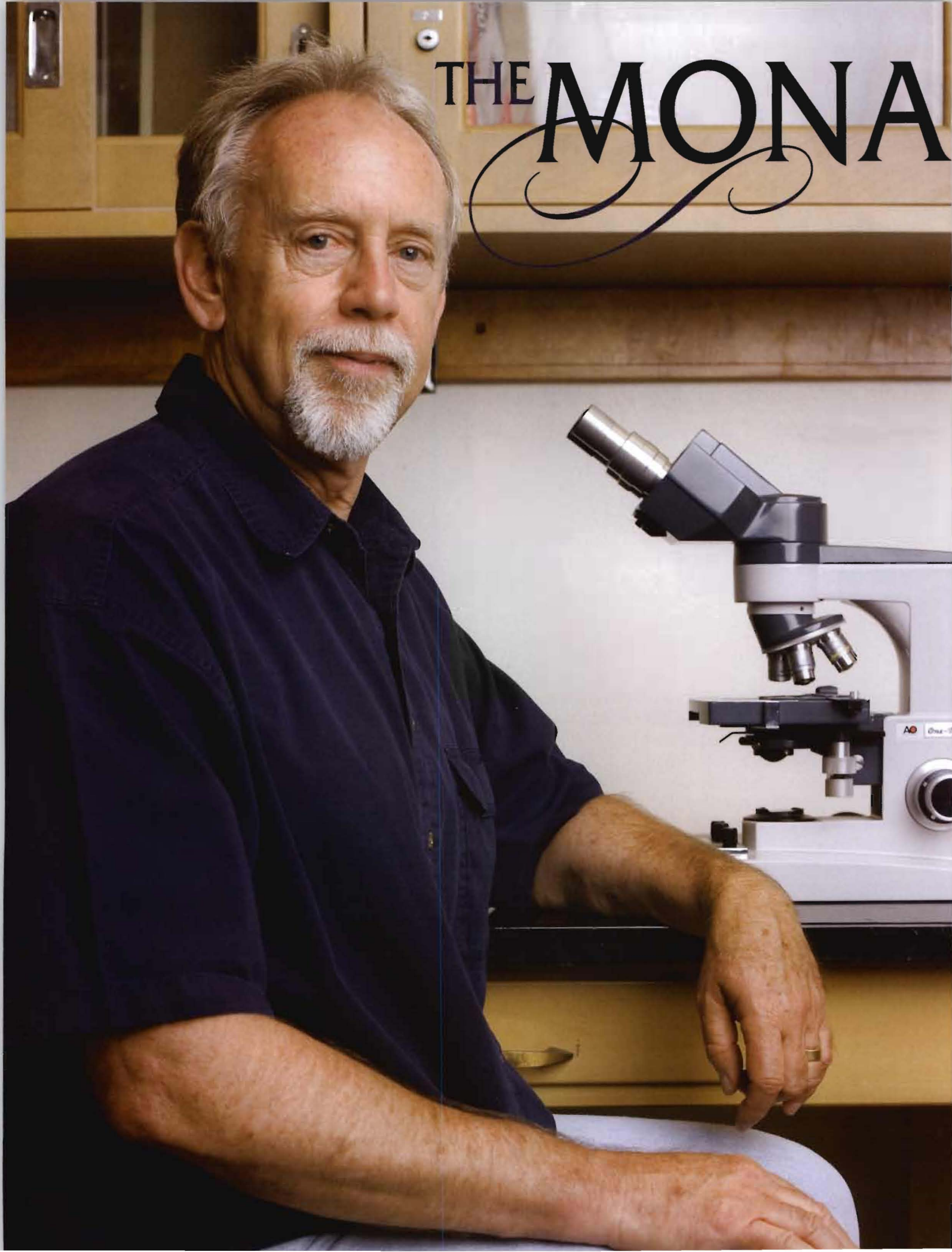


THE MONA



RCHMISSION

Cal Poly's reigning expert on monarch butterflies

by JO ANN LLOYD with STACIA MOMBURG



The monarch butterfly is not just another pretty insect. The delicate-looking insect is also quite robust by butterfly standards, according to ecology Professor Dennis Frey. And he should know.

A butterfly that was tagged as part of a research project that Frey and third-year grad student Shawna Stevens are conducting along the California coast was captured alive east of the Rocky Mountains, once thought to be an impenetrable barrier for monarch migration.

It's all part of Frey's research to better understand and protect the bright orange, milkweed-eating, super-migrating insect known as the North American monarch butterfly.

The existence of this beautiful winged insect is threatened by the destruction of its natural habitats and the milkweed plant its larvae feed on. New roads, housing developments, even agricultural expansion, create an inhospitable living environment. In addition the insect faces recurrent threats of nature, such as disease and extreme weather.

What's an ecologist to do?

With the help of Stevens and the generosity of Salinas resident Helen Johnson, a monarch advocate, Frey is working to help protect the species. But before he can suggest appropriate conservation efforts, he and his team first must unravel some of the mystery surrounding its migration patterns and origins.

This much he knows: Migration is essential to survival. These spectacular butterflies make annual fall migrations across America to wintering grounds to avoid freezing temperatures. In late winter and early spring they migrate again to find nourishment – milkweed – for their larvae. They must travel because milkweed does not grow in the butterflies' "overwintering" sites, Frey says.

The insects' incredible journey can extend

up to 2,000 miles, as they head to more temperate climates along coastal California and in the mountain regions of central Mexico.

Once they reach their fall destination, observers say, the butterflies create a stunning picture. They form dense clusters, each one hanging with its wing down over the one below it, creating a shingle effect. The weight of the cluster may protect them from being whipped in the wind.

Fellow Cal Poly entomology Professor Kingston Leong, also a leading monarch butterfly expert, calls the Pismo Beach colony "a wonderful site to behold: huge pods of

us when they find one of the tagged monarchs, it will help us better understand migration and population dynamics," Frey says.

Over 26,000 butterflies between Pismo Beach and Marin County have been tagged since the project began in 2001. Roughly 130 people have so far reported finding a tagged butterfly.

While the number of monarch butterflies, like many insect populations, varies greatly from year to year, Frey and Stevens are getting closer to understanding why. There appears to be a correlation between the drought cycle that began with El Niño in 1998 and a decreasing abundance of monarchs in western North America. The drought created a "climate variation fingerprint" throughout the West, allowing the Cal Poly researchers to identify areas where milkweed growth and availability would be affected.

The research team also knows that monarchs require a specific number of "degree-days," an amount of heat, warmth and time for opti-

mum larval development. Stevens has studied the pattern of late summer degree-days for each region in the West and has begun to pinpoint the areas that have the greatest potential to produce migrating butterflies. With this new information, the team hopes to identify critical breeding areas of western monarchs, an important key to conserving the species.

Frey points out that another important goal of Project Monarch Alert is to generate long-term data on the dynamics of western monarch populations. A large part of their effort for the past three years has been to monitor weekly "monarch abundance" at eight wintering habitats in San Luis Obispo and Monterey counties.

"Only with large-scale, long-term data like these will we be able to filter out the noise from significant trends," and unravel more of the monarchs' mysteries, he concludes. ■

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thousands of colorful butterflies gather in a eucalyptus tree grove. Hundreds more happily flitter about in the sunlight."

In trying to understand migration, the intrepid Cal Poly butterfly detectives have themselves taken on an arduous journey: Project Monarch Alert, sponsored by "citizen-scientist" Johnson since 2002. A primary goal of the project, and the first step, is tracking the butterflies.

It begins with the simple yet painstaking task of hand-tagging them. Thousands of them. The team, along with a host of volunteers, has tagged insects in Monterey, San Luis Obispo, Marin and Santa Cruz counties. The tags – tiny stickers about one-third of an inch in diameter – are affixed to the underside of the hind wing.

Each tag includes a toll-free phone number and an identification number. "If people call