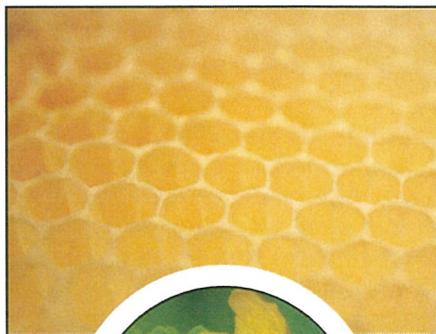


PROTECTING OUR POLLINATORS MAUI EDUCATIONAL APIARY PROJECT

Honeybees play a crucial role in the pollination of many tropical vegetables, fruits, and nuts in Hawaii. Their contribution to agriculture is undeniable; nevertheless we find that honeybee colonies are on the decline. The Maui Educational Apiary Project brings together the combined expertise of the Hawaii State Apiary program and the University of Hawaii Honeybee Project in an effort to reach out to the community and offer information about honeybee health, pollination services, and sustainable beekeeping.



HAWAII APIARY PROGRAM HAWAII DEPARTMENT OF AGRICULTURE

The health of a honeybee colony can dramatically affect other nearby colonies, and bees also play a critical role in agriculture by pollinating our food crops. A healthy and secure beekeeping industry is valuable to all. For these reasons, State Departments of Agriculture have Apiary Programs to support and regulate beekeeping.

With the recent arrival of Varroa mites, Small Hive Beetle and Nosema cerana, Hawaii received funds from USDA-APHIS to develop an Apiary Program. Some of the funds were used to help UH Manoa's Bee Team start research on honeybee health issues, and some were used to build an Apiary Program within the Department of Agriculture. Currently there are 4 Apiary staff, located in Hilo, offering Education and Demonstration, Biosecurity Surveys, Regulatory Services and Cooperative Research Projects statewide.

THE UNIVERSITY OF HAWAII HONEYBEE PROJECT

The project was created in June 2008 with initial funds from the Hawaii Department of Agriculture to address the impact of the newly arrived Varroa mite. Since its establishment, the program has expanded its research and extension goals to include:

- Honeybee colony health and pest management strategies
- Assessment of crop pollination needs
- Development of pollinator "friendly" farms
- Education and outreach to beekeepers, growers and Master Gardeners
- Development of a pilot pollinator curriculum for elementary school children.

The project is based at UH Manoa, within the College of Tropical Agriculture and Human Resources (CTAHR). Currently there are three graduate students working on bee health related issues and sustainable beekeeping in Hawaii.



www.hawaiibee.com

Hawaii Department of Agriculture
UH Pacific Cooperative Studies Unit
16 E. Lanikaula St.
Hilo, HI 96720
808 936 5483
ddowney@hawaii.edu



www.uhbeeproject.com

The University of Hawaii Honeybee Project
3050 Maile Way
Gilmore Hall Room 310
Honolulu, HI, 96822
808 956 2445
emv@hawaii.edu



THREATS TO HONEYBEES



For the last 150 years, the introduced European honeybee, *Apis mellifera*, has been an integral part of the agricultural system in Hawaii and the Pacific. However, due to great geographical isolation of the islands, the local honeybee populations have been free of many pest and diseases that had spread on the mainland US and Europe. However, in 2007 a devastating honeybee pest, the Varroa mite, was discovered in Hawaii, and in 2010, another bee parasite, the small hive beetle, was also detected in Hawaiian honeybee colonies. These parasites, associated viruses, and fungal diseases have caused large colony losses for the local beekeepers and greatly reduced the population of managed bees available for pollination in agricultural fields. In addition, these new pests and diseases have decimated the feral honeybee populations on Oahu and the Big Island of Hawaii. The “wild bees” that used to contribute to the pollination of many crops are now scarce. The sudden reduction of the feral bee population in conjunction with the decline of managed colonies has created a grave “pollinator shortage” in Hawaii that we are just beginning to address.

THE VARROA MITE

The varroa mite is an ectoparasite of bees. It feeds on the blood of immature and adult bees, and transmits devastating viral diseases, one of which is the so called Deformed Wing Virus, which has been linked to large scale colony losses across the world. Female mites prefer to parasitize drones, due to their larger body size, which results in more mites/cells being produced. In the above image, freshly sampled drones are found to be infested with mites.



THE SMALL HIVE BEETLE

The life cycle of the beetle is centered on the honeybee colony and both, adults and larvae, consume bee brood and hive products (pollen and honey). In its native South Africa the Small Hive Beetle (SHB) is not considered to be a major pest since it mostly attacks weak hives. In the continental US however, the SHB has caused large losses among managed colonies. The beetle’s success appears to be related to climatic conditions. In geographical regions with marked seasonality colonies experience relatively little beetle damage during the winter months, when beetle reproduction is greatly reduced. However, the subtropical climate of Hawai’i allows bees to raise brood year-round, thus providing continuous resources for the beetle. The warm, humid weather also makes pupation possible in most of the Hawaiian landscape and shortens the duration of immature stages. This release from climatic constraints, typical of temperate regions, may be contributing to the explosive beetle population levels recorded on the Hawaiian Islands.