Butterfly experiment a prairie masterpiece in the making

September 28 2009, By William Mullen

After waiting for a warm, summery day, biologist Doug Taron and a handful of colleagues fanned out through a thousand acres of restored prairie this month, stroking plants with delicate paintbrushes in hopes of adding a little color next summer.

Their medium was not oil paint or watercolors, but dark little caterpillars that will turn into Baltimore checkerspot butterflies.

They dipped their brushes into cups, picking up one or two of the tiny, quarter-inch creatures on the tip, and transferred them just beneath the leaves atop slender stalks of turtlehead, a native wetland prairie plant on the grounds of Fermi National Accelerator Laboratory, near Batavia, Ill.

It is an experiment, said Taron, curator of biology at Chicago's Peggy Notebaert Nature Museum. If it goes according to plan, 20 or so of the caterpillars will gather in leaf litter at the base of the stalk as the plant dies and hibernate in a loosely spun web as a colony for the winter. In the spring, they will wake up, pupate into the chrysalis stage and emerge as adult butterflies.

"This is one of the flashier butterflies in this state," Taron said of the Baltimore checkerspot, a big, dark-winged butterfly with wings 2 to 3 inches across, spattered in patterned orange and white spots.

Taron and Vincent Olivares, the Nature Museum's director of arthropod conservation, are Midwest pioneers in trying to captively breed rare and

endangered butterfly species in large numbers and restore them to nature, hoping they repopulate natural areas where they have not lived in many decades.

The Baltimore checkerspot is not an endangered species, but because Illinois has less than 1 percent of the checkerspot habitat that it had 200 years ago, they are a rare sight, Taron said.

"What we're doing is a pre-emptive strike, taking action before it becomes a seriously endangered species," he said. "We'd like to keep it away from becoming endangered."

Taron and Olivares work closely with area butterfly enthusiasts and prairie and wetland restoration projects. As native plants are re-introduced to pockets of agricultural land, the pair also tries to assess what animals used to live there -- including butterflies -- and when possible restore those, too, as a part of the old, natural ecosystem.

In 1975, Fermilab decided to restore some of its thousands of acres to native prairie, a project that continues successfully to this day.

The hallmark of an ecosystem favored by the Baltimore checkerspot is the turtlehead plant, named for the shape of its leaves. Females lay eggs on the turtlehead plants in the summer because it is only that plant the caterpillars feed upon when they hatch from the eggs.

Turtlehead was not planted at first in the Fermilab prairie restoration. But a few years ago Tom Peterson, a Fermilab engineer and butterfly enthusiast, suspected they had been native to the area. He arranged plantings of the wetland species in appropriate areas and they flourished.

Peterson called in Taron and Olivares, and last June they collected seven wild female Baltimore checkerspots in McHenry County, taking them to

their museum lab.

"They produced the 1,758 larvae (caterpillars) that we are working with," said Olivares.

When they hatched as caterpillars less than an eighth-inch long, they had lots of fresh turtlehead leaves at the lab to feed on, brought in from a staffer's garden. Following their natural cycle, they ate through the summer, finally stopping as their metabolism slowed in preparation for winter hibernation.

"We are only putting about 250 out in the prairie for the winter," said Olivares, who was using a tweezers instead of a brush like his colleagues because, he said, he is "more proficient with tweezers."

"If we find a lot of them survive and mate next spring, we'll put even more out next year," he said.

The other 1,500 Baltimore caterpillars will hibernate under large, upended ceramic flowerpots on the roof of the museum. If they survive and thrive, as expected, Taron will release them all in June, hoping that they all become the foundation of a healthy, permanent population.

Since they began experimenting with butterfly restorations in 2003, Taron and Olivares have raised thousands of Silver-bordered Fritillary, swamp metalmark and Gorgone checkerspot butterflies in captivity. There are no textbooks on the topic, so they learn by hit and miss efforts.

At one time, trying techniques that work elsewhere in the country, Taron tried keeping local butterfly larvae in refrigerators through winter months, but ended up killing some of them. Then he hit on the idea of leaving them in the real Chicago winter on the museum roof.

"They need to experience the cold," he said, "but to do it in a way that they can survive the process."

Taron said he is pleased that Fermilab's turtlehead plants were near public hiking, biking and horse trails running through the grounds, so the Baltimore checkerspots will be easy for visitors to see. "They are beautiful," he said, "and will give people a lot of pleasure watching them."

___