



Left: Dan Harvey inspects peanut-shaped ripe queen cells.

Below: Judy and Dan Harvey, sitting in front of mini-mating huts, run Olympic Wilderness Apiary, a state-of-the-art bee-raising business.



TO BEE *or* NOT TO BEE

By Kate Welch
Photos by Harry von Stark

In the summer, the Olympic Peninsula hums with the activity of farmers as they tend to their orchards, berry patches, hayfields, lavender and vegetable gardens. We observe that the land is alive and fragrant and buzzing with the sounds of summer. We listen and watch the honeybees, genus *Apis*, in their industrious flit from flower to flower. To the worker bees, the flower provides supplies of nectar and pollen that will support the hive. To the rooted male flower, the honeybee is the most efficient way to transport his pollen to the ovule of his rooted female partner, thereby ensuring reproduction. Flowers and honeybees enjoy a symbiotic relationship and each has adapted ways to use the other for their mutual benefit. Without this process, our gardens would shrivel and so too would

our food supply.

Throughout history humans have learned how to capture wild bees in their pursuit of honey and beeswax. Ancient Egyptian beekeepers were the first to record in their hieroglyphics the intimate dance between bee and flower. They kept their bees in easily transportable clay hives and for a fee would convey the bees from field to field. Centuries

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later, 18-wheelers migrate through farmlands and obtain a part of their income by collecting fees from farmers who want to guarantee that their fields are well pollinated.

On the Olympic Peninsula, beekeepers Dan and Judy Harvey run a small, but state-of-the-art business called Olympic Wilderness Apiary. Their hives are spread throughout their five acres west of Joyce. Dan Harvey is quick to point out, "This is not your everyday run-of-the-mill beekeeping operation."

Although the couple sells their delicious honey crop and makes elegant beeswax candles, that is not the crux of their business. The Harveys specialize in exporting healthy queen bees to areas of the United States where infestations of predatory varroa mites decimated 90 percent of the wild bee population in the 1980s. While larger honey producers took the easy road of blasting the hives with pesticides to control the spread of varroa mites, the Harveys took an organic approach. Dan put out the word to his logger



Above: Fully-developed queen bee cells

Left: Dan Harvey primes queen bee cell cups with royal jelly, the first step in developing the cells.



friends to be on the lookout for surviving wild bee colonies. He reasoned that his nook in the Olympic Peninsula constituted an isolated mating area. The surviving wild bee population would be naturally resistant to pests and disease and therefore require no miticide treatment. In time, the Harveys were able to capture several wild swarms of bees. They worked closely with researchers from the U.S. Department of Agriculture to introduce Russian honeybees, that were verified mite resistant, into the surviving wild colonies they had captured. However, the Russian bees did not take kindly to their forced immigration. Dan described their behavior as “very ornery” and it took several years before the bees settled down and became more docile.

The Harveys are just as dedicated and proud of raising quality breeder queen bees as a cattle rancher would be of his prize bull. The Harveys must do their part to ensure the health of their colonies in order to stay competitive in the commercial markets. Judy points out, “You’ve really got to be on top of your game.”

It is important to provide supplemental feedings all year and provide adequate space to prevent swarming. In addition the Harveys always are mindful of beneficial genetic qualities in their breeder queens. For example, Dan analyzes beneficial traits such as good hygienic behavior in the hive. He does this by killing a patch of brood with liquid nitrogen and noting whether or not the workers clean out the dead pupae and polish the empty cells. The bees

will groom each other much like monkeys and so, by using a specialized wash test, he systematically tracks the percentage of mites to the number of bees. Dan then can extrapolate information that relates to that specific colony. When the state lab closed last year, Dan bought a microscope and taught himself how to dissect bees to look for tracheal mites, another serious honeybee pest. With genetic selection tools, hard work and meticulous records, the Harveys have raised breeder queens that are disease and mite resistant without the use of harmful pesticides that can leach into the honey.

While the Harveys have honed their methods of beekeeping over the years, little has changed in the honeybee hive itself. There is the queen of the hive. She is the mother of the brood. As a larva, she is placed in a special chamber and fed only royal jelly so that she will fully develop her ovaries. The mature virgin queen takes flight, releasing pheromones that

attract the drones or male bees. Drones from many different colonies hang out in special mating areas where they compete for the attention of the queen. For the successful drones, it is a brief and fatal sortie for they fall to the ground and die after mating.

The queen may make several mating flights but when she returns to the hive, she rarely leaves again. She gets down to the business of laying eggs. One egg is laid in one hexagonal cell, thousands of them a day. The cells have been built with engineering precision, cleaned and polished by worker bees. They stock the individual cells with food (pollen and nectar) and cap the cell with wax. Twenty-one days later, another bee is hatched. The queen is able to determine the gender of her offspring. The vast majority will be ▷



At top: The hive entrance is defended by guard bees.

Above: A marked Russian breeder queen inspects a cell prior to laying an egg.

the survival of the colony.

The Harveys raise new queens by stealing the eggs laid by selected mite-resistant queens. Dan takes the eggs and grafts them onto special cells that are stocked with royal jelly. After a time the royal larva cells are placed back in the hive and the worker bees take it from there. New queens still must pass the muster: Judy says, "We will not send out a queen unless she is producing." Judy is in charge of the office and the shipping of the queens. The queen and some of her workers are placed in special cages and sent via overnight express to apiaries all over the country.

The service that Olympic Wilderness Apiary provides could prove absolutely crucial in the coming years. A new, mysterious and alarming threat facing

honeybees has apiarists and entomologists from around the country worrying and scrambling for answers. Colony Collapse Disorder is the term given to the phenomena of worker bees that simply and inexplicably go AWOL and abandon the hive. Left with no workers to forage for the hive, the queen and young hatchlings are left to die. So far 22 states report the presence of CCD and the significant loss of bee colonies. Scientists are baffled by this chain of events. The suspected causative agents being investigated include poor nutrition, immune deficiencies, extreme weather conditions, genetically modified crops, electromagnetic radiation from cell phones, the urbanization of bee habitat and the decline of wildflowers. Every apiarist has a theory. The Harveys feel strongly that CCD is linked to the overuse of chemical miticides and that their bees are strong enough to face any challenge.

What is at stake here is far greater than the potential loss of livelihood for the often-overlooked but passionately dedicated apiarists. It is more than the loss of a honey cash crop. CCD threatens the billions of dollars worth of crops pollinated by bees in the United States each year. On the Olympic Peninsula alone, bees help to pollinate apples, blue-

The Harveys specialize in exporting healthy queen bees to areas of the United States where mites decimated the wild bee population.

berries, blackberries, broccoli, cabbage, raspberries, cherries, pears, tomatoes, cranberries, squash and pumpkins. If one-third of the food produced in this country depends on the honeybee for pollination, is it an exaggeration to say that the disappearance of honeybees could spell economic and social disaster? Is the bee a harbinger of things to come, the proverbial canary in the mineshaft?

Possibly there is a gift offered in the baffling disappearance of this humble insect. Perhaps we may finally understand, at the core of our being, that humans *are* connected in some deep mysterious, inexplicable and glorious way to all forms of life on Earth. That, like the Harveys, we must be responsible stewards of our own backyard ... the diverse ecosystem of the Olympic Peninsula. Turn off the TV and observe the reality show in your own backyard. Are the bees still there or have they been voted off the island? □