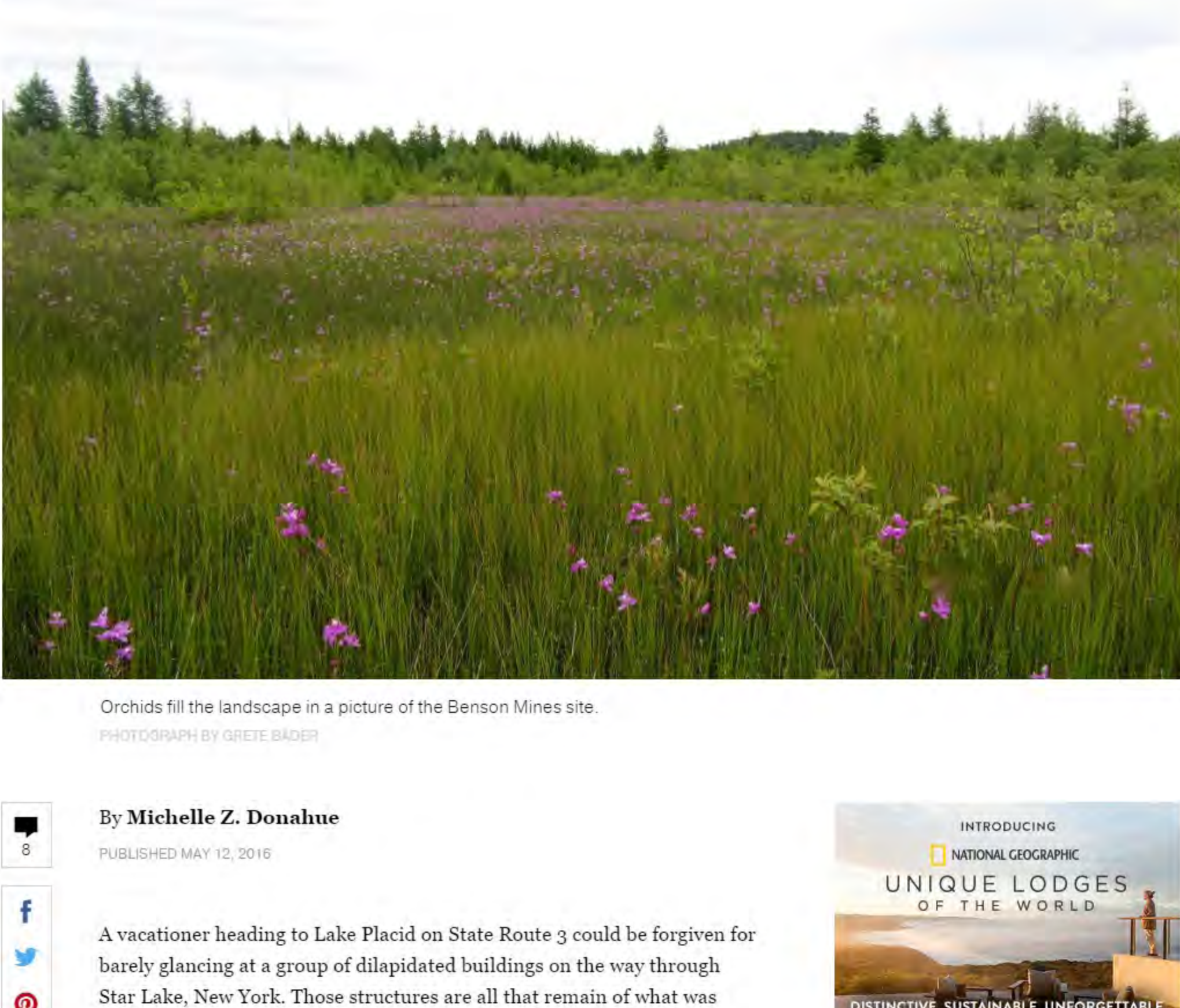


Millions of Orchids Are Blooming in an Abandoned Iron Mine

The plants are thriving in a wetland that sprang up after the mine was shuttered in the 1970s.

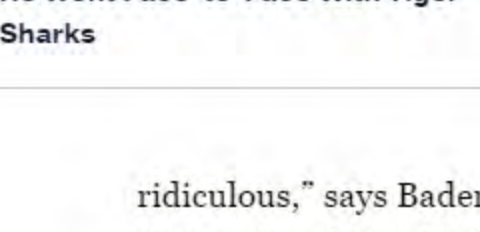


Orchids fill the landscape in a picture of the Benson Mines site.
PHOTOGRAPH BY GRETE BADER

By Michelle Z. Donahue
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A vacationer heading to Lake Placid on State Route 3 could be forgiven for barely glancing at a group of dilapidated buildings on the way through Star Lake, New York. Those structures are all that remain of what was once the world's largest open-pit iron mine.

But hidden in a wooded marsh directly across the street, curious road trippers would find an even more startling deposit: Millions of orchids have been thriving for over 60 years on the blighted industrial waste site.



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The colorful flowers are growing atop a wetland that formed at the base of a pile of tailings—crushed rock left over when iron ore is extracted from its surroundings. As part of her research, graduate student Grete Bader tallied up the plants within 20 predefined plots, and her work suggests wildflowers now cover the hundred-acre wetland.

That includes staggering amounts of native terrestrial orchids, such as the rose pogonia (*Pogonia ophioglossoides*) and the grass pink (*Calopogon tuberosus*). The site also boasts the state's largest collection of threatened pink shinleaf (*Pyrola asarifolia*).

"A million individuals of any given species is ridiculous," says Bader, who studies conservation biology at the State University of New York's College of Environmental Science and Forestry (ESF). "But I was seeing hundreds of individuals in each dense patch, and when you extrapolate that up, it's believable."

Fungal Friends

The former Benson Mines site, just 60 miles (96.5 kilometers) from the Canadian border, lies outside of the massive Adirondack Forest Preserve in upstate New York. Moose, beaver, otter, and deer are common denizens, while people are thinly scattered.

At its zenith in the 1940s, the Benson Mines pit supplied iron ore for government war efforts, shifting in the 1950s to supplying iron for steel used in the burgeoning auto industry. The relatively low iron content of the ore and the area's remoteness led to the mine's eventual decline, and it was shuttered in the 1970s.

But decades of activity resulted in the extraction of hundreds of millions of tons of waste rock. Roughly a million gallons of fuel oil spills also accumulated at the site over several decades but were only discovered in 1988. As late as 2004, fish caught in the nearby Little River were still described as tasting like fuel.

Bader, along with her advisor and longtime ESF professor Don Leopold, wanted to learn what it was about the tailings site that allowed so many orchids to grow so closely together in this seemingly inhospitable place.

Bader's investigation, the subject of her dissertation thesis, shows that plenty of microhabitats exist at the tailings site, allowing relatively clustered populations of orchids to develop. The site also boasts a variety of mycorrhizal fungi, which play a large role in making the orchids more resilient and able to grow together.

The fungi grow throughout the orchids' roots, increasing the plant's ability to absorb water and nutrients. In turn, the fungi benefit from the plants' photosynthetic energy. The fungi are also necessary for the dustlike seeds of these orchids to germinate.

"A lot of people think orchids are found in pristine habitats, but a lot of them are found in early successional habitats, after fires or something that opens up a clearing in the forest," Leopold says.

In essence, the disturbances at the site may be part of why the orchids are now thriving. "The water here has a unique chemistry that may be an underlying reason for the abundance of the orchids and fungi," Leopold says.

But why the orchids flourish in the wetland and not in nearby, virtually identical areas is a question that remains unanswered.

"It keeps me up at night," Bader says. Still, she adds, the site stands as a "testament to the ability of nature to heal itself."

Rocky Future

However, the orchids' future on the site is uncertain. An invasive species of reed called phragmites threatens to engulf the entire area. It now occupies almost nine acres and is expanding at a rate of 3 percent a year. Though the Benson Mines orchids appeared and thrived without human assistance, Bader says intervention is probably now required to maintain the site's rich diversity.

The tailings pile itself is also a precious economic resource. The millions of tons of granite-based aggregate rock at and around the mines can be used for a variety of purposes, including infill, pavers, kitchen counters, and fortification rubble for shorelines.

No new mining or blasting is anticipated, but a project to rehabilitate a rail line that once connected the mines to Carthage, New York, received \$9.9 million in funding from the state. Work is expected to begin later in May, with rail coming back online by next year.

Speaking for the property's owners, Benson Mine Trust, attorney Bernard Melewski says the company was unaware of the orchids' existence prior to the announcement by the researchers, who, to the best of anyone's knowledge, were not given express permission to survey the privately owned portions of the site.

Leopold notes that the site's boundaries lack signage and that he, Bader, and others thought the whole area they surveyed was public, county-owned land.

Mark Hall, a former elected official in the nearby town of Fine, has been involved in efforts to clean up the mine site and redevelop it for new industry. He says that the discovery of the orchids is wonderful, but limiting the use of the tailings site for the benefit of the plants is probably not a high priority for area residents.

"Not to say that we're not concerned with the environment, but we're an economically depressed area, and poor people need jobs," Hall says. "People are concerned about how they're going to put food on the table or shoes on their kids' feet."

Bader and Leopold both expressed the hope that the site might be annexed to the nearby Adirondack Forest Preserve, not only for the orchids' sake but also to retain some of the area's cultural history, in which the mine played an important role.

Judy Drabicki, the regional director for the state's department of environmental conservation in St. Lawrence County, says it's too early to say for sure if that's a possibility. And Benson has no plans to sell the property at this point.

"We're always happy to work with people if they're interested in selling, and we do prioritize what we think we can do to protect these areas," Drabicki says. "We may look at it and discuss with them, but I can't tell you what the outcome will be."

Bader says that no matter what happens to the Benson orchids, "the big-picture lesson learned from this site is that natural restoration is viable and could be considered for other places."

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Cynthia Rawlins 3 days ago

I love the fact that we have humans who care about our planet. we are short on the supply of stewards, yet we have an abundance of humans who are viewing life through "what's in it for me" glasses. How do all those poor people feed and shoe their children now? Perhaps a site like this could be photographed and the photos sold to raise money to buy the land and forever preserve the site. It makes me sick to think a person can think up ways to make money, but can't think of ways in which we can get along, which is a necessity this world is in dire need of more so than money.....

I'll volunteer to be on this campaign!

Like Reply

Michelle Hansen 5 days ago

We have a very similar situation at a failed driving range here in NH. Thousands and thousands of orchids! <http://www.dirrbotany.com/window-on-the-osspies/>

1 Like Reply

Alan Parrotte 3 days ago

Thank you for this story. I was born in Upper Lake and am very interested in the history of the area. I hope you will do more stories like this one.

Like Reply

Jennifer Ritter 5 days ago

Isn't this planet just amazing. Beat the hell out of it, and it survives.

Like Reply

Carter Fox Jr. 4 days ago

It is fascinating to find nature recovering, after man destroys it for a limited purpose! I saw a film titled "Abandoned America", where places around the country are either bouncing back to nature or deemed uninhabitable due to man's need for money! It makes me sick to think a person can think up ways to make money, but can't think of ways in which we can get along, which is a necessity this world is in dire need of more so than money.....

1 Like Reply

Alexander Hatund 4 days ago

Nature is really adaptable. There are iron-eating bacteria: https://en.wikipedia.org/wiki/iron_bacteria

Also, some fungus gets its energy from radiation.

Like Reply

Mark Friden 5 days ago

The entire concept of something as fragile and beautiful as a wild orchid thriving in what has been called "the worst brownfield site in the entire Adirondack Park" is mind-boggling. The fact that it is right here in my backyard is also astounding!

This entire site is indeed inside the Adirondack Park, but as privately-owned land, it is not part of the Forest Preserve. This may not have been clear to some readers.

Benson Mines has a very interesting history - one of boom and bust, that goes back over 100 years. As the Clifton Towner historian, I welcome any inquiries.

Like Reply

Lara Naylor 5 days ago

As Ian Malcolm so rightly said in Jurassic Park: "Life finds a way".

Like Reply