

Häagen-Dazs Honey Bee Haven 2020 Annual Report

University of California Department of
Entomology and Nematology

December 2020



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Prepared December, 2020 by Christine Casey, Academic Program Management Officer

Hopefully this will be the most unusual year we will ever experience at the Haven. Despite COVID-19 restrictions we managed to continue to keep the garden open and maintained, and to provide a limited outreach program.

We will continue to provide virtual education programs, and look forward to a return to normal programming later in 2021.

SUPPORT

Financial

The Haven continues to rely on grants and donations for our funding. Classes and guided tours also bring in operational funds; we were unable to offer these this year although that loss was offset somewhat by individual donations. Operating expenses in FY2020 were \$3693.54. This is a small budget for a garden of our size; we are able to operate efficiently thanks to the work of our volunteers. Our FY2020 operating expenses were also lower than typical as we could not offer our normal range of outreach programs.

A breakdown of FY2020 expenses is shown in Appendix I. Haven salary support comes from the USDA-NIFA Specialty Crops Research Initiative (<https://protectingbees.njaes.rutgers.edu/>) and the UC Davis Department of Entomology and Nematology (<http://entomology.ucdavis.edu/>). Donations and class and guided tour fees cover our operating expenses.

Volunteers

The Haven volunteer team continues to make tremendous contributions, with work taking place weekly on Tuesday mornings. In 2020, volunteers contributed 369 hours to the Haven: 271 hours of garden maintenance and 98 hours of outreach. This has an in-kind value of \$9111 based on the national volunteer average labor rate of \$27.20 (<https://bit.ly/2XIVWst>). Volunteers with 25 or more hours of service are recognized in the garden. All state, county, and University policies for volunteering during COVID-19 were followed in 2020.

Current volunteers with at least 50 hours of service are Connie Alexich, Barbara Heinsch, Diane Kelly, Stephanie Ogletree, Betty Warne, and Rick Williams.

GARDEN OUTREACH PROGRAMS

Events and guided tours

In addition to public events, guided tours are given from mid-March to mid-October. In 2020, 453 visitors attended events and tours at the garden; the affiliation of visitors is shown in Appendix II. This occurred mostly before the COVID-19 shutdown.

Off-site events

The Haven also participated in two off-site programs in 2020, both prior to the COVID-19 shutdown. Program details are listed in Appendix II. We reached 108 people at these events.

Remote events and bee gardening classes

We were able to continue our education programs and classes after the COVID-19 shutdown using Zoom. Program information and attendance are given in Appendix II.

Media coverage

The garden was covered in print and blogs in 2020. Links to each are given in Appendix II.

VIRTUAL HONEY BEE HAVEN

Social media

We use a variety of social media platforms to create the virtual Honey Bee Haven, including Instagram (#hbhgarden), Facebook (<https://bit.ly/2XWI39i>) and the Bee Gardener blog (<http://ucanr.edu/blogs/thebeegardener>). A California Specialty Crops-Bee Connection blog (<http://ucanr.edu/blogs/SpecialtyCropsandBees/>) related to our California Department of Food and Agriculture Specialty Crops grant remains live, although this grant has ended.

YouTube

We began posting short videos about bees and gardening to the Haven's YouTube channel (<https://bit.ly/38zM0HN>) this year. This allows us to reach beyond the Sacramento region and was especially valuable this year as we could not offer in-person programs due to COVID-19. Fifteen videos with 713 views were created in 2020. This effort will be expanded in 2021.

Web resources

The garden web page (<http://beegarden.ucdavis.edu/>) is updated regularly and serves as another source of information for bee gardeners.

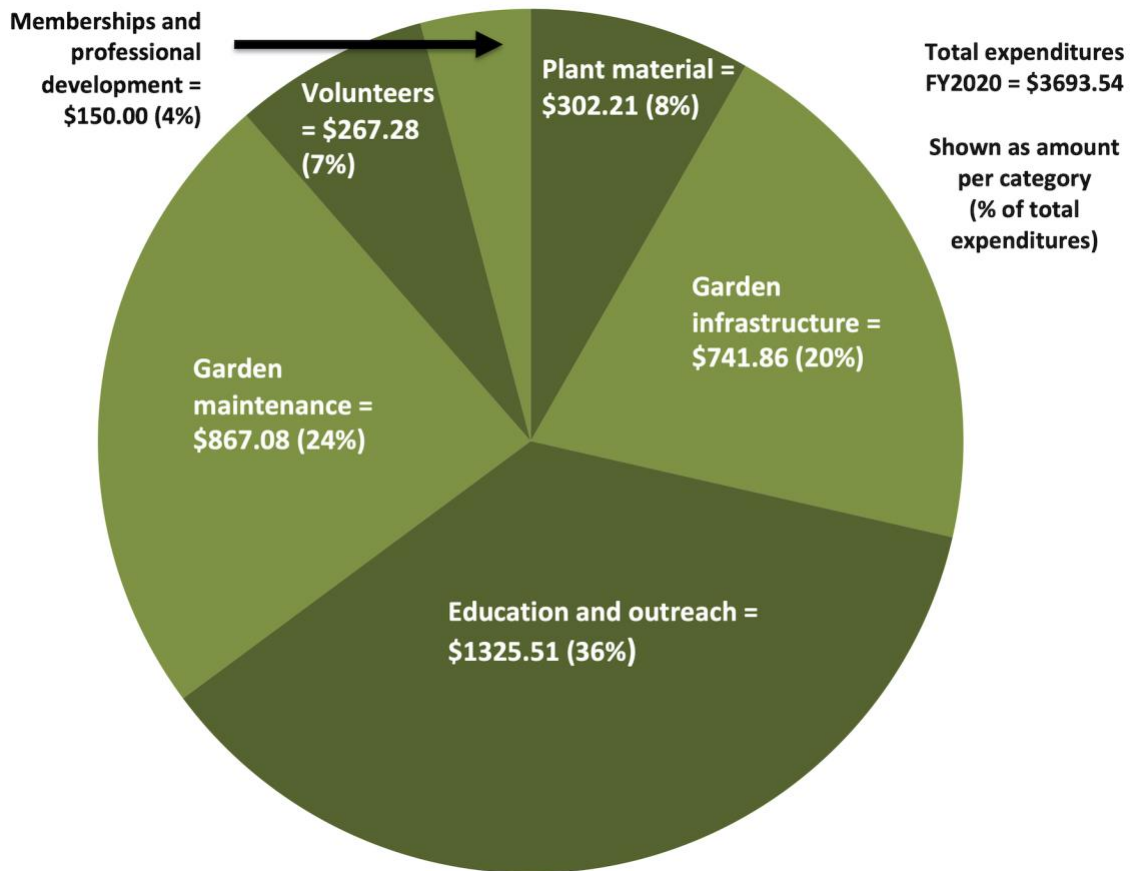
RESEARCH

We are now in the fourth year of the five-year project, "Protecting Pollinators with Economically Feasible and Environmentally Sound Ornamental Horticulture," which is part of a national effort funded by the US Department of Agriculture. Teams from around the country are studying the ornamental plants commonly sold in their region to determine bee foraging preferences.

Sampling continues in both in the Haven and in a nearby field plot. The latter consists of five replications of fifteen plants arranged in a randomized design. Sampling begins each year in May and continues into September.

Summary results for 2018 to 2020 are shown in Appendix III. Student intern Andrea Suarez did the data collection in 2020.

Appendix I. Honey Bee Haven FY2020 financial report



In addition to salary, it cost \$3693.54 to run the Haven in FY2020. The categories cover expenses as follows:

Plant material: All plants and seeds used in the garden

Garden infrastructure: Construction and maintenance of garden facilities including fencing, raised beds, and pathways

Education and outreach: Handouts, signs, and other display materials

Garden maintenance: Tools, soil amendments, and other supplies needed to maintain the garden

Volunteers: Refreshments and safety supplies for volunteers

Memberships and professional development: Professional memberships, fees and travel costs associated with training for garden staff, advertising

Appendix II. Honey Bee Haven guided tours, offsite events, and media coverage in 2020

Attendance and affiliation of garden event and guided tour participants. State, county, and University COVID-19 policies were followed at the November events.

| Date | Event or organization | Number | Type |
|-------------|------------------------------|---------------|---|
| 2/15/20 | Biodiversity Museum Day | 435 | Public |
| 2/12/20 | University Farm Circle | 7 | Public |
| 11/3/20 | Cameron Park Elementary | 4 | K-12 teachers making remote learning video |
| 11/12/20 | Putah Creek Council | 7 | Undergraduate student interns volunteer day |

Attendance and affiliation of off-site in-person event participants

| Date | Organization | Number | Type |
|-------------|---|---------------|--------------------------------------|
| 2/10/20 | Sonoma County Beekeepers monthly meeting | 150 | Beekeepers |
| 2/25/20 | USDA-SCRI grant stakeholders annual meeting | 25 | Scientists and horticulture industry |

Attendance and affiliation of off-site Zoom event participants

| Date | Event | Number | Type |
|-------------|---|---------------|----------------|
| 8/13/20 | Davis Kiwanis monthly meeting | 20 | Service club |
| 9/28/20 | UC Davis student orientation Night at the Museums | 88 | Undergraduates |
| 11/2/20 | Zoom class: Bee Gardening | 42 | Public |
| 11/9/20 | Zoom class: Common Bees in Gardens | 41 | Public |
| 11/16/20 | Zoom class: Bees in Food Gardens | 28 | Public |

Media coverage in 2020

| | |
|-------------------------|---|
| Woodland Daily Democrat | https://www.dailydemocrat.com/2020/01/04/usda-to-open-new-honey-bee-research-center-in-davis/ |
| UC Davis Arts Blog | https://www.ucdavis.edu/arts/blog/unexpected-art-nature-honey-bee-haven |

Appendix III. Plant bee attractiveness research results

Bee attractiveness in replicated field plot study 2018 to 2020

Honey bees:

| Plant | | Mean honey bees/20 sec ± SE | | | | | |
|------------------|-----------------------|-----------------------------|------|-------------|------|----------------|------|
| Family | Genus | 2018 | Rank | 2019 | Rank | 2020 | Rank |
| Asteraceae | <i>Achillea</i> | 0.03 ± 0.02 | 14 | 0.02 ± 0.01 | 14 | 0.01 ± 0.01 | 13 |
| Asteraceae | <i>Echinacea</i> | 0.20 ± 0.09 | 11 | 0.35 ± 0.19 | 9 | 0.52 ± 0.18 | 9 |
| Asteraceae | <i>Erigeron</i> | 0.09 ± 0.05 | 13 | 0.04 ± 0.02 | 13 | 0.07 ± 0.03 | 12 |
| Polygonaceae | <i>Eriogonum</i> | Not in study | n/a | 0.13 ± 0.13 | 11 | 2.84 ± 0.34 | 6 |
| Onagraceae | <i>Gaura</i> | 1.05 ± 0.12 | 5 | 1.39 ± 0.14 | 4 | 1.25 ± 0.12 | 7 |
| Crassulaceae | <i>Hylotelephium</i> | 0.34 ± 0.08 | 10 | 1.37 ± 0.38 | 5 | Did not flower | n/a |
| Lamiaceae | <i>Nepeta</i> | 2.86 ± 0.19 | 2 | 4.49 ± 0.24 | 3 | 7.57 ± 0.5 | 4 |
| Scrophulariaceae | <i>Penstemon</i> | 0.35 ± 0.16 | 9 | 1.18 ± 0.15 | 6 | 9.68 ± 0.76 | 3 |
| Lamiaceae | <i>Perovskia</i> | 2.00 ± 0.17 | 3 | 6.33 ± 0.34 | 2 | 13.54 ± 0.75 | 1 |
| Lamiaceae | <i>Salvia</i> | 0.42 ± 0.06 | 8 | 0.71 ± 0.18 | 7 | 5.14 ± 0.54 | 5 |
| Asteraceae | <i>Symphyotrichum</i> | 0.83 ± 0.21 | 6 | 0.33 ± 0.07 | 10 | 0.51 ± 0.14 | 10 |
| Lamiaceae | <i>Teucrium</i> | 2.87 ± 0.2 | 1 | 6.66 ± 0.37 | 1 | 9.87 ± 0.89 | 2 |
| Scrophulariaceae | <i>Verbascum</i> | 0.19 ± 0.09 | 12 | 0.11 ± 0.03 | 12 | 0.95 ± 0.31 | 8 |
| Verbenaceae | <i>Verbena</i> | 0.70 ± 0.08 | 7 | 0.41 ± 0.08 | 8 | 0.31 ± 0.31 | 11 |

Other bees: bumble bees, carpenter bees, leafcutter bees, longhorned bees, and sweat bees

| Plant | | Mean non- <i>Apis</i> bees ¹ /20 sec ± SE | | | | | |
|------------------|-----------------------|--|------|--------------|------|----------------|------|
| Family | Genus | 2018 | Rank | 2019 | Rank | 2020 | Rank |
| Asteraceae | <i>Achillea</i> | 0.16 ± 0.04 | 14 | 0.19 ± 0.04 | 13 | 0.45 ± 0.11 | 11 |
| Asteraceae | <i>Echinacea</i> | 0.68 ± 0.14 | 8 | 0.2 ± 0.08 | 12 | 1.13 ± 0.28 | 5 |
| Asteraceae | <i>Erigeron</i> | 1.36 ± 0.23 | 5 | 0.8 ± 0.11 | 6 | 0.93 ± 0.18 | 8 |
| Polygonaceae | <i>Eriogonum</i> | Not in study | n/a | 1.38 ± 0.5 | 4 | 4.79 ± 0.47 | 2 |
| Onagraceae | <i>Gaura</i> | 2.64 ± 0.14 | 2 | 1.16 ± 0.1 | 5 | 3.04 ± 0.22 | 3 |
| Crassulaceae | <i>Hylotelephium</i> | 0.44 ± 0.09 | 12 | 1.76 ± 0.42 | 3 | Did not flower | n/a |
| Lamiaceae | <i>Nepeta</i> | 1.45 ± 0.15 | 4 | 0.52 ± 0.05 | 9 | 0.99 ± 0.11 | 7 |
| Scrophulariaceae | <i>Penstemon</i> | 0.42 ± 0.15 | 13 | 0.65 ± 0.09 | 7 | 0.84 ± 0.11 | 9 |
| Lamiaceae | <i>Perovskia</i> | 2.41 ± 0.14 | 3 | 1.79 ± 0.16 | 2 | 1.1 ± 0.14 | 6 |
| Lamiaceae | <i>Salvia</i> | 0.46 ± 0.07 | 11 | 0.53 ± 0.09 | 8 | 0.82 ± 0.21 | 10 |
| Asteraceae | <i>Symphyotrichum</i> | 7.79 ± 0.37 | 1 | 11.31 ± 0.63 | 1 | 19.43 ± 1.25 | 1 |
| Lamiaceae | <i>Teucrium</i> | 1.03 ± 0.11 | 7 | 0.47 ± 0.07 | 10 | 2.4 ± 0.32 | 4 |
| Scrophulariaceae | <i>Verbascum</i> | 0.47 ± 0.08 | 10 | 0.23 ± 0.06 | 11 | 0.41 ± 0.11 | 12 |
| Verbenaceae | <i>Verbena</i> | 1.18 ± 0.1 | 6 | 0.12 ± 0.03 | 14 | 0.08 ± 0.06 | 13 |

¹Non-*Apis* bees: *Bombus*, Halictidae, *Melissodes*, Megachilidae, *Svastra*, and *Xylocopa*



Replicated field plot for sampling bee plant preference. The plot is about two miles from the Haven and is located near honey bee hives and native bee habitat.

Bee attractiveness in Haven observations 2018 to 2020

Honey bees:

| Plant | | Mean HB/20 sec ± SE | | |
|---------------|-----------------------|---------------------|------|-----------|
| Family | Genus | All years | Rank | CA native |
| Crassulaceae | <i>Hylotelephium</i> | 16.67 ± 4.89 | 1 | no |
| Lamiaceae | <i>Teucrium</i> | 12.00 ± 1.15 | 2 | no |
| Polygonaceae | <i>Eriogonum</i> | 10.68 ± 0.75 | 3 | yes |
| Lamiaceae | <i>Calamintha</i> | 10.60 ± 0.72 | 4 | no |
| Lamiaceae | <i>Perovskia</i> | 9.98 ± 0.80 | 5 | no |
| Lamiaceae | <i>Nepeta</i> | 9.78 ± 0.48 | 6 | no |
| Asphodelaceae | <i>Bulbine</i> | 8.44 ± 0.84 | 7 | no |
| Asteraceae | <i>Symphyotrichum</i> | 6.69 ± 1.15 | 8 | yes |
| Mytaceae | <i>Callistemon</i> | 6.53 ± 1.29 | 9 | no |
| Asteraceae | <i>Helianthus</i> | 6.27 ± 1.08 | 10 | partial |

Other bees: bumble bees, carpenter bees, leafcutter bees, longhorned bees, and sweat bees

| Plant | | Mean non-Apis bees ¹ /20 sec ± SE | | |
|------------------|-----------------------|--|------|-----------|
| Family | Genus | All years | Rank | CA native |
| Asteraceae | <i>Achillea</i> | 2.06 ± 0.40 | 1 | partial |
| Asteraceae | <i>Helianthus</i> | 1.73 ± 0.54 | 3 | partial |
| Asteraceae | <i>Gaillardia</i> | 1.88 ± 0.25 | 2 | no |
| Asphodelaceae | <i>Bulbine</i> | 1.29 ± 0.22 | 4 | no |
| Asteraceae | <i>Symphyotrichum</i> | 1.06 ± 0.42 | 7 | yes |
| Fabaceae | <i>Lupinus</i> | 1.08 ± 0.21 | 5 | yes |
| Lamiaceae | <i>Salvia</i> | 1.06 ± 0.08 | 6 | partial |
| Lamiaceae | <i>Caryopteris</i> | 0.92 ± 0.17 | 8 | no |
| Scrophulariaceae | <i>Verbascum</i> | 0.87 ± 0.14 | 9 | no |
| Onagraceae | <i>Gaura</i> | 0.78 ± 0.16 | 10 | no |

¹Non-Apis bees: *Bombus*, Halictidae, *Melissodes*, Megachilidae, *Svastra*, and Xylocopa



View of the Haven with its typical range of flowering plants that were sampled for bee preferences.