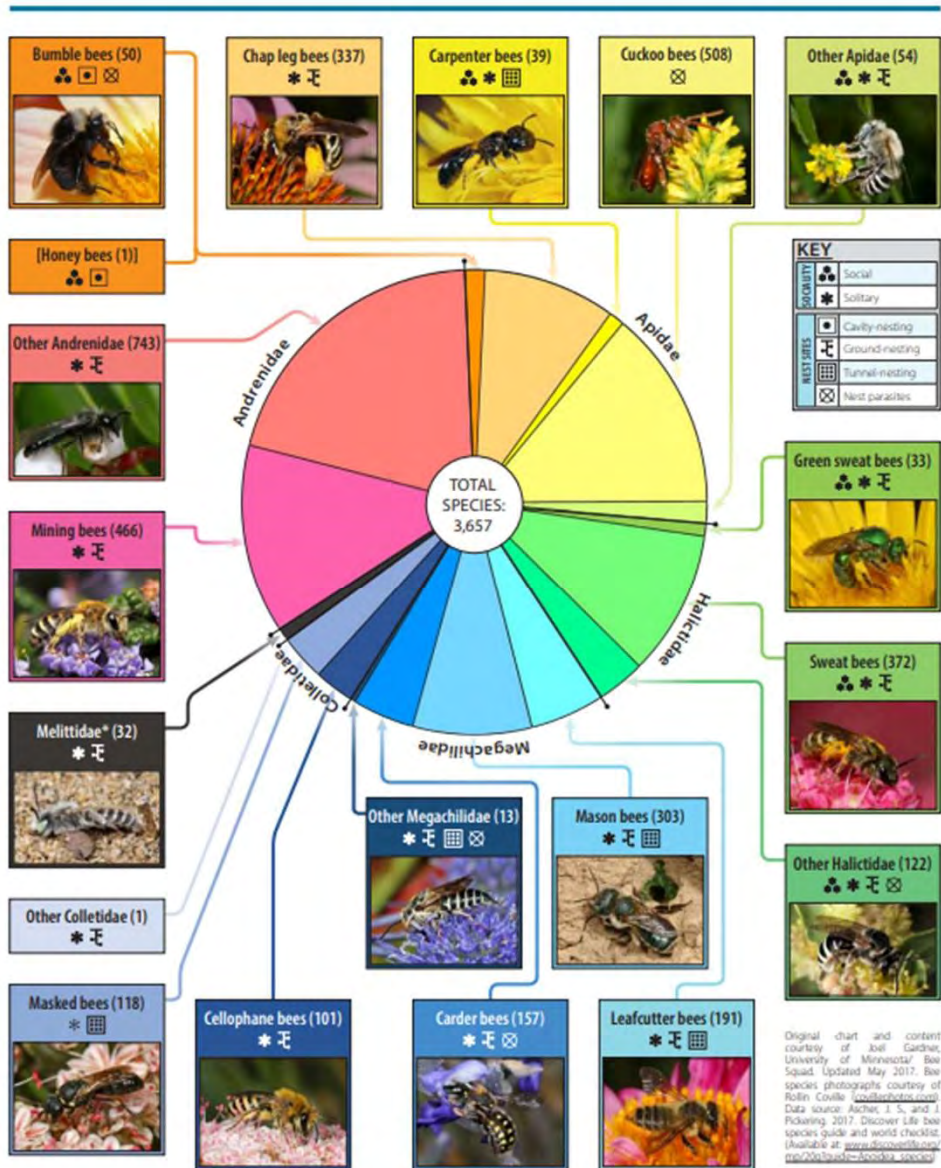
Drury's Long-horned Bee (*Melissodes druriellus*)



Subgenus *Paraugochloropsis*
(augochlorine sweat bees)







Native Bees	Total Species
Worldwide	>20,000
North America	>3657
Illinois	~500

Bumble Bees	Total species
Worldwide	265*
North America	~50
Illinois	11 ish (of 18 historically collected in the last 15 years!)
	3 = Endangered or Threatened



* Bumblebeespecialistgroup.org

>4000 Native Bees in North America

Nearly 500 in Illinois



25% Social



75% Solitary & non-aggressive

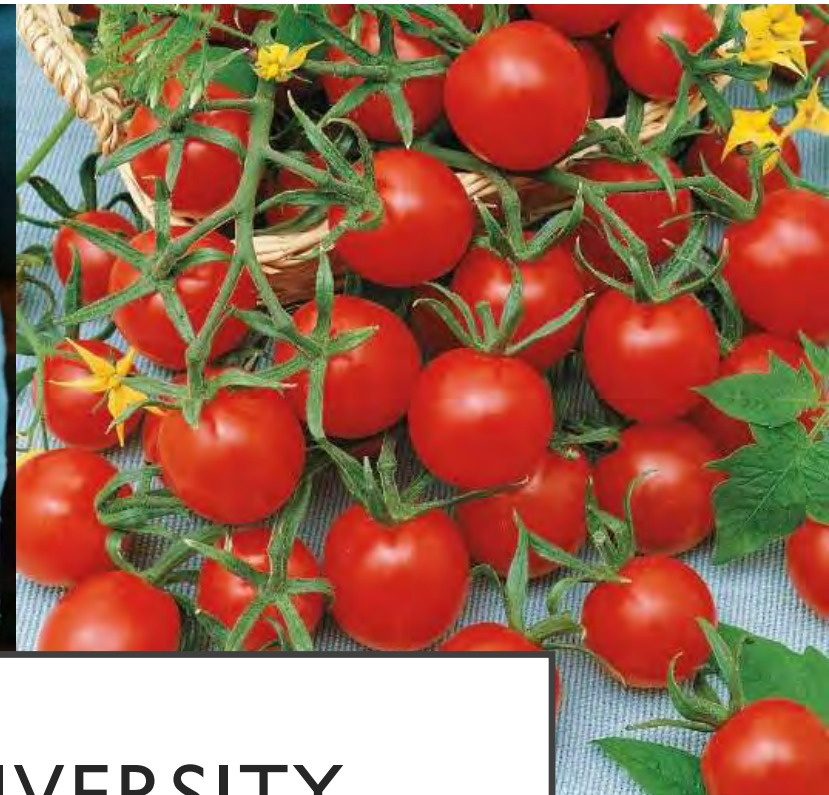
Bumble bees, some sweat bees

- 250 Bumble bees worldwide
- 57 in N.America
- 9 & 2 cuckoo Bumble bees in Illinois



60 - 70% Ground Nesting

30 - 40% Cavity/Tunnel Nesting



BENEFITS OF BEE DIVERSITY

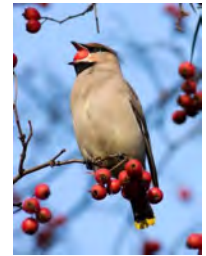
Honeybees “Waggle”

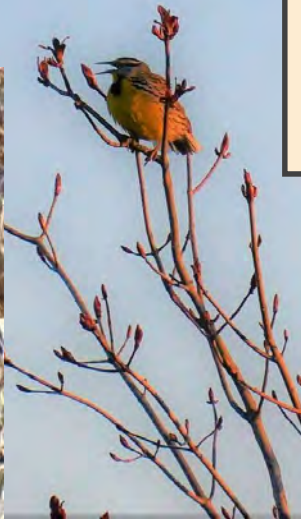
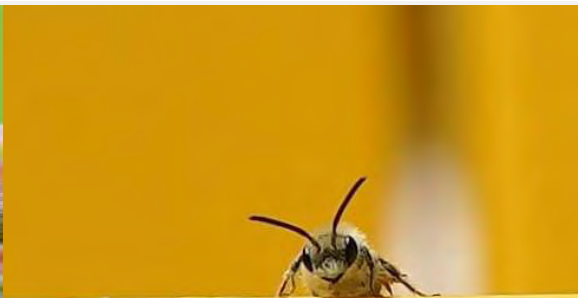
1 out of 3 bites of food
including our most
nutritious fruits, vegetables,
nuts & seeds

Bumble bees “BUZZ”
pollinate

BESIDES FOOD, WHY CARE ABOUT NATIVE BEES?

- **Provide bulk** of pollination of our native plants
- **Everything is CONNECTED-** When you lose a keystone species, you risk losing the plant & other wildlife it depends on
- **Quality of life:** Higher levels of biodiversity has been shown to lead to improved moods.





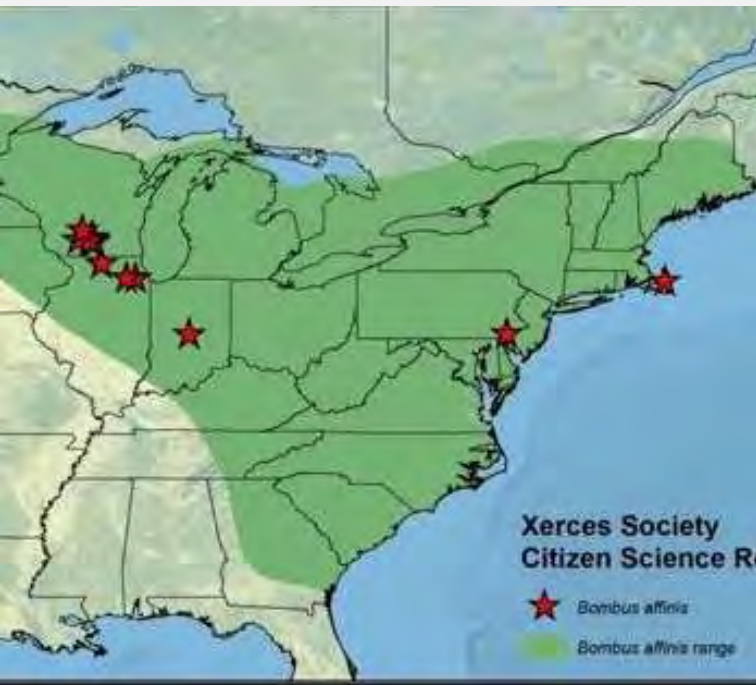
32-BIRDS
17-PLANTS
10-INSECTS
9-MAMMALS
2-REPTILES



USGS Bee Inventory and Monitoring Lab



USGS Bee Inventory and Monitoring Lab



CHALLENGES FACING OUR BEES



87% DECLINE IN RUSTY
PATCHED BUMBLE BEE
(*BOMBUS AFFINIS*)

ADDED TO ENDANGERED LIST IN
2017- IUCN **RED LIST**
CRITICALLY ENDANGERED

Still being
observed in
northern
Illinois!



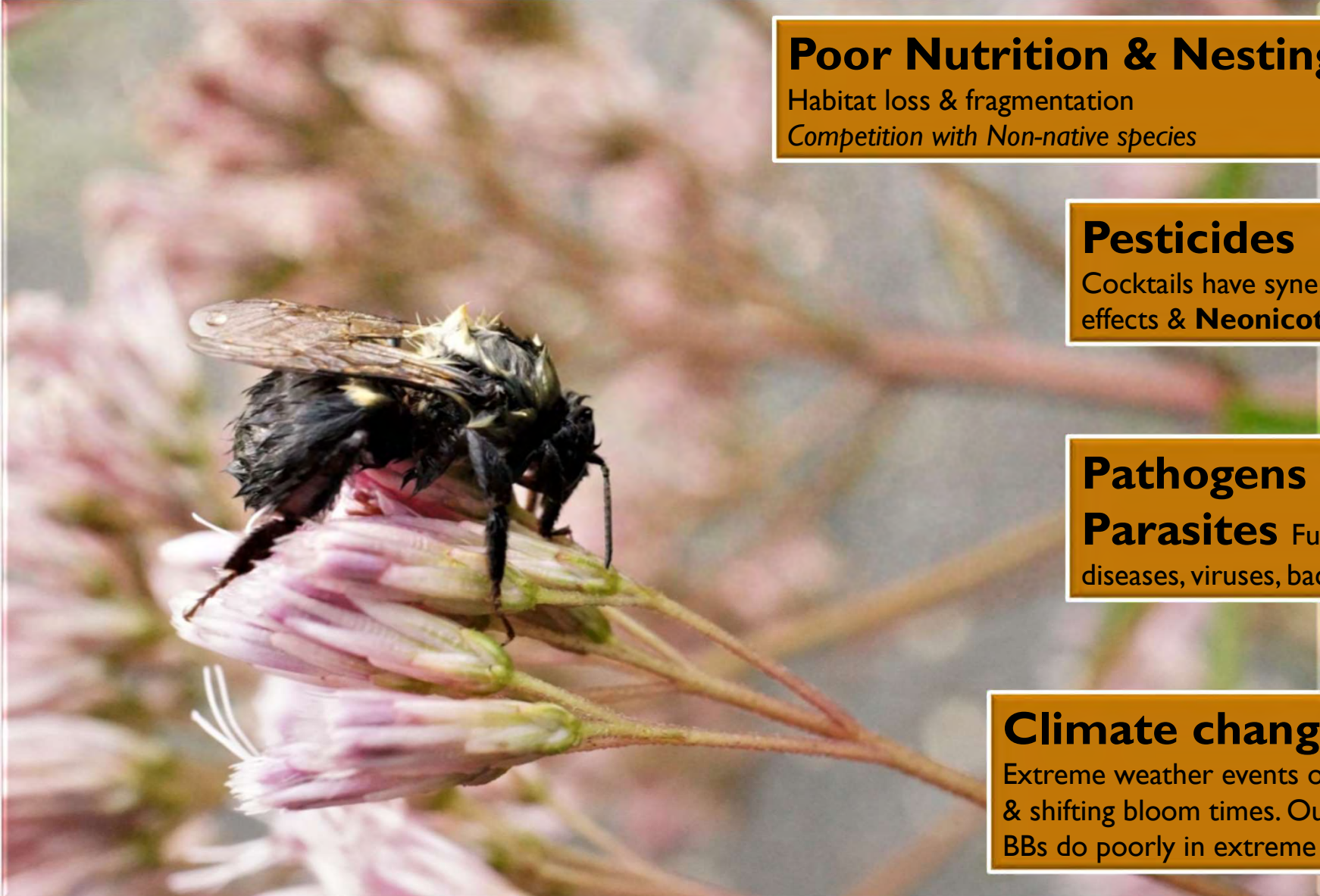
40 percent of bee species are in decline or threatened with **EXTINCTION!** 700 in North America

“The health of agricultural landscapes and the health of insect pollinators are integrally linked. Land-use change, leading to a **loss of floral diversity and abundance**, is a primary driver of insect pollinator declines. “

Damon & Martins, Human Dimensions of insect pollinator conservation <https://doi.org/10.1016/j.cois.2020.04.001>

How we steward our land is of VITAL importance!

← 6TH MASS EXTINCTION BY NAT MORLEY



Poor Nutrition & Nesting sites

Habitat loss & fragmentation

Competition with Non-native species

Pesticides

Cocktails have synergistic effects & **Neonicotinoids**

Pathogens & Parasites

Fungal diseases, viruses, bacteria, etc.

Climate change

Extreme weather events on the rise & shifting bloom times. Out of sync. BBs do poorly in extreme heat.

The Gateway Bee

Until
further
notice!



Rusty-patched Bumble Bee (*Bombus affinis*)
Worker
Joe Pye Weed
MY BACKYARD! 8-12-2019

READY! SET! ACTION!

“One of the biggest reasons our actions matter is that what **we do changes us**. ... as a community, we can make a difference.” – author Katharine Hayhoe, Saving Us



Give it your all

Redo if necessary

Ignore giving up

Take time to do it right

STEP #1: DIVERSIFY! Trade LAWN for natural habitat

\$40 Billion/year tending to 40 Million acres of turf grass

Bee Lawn

61 species of bees!!!



- *Bombus terricola* enjoying white clover
- Yellow-banded bumble bee

*Source: "Perfect Green Lawn is BUZZ Kill", MotherJones.com by Tom Philpott 5/7/20. Study by Marla Spivak

STEP #2: Grow Native Plants

PLANT CHOICES THAT SUPPORT THE MOST LIFE!

Including
Pollinator
friendly TREES
and SHRUBS



A typical suburban landscape
20-30% native plant species.









Try reversing that to
70-80% native species from local
genotypes.

Pollinatorgarden.org Annie S. White, PhD



Additional Steps:

-  Create Nesting Habitat
-  Reduce Pesticide and herbicide use
-  Citizen Science! 😊
-  Take climate action
-  Embrace sustainable/regenerative agriculture practices: Go Organic!
-  Cultivate LIFE-affirming connections in your community





Garden Walks!



Develop a botanical sense of place!



[Click for details](#)



HOW MANY FLOWERS DOES IT TAKE TO MAKE 1 POUND OF HONEY?

2 MILLION!!!!

"Before you do beekeeping, you need to *work on becoming a habitat restoration, garden expert, community activist* — getting lots of habitats out there for bees in the area surrounding where you live."

-*Elaine Evans, University of Minnesota Extension**

"Honeybees have a negative impact on those endangered bees that we're concerned about."

*Source: "Beekeeping craze not so sweet without proper precautions", Lawrence Banton, August 24, 2020.



Is this sustainable?

Year	# Apiaries	# Colonies
2020	239	1700
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Alison
McAfee, Ph D.
Quote:

"To many people, honey bees symbolize prosperity, sustainability and environmentalism. But as a honey bee researcher, I have to tell you that only the first item on that list is defensible."

<https://www.scientificamerican.com/article/the-problem-with-honey-bees/>





PLEASE, FOR OUR NATIVE BEES, THINK TWICE ABOUT INTRODUCING HONEY BEES IN NATURAL AREAS AND YOUR BACKYARD!

What's wrong with honey bees in natural areas?

Honey bees compete with native pollinators for floral resources (food). One hive of honey bees collects the equivalent amount of pollen as 100,000 solitary native bees over a 3-month period

Honey bees may spread disease and parasites to our native insects

Honey bees prefer non-native plants and can contribute to the spread of invasive plants

Honey bees can interfere with the reproduction of native plants

SAVE THE BEES?

Honey bees are not native to North America. They were introduced into North America from Europe in the early 1600s. They are now one of the most abundant and widespread insects on Earth. Honey bee populations have increased 45% worldwide over the last 50 years and **there is no risk of this bee species going extinct**. Honey bees are important pollinators of agricultural crops but do not belong in areas providing critical habitat for native bees.

HABITAT FIRST!

Our native bees are in severe decline. Habitat loss, overuse of pesticides, industrial agriculture, and the loss of flowering plants have all contributed to this loss. By introducing honey bees, we add another stressor to our native bees that can have negative consequences that are largely unseen. **Help get the word out about native bees and their critical interdependent relationship with the natural world.** All bees need adequate habitat that includes flowering plants. Introducing more populations of bees when food is already scarce is counterproductive. **Plant native plants!** Manage non-native plants. If we all do a little bit, it adds up to a WHOLE lot!

Sources:

The Bee Informed Partnership: <https://beeinformed.org/results/colony-loss-2015-2016-preliminary-results/>
Cane, J. H., & Tepedino, V. J. (2016). Gauging the effect of honey bee pollen collection on native bee communities. *Conservation Letters*.
Colla, S. R., & Machor, J. S. (2016). Questioning public perception, conservation policy, and recovery actions for honeybees in North America. *Conservation Biology*.

Further Reading:

www.wired.com/2015/04/youre-worrying-wrong-bees/
www.insidescience.org/news/how-bees-you-know-are-killing-bees-you-don't
www.atiasobscura.com/articles/the-case-against-honeybees
www.washingtonpost.com/news/wonk/wp/2016/10/10/believe-it-or-not-the-bees-are-doing-just-fine

LET US, TOGETHER, FOCUS ON
KEEPING THE BEES WE DO HAVE.

“Rather than an impossible challenge, cities should see the Gordian Knot of urban beekeeping as an opportunity. Let us harness this social energy and environmental engagement to understand, conserve, and protect all pollinators within urban environments.”

Confronting the Modern Gordian Knot of Urban Beekeeping, Egerer & Kowarik, Trends in Ecology & Evolution, November 2020. Vol 35 No. 11



Photo: Alma Schrage, Bee Biologist

REFERENCES

- Angelella, G.M., McCullough, C.T. & O'Rourke, M.E. **Honey bee hives decrease wild bee abundance, species richness, and fruit count on farms regardless of wildflower strips.** *Sci Rep* 11, 17043 (2021) doi: <https://doi.org/10.1038/s41598-021-95368-x>
 - “Regardless of whether wildflower strip was present or not, having honey bees on the farm decreased wild bee abundance by 48%, species richness by 20%, and strawberry fruit count by 18% across all of the farms.” Additionally, “This work demonstrates that honey bee hives could detrimentally affect fruit count and wild bee populations on farms, and benefits conferred by wildflower strips might not offset these negative impacts. Keeping honey bees hives on farms with wildflower strips could reduce conservation and pollination services.”
- Casanelles-Abella, J., Moretti, M. **Challenging the sustainability of urban beekeeping using evidence from Swiss cities.** *NPJ Urban Sustainability* (2022) 2:3; doi.org/10.1038/s42949-021-00046-6
 - We found large increases in hives numbers across cities ...and observed that available resources are insufficient to maintain present densities of beehives, which currently are unsustainable.
- Kit S Prendergast, Kingsley W Dixon, Philip W Bateman, Interactions between the introduced European honey bee and native bees in urban areas varies by year, habitat type and native bee guild, *Biological Journal of the Linnean Society*, Volume 133, Issue 3, July 2021, Pages 725–743, <https://doi.org/10.1093/biolinnean/blab024>
 - “Not all native bees species were impacted, but when native bees preferred many of the same flower species as honey bees or were of larger body size, meaning they needed more food, this is when honeybees had a negative impact on native bees. This occurs due to resource competition, where honeybees were more successful at exploiting food resources from flowers, leaving not enough nectar and pollen to support native bee populations.”
“Controlling the density of honeybees would also be critical in reducing pressure on vulnerable native bees.”
- Valido, A., Rodriguez-Rodriguez, M.C. & Jordano, P. **Honeybees disrupt the structure and functionality of plant-pollinator networks.** *Sci Rep* 9, 4711 (2019). Doi: <https://doi.org/10.1038/s41598-019-41271-5>
 - “It disrupts their hierarchical structural organization causing the loss of interactions by generalist species, and also impairs pollination services by wild pollinators through reducing the reproductive success of those plant species highly visited by honeybees. High-density beekeeping in natural areas appears to have lasting, more serious negative impacts on biodiversity than was previously assumed.”