

Russian Queens Bee-little Mites' Impact

Federal scientists hope to establish a Russian dynasty throughout the United States—one populated by the progeny of Asian-hatched honeybees, renowned for their resistance to mites.

That goal moved a step closer last week. The first generation of bees produced by 90 expatriate queens, just released from quarantine, has significantly outperformed U.S. members of their species, *Apis mellifera*, in resisting infestation by varroa mites.

This parasite, which first turned up among U.S. honeybees 11 years ago, has taken a devastating toll. Feeding off their hosts' blood, the energy-sapping mites weaken and soon kill the bees (SN: 2/8/97, p. 92). Moreover, mites in four states have developed resistance to the one pesticide approved for use against them, notes Thomas E. Rinderer of the U.S. Department of Agriculture honeybee laboratory in Baton Rouge, La.

Such pesticide-resistance leaves beekeepers defenseless, he says. Indeed, he notes, because wild honeybees never received treatment, "they're gone." Though swarms that stray from beekeepers' colonies may survive a few months in the wild, he says, these days "they're doomed, too."

The parasites develop on bee pupae. Once a bee emerges as an adult, it normally lives 30 days or more, depending upon how hard it works. But an infested worker may survive only 3 to 5 days in its sickly state. The mites, which also attack adults, reproduce on a 10-day cycle, allowing them to quickly kill off a colony.

In the new tests, Rinderer's team exposed 90 parasite-free colonies to mites. Each colony contained a Russian-hatched queen and up to 60,000 of her offspring. About 12 weeks later, the USDA scientists tallied how many mites infested the adults and pupae.

From previous data on U.S. colonies, "we would have expected an 11.4-fold increase in mites during the test period," Rinderer says. Instead "we got an average 3.9-fold increase—and many colonies had no increase. This is extremely exciting."

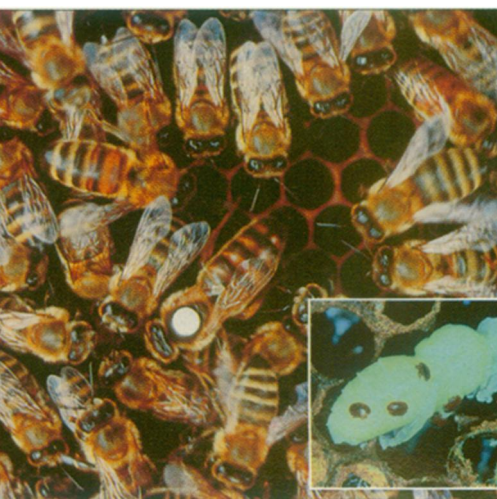
Though many honeybee populations along the Primorski region of Russia's Pacific coast have had a century to develop natural resistance to the varroa mite, bees who arrived there more recently show little ability to coexist with the parasite. The current tests were designed to identify and eliminate these weaker bees from any U.S. breeding program.

Imported a year ago, the queens, which can live up to 3 years, are becoming quite elderly. Colonies headed by their daughters, however, are now begin-

ning a new wave of tests to compare them directly with U.S. hives. The queens, which mate only once, carry sperm from descendants of Primorski-hatched bees. By next spring, Rinderer's team plans to begin distributing mated Russian queens to beekeepers for experiments to evaluate how well they pollinate plants and produce honey under field conditions.

The Russian queens are fueling considerable excitement among apiarists, says Troy Fore of the American Beekeeping Federation in Jesup, Ga. The cost of treating colonies with the varroa miticide can eat up 20 percent of a beekeeper's gross earnings—or about 80 percent of the intended profit, he says. Bees with Russian genes should reduce the need for some or all of these expensive treatments, he adds.

The Russian queens also "offer to throw the [mite] resistance gene into



Russian queen (bearing white tag) and her family. (Inset) Bee pupa infested with varroa mites.

[stray] bees," reestablishing a self-sustaining feral community, notes beekeeper Kim Flottum, who edits *BEE CULTURE* in Medina, Ohio. —J. Raloff

Teens put cultured spin on friendship

As children learn to navigate the social world, their moral compasses can be set in different directions depending on whether the surrounding cultural system celebrates self-interest, as in Western societies, or duties to others, as in Asia. While teenagers in both types of cultures invest particular value in close friendships, they do so for culturally distinct reasons, a new investigation suggests.

Researchers have long held that Western teenagers grapple intensely with the responsibilities and obligations that go with close friendship. The latest findings support the theory that this is a universal phase of moral development, which also arises in cultures where kids learn early and often about their duty toward strangers, scientists argue in the July *DEVELOPMENTAL PSYCHOLOGY*.

Children in both China and Iceland veer down culture-specific developmental paths to reach a common teenage focus on close friendships, report psychologists from the Max Planck Institute for Human Development in Berlin and the Chinese Academy of Sciences in Beijing. Monika Keller of the German facility directed the project.

The Icelandic sample consisted of 97 boys and girls in Reykjavik who were contacted at ages 7, 9, 12, and 15. Chinese volunteers, all in Beijing, were assessed only once: 80 at age 7 and 90 at each of the ages 9, 12, and 15.

Every child was presented with a story in which a protagonist has to choose between keeping a promise to meet a close, same-sex friend to talk and play or accepting an invitation from a new classmate, who has no friends, to attend a movie and a pop music concert.

Younger Icelandic children usually felt it was morally right to opt for the friend, but viewing the new child as a source of pleasure, few predicted that the protagonist would actually turn down the second invitation. By age 15, most said the protagonist would choose the friend due to personal loyalty that overrode temptation to accept the new child's offer.

Younger Chinese kids also said that the protagonist would opt for the new child but judged this act as morally right, expressing the society's concern for taking care of a new group member. At age 15, most chose the friend, stressing the maintenance of relationships, although they worried about neglecting the new child.

William M. Bukowski of Concordia University in Montreal and Lorrie K. Sippola of the University of Saskatchewan in Saskatoon say that they aren't surprised that the younger children hew most closely to the surrounding society's views. —B. Bower