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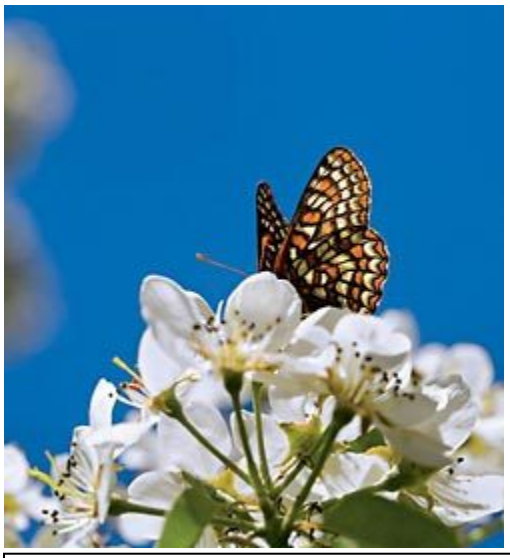
Butterflies aren't free

Saving the planet, one bug at a time

Cover Story by Paula Bock, July 15, 2007



BENJAMIN BENSCHNEIDER / THE SEATTLE TIMES

A Taylor's checkerspot butterfly sips nectar from a flowering crabapple tree in a secluded meadow near Corvallis, Ore. The butterfly is in serious danger of disappearing from the planet, primarily because of reduced habitat.

The Taylor's checkerspot butterfly is no bigger than a man's thumb, sports splashy orange and black wings, cavorts in sunny meadows ringed by oak and pine, tastes with its feet, nectars on wild strawberries, has a short (but splendid) lifespan of five to eight days, and is in imminent danger of forever disappearing from the face of the earth.

Fifty years ago, *Euphydryas editha taylori* fluttered in more than 70 meadows throughout the Puget Sound region, Willamette Valley and south Vancouver Island. Since then, 97 percent of the butterflies' upland prairie habitat has been wiped out — victim of agriculture, urban development, logging, invasive plants, pesticides, a Wal-Mart parking lot and drought.

They've vanished from British Columbia and all but 14 spots in Washington and Oregon. Of those sites, most have fewer than 50 butterflies.

But one rare patch of prairie, tucked behind a hummock off an old wagon trail outside Corvallis, is home to about a thousand Taylor's checkerspots, a quarter of the population on the planet.

So here, on the sweetest of spring days, comes Scott Hoffman Black.

He wears mirrored sunglasses, a black shirt, tough leather workboots and a polished cowboy belt buckle emblazoned with a fierce eagle. A marbled composition book peeks out of his back pocket. He carries a butterfly net. Altogether, an odd ensemble. The man looks like a CIA agent investigating Winnie-the-Pooh's Hundred Acre Woods.

In fact, the former log bucker and oil-rig worker with a master's degree in ecology is executive director of the Xerces Society, a nonprofit dedicated to protecting biodiversity through invertebrate conservation. It has 4,000 members in the U.S. and a dozen other countries.

Founded 35 years ago on behalf of butterflies, the Portland-based Xerces Society has since expanded to defend bees, slugs, beetles, flies, crustaceans, spiders and countless other creepy crawlies. Some of them are esoteric: jumping slugs that exist only in old-growth forests; the Madison Cave isopod, a primitive aquatic scavenger that lives in deep lakes in a single cave in Virginia; the Bruneau hot springsnail of Idaho, so small that a dozen would fit on your pinky.

Why bother with nature's small creatures?

The snail, though minuscule, serves as an indicator of water-quality trouble — "the first thing that's going to go," Black says.

And in the grander landscape, the animal kingdom depends on a foundation of insects. "Everybody loves salmon," he says, "but without the lowliest little flies in the stream, you won't have salmon because small salmon feed on small flies."

A study published last year in BioScience determined that native insects in America perform services worth nearly $58 billion a year. Bugs are food for wildlife that supports a $50 billion recreation industry; they pollinate $3 billion in crops; provide $4.5 billion in natural pest control and clean up grazing lands, saving ranchers some $380 million, according to the study by Cornell University entomologist John Losey and Mace Vaughan, the Xerces Society's conservation director.

And speaking of pollination, the recent mysterious honey bee colony collapse is *not* due to cellphone transmissions. That's an urban myth. What's true, Black says, is that hundreds of species of native bees are available for crop pollination — if only their habitat were properly managed. That means flowering hedgerows, fallow land, crop

diversification. Using a variety of bees for pollination means less threat to the food supply from a single mite, parasite or disease. "We need to diversify our portfolio of pollinators," Black says.

Outside of food security issues, rallying public support for bugs is a challenge.

"God bless the people working on wolves, owls and bears," Black says, "but once you get beyond butterflies, your job gets a lot harder. People just don't get it, and some of them have an aversion to insects. On the flip side, once people are engaged, it becomes easy because we don't need vast tracts of land for people to take action. Anybody can do something on a little bit of earth to improve pollination."

Don't use pesticides. Figure out which native plants are right for your habitat. (Not necessarily trees.) Leave your yard somewhat messy to attract butterflies . . . and snails and gnats and midges.

"We're equal opportunity. Anything without a spine, Xerces will work on," Black says — (ba-da-*bing!*) "except for politicians."

Protection of the butterflies and bugs has become as much about politics as it is about research on larval feeding habits.

Take the case of the tiny Delhi Sands flower-loving fly, the only fly on the endangered species list. In Colton, Calif., east of Los Angeles, city officials say the tiny insect stopped construction on a freeway interchange, nixed a $10 million baseball-field project and prevented development of prime downtown real estate because construction would have destroyed the insect's sand dune habitat. Annoyed City Council members, armed with giant fly swatters, have unsuccessfully lobbied to take the fly off the endangered list. (In Mexico, the politics of butterflies have escalated to the point of gunfights over logging in Monarch butterfly territory.)

Closer to home, it's hard being a bug under the Bush administration, Black says. Shaky species not already listed as endangered have a tough time getting federal protection.

The Taylor's checkerspot, for example, is considered endangered by Washington's Department of Fish and Wildlife, which formulated a conservation plan for the species and recommended it for federal protection. Still waiting — almost six years later.

So, as in other cases, Xerces works with private landowners, ranchers, farmers, golf courses, county parks programs and even the Oregon Zoo. Sometimes, Xerces suggests limited grazing; other times, it suggests no pesticides or selective logging or stream conservation.

Black, a native Nebraskan who has fought to return wolves to Idaho and protect rainforest in Borneo, is nonplussed about lobbying large landowners and ranchers about delicate fluttery butterflies. In his boots, bolo tie and trademark silver belt buckle

commemorating the bicentennial of the U.S. Constitution and Bill of Rights, he doesn't look out of place in cattle country.

"Everybody insists: It's my right to do whatever with my land," Black says. "I think a Bill of Responsibility might have been a good sister to the Bill of Rights."

Responsibility to save butterflies and bugs? Why should anyone care if a little-known species goes extinct?

"You can always use the logical reasons," he says. "It's potentially an important piece of this ecosystem. Food for animals. Pollinates certain plants. But we're really not sure what extinction of a single species means. This planet is so intricate, there's no way we can know. But what about the next species and the next and the next? Sooner or later, we're going to start to have repercussions.

"Humans have a unique place in this world. We're the only ones who can cause other species to go extinct. We can choose. We should choose to be stewards. Whether you believe in God or evolution, we should be taking care of what's here."

The keepers who care for butterflies in the Oregon Zoo's captive breeding program get a little punchy come spring.

That's understandable, especially this year, because more than 200 Taylor's checkerspots made it through a full lifecycle in captivity for the first time.

Temperature and humidity controlled, the butterfly lab sports a lava "larvae" lamp, three white refrigerators filled (in season) with the dormant larvae 6,000 Oregon silverspots, garage-shop warming lights, hundreds of lidded Dannon yogurt containers with grooves that allow just the right amount of airflow for captive caterpillars. "We ate a bunch of yogurt last year," says conservation zookeeper Mary Jo Andersen. In their net cages, stocked with flowering twigs and moist candy-colored sponges, the adult Taylor's checkerspots have a windowscape view of a pacing polar bear.

Raising rare butterflies in captivity is not straightforward.

You have to find and grow the right food for each stage of life for each species. Taylor's checkerspots, as caterpillars, eat Indian paintbrush and a non-native species with soft, wide leaves called English plantain. As adult butterflies, they sip flower nectar and Gatorade-soaked Q-tips. (Favorite flavor: melon. They don't like passion fruit.) Oregon Silverspot larvae feast on purple violets, two pots each. The Mardon skipper caterpillar will drop eggs only at the base of certain fine fescues.

It's a matter of trial and error, says zookeeper Melissa Arnold. "There's a fine line between desiccation and mold." That prompts the butterfly lab's theme song, "Fifty Ways to Kill Your Larvae," with apologies to Paul Simon.

Just throw 'em in the trash, Nash

Squish 'em on the head, Ted . . .

Prone to desiccate, Nate

Succumb to mold, Harold . . .

The first winter in captivity, Taylor's checkerspot larvae didn't survive in the refrigerator, a moisture-management issue. Last year, they successfully overwintered beneath upside-down terracotta pots under a zoo building overhang. They formed chrysalis sacs, metamorphosed and pupated into butterflies this spring. Like doting parents who hang onto their children's baby teeth, Andersen and Arnold saved the Taylor's molted exoskeletons, snippets that look like fuzzy black pipe cleaners.

For the Oregon Silverspots, all the work paid off. After raising and releasing them for six years, butterfly counts show captive breeding has kept that endangered population stable.

As for the Taylor's checkerspots, the Washington Department of Fish and Wildlife released 199 captive-bred large caterpillars near Olympia, at a site where they'd previously died out. By late spring, butterflies were flying — successful metamorphosis! Next year is what really counts. Will the zoo-bred Taylor's checkerspots be able to create another generation in the wild?

Say "Northwest," and most people flash on giant trees and salmon. But after the last Ice Age, there were thousands of acres of prairie in what is now Washington and Oregon. Today, almost all of it is gone.

"These butterflies," Black says of the Taylor's checkerspots, "are the poster child for what remains."

Most of the prairies went to agriculture because pioneers didn't need to cut down trees to plant crops. The lovely meadows were perfect for homesteads and, later, housing developments. Human suppression of natural fires allowed Doug fir and other seedlings to crowd the once wide-open oaky balds. Recently, invasive non-native grasses such as false brome, with tough, sharp-edged blades, have shouldered in from forest edges, taking over patches of wild strawberries, soft yarrow, fine fescue, Indian paintbrush and English plantain where the Taylor's checkerspots love to nectar, forage and lay eggs.

Scientists at Oregon State University found the jackpot Taylor's checkerspot meadow serendipitously almost a decade ago while searching for other butterflies. The hilltop prairie, no bigger than a baseball field, is part of Benton County's Fitton Green Open Space Natural Area. So when Black spotted encroaching false brome there, he worked with the Benton County Parks Department to beat it back. Last fall, when the larvae were dormant and the butterflies weren't flying, they carefully sprayed herbicide around the meadow's edges.

If they hadn't killed the false brome, Black says, it would've taken over the meadow in five to seven years. Taylor's checkerspots wouldn't be able to nectar or mate, and who knows whether they'd find suitable habitat elsewhere — or whether they'd "just wink out"?

After awhile, we run into two other butterfly guys: Lepidopterist Dana Ross and Al Kitzman, superintendent of the Benton County Parks Department. It's the first really warm sunny day during the six-week season when Taylor's checkerspots fly. Everyone's out.

A few years ago, Ross and Xerces ecologists studied aerial photographs to map the type of terrain the species seems to like: South-facing meadows ringed by forest and sprinkled with native prairie plants. A few of the likely meadows turned out to be prime Taylor's sites; they discovered another small butterfly meadow while exploring on foot.

As we hike to the latter, they talk about nearby private land that was recently sprayed by helicopter so the owner could plant pine trees for privacy. The owner didn't realize it was potential habitat for Taylor's checkerspots.

Black looks somewhat distraught. He twists and untwists his butterfly net around its pole.

"Luckily," Ross says, "they didn't do a good job. The strawberries seem green, and the English plantain will come back." Black makes a note: Talk with the landowner.

We reach the sloping upland meadow, dubbed "Fitton West." It's lush with English plantain, little strawberries, soft yarrow, lupine.

Kitzman: *It looks like there should be a whole bunch (of butterflies) here.*

Black, scanning: *But there's not.*

Kitzman: *I counted eight.*

Black: *I counted six.*

Ross: *I counted 12.*

Kitzman: *Nice!*

The lepidopterists decide to recount, zig-zagging up the hill, sweeping the air with their nets: A dozen Taylor's checkerspots.

They speculate on how much friendly habitat and how many Taylor's checkerspots are needed to maintain a stable population. They wonder how far the butterflies will fly to forage and mate. They talk about planting wild strawberry and other native plants to enlarge the border of Fitton West.

Last year was a downer for Taylor's checkerspots. Cold and wet. Then a spell of decent weather. Then more cold and wet, killing larvae and pupa that had already emerged. Suddenly, hot summer!, making for a briefer flight season because the English plantain shriveled up. "In nature, there are always natural fluctuations due to weather, parasites," Black says. "If it were a robust population, you wouldn't worry."

Problem is, it's not robust. And what about the earlier, longer, drier summers predicted by global warming?

Consider: 7,000 Taylor's checkerspots were counted in a meadow near the bombing range at Fort Lewis as recently as 1997. Then came El Niño and three years of drought that shriveled the butterfly's host plant. In 1998, on the same site, lepidopterists found only 100 Taylor's checkerspots. In 2000, 10. By 2001, zero. The butterflies have never come back.

Astounding how many living things flit, buzz and crawl on a sunny day in the meadow of a thousand butterflies. A yellow-faced bumble bee nests in an old mouse burrow. Baby spiders, by the hundreds, swarm out of pale green eggs. Gnats rise from grass tussocks. Tiny wasp nests pepper a wild rose.

The Taylor's checkerspots congregate on blossoms of flowering crabapple and flit low to the ground, three boy butterflies chasing one girl. There's a dance of wings, then a coupling, black fuzzy bodies connected tail to tail. A long stillness, a slight pulsing, finally a flutter of wings. Butterfly sex in a hidden meadow.

Within hours, the female will lay fertilized eggs on the underside of a tasty English plantain leaf. When the baby caterpillars hatch weeks later, they'll have food under their feet. But their parents will have already died because Taylor's checkerspots live as butterflies for only a week.

Oh, what a week.

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