Native Plant Society of Northeastern Ohio

Unlikely Ties between Geology and Wildflowers

by Patrick Biliter

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When I was asked by a member of The Native Plant Society if there are any native plants that are restricted to certain rock types, an entire plant community restricted to rare habitats known as "serpentine barrens" instantly came to mind. Serpentine barrens are strange places. Underlain by mottled, greenish-gray, waxy-feeling, asbestos-bearing metamorphic rocks called serpentinites. Serpentinite originates deep in the earth. Once it reaches the surface, it weathers into utterly nasty soils loaded with iron, nickel, chromium, and cobalt (ouch!) Shunned by early settlers and farmers, these soils are toxic for most plants.

But "life will always find a way" (a quote, not from Charles Darwin, but from Stephen Spielberg's *Jurassic Park*). It turns out that serpentine barrens harbor dozens of extremely rare species of plants and insects that live nowhere else. The nearest serpentine barrens are in Pennsylvania and Maryland, of which a great example is the 1,900-acre Soldiers Delight Natural Environmental Areas in Baltimore County, Maryland. Beloved by The Maryland Native Plant Society, it harbors 39 species of rare, threatened, or endangered plants -- sounds like a great excuse for a long-distance field trip.

photographs courtesy of Ami Horowitz, Tom Sampliner, and Patrick Biliter

But that's cheating. What about Ohio? Geologically speaking, it's a boring place. Our state is covered in sedimentary rock and doesn't have any igneous or metamorphic outcrops at the surface. However, we do have one of the rarest plants in the world, the endangered Lakeside Daisy, *Tetraneuris herbacea*, which is completely dependent on a limestone

substrate for its existence. The only remaining naturally-growing community of Lakeside Daisies in the entire United States is in the Lakeside Daisy State Nature Preserve on the Marblehead peninsula in Ottawa County. But you don't have to go to Ottawa County to see living Lakeside Daisies. Thanks to the skill, ingenuity, and determination of botanists at the Holden Arboretum, you can find these are native plants blooming in late spring and early summer in Holden's Wildflower Garden.

The Lakeside Daisy is an attractive and delicate little member of the aster family that thrives in brutal conditions where few other plants can survive. Once occurring widely in the Great Lakes region bordered by Ontario, Ohio,

Michigan, and Illinois, it has become extremely rare due to habitat loss. It grows in shallow joints and crevasses in barren, hot, treeless limestone platforms, nearly devoid of soil and subject to drought. These barren rocky flats are called “alvars”, a word of Scandinavian origin, where such rare habitats are fairly common. But there are no alvars in Lake, Cuyahoga, Ashtabula, or Geauga counties, and precious little limestone. Our outcrops are limited almost entirely to shale, siltstone, sandstone, and

conglomerate. So how did the staff at Holden get them to grow here? They went through the trouble of building an artificial limestone outcrop in the Wildflower Garden, hauling in the boulders from the Lake Erie shoreline

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well to the west of Cleveland. Just to make sure, I put a tiny drop of dilute hydrochloric acid on an inconspicuous corner of the rock, and sure enough, it fizzled! The fizzle is from the reaction of the acid and the calcium carbonate in the limestone releasing carbon dioxide.

Other tell-tale hints are the tiny crinoid or sea lily fossils in the rock. The next time you visit The Holden Arboretum, take a short walk from the

Visitor Center to the Wildflower Garden to find the limestone outcrop; check out the beautiful little Lakeside Daisy flowers (or their leathery basal rosettes if they aren't in bloom); and find the fossils of the sea lilies (a marine animal related to starfish) that grew at the bottom of a shallow tropical sea that covered Ohio some 350 million years ago. It's a great example of where ancient geology and present-day botany come together.

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