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The odors of the scrub

By Archbold Biological Station
Feb 24, 2021

Plant Ecology Program intern Haley Dole with a Scrub Bay (Persea humilis).
ERIN STEWART PHOTO

If you accompany scientists from Archbold's Plant Ecology Program on one of their morning field excursions, you might be surprised to see a researcher squat down, rub a tiny sprout between

their fingers, and then give their hand a careful sniff. As program intern Erin Stewart explains, “Each month we perform seedling checks for a species of scrub mint called Garrett’s Mint. Often these seedlings are extremely small, and the only way to tell them apart from other species is to smell them. Even the tiniest seedlings have a distinctly minty odor!”

The smell can also help members of the Plant Ecology Program distinguish between different species of scrub mint. According to Program Director Dr. Eric Menges, “Garrett’s Mint has a bracing eucalyptus smell,” such that you “sometimes notice the plant after you have stepped on it.” Meanwhile, the scent of the related Lake Placid Scrub Balm is “like spearmint gum,” and the coastal mint, Titusville Balm, smells “a lot sweeter,” according to research assistant Lexi Siegle.

Mints are not the only aromatic species gracing the scrub. Another lab favorite is Hog Plum. Although often cursed for its thorns that easily poke through field pants, the plant produces flowers that smell quite pleasant. Research assistant Stephanie Koontz describes the scent as “sweet, almost like honey that saturates the air around you.” Meanwhile, the leaves, when crushed up, release an almond-like odor. Scrub Bay also has fragrant leaves similar in smell to “the sweet bay leaf you would use in the kitchen for soup,” according to program intern Haley Dole.

Researchers clearly appreciate these smells, but what is in it for the plant? Plants release odors for two primary reasons: to attract pollinators and deter herbivores. Regarding pollinator attraction, the leaves and flowers of many plants release scents that appeal to specific groups of insects. For instance, bees are often attracted to the smell of herbs, such as the scrub mints studied by Archbold scientists. Some flies are also drawn to these sweet scents, while others pollinate plants that release putrid odors. Many plants that rely on beetles for pollination release quite pungent smells that may be fruity or spicy.

Smells may also function to deter insects and other herbivores. For example, the odor of almonds is commonly associated with the presence of cyanide, as many murder mystery fanatics are aware. In plants such as Hog Plum, cyanogenic compounds are released in response to leaf damage, which functions to prevent further herbivory.

While most plants are adapted to avoid being eaten by insects, carnivorous plants have flipped this dynamic and consume insects themselves. Here again, scents come in handy. Research at the New Zealand Institute for Plant and Food Research by Ashraf El-Sayed and colleagues has shown that a certain species of sundew releases different sets of odors from its traps and its flowers such that prey species are attracted to the former and pollinators are attracted to the

latter. Thus, through smell the plant can avoid trapping the insects it relies on for pollination. Whether the Pink Sundew, found at Archbold Biological Station, engages in similar chemical signaling remains to be seen.

At Archbold Biological Station, the Plant Ecology Program has just wrapped up their yearly demography surveys on Florida Rosemary. Despite the name, the plant is not related to and does not smell like the rosemary commonly used in cooking, but instead has a very subtle fragrance. Research assistant Scott Ward identifies Florida Rosemary as one of the “most distinct smells” in the scrub, stating that “it smells like ecology in action.” The same could be said for many other plant smells: whether we realize it or not, each sniff tells the story of a particular ecological interaction.

A Moody