

IN THIS ISSUE:

BEES!



Bees are fascinating and invaluable creatures. They pollinate our vegetables, fruit, nuts, and even cotton plants. They are also responsible for many of the wildflowers we are enjoying this spring. Without bees, our world would be a very different place!

Bees can be *social* (live in colonies and collectively defend a nest) or *nonsocial* (solitary individuals). Social bees, like honeybees, are more likely to sting in defense of their nest (and queen). Nonsocial bees are less aggressive and are associated with milder stings. In fact, it typically requires intentional agitation on *our* part to get one to sting!

Five of Arizona's common bees around your school or home include four solitary species (carpenter bees, leafcutter bees, sweat bees, and digger bees), and the social (Africanized) honey bee.

Nonsocial bees lay their eggs in individual cells within the nest site, and leave a cache of food for the young larvae to feed on. That is the extent of the solitary bee parenting. More than 90% of all bee species are a nonsocial in nature – which means, unlike honey bees, there are no comrades who will come to her aid should you inadvertently provoke her.



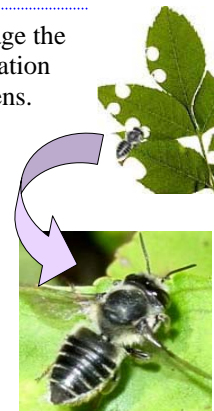
Carpenter bees (*Xylocopa* spp.) are a solitary, or nonsocial, bee. They measure about 1" in length and have black or blue-black metallic abdomens. These heavy-bodied bees make their nest in wood, choosing agave or soft branches.

In urban environments carpenter bees can become pests by tunneling into the soft wood of window or door frames, eaves, roof shingles, telephone poles, etc., to create a nest site. Eggs are laid consecutively along the main tunnel. The female leaves a ball of pollen in each cell before closing it up, working her way backward toward the tunnel entrance. Carpenter bees are not aggressive, but the females are capable of stinging if properly provoked. They are easy to spot and fun to watch!

Leafcutter bees (*Megachile* spp.) are about the same size as honey bees (2/3" long), dark colored with horizontal stripes on their abdomen. They do not transport pollen on their legs as most other bees, but rather on the underside of their abdomen! Adult females excavate a tunnel about the circumference of a pencil in soft wood plants to lay their eggs. They line the cell with leaf fragments – you may have seen the circular cuts they make on the edge of ornamental leaves (especially rose cane,

bougainvillea, and ash). It does not damage the plant, and the benefits gained from pollination make them welcome guests in most gardens. In fact, some folks take advantage of these native pollinators by inviting them to nest around garden areas.

Leafcutter bees can be **more efficient pollinators than honey bees**, as in the case of alfalfa crops. They are tended like honeybees for this purpose, doubling and even quadrupling crop yields for some alfalfa growers!



Sweat bees belong to the family Halictidae, and are the largest family of bees next to honeybees (Apidae). Sweat bee species range in color from brown or black to a beautiful metallic green, some with possible light yellow horizontal stripes on the abdomen. They measure about 1/4 - 1/2" long. Sweat bees nest in the ground by digging a tunnel and laying eggs in individual cells with a small amount of nectar and pollen ("bee bread") to sustain the young larvae. A small number of species will nest in rotten wood. Though technically nonsocial, female sweat bees may be seen sharing a tunnel entrance with other females; however, additional tunnels branch off the main to individual nests.

Sweat bees are excellent pollinators, and large accumulations of pollen can be seen attached to their back legs during summer months. Most importantly, sweat bees have a little understood tendency to lick the sweat off humans. That may not be a fly on your sweaty hand, but a sweat bee. If you swat the bee, you may get stung. The gentle brush-off leaves everyone unharmed.

Digger bees belong to the family Anthophoridae, and are ground nesters. Their heavy, hairy bodies measure 3/8-3/4" and are colored black and yellow. They build their nesting tunnels in exposed bare dirt or sandy soils, on flat ground or embankments. Large aggregations of individual nests can occur when soil conditions are good.

Southwest Digger bees prefer nectar from cactus flowers: saguaro, prickly pear, and cholla (UA College of Ag. & Life Science). They can be observed in the summer carrying loads of cactus pollen on their hairy legs. It takes



a lot to provoke them, and their sting is mild. Like other native nonsocial bees listed here, digger bees are excellent pollinators. If you have an aggregation of nests that you wish to be rid of, cover the ground with mulch or gravel.



Honey bees (*Apis mellifera*, of the family Apidae) are a social bee, introduced to North America from Europe by colonists and since have become economically important for crop pollination, honey, and beeswax.

During the early 1990's in southern US states, the European honey bee began hybridizing with African honey bees which migrated northward from Brazil after being introduced there. The product of this European honey bee/African honey bee hybridization is called an **Africanized honey bee (AHB)**. The physical differences between AHBs and European honey bees can only be detected by an entomologist. It is estimated that over 90% of wild bee colonies in Arizona are Africanized bees. For this reason:

All wild honey bees in Arizona are presumed to be Africanized.

All honey bees are about 2/3" long, and have a hairy body that is yellowish orange in color with black transverse bands on the abdomen. There are three types of honey bees in a colony: the queen (of which there is only one), drones (approximately 200), and workers (20,000 to 200,000!). A typical colony has about 20,000 honey bees.

The drones are fast fliers adapted for mating only, after which they die. Workers are sterile females who have a variety of "jobs": to build and protect the hive, gather nectar from plants, feed the larvae, drones and queen, and clean & repair cracks in the hive. Workers will sting perceived intruders. The stinger is uniquely barbed in honey bees, making it difficult to extract and often causing a ruptured abdomen resulting in bee death.

Swarming occurs many times a year for the AHB (typically 1-3 times a year for non-Africanized) when a newly hatched queen emerges for her nuptial flight in search of a new hive. The AHB is not particular about hive location, leading to more common encounters between it and humans.

Below are some points to take note of should you encounter a hive or swarm of honey bees – presumably Africanized:

1. Do NOT panic. 7 out of 10 deaths related to bee attacks (not involving bee allergy incidents) are due to folks panicking and literally causing their own death by running off cliffs, in front of cars, drowning, etc. Being hit by cars and drowning are the 2 most common.
2. Though their venom is no more or less toxic, the AHB tends to sting in greater numbers and is more easily provoked than the European honey bee. Therefore, do not try to remove a colony yourself! Call the experts.
3. If you are being chased: run away in a straight line and find shelter inside (car, house, etc.). Africanized bees are slow fliers and most healthy people can out run them.
4. Avoid other people, or they too will be attacked. Once stung, you are a "marked" target. Bee stings are delivered with a pheromone which labels you as a threat.
5. Scrape stings off as soon as you get to an indoor safe place.



6. Do not hide underwater, as the swarm will simply wait for you to surface.
7. **Seek medical attention, in case of anaphylactic shock.**
8. **If a person sustains more than 50 stings they should be treated in a hospital emergency room.**

Leave bees to their work and give them plenty of space. The next time you pass by the yellow blooms of an acacia or brittlebush, don't panic but rather take note of these hard working critters and consider which common Arizona bee it might be.

Arizona IPM News

Arizona's IPM in Schools program welcomes a new district: **Tempe School Dist. #3!** Nevitt Elementary is the pilot site for this district over the next year. This is Arizona's 10th school district. Members of any school community (school staff, parents, students) interested in improving pest management and children's environmental health in their school should contact their principal. UA entomologists can help!

A March meeting was held for the Arizona IPM in Schools Coalition members & interested others. The Coalition's discussion focused on integration of Indoor Air Quality. **Gregg Smith**, a facilities manager from Salt Lake City Schools, gave a presentation on his experience with implementing the EPA's Tools for Schools IAQ kit. Once a basic infrastructure is in place for IPM or IAQ, it is much simpler to introduce other programs in a way that makes them sustainable. Many of Arizona's school districts already have an excellent infrastructure when it comes to IAQ (appointed staff, good communication); **integrating IAQ with existing IPM programs will lead to better indoor air quality for a quarter million school-aged children** in Arizona (this is the number of children currently involved in the IPM in Schools coalition).

Information sources:

1. Colorado State University Cooperative Extension – Horticulture website: <http://www.ext.colostate.edu/PUBS/INSECT/05576.html>
2. Desert Discovery, University of Arizona, website: <http://desertdiscovery.arizona.edu>
3. Lewallen, Charles S. Oklahoma Wildflower Database. Website: <http://www.biosurvey.ou.edu/okwild/>
4. Olson, Carl. 50 Common Insects of the Southwest. Western National Parks Association. 2004.
5. University of Arizona Cooperative Extension – Urban IPM website: <http://cals.arizona.edu/urbanipm/insects/bees/>
6. University of Arizona College of Agriculture and Life Sciences website: <http://ag.arizona.edu/pubs/insects/ahb/inf21.html>

For more information on IPM in Schools program contact Dawn Gouge or Jennifer Snyder 520-568-2273, dhgouge@ag.arizona.edu



Few bugs are bad! More than 95% of all insect species are beneficial to humans