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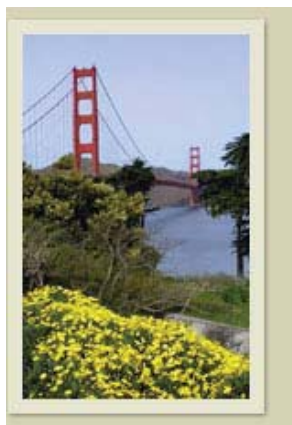
Our research group at the University of California has been working since 1987 on documenting bee diversity and bee frequencies on wild California plants in several northern California sites. This research led to a series of new bee sampling methods that we used to start the urban bee project in the late 1990s. After several years of sampling in residential areas of the East Bay region of the San Francisco Bay Area (SFBA) we have found about 81 species of bees, most of which are native to California. Once sampling is completed in other urban residential areas of the SFBA, we expect this number to increase well beyond 100.



We have found that the bees have definite preferences for plants and that certain bee groups can be expected to forage for pollen and nectar on certain plants, and at certain frequencies, regardless of whether the plants are native or exotic to California. We have used this information to create an experimental bee garden, with the most preferred plants on the Berkeley campus of the University of California.

The garden is also serving as an outreach tool for advising gardeners, teachers, and other urbanites on planning their own gardens that will encourage bees and other flower visitors.

[Common S.F. Bay Area Bee Groups](#)



There are about 25,000 species of bees known worldwide. In the U.S. we have almost 4,000 species, and in California slightly more than 1,500 species have been recorded. A complete list of the bees of the San Francisco Bay Area is not yet available, but just in the East Bay cities of Albany and Berkeley 81 species of bees have been identified from residential neighborhoods. These 81 species consist mostly of native California bees distributed among the following five families: *Apidae* (includes honey and bumble bees), *Andrenidae*, *Colletidae*, *Halictidae*, and *Megachilidae* (includes leaf-cutter bees). Descriptions of the easily recognized genera and species are presented along with information on their seasonal periods

of activity. [References](#) are also provided on more detailed information on bees in the U.S. and world.

We have evaluated numerous plants in the San Francisco Bay Area for their relative attractiveness to urban bees. You can click here for a [complete list](#) of attractive plants. Take a look also at our shorter list of plants, selected from the long list, which includes the smaller and easier plants to grow for those who wish to encourage bees in your gardens within a short period of time. The short list also contains information useful to gardeners about propagation, plant size, flower color, and the bee types and other floral visitors to be expected.

California Statewide Survey



With the success of the monitoring in Berkeley and other nearby cities the urban bee lab has extended their research beyond the Bay Area to include several more cities throughout the state of California. Our goal is to document and explore the diversity of native bees from Northern to Southern California. We are curious to see if a flower

in a garden in Ukiah attracts the same kinds of bees as the same flower in a garden in Santa Barbara. Does the same bee in southern California prefer the same flowers as the same bee in northern California? This research seeks to find some of these answers.

Bee Monitoring Protocol

Bees are variably but predictably attracted to their host flowers. Some are highly attracted, some are modestly attracted, and others show only a low attraction. In order to quantify the relative attraction of a plant to its bees, we developed a simple monitoring method or protocol. By observing a 1.5m x 1.5m space of flowering vegetation of a given ornamental for 3 minutes it is possible to count the number of bees entering this area and making contact



with the reproductive flower part (anthers and stigmas). The number of bees making one appropriate contact and not the number of flowers each bee touches constitutes the visitation count. Once several counts are made and replicated numerous times on different individual plants, an average visitation count or rate is calculated.

This average is then compared with others on a scale of low to high attraction, which provides us with a good predictor of what to expect from a plant and the bee

numbers it should attract. If bee types are also noted, a bee diversity figure can also be calculated. Visitation counts are only made on warm, high air pressure days with little or no wind. Also, only plants in full flower are used for the counts. The goal is to select the most optimal weather and plants conditions for conducting the counts.

Bees Vs. Wasps



Although urbanites often refer to bees and wasps interchangeably, they are different in many respects. Some bees and wasps look similar, but it is their different lifestyle that quickly sets them apart. Bees are interested almost exclusively in pollen and nectar from their host plants and are adapted to use these resources for their energy and reproduction.

Wasps, in sharp contrast, are mostly predatory and visit garden plants searching for small prey items like caterpillars. Some of these wasps will occasionally be observed visiting selected flowers where they may take a small drink of nectar; some are searching flowers for small insect prey. Read on to learn more about distinguishing these two common garden visitors.