



Wonderful Wasps



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Story time! Have you been stung before?



Schmidt sting pain index

The Schmidt Sting Pain Index

Level
1

"Light, ephemeral, almost fruity. A tiny spark has singed a single hair on your arm."

- Dr Justin Schmidt on the Sweat bee



Fire ant

Several Solenopsis species

Photo: Justin Schmidt/author provided



Sweat bee

Halictus farinosus

Photo: Jillian Cowles/author provided

Level
2

"The oven mitt had a hole in it when you pulled the cookies out of the oven."

- Dr Justin Schmidt on the Jack jumper ant



Honeybee

Apis species

Photo: Orangeaurochs/Flickr






Jack jumper ant

Myrmecia pilosula

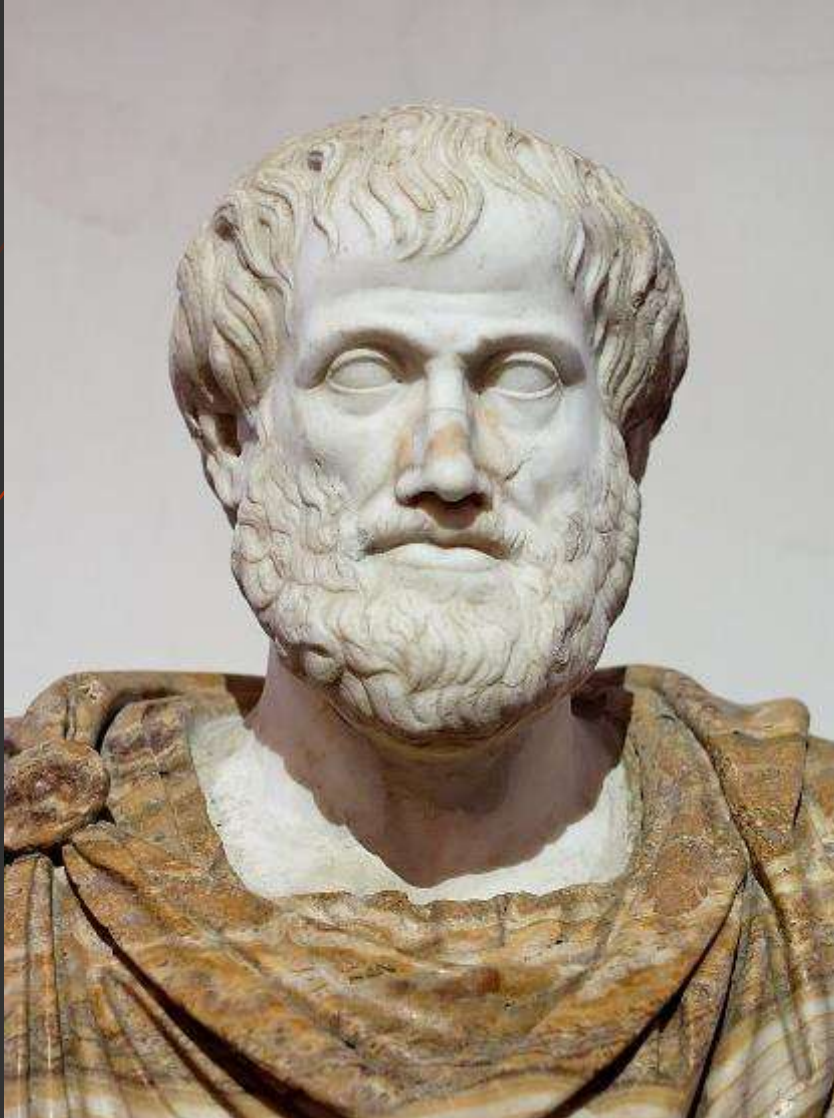
Photo: Steve Shattuck/Flickr

Schmidt sting pain index – wasps occupy several top slots!

Level 3	<p>“Bold and unrelenting. Someone is using a power drill to excavate your ingrown toe nail.”</p> <p>- Dr Justin Schmidt on the Florida harvester ant</p> <div></div> <div><p>Yellow paper wasp <i>Polistes flavus</i> Photo: Jillian Cowles/Author provided</p><p>Florida harvester ant <i>Pogonomyrmex badius</i> Photo: Bob Peterson/Flickr</p></div>
Level 4	<p>“Blinding, fierce, shockingly electric. A running hair dryer has just been dropped into your bubble bath.”</p> <p>- Dr Justin Schmidt on the Tarantula hawk</p> <div></div> <div><p>Bullet ant <i>Paraponera clavata</i> Photo: Graham Wise/Flickr</p><p>Tarantula hawk wasp <i>Pepsis species</i> Photo: Ian Norman/Flickr</p></div>

 theconversation.com Source: Schmidt, J. O. 1960. Insect defenses: adaptive mechanisms and strategies of prey and predators

People hate wasps.



- “Hornets and wasps ... are devoid of the extraordinary features which characterize bees; this we should expect, for they have nothing divine about them as the bees have.”
~ Aristotle, ca 300 BC

People hate wasps.



- The most popular words that participants used to describe bees included, honey, flowers, pollen, and pollination, while the most popular words for wasps included sting, annoying, dangerous, and angry, according to the study.

“Good bug” vs “Bad bug”



Insects in the ecosystem

► Foundational!



Wasps are beneficial to us

- Controlling 'pests' of our garden plants



Wasps are beneficial to us

- Controlling 'pests' of our garden plants



Wasps are beneficial to the ecosystem

- ▶ Controlling all sort of arthropod populations!



Wasps are beneficial to the ecosystem



A wasp-eating moth...

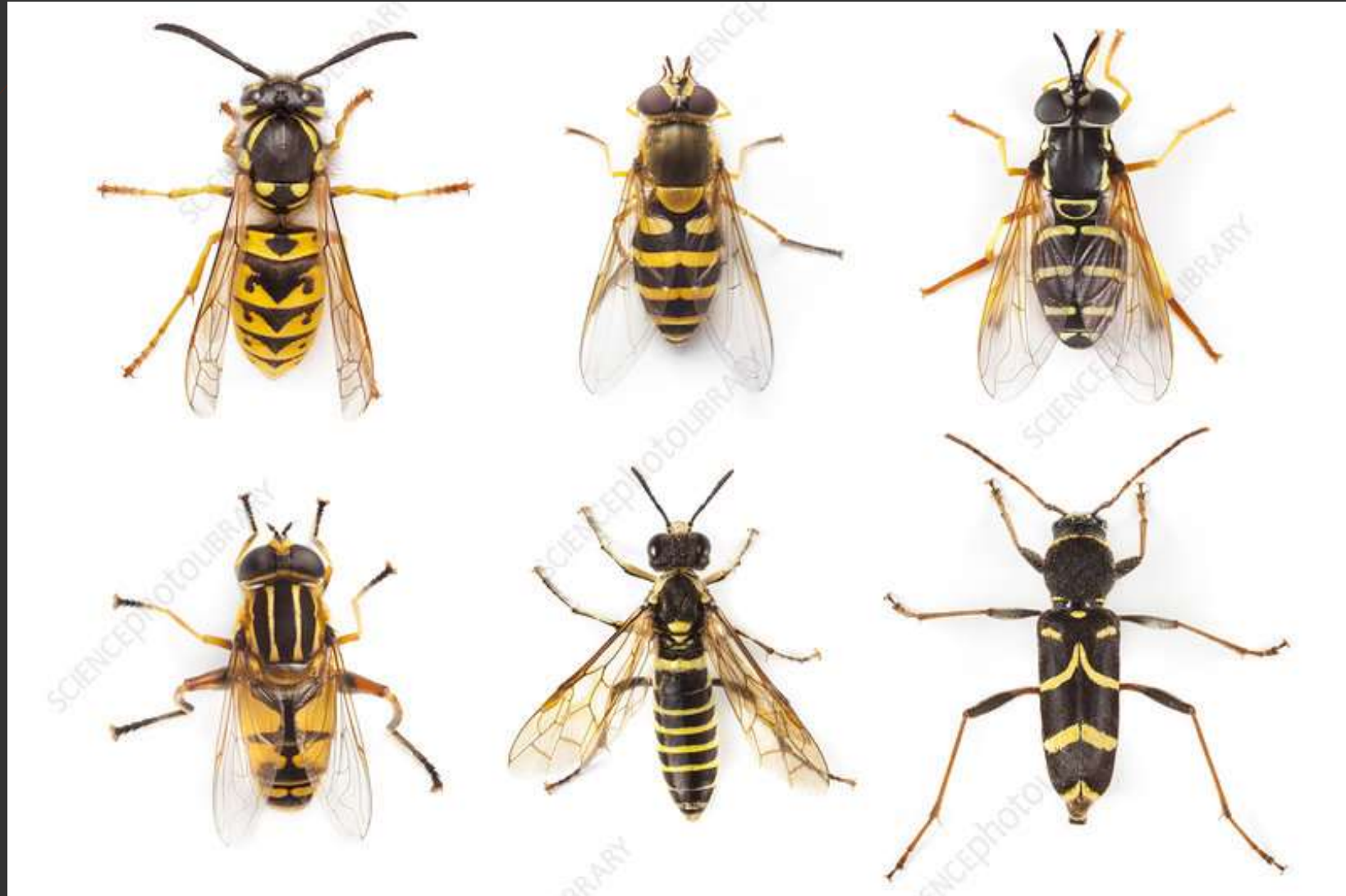
Sooty-winged *Chalcoela*



Wasps as pollinators



Natural selection for things that look waspy



Clear-wing moths



Hoverflies – “eastern hornet fly”

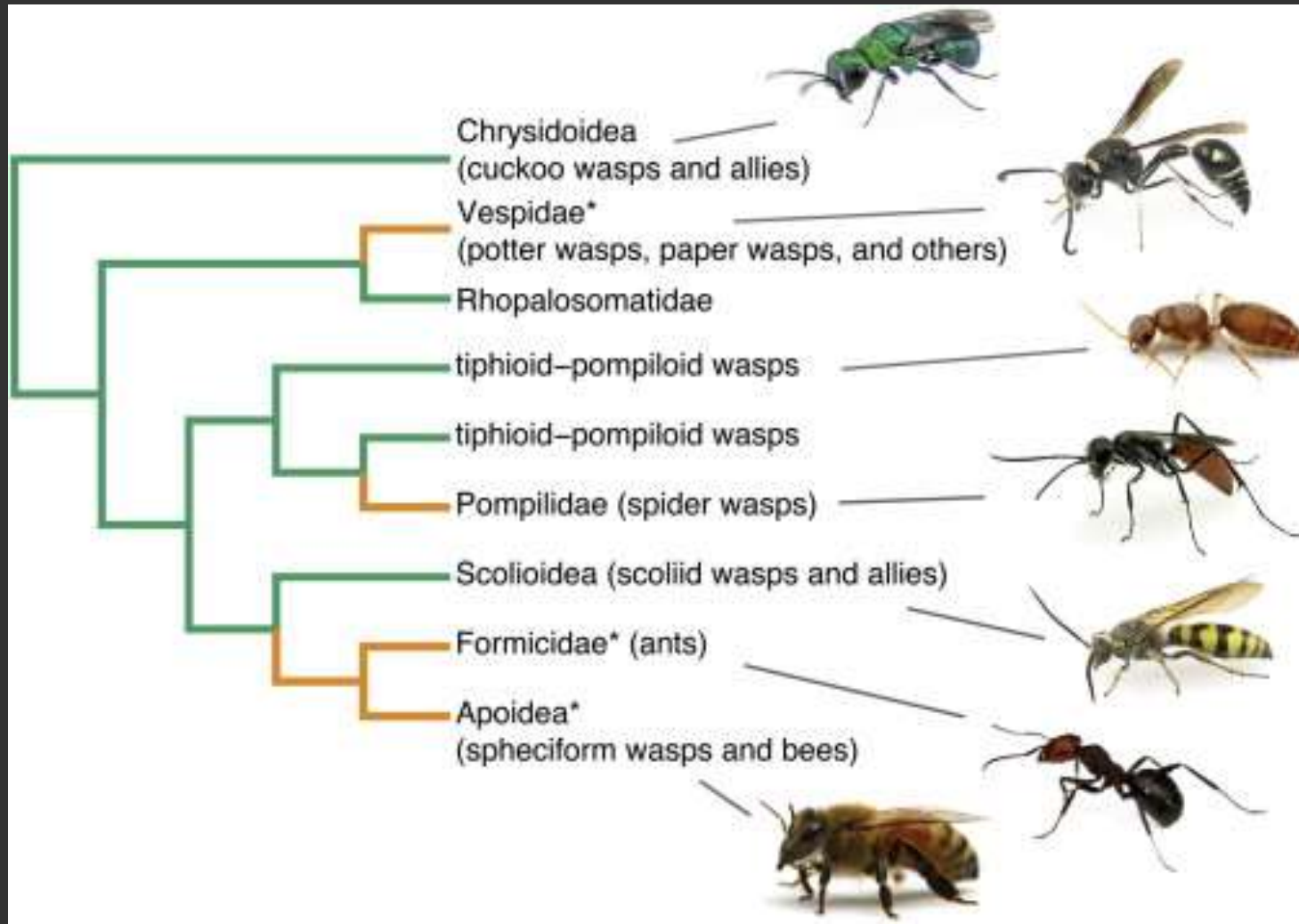


Mantisflies

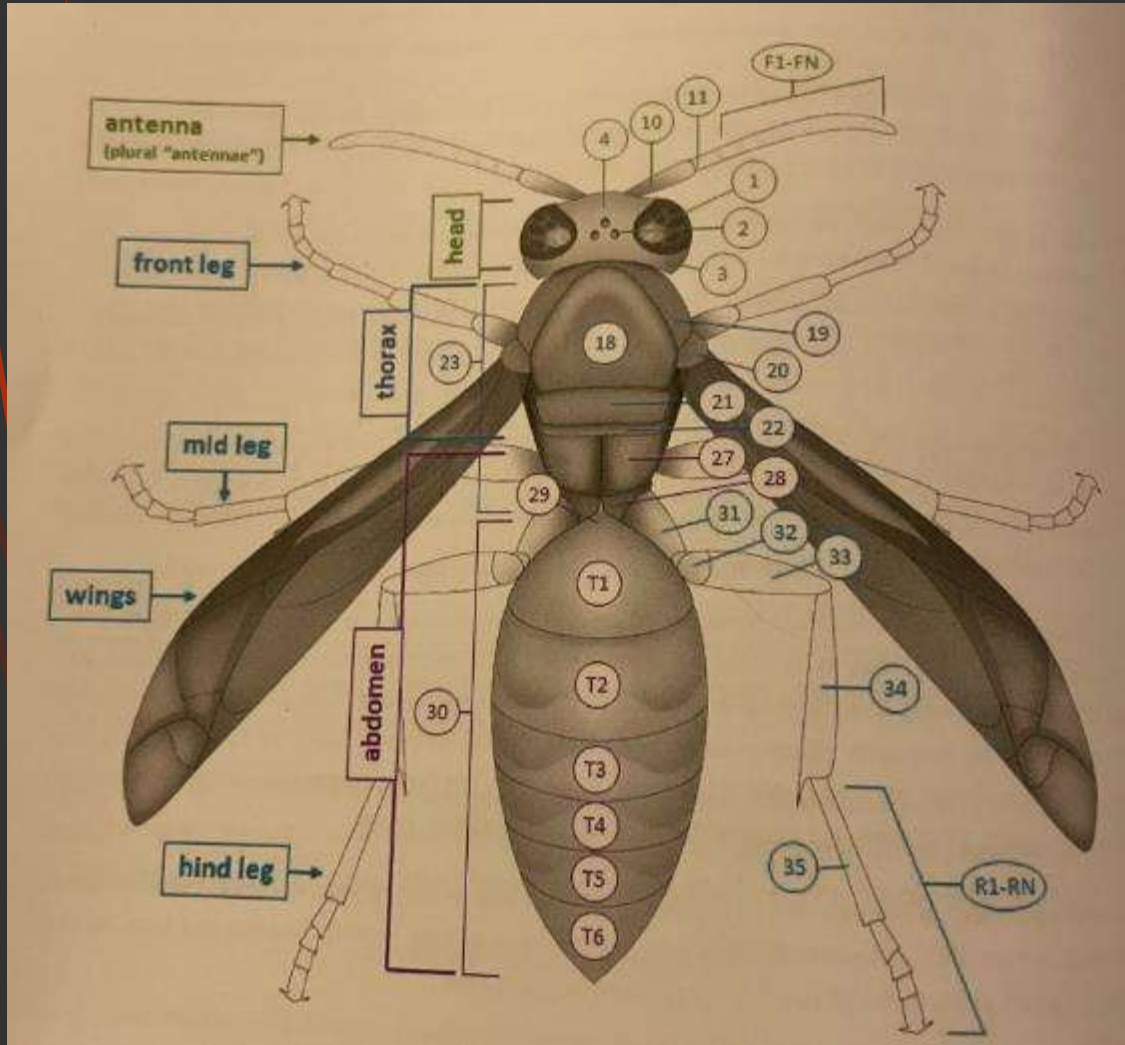


What is a “wasp?”

- Insect order: Hymenoptera



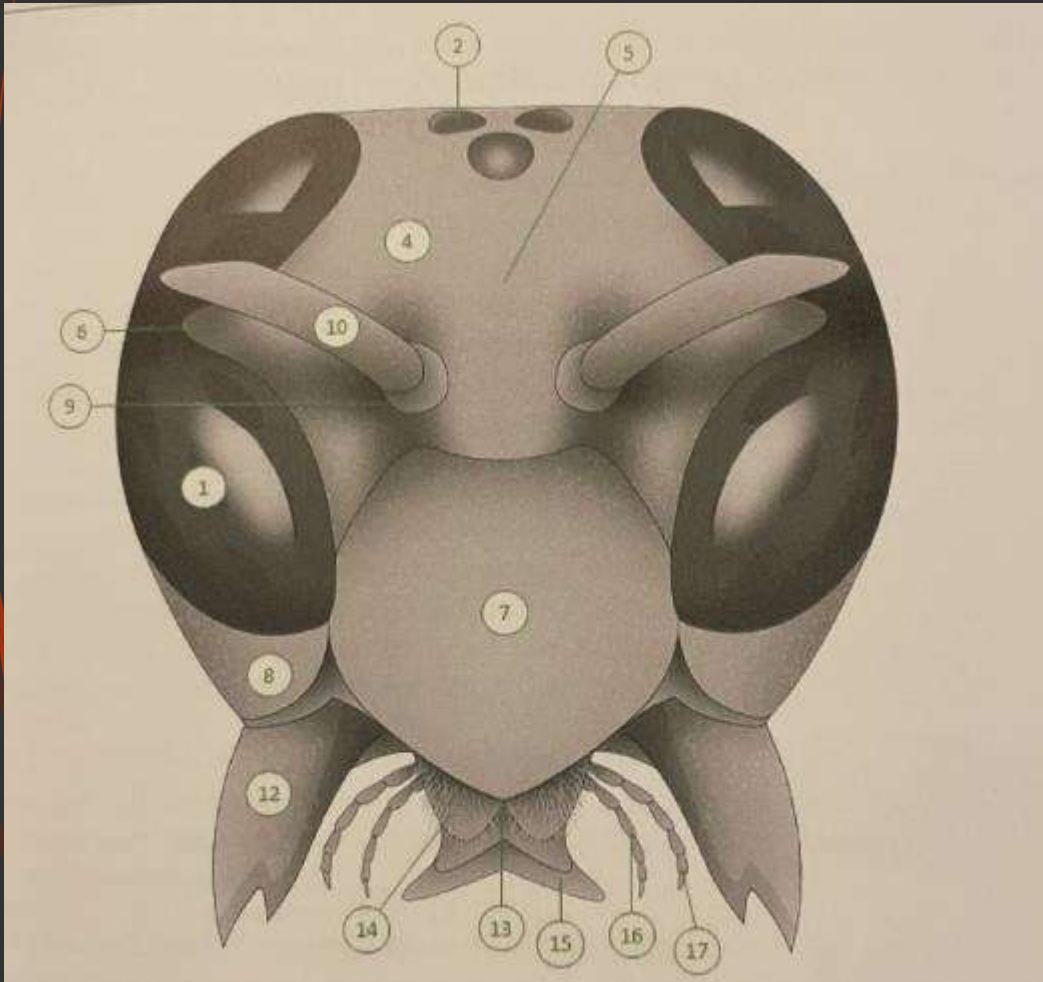
Structures on a wasp



Wasp ovipositor - stinger



Eyes of a wasp – compound eyes and ocelli




How many wasps are there? Lots.

BMC Ecology

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Quantifying the unquantifiable: why Hymenoptera, not Coleoptera, is the most speciose animal order

[Andrew A. Forbes](#) , [Robin K. Bagley](#), [Marc A. Beer](#), [Alaine C. Hippee](#) & [Heather A. Widmayer](#)

[BMC Ecology](#) **18**, Article number: 21 (2018) | [Cite this article](#)

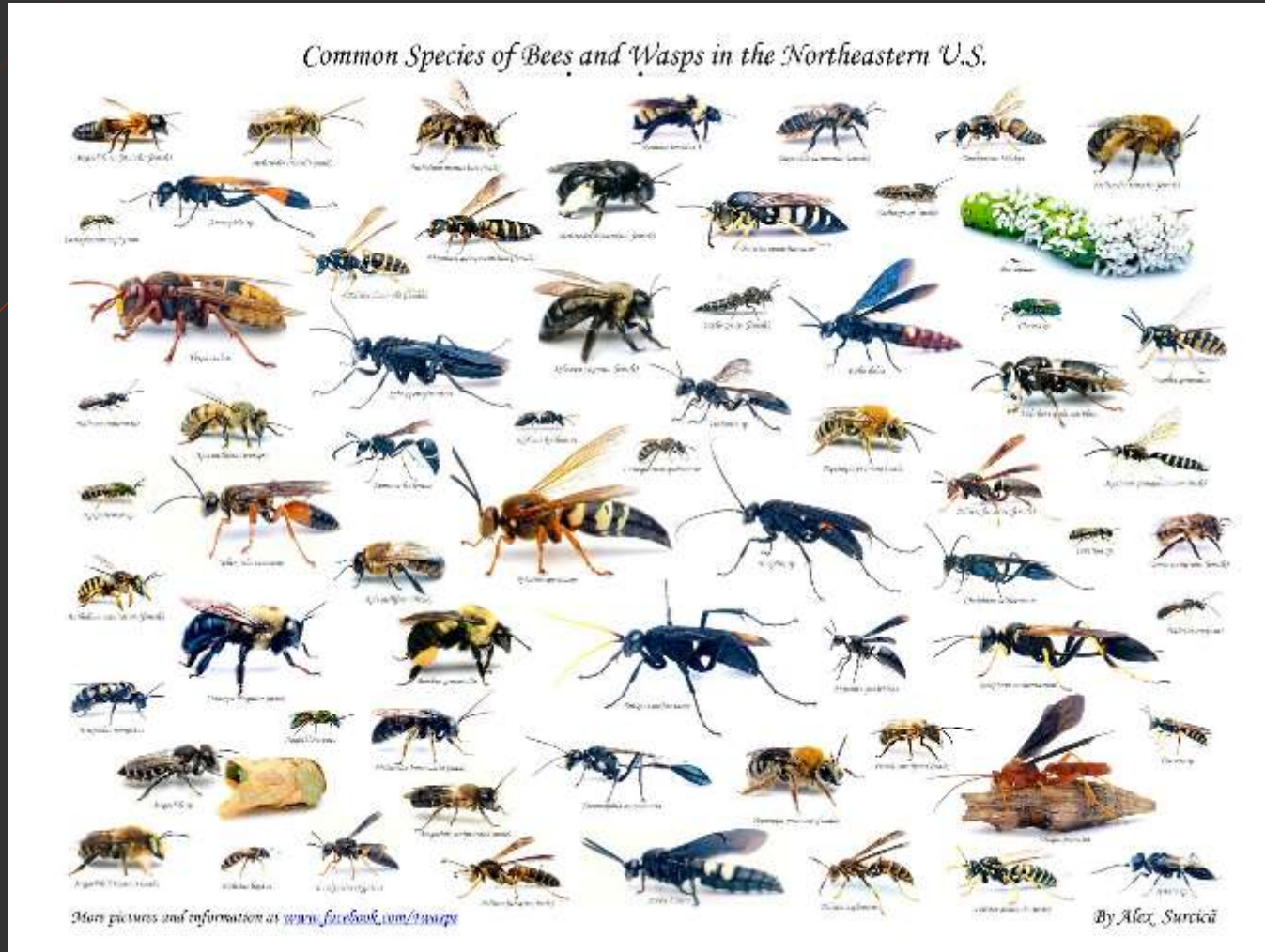
19k Accesses | **99** Citations | **220** Altmetric | [Metrics](#)

Abstract

Background

We challenge the oft-repeated claim that the beetles (Coleoptera) are the most species-rich order of animals. Instead, we assert that another order of insects, the Hymenoptera, is more speciose, due in large part to the massively diverse but relatively poorly known parasitoid wasps. The idea that the beetles have more species than other orders is primarily based on

Some examples of wasps (groups or individuals)



Potter wasps – subfamily Eumeninae



Spider wasps – family Pompilidae



Mud dauber (*Sceliphron caementarium*)



Cicada killer (*Sphecius speciosus*)



Cuckoo wasp – family Chrysididae

► Hyperparasitism!



Emerald wasps (*Ampulex* sp.)





Velvet ants – family Mutillidae



Ichneumon/Braconid wasps



Gall-forming wasps – family Cynipidae



Social wasps – what's a “yellow jacket?”



Ground hornets – *Vespula* sp.



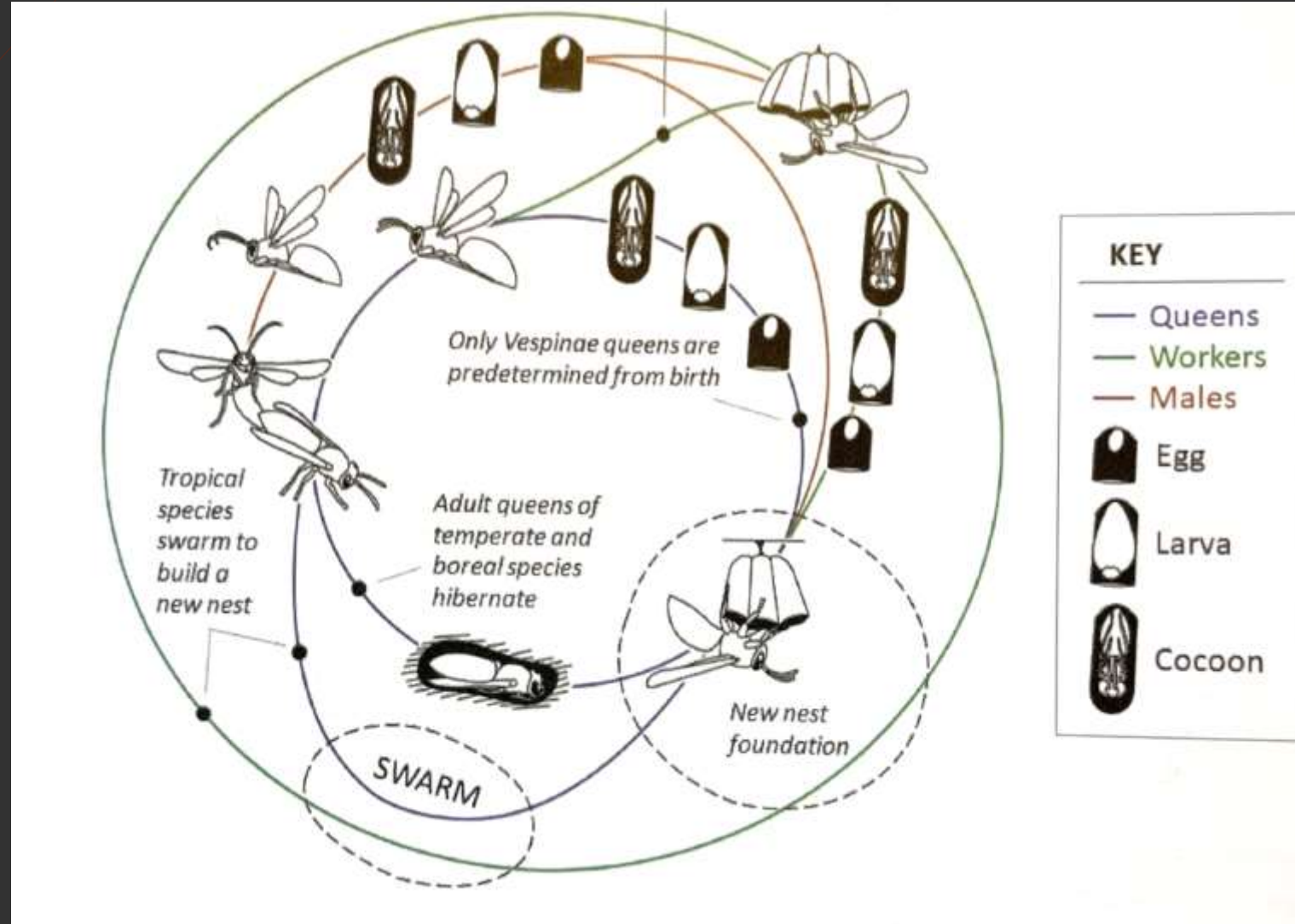
Paper wasps – *Polistes* sp.



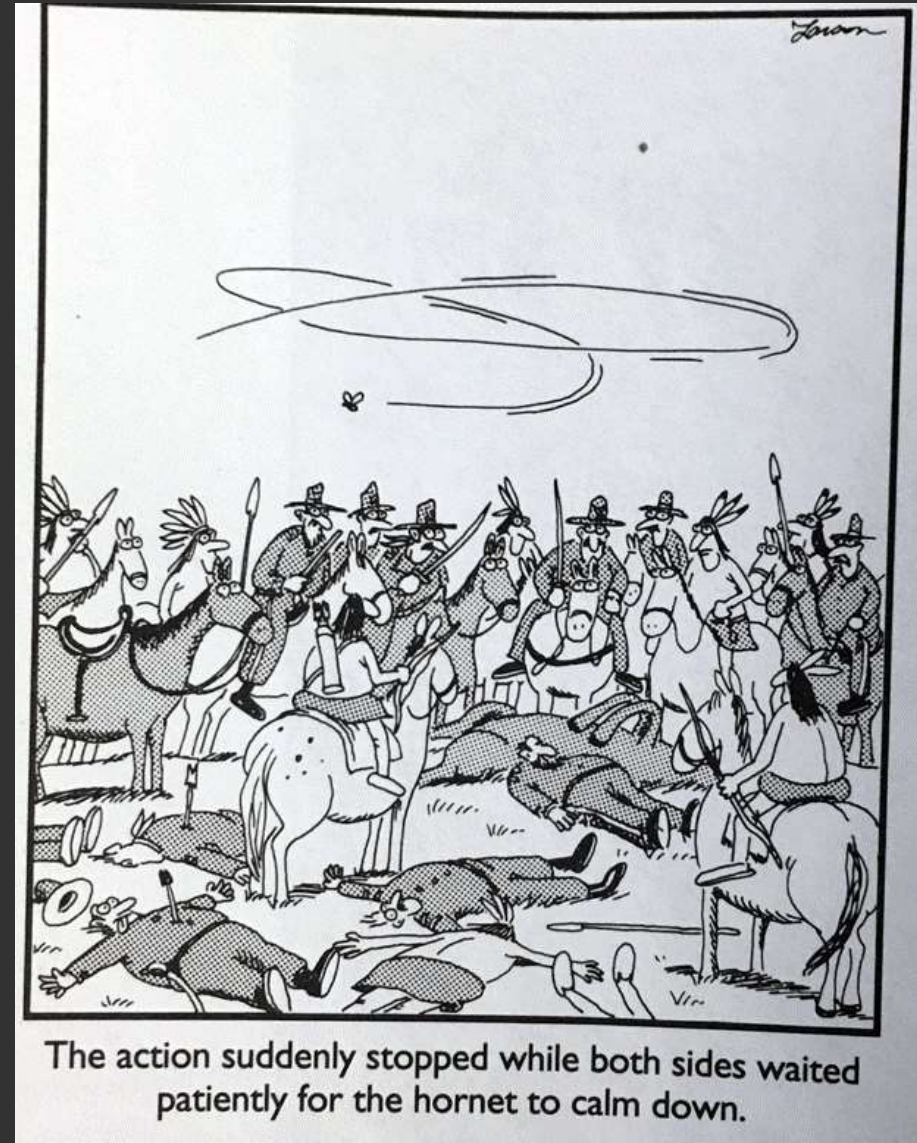
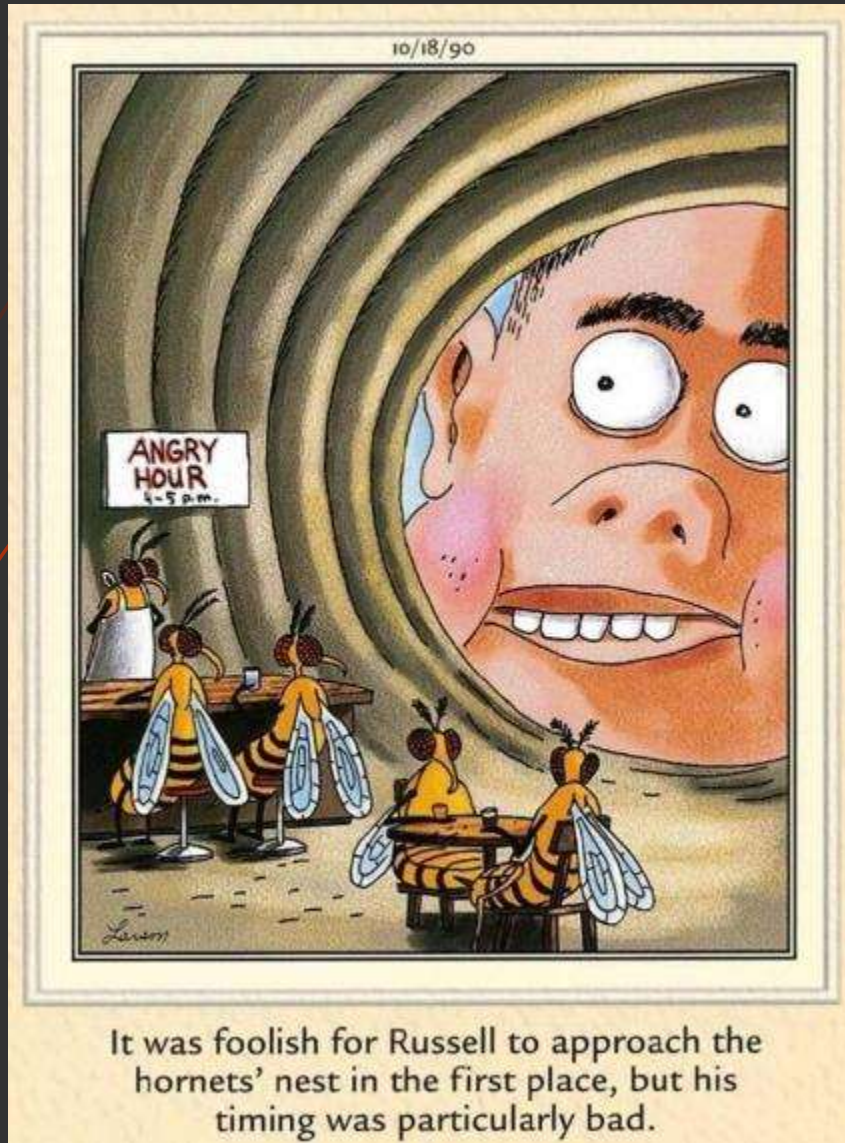
Making a nest



Colony life cycle



Aggressive vs defensive



Managing wasps...




Observing wasps... from a distance!



Wasp resources - online

➤ www.bugguide.net



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Order Hymenoptera - Ants, Bees, Wasps and Sawflies

[Classification](#) · [Synonyms and other taxonomic changes](#) · [Explanation of Names](#) · [Numbers](#) · [Size](#) · [Identification](#) · [Habitat](#) · [Food](#) · [Life Cycle](#) · [Remarks](#) · [See Also](#) · [Internet References](#) · [Works Cited](#)





Classification

Kingdom: [Animalia \(Animals\)](#)
Phylum: [Arthropoda \(Arthropods\)](#)
Subphylum: [Hexapoda \(Hexapods\)](#)
Class: [Insecta \(Insects\)](#)
Order: [Hymenoptera \(Ants, Bees, Wasps and Sawflies\)](#)

Synonyms and other taxonomic changes

The higher taxonomy of Hymenoptera is in flux, so several traditional, artificial major groupings are retained for convenience both in the guide and many other sources. Recent advances in higher taxonomy summarized in [1](#) [2](#) [3](#).

Explanation of Names

- *Hymenoptera*: Greek *hymen* 'membrane' + *pteron* 'wing'.
- *wasp*: Old English *waesp*, *waef*; the [Indo-European](#) root was **wops-* (original meaning related to weave); Latin *vespa* is of the same origin; *bee* goes ca. 5,000 years back to the Indo-European *bh1* 'bee' (echoic of the buzzing) (Partridge 1958)

Numbers

ca. 18,000 spp. in >2000 genera in our area [4](#) [5](#); worldwide, >153,000 spp. described (132 families, 8423 genera) [6](#) and ~1,000,000 estimated [1](#) (up to 3M, according to some workers)

Calendar

[Upcoming Events](#)

Photos of [insects](#) and [people](#) from the [2022 BugGuide gathering in New Mexico](#), July 20-24











Wasp resources - online

➤ www.iNaturalist.org

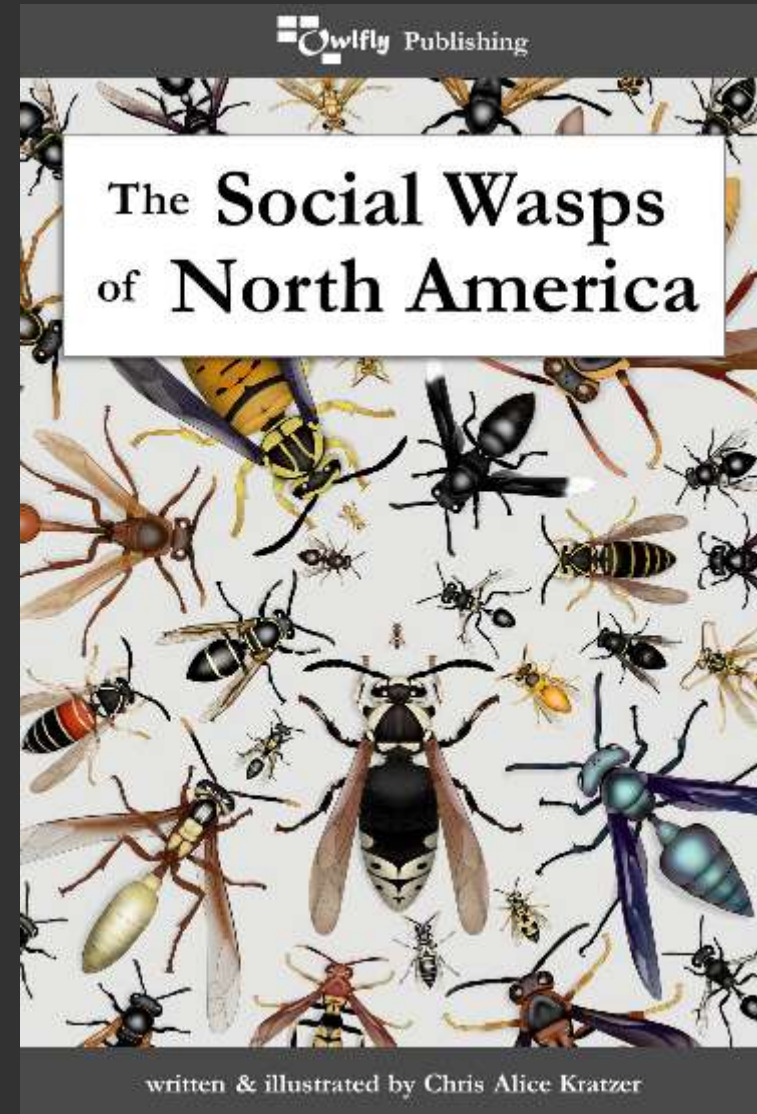
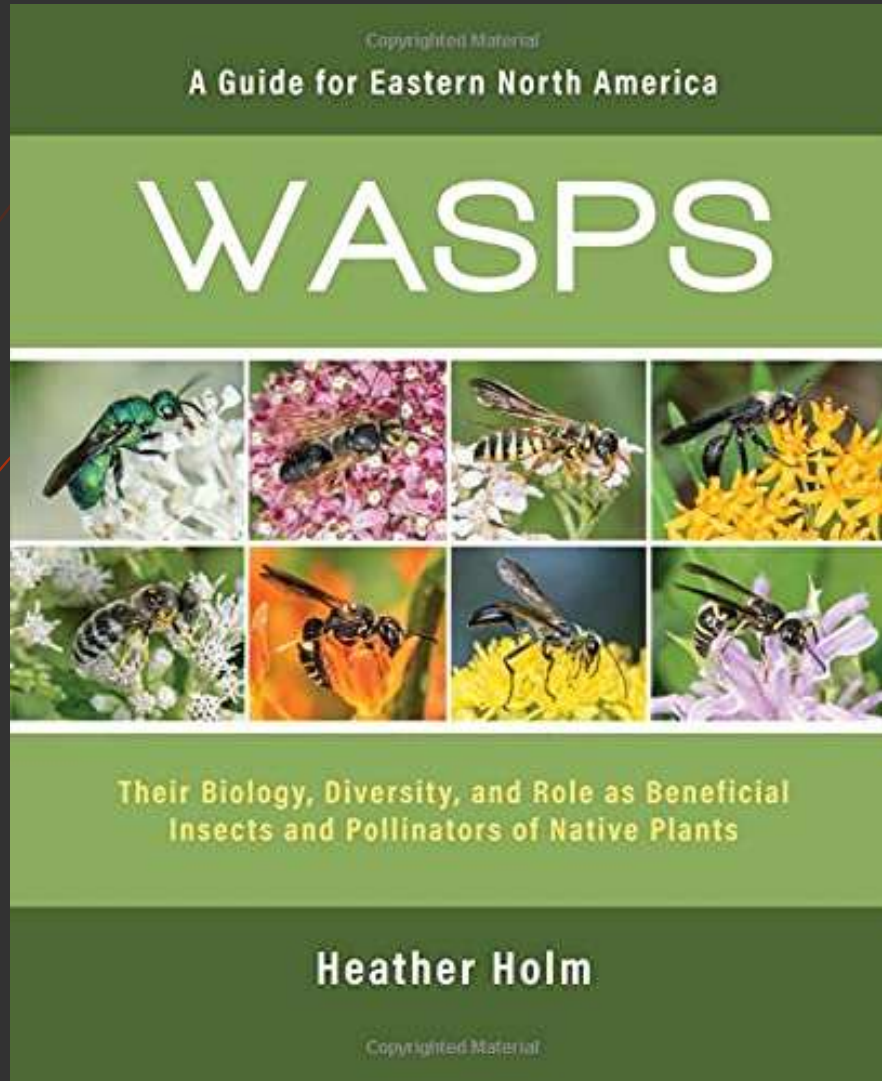
Observations

Ants, Bees, Wasps, and Sawflies Denton County, TX, USA Go Filters

Denton 11,762 OBSERVATIONS 368 SPECIES 870 IDENTIFIERS 1,287 OBSERVERS

 1,685 observations CC Western Honey Bee (<i>Apis mellifera</i>)	 1,029 observations CC American Bumble Bee (<i>Bombus pennsylvanicus</i>)	 337 observations CC Red Imported Fire Ant (<i>Solenopsis invicta</i>)	 332 observations CC Eastern Carpenter Bee (<i>Xylocopa virginica</i>)	 312 observations CC Ringed Paper Wasp (<i>Polistes annularis</i>)
 230 observations CC Guinea Paper Wasp (<i>Polistes exclamans</i>)	 201 observations CC Hunter's Little Paper ... (<i>Polistes dorsalis</i>)	 200 observations CC Apache Paper Wasp (<i>Polistes apacheus</i>)	 181 observations CC Yellow-legged Mud-da... (<i>Scalptiron caementarium</i>)	 152 observations CC Shiny Acrobat Ant (<i>Crematogaster laeviuscula</i>)

Good wasps books



Challenge for the week!



- Go outside
- Try to find at least 5 different kinds of wasps
- If you're able to, take a photo
- Upload it to iNaturalist
- Tag **@sambiology** on your 5th kind of wasp!



Wonderful Wasps



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