What kind of bee is that bee? Exotic Bee ID website expanded

June 26 2020

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Exotic Bee ID, a website created through a collaborative effort between the U.S. Department of Agriculture's Agricultural Research Service (ARS) and Animal and Plant Health Inspection Service (APHIS) and

Utah State University (USU) to help identify non-native bees in the United States, has been expanded to include more information and species.

While Exotic Bee ID is designed primarily as a screening tool for those who monitor and intercept non-native bees coming into this country, such as people working at ports of entry, state agriculture departments, and university extension services, it also is set up to be used by growers, hobbyists and home owners—that is, essentially anyone with an interest in identifying bees. Access to the website is free.

Unveiled in 2018, the original website provided information and identification resources for honey bee species and Megachilidae—the taxonomic family that includes leafcutter bees, mason bees and resin bees. The expansion added information and species level ID guides for selected exotic and native bees from the genera of wool carder bees and additional mason bees.

"We focused on these groups as they include the majority of non-native bees that either have already been introduced or have a high potential to invade the U.S. and then some of their look alike natives," explained entomologist Terry L. Griswold with the ARS Pollinating Insect-Biology, Management, Systematics Research Unit in Logan, Utah, who is the ARS collaborator for the website. "Introductions of new species can have negative consequences from bringing in new pathogens and parasites to displacing native species. Ultimately, this easy-to-use, accurate website could help reduce native pollinator losses."

A unique feature of Exotic Bee ID is that the identification guides can be entered at any point from color of parts of the insect's anatomy, presence and placement of hairs, leg shape, distribution ranges, or other elements. This is unlike conventional keys that are set up to make binary yes/no decisions in a predetermined order of characteristics that

entomologists build to identify bees.

"You start your search for an ID in the key using whatever features you feel comfortable recognizing. While many of the physical traits can only be seen using a microscope, if you are looking at a live bee or a photo you took with your phone you can narrow down your options using features you can see," said USU Exotic Bee ID project coordinator Skyler Burrows. "Or you can just start looking at the photos in the website's gallery for similar looking bees."

For example, you find an unfamiliar bee in your Chicago garden on a lamb's ears plant defending it by flying in small circles to drive off other insects. Taking a closer look you may see yellow bands on the back of the abdomen that are separated in the center to form a black "V-shape" and even possibly the pollen collecting hairs on the underside of the abdomen.

Keying these physical traits will winnow the possible identification from hundreds to 14. When you add in the behavior and range, there is only one ID: European wool carder bee Anthidium manicatum.

A native of Europe, Asia and North Africa, the European Wool Carder bee was accidently introduced into the United States in the 1950s and has since spread across the country.

The nucleus of information that forms Exotic Bee ID comes from ARS' U.S. National Pollinating Insects Collection, a world class collection of more than 1.6 million specimens from around the country and the world, also housed in Logan, Utah.

The Exotic Bee ID website has been augmented with incredibly sharp photos taken by a special camera that can magnify insect parts 1000X and then automatically stitch the photos together, sometimes more than

hundreds of individual shots to create images as large as a gigabyte each that show every detail.

Provided by United States Department of Agriculture

Citation: What kind of bee is that bee? Exotic Bee ID website expanded (2020, June 26) retrieved 10 April 2024 from https://phys.org/news/2020-06-kind-bee.html