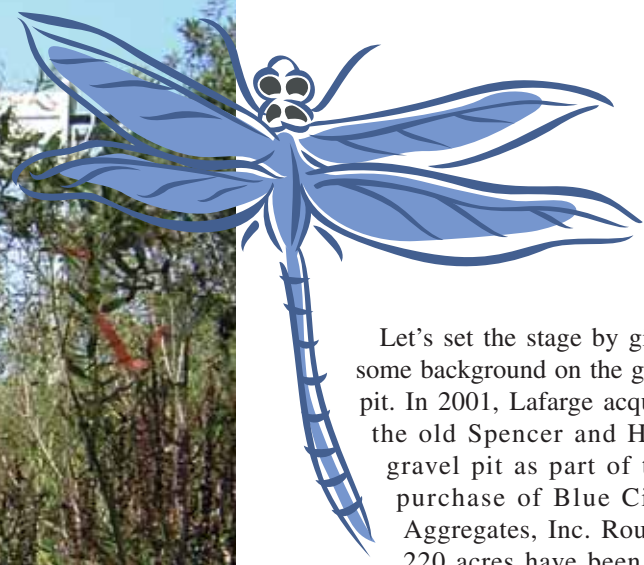


Bring Back the Butterflies: Innovative Reclamation using Endangered Species



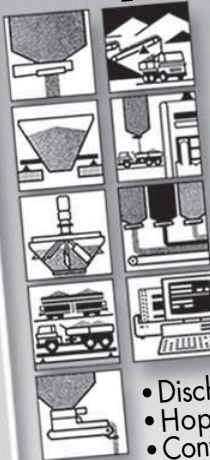
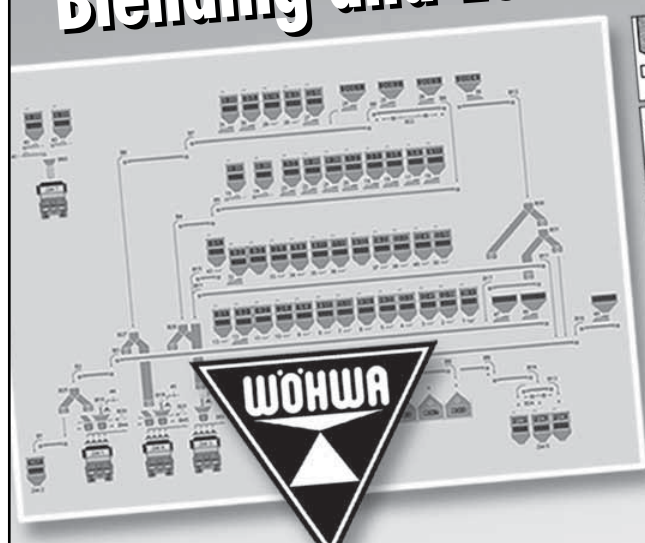
by Mike Meyers
Mined Land Reclamation Specialist
New York State Department of
Environmental Conservation

Reclaim a gravel pit to endangered butterfly habitat? Freelance biologist Rick White expected to be hit with a stick when he pitched the idea to Bill Poole, then Business Unit Manager for Lafarge North America, Inc., in Buffalo, N.Y., early in 2002. Amazingly, Bill liked the idea, especially the part about not having to spread 300,000 cubic yards of overburden across 155 acres of a depleted gravel pit in Elton, N.Y., about 40 miles southeast of Buffalo. With this agreement, the Butterfly Project was born.



Let's set the stage by giving some background on the gravel pit. In 2001, Lafarge acquired the old Spencer and Haley gravel pit as part of their purchase of Blue Circle Aggregates, Inc. Roughly 220 acres have been permitted by the New York State Department of Environmental Conservation (DEC) to be mined and reclaimed to agricultural use. Down the middle of the pit, previous operators had stockpiled topsoil, overburden and pond settlings in a roughly graded heap 1000 feet long, 300 feet wide and 50 feet high, known as the Big Deposit (BD) to the workers. A county road and Elton Creek, a high quality trout stream, separate the pit and processing plant from the active mine face.

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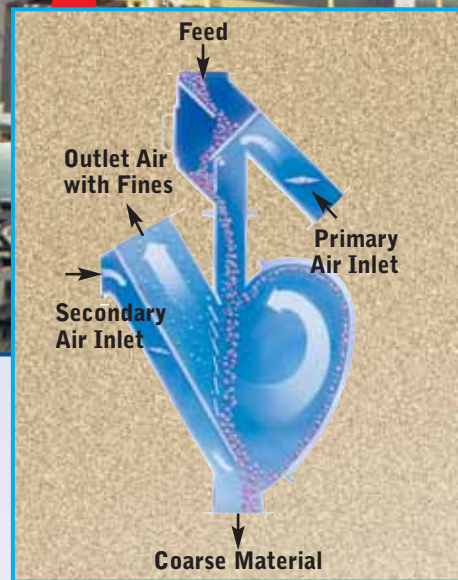
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Lafarge retained Rick White to come up with an alternative reclamation plan that was acceptable to DEC and less expensive than knocking down the BD and planting corn.

Rick and I visited the site several times during 2002 and engaged in old-fashioned arm waving, a time honored tradition among field scientists. With ecological benefit and education as the underlying themes, our goal was to maximize diversity and beauty; our strategy was to avoid fatal flaws; our prime directive was to have fun.

First, we chose warm season grasses to revegetate the regraded mine floor and faces. Without the benefit of topsoil or fertilizer, exotic cool season grasses and weeds will not out-compete the more slowly growing natives. Once established in two or three years, warm season grasses provide better food and cover habitat for a wide variety of grassland birds and are much more drought resistant than the cool season imports. “We might even attract Henslow’s Sparrows or Upland sandpipers,” mused White, an ornithologist, among other things.

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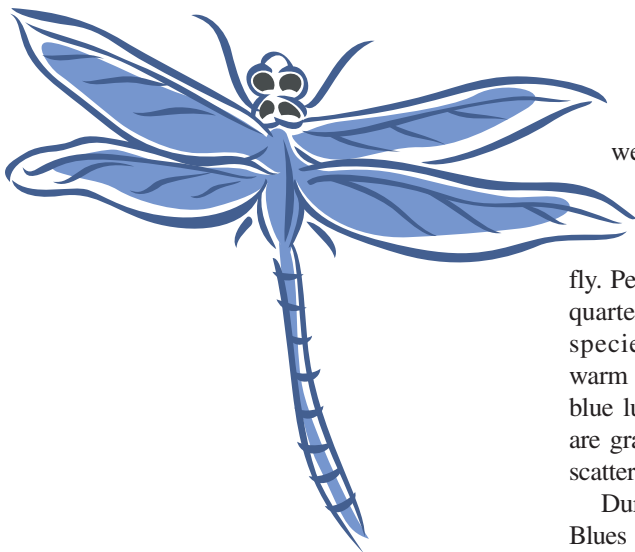
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While warm season grasses were a good start, it was not enough to relieve Lafarge from the requirement to spread topsoil. Enter the Karner Blue butterfly. Periwinkle blue, about the size of a quarter and on the federal endangered species list, Karner Blues thrive in warm season grass savannas, but only if blue lupines also grow there. Savannas are grasslands with 20-30 percent trees scattered through the site.

During the caterpillar stage, Karner Blues eat blue lupine leaves exclusively.



Since blue lupines like sandy, dry, sterile soils, the bottom of a gravel pit sounded like a good fit. An alternative reclamation plan began to form. Research to avoid fatal flaws commenced.

Karner Blues lay their eggs on lupine or on other warm-season grass plants. Since the adults eat nectar from flowering plants and two cycles occur per year, the seed mix must include warm season grasses, blue lupines and a variety of drought-tolerant wildflowers that will ensure nectar throughout the summer to feed each brood.

When mining is finally completed, the filled ponds will be reclaimed to wet meadow habitat and planted to birdsfoot violets to attract the Regal Fritillary, a butterfly declared threatened by the federal government.

Karner Blues also have habitat size requirements. According to Kathleen O'Brien, NYSDEC endangered species biologist, the population needs at least four or five lupine-rich breeding habitats of at least five acres each, connected by 600 to 1500 feet of warm season grasses, flowering plants and sporadic trees, a.k.a. the savanna.

"They're local to their habitat when they breed, and don't venture very far," notes O'Brien. "At least one hundred acres of habitat with firebreaks are needed to protect the population from a brushfire or other disaster."

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Luckily, the Lafarge site is big enough. Rick White generated a working plant list to guarantee flowers from spring snowmelt to autumn snowfall, maximizing diversity and beauty.

Lafarge modified the DEC mining permit to reclaim the site to butterfly habitat, as well as other habitats described below, and went to work.

Lafarge graded and seeded 40 acres in 2003, five acres in 2004 and five acres in 2005. Initial results are encouraging, but lupines are not being overly cooperative. Test plots this

spring may provide guidance. We're learning that warm season grasses grow better if planted in the spring, rather than the fall, and that broadcasting the seed, followed by dragging the seedbed, stimulates better growth. Annual rye helps provide cover the first year.

Seventeen acres of the fertile soils on top of the BD have been planted with 10,000 oaks, maples, white pines and blight-resistant American chestnut trees to create a representative forest native to New York. The chestnut seedlings came from the American Chestnut Foundation as a cooperative effort to restore the native species, virtually wiped out last century by an imported blight from China. Hopefully, the site is isolated enough to allow the seedlings to mature to fruit-bearing age without a blight attack.

Additionally, several species of nut producing trees, such as red oak, white oak, hemlock and red maple, will be planted on a previously revegetated settling pond to create squirrel hunting habitat.

So far, we have warm season grass savannas with some lupine rich patches of Karner Blue butterfly breeding habitat, previously reclaimed cool season grass stands with some wildflower rich patches, an oak-maple-white pine-American chestnut forest and squirrel hunting habitat. What's next? Why, shrubbery, of course.

Transition zones between the forest on the BD, the surrounding savanna and the undisturbed forest beyond the north pit rim will be planted with shrubs of varying heights. A wide variety of migrating songbirds, insects and mammals will eat, hide and hunt within the bushy border habitat. Dogwoods, serviceberry, arrowwood, elderberry, sand cherry and rugosa rose will add even more diversity and beauty to the project.

The arm waving was on a roll. Next came the settling pond system. Like most mature gravel pits, significant acreage is covered with silt ponds either filled or filling. When mining is finally completed, the filled ponds will be reclaimed to wet meadow habitat and planted to birdsfoot violets to attract the Regal Fritillary, a butterfly

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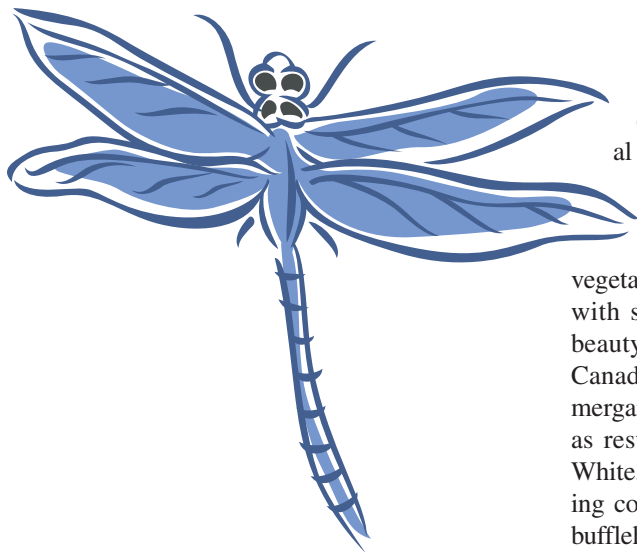
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Ponds with remaining open water will be planted with emergent and submergent vegetation, depending on water depth, with some water lilies thrown in for beauty. Migrating waterfowl, such as Canada geese, mallards and common mergansers, use the sterile ponds now as resting habitat. According to Rick White, "With sources of food and nesting cover provided, we hope to attract buffleheads, wood ducks, black ducks,

green-winged teal and pied-billed grebes."

Existing access roads around the settling ponds will be paved to provide handicapped-accessible trails around the reclaimed wetlands, through a portion of the Karner Blue and Regal Fritillary butterfly habitats, shrub transition zone, wildflower rich cool season grass stand and oak-chestnut forest.

Done yet? Nope.

Remember Elton Creek, the high quality trout stream that separates the original pit and processing plant from the active mine face? Lafarge will sell public fishing rights along 0.9 miles of the stream to DEC, as well as construct a parking lot, small park and handicapped accessible trail to a fishing platform over an excellent trout hole. Currently the parking lot and park are in. The trail and fishing platform will be completed as time allows.

How good is the fishing? In August 2004, DEC electro-shocked 1,200 feet of the stream, with help from Trout Unlimited volunteers. Some holes produced more than 50 brown and rainbow trout, including several browns more than 15 inches long. According to NYSDEC fishery biologist Scott Cornett, "At over 1,000 wild brown trout and rainbow trout per mile of stream, this section of Elton Creek ranks as one of the best in Western New York. In fact, the estimated biomass of rainbow trout (74 lbs/ac) is the highest we have ever measured in our region."

Not bad for flowing through the middle of an active gravel pit.

Future plans for Elton Creek include construction of several state-of-the-art instream structures to create even better trout habitat. According to Rick White, "The limiting factor is depth. Every place we have more than two feet of water, we have one or two big browns and a concentration of smaller fish."

Probably channelized by past land uses, the stream has only three pools in 1,200 feet, when it should probably have nine. Lafarge, White and the DEC will work closely with U.S. Army Corps of Engineers researcher Dave Derrick to design and construct seven or eight structures to encourage the

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The riparian zone along the stream banks has been planted with several hundred shrubs to increase food production, nesting habitat and cover for neotropical migrant songbirds and invertebrates to maximize diversity. Since the shrubs will blossom at various times, they will maximize beauty as well.

By now, you’re probably thinking one or more of the following thoughts: these guys are nuts; sounds good, but how much will it cost; why bother? Reasonable thoughts.

The warm season grasses cost three times more than cool season grasses, but will grow without topsoil or fertilizer. Bill Poole, now general manager, estimates that the present plan will cost Lafarge a third as much as bulldozing the BD into a cornfield. That will pay for an awful lot of grass seed, trees and shrubs.

If this project succeeds, a method will be created to bring a federally declared endangered species back from the brink of extinction. There are only a few thousand Karner Blue butterflies left. Gravel pits occur across their historic range from Maine to Michigan. Aside from the altruistic value of helping the planet, the mining industry can use the good public relations. As White points out, “The Karner Blue looks sexy on a T-shirt.” Adds Bill Poole, “Lafarge is very excited about this project because it makes sound business sense and is good for the environment.”

So far, Lafarge has worked with New York State Department of Environmental Conservation, U.S. Army Corps of Engineers, USDA Natural Resources Conservation Service, U.S. Fish and Wildlife Service, Cattaraugus County Soil & Water Conservation District, Cattaraugus County Department of Public Works, New York Governor George Pataki’s regional representatives and Trout Unlimited. The exemplary spirit of cooperation establishes a healthy foundation for future endeavors.

In September, the project won Lafarge’s Environmental Excellence Award for their North American Division. Also, Lafarge’s Butterfly Project recently won Pollinator Protector of the Year honors at the Wildlife Habitat Council’s 17th Annual Symposium in Baltimore.

We anticipate moving the first batch of Karner Blue butterflies onto the site in 2008, after the habitat is firmly established. For further information, please contact Rick White at (585) 933-6063 or Rick@eco-catt.com. ■



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