



NYFA Newsletter

New York Flora Association - New York State Museum Institute

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Sandplain Gerardia – A Success Story on Long Island September 2003

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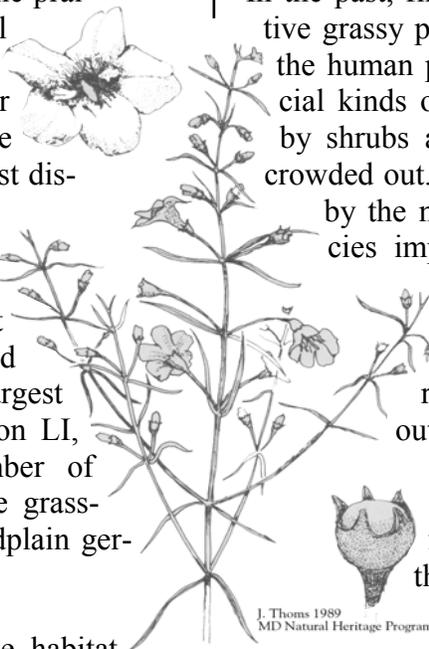
Sandplain gerardia (*Agalinis acuta*) is the only plant in NY State that is on the Federal Endangered Species list. It is a small annual related to snapdragons that grows in native grasslands along the coast of the northeastern US. Once 60,000 acres of native grassland provided habitat for plants such as sandplain gerardia, and its pink blossoms by the millions colored the prairies in the late summer. Now, all but 200 acres of those grasslands have been lost to development or grown up in brush, and by the 1980s sandplain gerardia had almost disappeared.

On Long Island, significant remnant populations remain only at Sayville, the Hempstead Plains, and Montauk. Sayville supports the largest population of sandplain gerardia on LI, with 85–95% of the total number of plants. Protection of the Sayville grasslands is critical to survival of sandplain gerardia on LI.

Sandplain gerardia needs a prairie habitat dominated by native bunchgrasses, especially little bluestem. It is thought that a hemi-parasitic relationship exists between sandplain gerardia and bluestem, with the gerardia getting nutrients

and moisture from the bluestem roots. This plant cannot be grown in your backyard; it needs high quality native grassland habitat. The best way to protect endangered species like the sandplain gerardia is to preserve and restore the ecosystems in which they grow.

In the past, fire, cutting and grazing maintained native grassy prairies, but these practices declined as the human populations grew. Without these special kinds of disturbance, grasslands are invaded by shrubs and weeds, and sandplain gerardia is crowded out. Sandplain gerardia is also threatened by the now common cotton tail rabbit, a species imported from Europe that can devour most of the gerardia plants before they can set seed. Most of the sandplain gerardia on LI have been surrounded by fences to keep the rabbits out.



J. Thoms 1989
MD Natural Heritage Program

The Nature Conservancy, with support from the US Fish and Wildlife Service, the NY State Dept. of Environmental Conservation and the Federal Aviation Administration has been working

for more than 15 years to improve sandplain gerardia habitat and increase the numbers of plants that appear each year. Dr. Marilyn Jordan, Conservation

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Scientist with The Nature Conservancy, has been tending sandplain gerardia on LI since 1992.

Keeping the area in a healthy prairie state is an ongoing process that involves prescribed burns by trained agency prescribed fire crews, cutting shrubs and mowing. Each fall mature seeds are collected by hand and resown, sometimes in totally new locations. As is true with most annuals, gerardia seeds can stay alive and viable in the soil for a period of time, possibly years. Scientists call that the soil seed bank. Growing the plants in greenhouses has not been effective, for it is labor and time intensive, and for an annual plant it offers no benefits over direct sowing in the field.

Total numbers of sandplain gerardia on LI have increased from about 500 in 1990, to 14,000 in 2001, and more than 80,000 in 2003. This progress is very encouraging, but most of these plants occur at just one site in Sayville. It may take five to ten more years before sandplain gerardia can be securely established at additional sites, and be considered secure on Long Island.

New York People

New York Plants

An update of who is doing what across the state

The Department of Biological Sciences, **University at Albany**, has a small cadre of ecologists, including two laboratory groups with students involved in botanical aspects of research projects. Most of the focus is on plant communities and ecosystems.

Among the students in **Professor Gary Kleppel's** laboratory group:

Ben Dittbrenner (bd2573@albany.edu), an M.S. student, has been examining a group of 40 forested wetlands, half in Orange County, half in Saratoga County. His goal is to determine whether the canopy tree community can be used to broadly predict understory plant composition and hydrological features of each site. This is part of a larger project to test the use of remote sensing technology for monitoring wetlands in New York State. So far, it appears that similarity in canopy composition is a weak predictor of whether sites share a similar understory, at least in the lower Hudson basin. Among northern sites, the relationship is considerably stronger, indicating that remote sensing may be useful for small-scale plant

community classification and monitoring in more rural areas.

Anna Hartwell (ah5718@albany.edu) is a doctoral candidate also studying wetland ecology. Her focus is on invasive plant species and their relationships to disturbance in the surrounding landscape. Using high-resolution hyperspectral imagery (a fancy term for low-altitude aerial photography in narrow wave bands), she is determining whether purple loosestrife (*Lythrum salicaria*) and common reed (*Phragmites australis*) can be distinguished and finely mapped on the basis of leaf reflectance signatures. A more fundamental question is whether effects on wetland communities and ecosystem properties can be demonstrated for either or both species. In addition to testing whether these invaders represent a form of ecological degradation, she is asking whether surrounding land use (i.e., anthropogenic disturbance) can be used to predict the observed invasion patterns.

Becky Shirer (rs5605@albany.edu) is an M.S. candidate studying a group of 40 emergent wetlands, again part of the larger project combining remote sensing and ground studies in Orange and Saratoga Counties. Her focus is on aquatic plant diversity and water quality in relation to surrounding land use. A major goal is to establish measurable benchmarks to detect wetland states (levels of relative quality or degradation) for conservation purposes. Although state and federal wetland regulations aim to protect most wetlands, detailed monitoring and assessment are rarely undertaken (especially on private land), so the relatively crude tools used in large-scale wetland mapping need refinement. Becky is using GIS tools to test whether relatively simple measures of vegetated upland buffer (e.g., width and continuity) can predict the ecological status of freshwater marshes and other emergent wetlands.

Among the students in **Professor George Robinson's** laboratory group:

Laura Audette (lcaudette@hotmail.com) is completing her Master's Thesis on urban watershed restoration. As part of her research, she has documented the significance of wetland and riparian vegetation in buffering water quality. She has calculated that Albany's Patroon Creek drains a watershed with 35% of its surface area in the "impervious" category. Water quality, as measured by major ion concentrations, improves in relation to the amount of marsh and forest cover upstream. In the process, we have characterized several

plant communities, including a rich native riparian forest in the eastern Albany Pine Bush, several remnant floodplain forests in various stages of degradation, and the Tivoli Lakes Preserve in northeastern Albany, with its diverse mix of natural and disturbed habitats.

Dan Capuano (capuano@localnet.com) is a new doctoral student also working on urban watershed ecology. The plant connection in his research is related to the ways in which forests act to modify contamination of streams by road salt constituents. High residual salt concentrations are being found in Lower Hudson tributaries, even in summer, indicating storage of soluble contaminants in soils and sediments. Dan will be working to establish how and where NaCl and other contaminants are stored, as well as studying their effects on wild plant and animal communities.

Cori Drummond (cdrummon@nycap.rr.com) is finishing her M.S. in a study of trophic interrelationships involved in Lyme disease. During her field studies, she documented woodland composition and physiognomy in 27 sites in the Albany Pine Bush, ranging in size from < 1 ha to over 400 ha. At the same time, she estimated densities of black-legged ticks and the frequency of their infection with the Lyme disease spirochete. Data collected on mammal communities, including work by Dr. Roland Kays (NYS Museum), round out the picture. Among other interesting results, Cori has detected a strong correlation between woodland type, tick densities, and infection rates. In simple terms, it appears that small Pine Bush fragments are full of invading hardwoods, with dense canopies and reduced understories, an abundance of grey squirrels, but few deer mice and low tick densities. Conifer stands (*Pinus rigida* and *P. strobus*) are associated with more open canopy, more mice and higher densities of infected ticks.

Hal Feld (alltheworld@hotmail.com) is a second-year M.S. student who has studied the invertebrate communities associated with purple loosestrife (*Lythrum salicaria*) in the Lower Hudson estuary. In contrast to its herbaceous associate, jewelweed (*Impatiens capensis*), loosestrife supports a richer and more abundant assemblage of snails, insects, arachnids, and other invertebrates. However, "supports" here is apparently in a very literal sense. Few herbivores or pollinators were observed using loosestrife. But its more rigid growth form apparently makes it

an attractive platform for mating, escaping tides, and other uses unrelated to its potential as a food source.

Jake Griffin (jg3786@albany.edu) is on the staff of the Institute of Ecosystem Studies in Millbrook, under the supervision of Dr. Gary Lovett. A first-year M.S. student, Jake has been studying the impact of beech bark disease on Catskill forest communities and ecosystem processes. As part of his work, he has relocated many of Dr. Michael Kudish's Catskill survey plots (conducted in the 1970's), and he is re-examining them to study changes in forest structure and composition. One of his more interesting findings is that the dramatic effects appear at mid-elevation zones. Also, in some locations, sugar maple (*Acer Saccharum*) is replacing American beech (*Fagus grandifolia*), but in others the sugar maples are also declining, perhaps in response to acid precipitation. Jake is now trying to factor in land use history, a potentially significant correlate of elevation.

Sean Madden (sm1871@albany.edu) is finishing an M.S. degree in watershed studies. Much of his field work has been in the Tenmile Creek drainage, a rural watershed in southwestern Albany County. Much of the area is covered by hardwood and hemlock-hardwood forests, mostly second-growth. Although contaminant levels are relatively low in this well-buffered stream, Sean has discovered some "leaks" in the forest buffer – small tributaries that drain substantial amounts of road salt into the main creek. He is now working on riparian vegetation mapping for the Tenmile Creek and other watersheds.

Also of potential interest to NYFA members, **April Boulton**, a post-doctoral Fellow at Villanova University, is studying ant mounds in Helderberg Mountain forests, with a little help from George Robinson. She studies a woodland ant, *Formica exsectoides*, a predaceous species whose nests form sizable mounds that are tended by workers. In old fields and early successional woods, the surface of each nest seems to be dominated by one or two weedy grasses or herbs (e.g., *Dactylis glomerata*, *Poa praetensis*, *Galium mollugo*, *Vicia craca*) April is asking whether these species are directly selected by the ants (e.g., by planting or removing other species), or whether the relationship is more indirect (e.g., related to ant contributions to soil nutrients).



How to Photograph Flowers

"Reprinted with permission from the New York Institute of Photography
Web site at <<http://www.nyip.com>>"

It's summer in many parts of the world. For those of us who spent the winter trapped inside, summer means, among other things, an irresistible chance to grab the camera and start capturing the many blooms of the season. Yet, how do you turn those shots of your favorite blooms into something special? "Flowers make great subjects," observes Chuck DeLaney, Dean of the world's largest photography school, New York Institute of Photography (NYI). "However, the trick to capturing this particular subject lies with understanding the very special nature of your subject." Here are some tips for great flower photographs from NYI.

First, walk around the flower to see how it looks with light coming from different directions. Watch carefully when the light (usually, the sun) is behind the flower, coming toward the camera. Often, the petals will glow with beautiful iridescence. This is called "backlighting" because the light is coming from the back of the subject (in this case, the flower). Backlighting is often the best type of lighting for translucent subjects like petals. However, don't despair if there is no sun. Gray and overcast days provide great opportunities for flower photography. The lighting is more even and there are no shadows. Rain turns colors more intense. You can even carry a spray bottle to simulate rain droplets or dew drops on even the sunniest of days. Even night photography is an option. You'll be surprised at how attractive a flower photo can be when illuminated by flash.

Second, to make a flower picture come alive, wait until something adds life to the flower - for example, a bee alights, or a spider crawls into it, or a hummingbird pays a visit. It takes patience, but it pays off if, for example, after you wait a few minutes, a butterfly lands on your flower. Shoot! The picture you get will be great.

Three, try interesting angles and backgrounds. Consider getting down low on the ground or shooting with the wide angle setting on your lens. Don't despair if the background behind the flower is unattractive. Try replacing it with a colored piece of paper or fabric. There are lots of different ways you can experiment when photographing flowers!

For the complete article on photographing flowers plus some great flower photos, visit the New York Institute of Photography Web site at <http://www.nyip.com>.

New York Flora Association Membership Form

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