Stuart Weiss brings butterflies back to Edgewood Natural Preserve

by Marion Softky

The Almanac, Menlo Park, Atherton, Portola Valley, Woodside

Wednesday, March 28, 2007

On March 15, biologist Stuart Weiss of Stanford Weekend Acres spotted Edward I fluttering over the early goldfields at Edgewood Natural Preserve.

Edward (the name given him by Dr. Weiss) was the first threatened Bay checkerspot butterfly he spotted in the serpentine wildflower fields since the population disappeared there four years ago; the orange, black and white butterflies were victims of fumes from the nitrogen compounds spewed by more than 100,000 cars a day driving on nearby Interstate 280. The fumes fertilized invasive rye grass that choked plants that support the butterflies.

Edward was there because of a program engineered by Dr. Weiss to re-establish the butterflies in their historic habitat. Over the last two months, Dr. Weiss has brought at least 1,000 fuzzy black caterpillars to Edgewood from a healthy checkerspot population on Coyote Ridge, south of San Jose. He lovingly planted them on little patches of *Plantago erecta*, an obscure plant that only grows in the harsh serpentine soils east of the San Andreas Fault. Also called California plantain, it is the essential host plant that checkerspot larvae depend on.

"It's exciting," says Dr. Weiss in an interview a week after he spotted Edward, as we walk Edgewood's serpentine fields looking for more butterflies. "This demonstrates that we can do things in the face of all the threats to biodiversity."

Over half an hour, Dr. Weiss spots four of the elegant butterflies near the top of the long hill where people driving south on I-280 can see large yellow patches of massed wildflowers about this time every spring. By April, he hopes that slope will also be aflutter with butterflies.

Dr. Checkerspot

Walking slowly along a transect covered with early blooming goldfields, owl's clover, and an occasional California poppy, Dr. Weiss refers to his initials, SBW, as: "Sure Beats Working."

Yet Dr. Weiss is working. And his research on butterflies has illuminated the loss of checkerspots, and led him into ecological research in many other fields, from endangered clapper rails on the Bay shore, to adjusting microclimates in vineyards to achieve better harvests.

Butterflies never occurred as a subject of study to the Philadelphia kid who picked Stanford over Harvard for college. He recalls catching his first checkerspot working for Paul Ehrlich at Stanford's Jasper Ridge Biological Preserve in April 1979. Dr. Ehrlich's pioneering studies of checkerspot butterflies at Jasper Ridge laid the base for his international reputation as a guru on population threats.

"It was so much fun. I ended up pretty hooked," Dr. Weiss admits. "I was chasing butterflies in fields of wildflowers while my friends were sitting in a classroom with 300 others."

Mr. Weiss — he didn't get his Ph.D. until 1996 — began studying plants and butterflies at Edgewood Park back in 1983, when the site had been bought for a golf course. He mapped habitat and counted caterpillars in the serpentine grasslands that provide spectacular displays of native wildflowers each year. The soil is so thin and poor on these hills that the exotic plants and grasses that came with the Europeans

can't survive, leaving the natives, adapted to hostile soil chemistry, to show off in the spring,

After a monumental political battle between the golfers and the native landscape lovers, the golfers lost. The county declared Edgewood Park a natural preserve in 1993.

But the butterflies were in trouble. The population, estimated at close to 5,000 in 1997, was gone in six years.

Drive-by extinction

Anyone walking the serpentine hills of Edgewood Park can see and hear the traffic on I-280.

Dr. Weiss led the study that identified fumes from I-280 as the indirect cause of the die-off of butterflies, and crafted the plan to restore them. His work has been supported by the San Mateo County Parks and Recreation Foundation, the National Fish and Wildlife Foundation, the Friends of Edgewood Natural Preserve, and San Mateo County.

As the exhausts from more than 100,000 cars per day on the freeway drifted downwind over the Edgewood grasslands, their nitrogen oxides fertilized the nutrient-poor grasslands. As a result, Dr. Weiss discovered, Italian ryegrass flourished; it choked out the plants that supported the butterflies, and the butterflies dwindled and disappeared.

Dr. Weiss notes that the introduction of catalytic converters to control air pollution in the 1990s made the effect worse. Catalytic converters produce ammonia, and ammonia is an even stronger fertilizer. "It is feeding them fertilizer in the most efficient possible way," he says. "It's drive-by extinction."

The invasive grasses had to be controlled before the butterfly could be successfully re-introduced. Goats proved ineffective, and burning couldn't be arranged. However, mowing, partially supported by grants from PG&E, has reduced the rye grass to the point where the *Plantago* has recovered, and the caterpillars have been re-introduced.

Now the caterpillars have pupated and are ready to fly free in the next few weeks. They have a brief and busy life, as they fly, mate, sip nectar from the serpentine flowers, and lay eggs at the base of the *Plantago*. And most die in less than a couple of weeks.

The hope is that enough eggs will survive to launch new generations of butterflies at Edgewood. A female lays 500 eggs; and they hatch in seven-to-10 days. "Only a tiny fraction survive," says Dr. Weiss. "If two survive, it replaces the population. If four survive, we've doubled it."

Dr. Weiss remains hopeful. We've got Edward I and Edwin," he says. "I'm hoping for Edith."

Information

For information on Dr. Stuart Weiss and the project to restore the Bay checkerspot butterfly to Edgewood Natural Preserve, contact his consulting firm, Creekside Center for Earth Observations, which he runs out of his home in Stanford Weekend Acres. Call 854-9732 or go to www.creeksidescience.com. Information is also available from Julia Bott of the San Mateo County Parks and Recreation Foundation at 321-5812, or go to www.supportparks.org