

Pollinators on Boulder County's Riparian Open Spaces



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1 mm

UCMC 0130993 F



UCMC 0130



UCMC 0201802 L



UCMC 0208706



UCMC 01



UCMC 0201983 F



UCMC 0125



UCMC 0



UCMC 0201983 L2



UCMC 020883





Photos by Diane Wilson

Bees are extremely diverse!

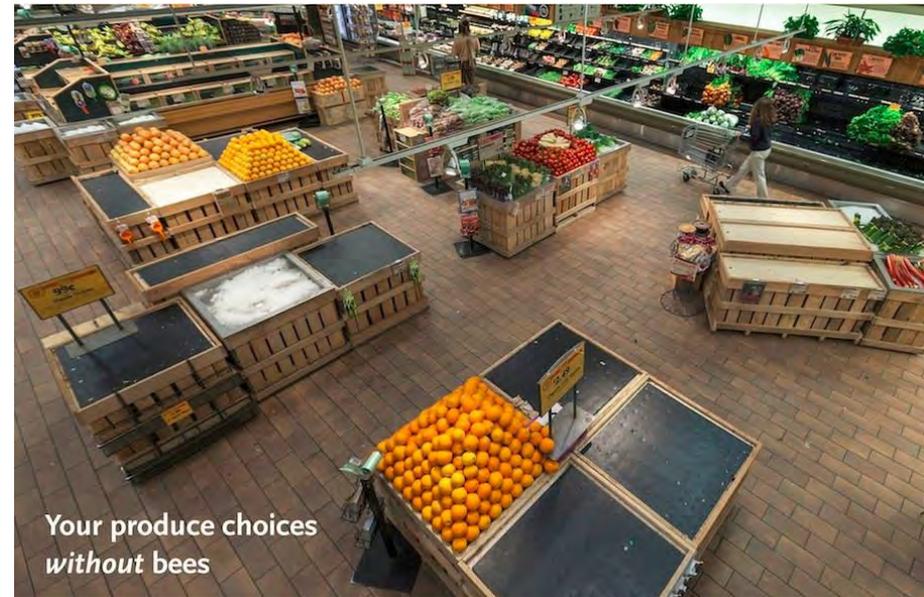
- 19,600 species world-wide
 - Especially in deserts
 - Mediterranean regions
 - High grasslands
- 3,600 species in North America
 - California 1600 species
 - Arizona, New Mexico, Utah
- 946 species in Colorado
 - 660 species in Front Range
- 7 species of honeybee worldwide
 - 1 species, *Apis mellifera*, in CO

Why care about bee diversity?

- Agriculture (USA annual contribution)
 - Honeybees: \$20 Billion
 - other bees: \$10 Billion
 - Probably huge underestimate



Your produce choices
with bees



Your produce choices
without bees

Why care about bee diversity?

- Ecology
 - Wildflowers
 - Wildlife
 - Human well being

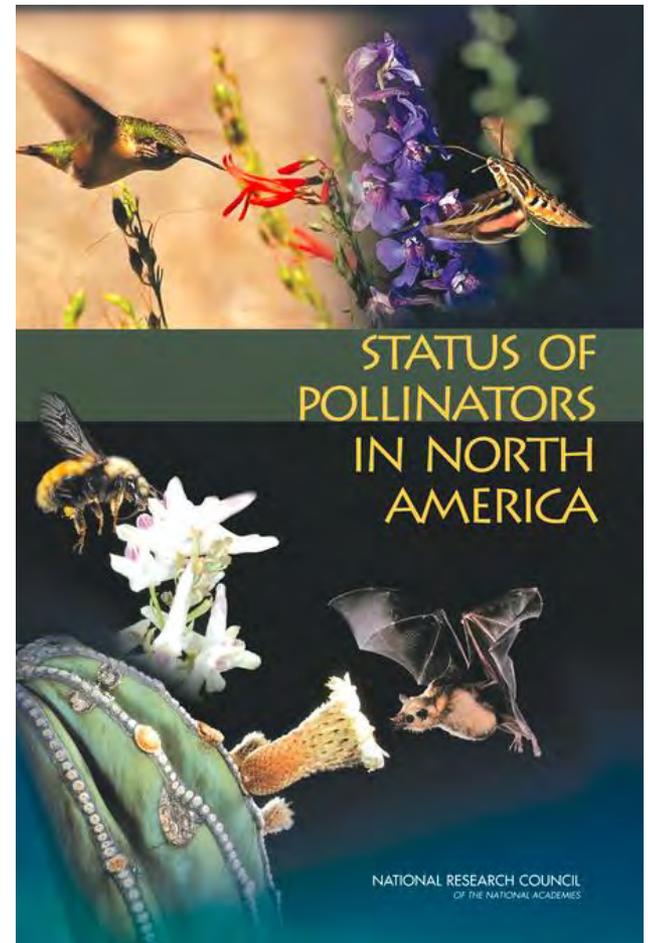


Boulder County Bee Diversity



Boulder County Bee Diversity

- 562 species
 - T. D. Cockerell 1907
 - Goldstein and Scott 2015
 - National Research Council 2007



Cavity-nesting Bees



Bee monitoring blocks



Bee monitoring blocks





30 mm





Man





UCM



1 mm

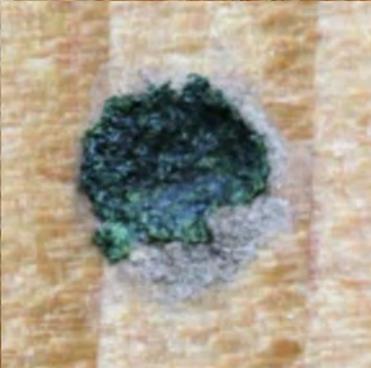
UCMC 0250028 L



0251358 F



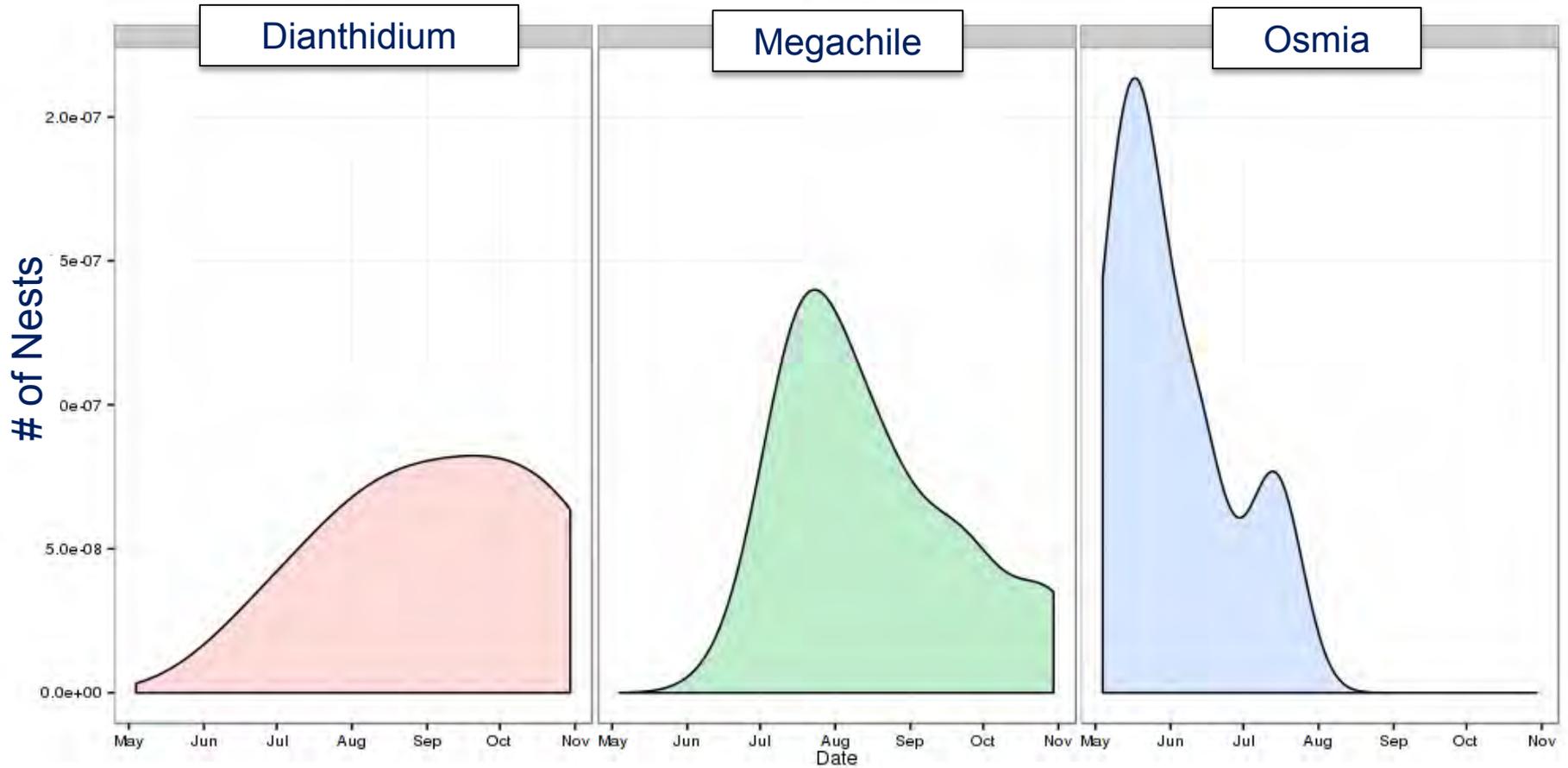
An index of diversity







The Bee's Needs



Bees Needs Interactive Data

By Collin Schwantes

Use this interactive data page to explore trends in cavity nesting bee data. Have fun playing around with the data and let me know if there is anything else you would like to be able to do!

Block Phenology Summary **Map**

Map Instructions

City

All

Set your Map Scale

13

Map Type

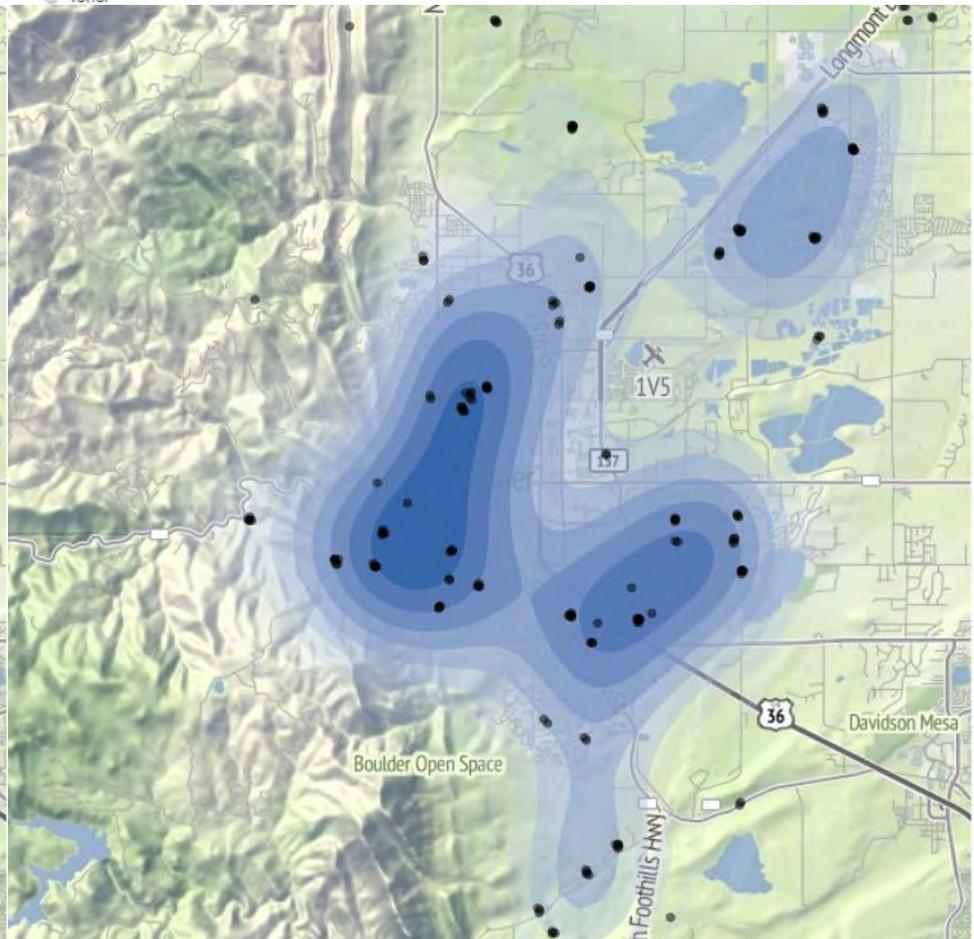
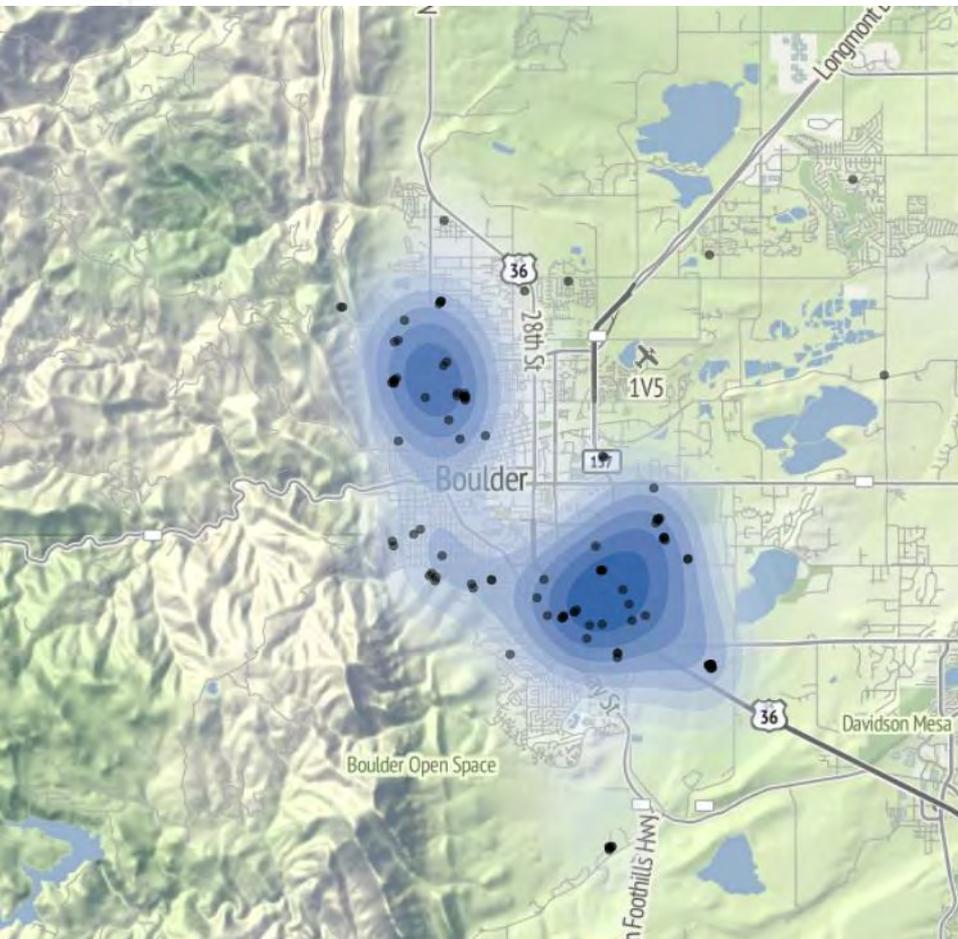
Watercolor

Toner

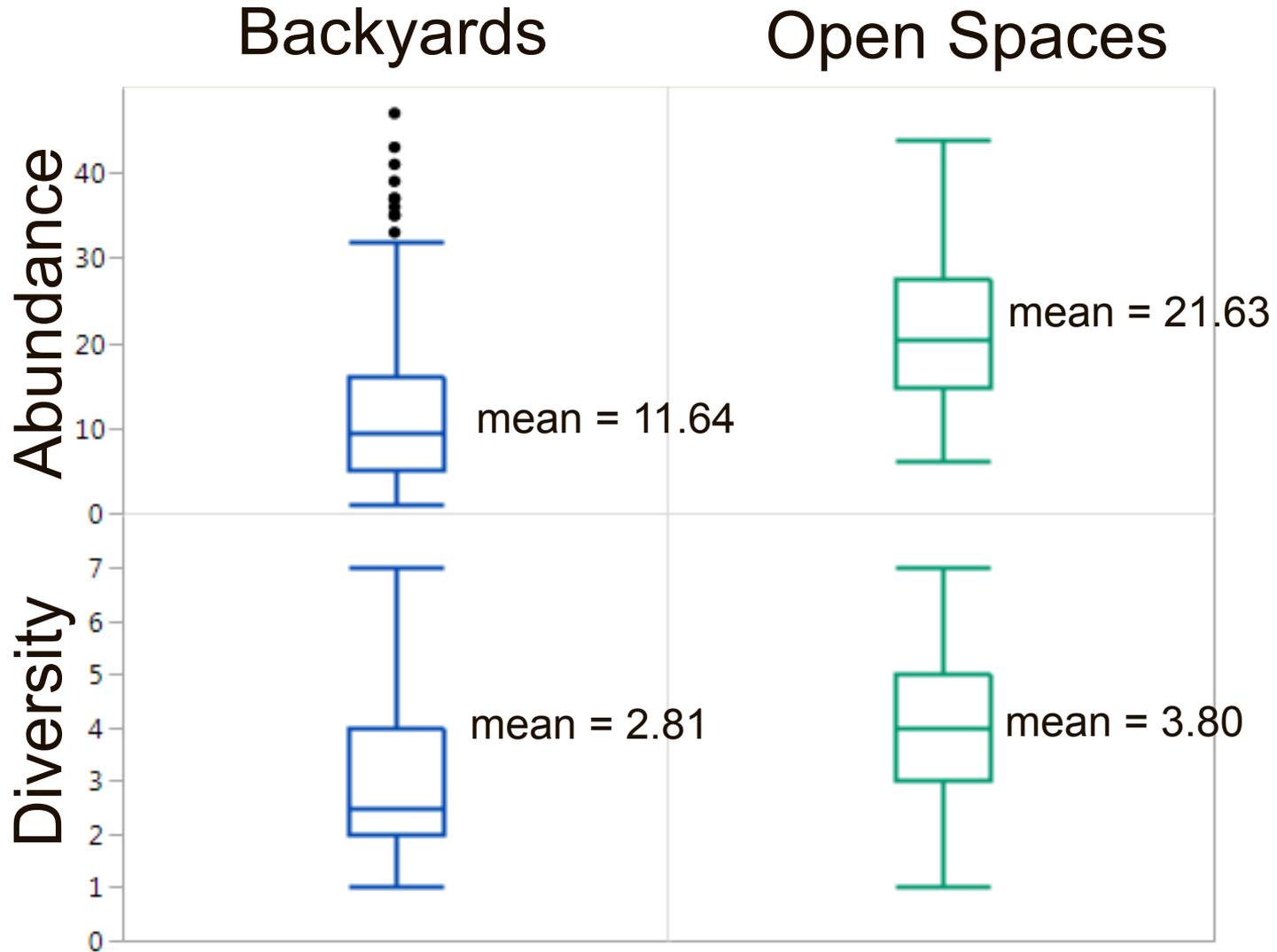
Data representation

Nest Blocks Contours

Update



Open spaces are bee hotspots!





04/03/2016 12:23



04/03/2016 12:14

What is the conservation value of woody debris for pollinators?

- Estimate woody debris habitat for pollinators
- Survey all and specifically cavity-nesting bees
- Explore relationship between woody debris and pollinator community dynamics



The St. Vrain Corridor



The St. Vrain Corridor



The St. Vrain Corridor



A
B
C
D
E
169033
F
G
H
I
J
1 2 3 4









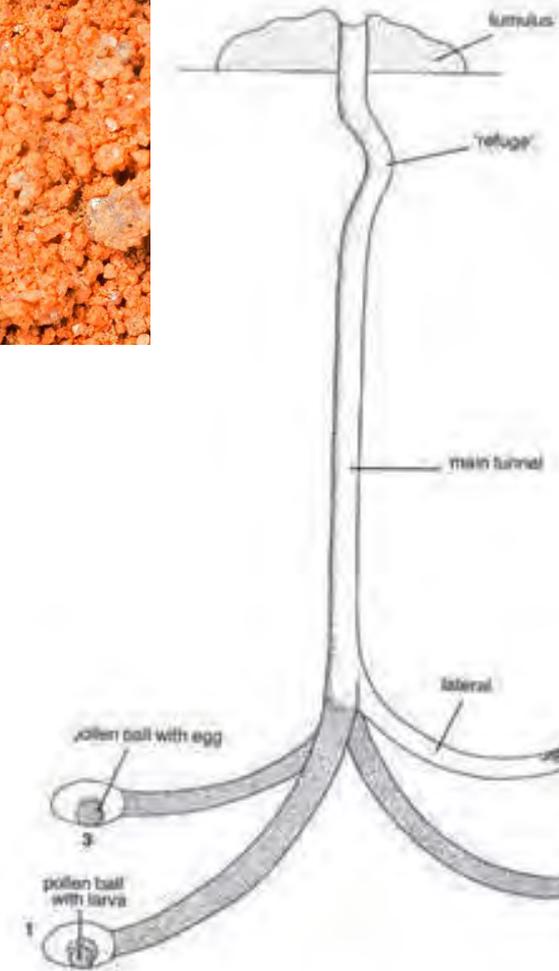








Ground-nesting bees









Keyes

6 May 2016



Leaf-cutter bee nests in vertical south facing banks. Could be non-native (*Megachile rotundata* or *M. apicalis*) or a native species or several different species. Other native bank nesting bees present along the entire draw, likely digger bees, *Anthophora* spp.

© 2016 Google

220 ft

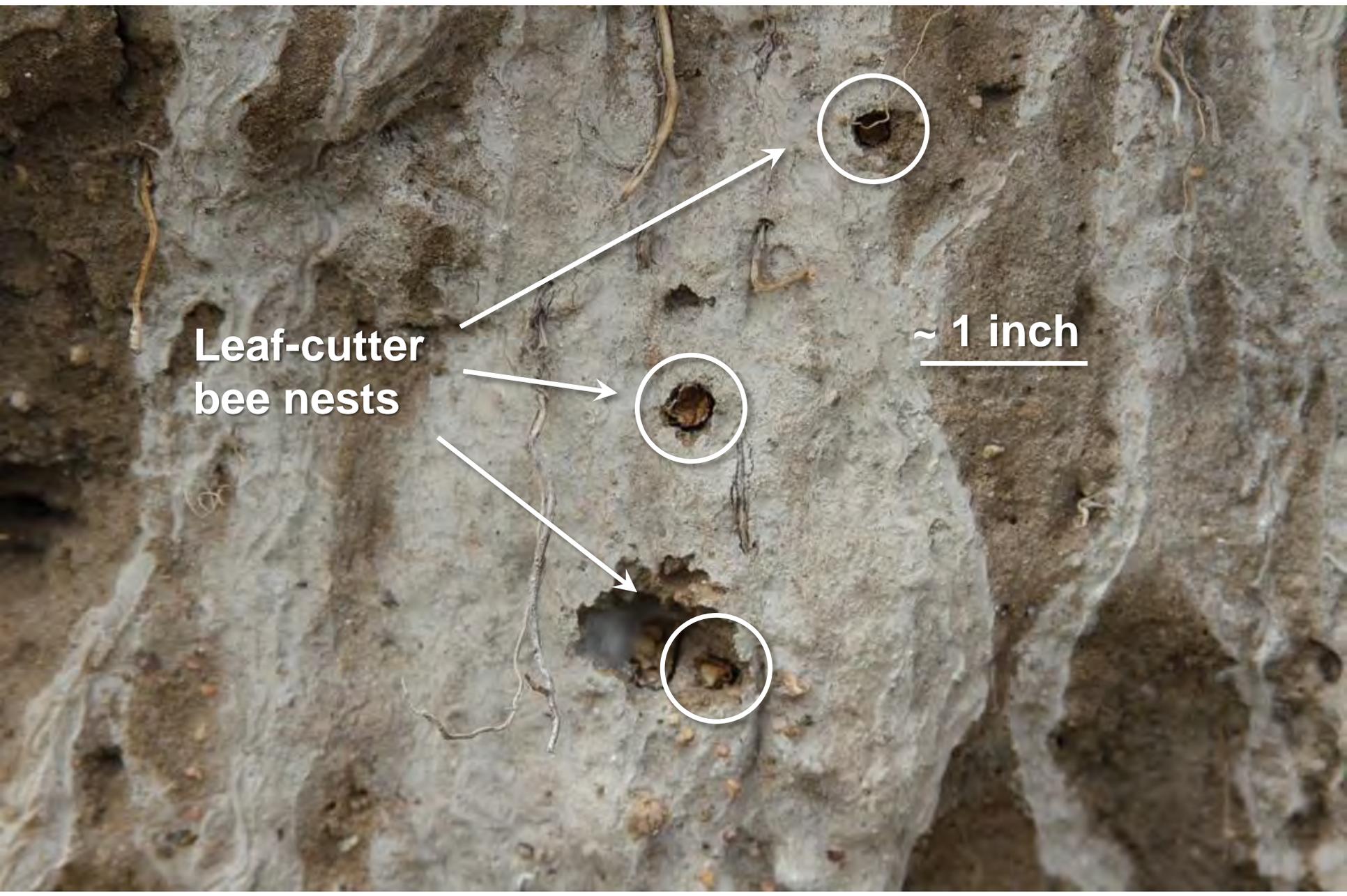




~ 1 foot

**Leaf-cutter
bee nests**

~ 1 inch



~ 1 inch

Leaf-cutter
bee nest
close up



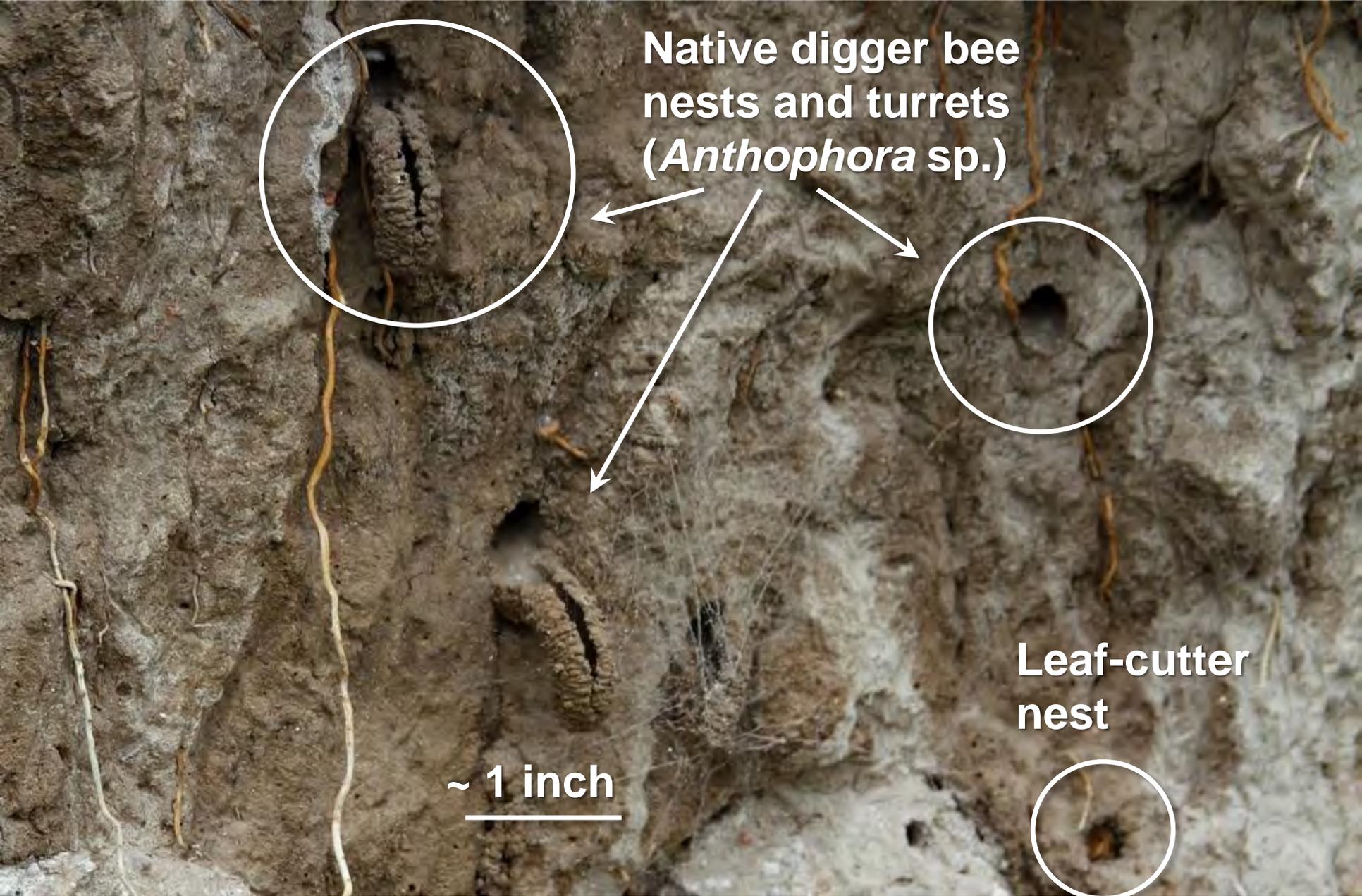
**Native digger bee
nests and turrets
(*Anthophora* sp.)**



**Leaf-cutter
nest**



~ 1 inch



Leaf-cutter using
abandoned native
digger bee nest



~ 1 inch



Western Mobile

23 June 2016



Leaf-cutter bee, digger bee, *Andrena* spp, and Halictid bee nests in east facing vertical banks. Many *Halictus* spp, *Lasioglossum* spp, and *Hylaeus* spp on southwest facing vertical bank.

© 2016 Google



Western Mobile

16 June 2016

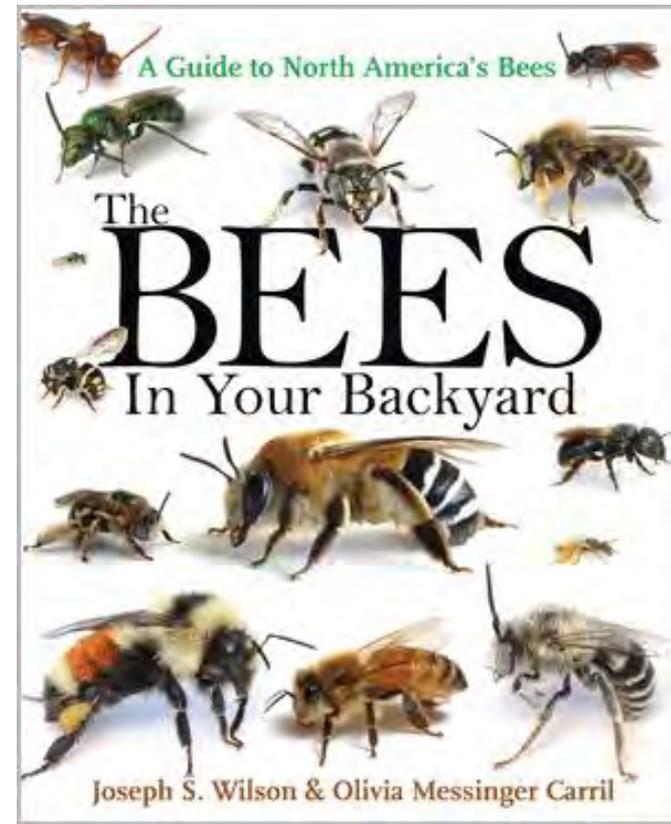
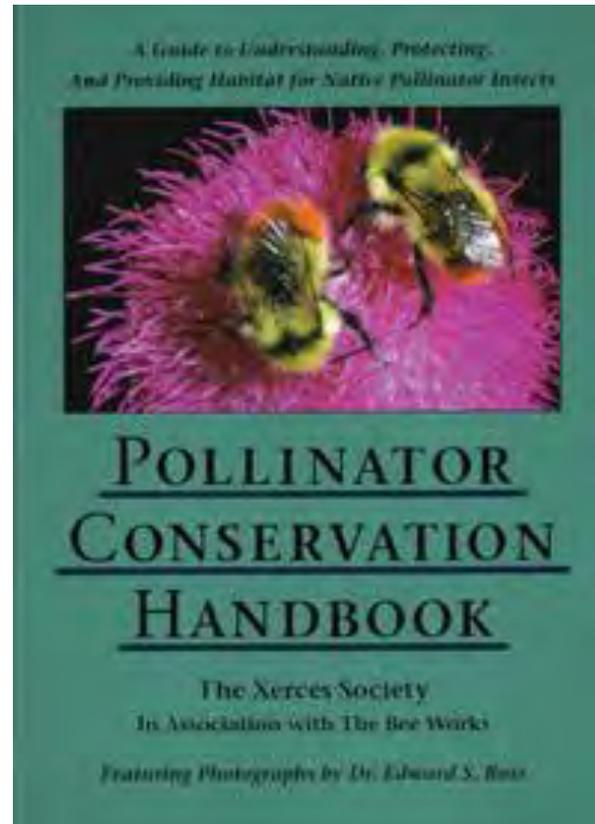
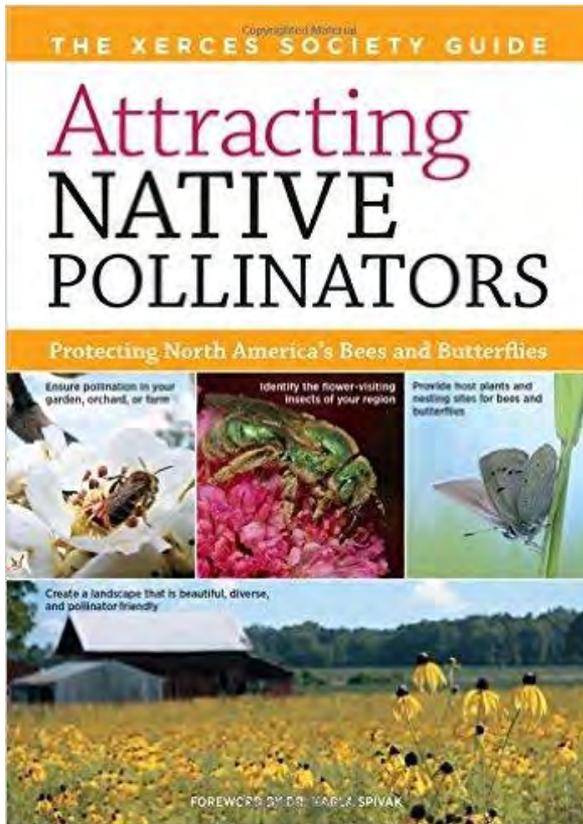
Andrena spp, many
Halictus spp,
Lasioglossum spp,
Anthophora spp, and
Hylaeus spp on southwest
facing vertical bank.



More to come!



Knowledge is key for conservation!



Thank You!



<http://www.adriancarper.com/bee-research-blog>