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Editor's Note: The red-winged blackbirds and geese came back almost a whole month early to the North Country for the second year in a row, after which a series of nor'easters hit and enveloped us in snow and cold again well into April. Thus it was a pleasure to read Chris Mangels' article on a spring ephemeral and to dream of carpets of trilliums interspersed with ginger and violets. Joe McMullen has provided us with a recap of another successful winter plant identification workshop, and Scott Ward's article on technology and botany is quite enjoyable, as was perusing this year's list of field trips and workshops. Another spring and summer is on the way, and we hope to see you in the field!

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Spring corydalis (*Corydalis solida* (L.) Clairv.) naturalized in the Northeast and locally invasive in the mid-Hudson Valley of New York

by Christopher Mangels

Introduction

Nothing evokes an image of the early season rush of ground flora as well as the spring ephemerals, and no plant family perhaps better exemplifies this heterogeneous group than the fumitories and their relatives. The family Fumariaceae, recognized by some (mainly European) authorities as subfamily Fumarioideae in the Papaveraceae (Poppy family), includes many iconic springtime plants such as Dutchman's-breeches, bleeding hearts and others traditionally included in the genus *Dicentra*. Though slightly less well-known, the genus *Corydalis* in fact comprises the bulk of taxa in the family/subfamily, with roughly 440 species worldwide (Lidén 1996), many of which are now in cultivation.

Corydalis solida (synonym *C. bulbosa* [L.] DC.), Spring corydalis, is a dainty yet showy European species that begins flowering in mid-April. It has a long horticultural history, originating with ornamental and medicinal use in 16th century monasteries (Lidén & Zetterlund 1997). Although, as with many of the cultivated fumarioids, the exact time of its introduction to North America is uncertain (Tebbitt et al. 2008), *C. solida* ha been noted as an escaped or naturalized species only comparatively recently and sporadically. The earliest record of a non-cultivated population appears to date back to 1932, at the Arnold Arboretum, Boston, although it was purportedly first observed there in the 1920's (Palmer 1935). It was again mentioned as persisting 36 years later by DeWolf (1968). The late Leslie Mehrhoff, who deposited the first known vouchers in Connecticut from Litchfield (1992) and Tolland (1996) counties, later re-collected it at the Arnold Arboretum (2008), possibly in an effort to retrace the reports of Palmer and DeWolf (University of Connecticut 2017). *C. solida* is not in the Arboretum's cataloged living collections but continues to occur occasionally on the grounds (K. Port, Manager of Plant Records, pers. com.).

At the time of publication of the treatment of Fumariaceae for Flora of North America, *C. solida* had only been documented in three northeastern states (CT, MA, VT) and Ontario (Stern 1997), with all contemporaneous reports limited to five counties in New England and two provincial counties (Haines 2017, Sorrie & Somers 1999, Oldham 2017). Michigan Flora Online also denotes an occurrence in Washtenaw County (Reznicek et al. 2011). In New York state, Mitchell's treatment of Fumariaceae (1983) followed by the last state checklist (Mitchell & Tucker 1997) recognized only three species of *Corydalis* sensu lato (one of these now assigned to genus *Capnoides*) as native, with a fourth, *C. lutea*, as an exotic. As many readers of this newsletter probably know, a fifth species, *C. incisa*, also exotic, was added to the state flora after its discovery in 2005 in Bronx County by Michael Sundue (Atha et al. 2014). Within a brief

timespan, *C. incisa* has proven highly invasive and gone from nearly unknown in North America to the focus of local monitoring and removal efforts along with a national level risk assessment (Atha et al. 2014, PPQ 2017).

In April 2015, Nava Tabak collected a plant later confirmed by Daniel Atha (NYBG) as Spring corydalis in Victor C. Waryas Park, situated on the Hudson River in Poughkeepsie (*Tabak 195*, NY). The population was extensive and by all appearances adventitious. Subsequently, she found the species farther to the east at College Hill Park and heard reports of it growing along roadsides elsewhere around the city. In April 2017 I found an additional small (~8 square meters) colony along a newly paved rail trail in nearby Walkway Over the Hudson State Park. All these localities lie within a one-mile radius - excluding possible roadside outliers that have yet to be mapped - which seems to indicate spread from a single original planting. So far, however, no such source has been detected. Days before my 2017 finding, William Moorhead identified a large population, estimated at tens of thousands of flowering stems densely covering about 0.5 acre, along a roadside in Hartford County, Connecticut (a county record) that he first observed in 2016 but could not at that time (post flowering) confirm to species. Recently, two reliable but as yet unconfirmed reports of colonies in the town of Esopus, Ulster County have also been made.

Viewed collectively, these sightings present an equivocal accounting of the present status of *C. solida*. Since it assumedly has been fairly widely planted, the species may simply be exhibiting a localized, unchecked and heretofore largely unnoticed escape, in which case it would be considered naturalized, as defined by Richardson et al. (2000). Conversely, the apparent spontaneity of plants along roads and trails, along with the magnitude of several of the populations, strongly suggests an emerging invasive species, which entails the potential to spread over sizable areas and beyond short distances from parent plants (Richardson et al. 2000). Such behavior could conceivably be related to some recently acquired mode of dispersal, e.g., transport of diaspores via soil, proliferations of hybrid swarms like those reported in European parks and gardens (Lidén & Zetterlund 1997), or gradual adaption undergone after an earlier lag-phase (Mack 1985, Crooks & Soule 1996). While lag-phases seem to be a consistent feature of plant invasions and can operate on the decades-to-centuries time scale seen with this species (Caley et al. 2008), distinguishing a two-stage invasion (i.e. a lag-phase followed by an increase-phase) can be difficult, especially when data are limited (Crooks & Soule 1996, Aikio et al. 2010), as in this case. Since *C. solida* is both a horticulturally popular and relatively well-studied species, particularly among European biologists, there is, conveniently, a substantial body of information pertaining to its life history and ecology. A brief review of this literature sheds some light on possible factors relating to invasiveness.

Species description

C. solida is a hardy perennial species, recognizable in general aspect as a fumewort by its dissected leaves and proportionally large, dense racemes of numerous (5-25) small, spur-bearing, zygomorphic flowers (Fig. 1). Less salient though more diagnostic characters include tuberous roots (Fig. 2); stems bearing one or two (rarely three) ternately decompound leaves with a conspicuous lobed scale below the lowest leaf; and fruits that when ripe are elliptical in shape and approximately equal in length (15-20 mm) to the pedicels (Tutin et al. 1993). The presence of globose tubers distinguishes it from other species currently found in the Northeast flora, and its lack of sepals, longer pedicels and occasionally yellowish petals separate it from all North American native tuberous perennial taxa (Stern 1997). However, the species is highly variable, with four subspecies as well as many horticultural varieties and hybrids (Tutin et al. 1993, Lidén & Zetterlund 1997). For example, while the plants from Poughkeepsie and most New England localities have purplish corollas, corresponding to the puce color of the “weedy” form of *C. solida* subsp. *solida* most commonly found in Europe (Lidén & Zetterlund 1997), two of the specimens collected by Mehrhoff have corollas described as pink; white, red and salmon as well as blue-purple forms are also known. Coincidentally, *C. incisa* also has purple corollas. Confirmation therefore requires close attention to

all floral and vegetative features. Unfortunately, identification and detection are hampered by the species' ephemerality: the flowering period is brief (April-May) and all above-ground parts wither not long thereafter.

Figure 1. Plants at anthesis, 20 April 2017. Photo by W. Moorhead.

Geographic range, habitat, and ecology

C. solida occurs across most of Europe (Tutin et al. 1993), although it is regarded as naturalized in Scandinavia (Olesen & Ehlers 2001). Within the native range it is considered a mesophyte that primarily grows in the herb layer of nutrient-rich deciduous forests (Vandelook & Van Assche 2009). Since it is highly adaptable as a garden plant (Lidén & Zetterlund 1997) it can conceivably also survive under a broad range of conditions outside of cultivation, assuming adequate moisture and early-season light, including compacted or otherwise disturbed soils typical in urban situations, and perhaps dump sites or in fill material. Habitat descriptors used for New York and New England specimens, which include weedy woodland, grassy and wooded embankments and railroad rights of way, appear to support this notion.

In terms of growth habit, *C. solida* is classified as a clonal vernal geophyte. Individual roots are short-lived but annually renewed through a "mother and daughter" system of attached below-ground tubers (Klimes & Klimesova 1999). Each fully-grown tuber typically produces two flowering shoots, each of which develops a new tuber for the next season, thereby doubling the number of tubers each year (Lidén & Zetterlund 1997). These phenological stages are discrete and their timing is closely cued to temperature (Khordorova & M. Boitel-Conti 2013). While this modularity confers resilience and would account for the apparent longevity of some colonies, it requires time to establish: from the first-year seedling stage a flowering stem is often not produced until the fourth year in a greenhouse setting, and likely longer under natural conditions (Lidén & Zetterlund 1997). Also, because both growth and reproductive success in the current year are related directly to photosynthetic input from the leaves of the previous year (Olesen & Ehlers 2001), loss of foliage for any reason, such as mowing, might appreciably reduce future the vigor of a plant or colony.

The life strategy of *C. solida* involves an interplay of vegetative and seed reproduction. Like most

tuberous *Corydalis* species, it is an obligate outcrosser; thus, as with any self-incompatible perennial species, vegetative replication provides a hedge against low seed yield or failure, whether due to poor pollination or other factors. While the tubers function more for storage and maintenance than for dispersal under natural conditions, these are the commonest form of propagule in horticulture, and could as easily be involved in accidental human transport. Interspecific breeding is also not uncommon among the tuberous outcrossing species and hybrids are easily produced, e.g. the Baltic endemic *C. gotlandica* is the result of the cross *C. solida* x *C. intermedia* (Lidén & Zetterlund 1997). The flowers are structurally entomophilous; primary pollinators are generalist early bumblebees and honeybees (Denisow et al. 2014). A study of remnant populations in Poland found measurable seed production in insular urban patches, although there was year-to-year variability and output was generally pollinator-limited (Ziemiański & Zych 2016). Curiously, while Hansen & Stahl (1993) describe *C. solida* as a "prolific self-seeder" in gardens, and seed is available commercially (e.g., www.seedaholic.com), its seeds are sensitive to drying and cannot survive long storage, which has been noted as a limiting factor in cultivation (Lidén & Zetterlund 1997). Also, as discussed in Stolle (2004), *C. solida* and related species exhibit low seed "vitality", and *C. solida* reportedly exhibits a low early germination rate (5–10 %). Seeds display a nondeep simple morphophysiological type of dormancy (Baskin & Baskin 2001). Germination occurs in late winter and seedlings emerge in early spring after late spring dispersal in the previous year (Vandelook & Van Assche 2009). It probably does not form persistent seed banks (Vandelook & Van Assche 2009). Its fruits are capable of explosive dehiscence, which along with arillate seeds is a potential aid in dispersal (Fukuhara 1999). Despite the presence of an oily elaiosome, active dispersal by ants is reportedly not reliable (Olesen & Ehlers 2001) and may be infrequent even in robust native populations (Ehlers 2012).

Figure 2. Plants excavated in early fruiting stage, 11 May 2017, showing underground tubers. Photo by C. Mangels.

Invasive potential

Although *C. solida* has not displayed the sort of capacity for rapid spread reported for *C. incisa* (PPQ 2017), a number of its traits along with other evidence give cause for concern about invasiveness. To highlight, these include: 1) documented long-term persistence (approaching 100 years at one site); 2) observed high density and areal spread in at least two populations; 3) clonal as well as seed reproduction, with potential dispersal by tubers; 4) hardiness and edaphic adaptability; 5) reported hybridization and weediness within the native range; 6) known range expansion in northern Europe. If nothing else, these factors suggest that control may be difficult once the species is established. There seems to be no published experiential information regarding control options or evaluation of methods.

Call for new sightings and mapping of infestations (iMapInvasives)

Using some of the same evidence presented in this article, New York's Lower Hudson PRISM (LHP) of New York has provisionally assigned *C. solida* to the category of Tier 5, which includes species for which there is a general lack of available information for evaluating their invasiveness, but which nonetheless "may be exhibiting the potential to become invasive at locations within the PRISM" (LHP 2018). Pending more conclusive findings this species should probably remain in Tier 5. Meanwhile, gathering as much data as possible about this species, from within as well as outside the PRISM and across the region, will continue to be strategically important. All known populations should be mapped, assessed, and ideally monitored, while any unconfirmed and historical localities should be investigated. If any readers should find what they believe to be this species growing outside of a garden setting, or know of plantings that appear to be naturalizing, I would recommend sending a report to the iMapInvasives database (www.imapinvasives.org) that includes enough detail to support positive identification.

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Literature cited

Aikio, S., R.P. Duncan & P.E. Hulme. 2010. Lag-phases in alien plant invasions: separating the facts from the artefacts. *Oikos* 119**:** 370-378.

Atha, D., J.A. Schuler & S.L. Tobing. 2014. *Corydalis incisa* (Fumariaceae) in Bronx & Westchester counties, New York. *Phytoneuron* 2014-96**:** 1-6.

Baskin, C.C. & J.M. Baskin. 2001. *Seeds: Ecology, Biogeography, & Evolution of Dormancy & Germination*. Academic Press, San Diego.

Caley, P., R.H. Groves & R. Barker. 2008. Estimating the invasion success of introduced plants. *Diversity & Distributions* 14**:** 196-203.

Crooks, J. & M. E. Soule. 1996. Lag times in population explosions of invasive species: causes & implications. In: O.T.

Sandlund, P.J. Schei & A.Viken, eds. *Proceedings, Norway/UN Conference on Alien Species*. Directorate for Nature Management & Norwegian Institute for Nature Research, Trondheim, Norway. Pages 39-46.

Denisow, B., M. Strzałkowska-Abramek, M. Bozek, & A. Jezak. 2014. Early spring nectar & pollen & insect visitor behavior in two corydalis species (Papaveraceae). *Journal of Apicultural Science* 58(1)**:** 93-102.

DeWolf, G.P. 1968. Note on *Corydalis bulbosa*. *Rhodora* 70(782)**:** 296-298.

Ehlers, B.K. 2012. Geographic variation for elaiosome-seed size ratio & its allometric relationship in two closely related *Corydalis* species. *Plant Ecology & Diversity* 5(3)**:** 395-401.

Fukuhara, T. 1999. Seed & funicle morphology of Fumariceae-Fumarioidideae: Systematic implications & evolutionary patterns. *International Journal of Plant Science* 160(1)**:**151–180.

Haines, A. 2011. Flora Novae Angliae: A Manual for the Identification of Native & Naturalized Higher Vascular Plants of New England. Yale University Press, New Haven, CT.

Hansen, R. & F. Stahl. 1993. *Perennials & their garden habitats*. Timber Press, Portland, OR.

Khordorova, N.V. & M. Boitel-Conti. 2013. The role of temperature in the growth & flowering of geophytes. *Plants* 2**:** 699-711.

Klimes, L. & J. Klimesova. 1999. CLO-PLA2 - A database of clonal plants in central Europe. *Plant Ecology* 141**:** 9-119.

Lidén, M. 1996. New taxa of tuberous *Corydalis* (Fumariaceae). *Willdenowia* 26: 23-35.

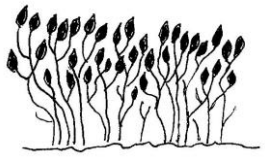
Lidén, M. & H. Zetterlund. 1997. *Corydalis, a Gardener's Guide & a Monograph of the Tuberous Species*. AGS Publication Ltd. Friary Press, Dorset, UK.

Lower Hudson PRISM. 2018. Invasive Species Categorization for the Lower Hudson. Unpublished list V1.3, dated 02/12/2018.

Mack, R.N. 1985. Invading plants: their potential contribution to population biology. In: J.White, ed. *Studies on plant demography: John L. Harper festschrift*. Academic Press, London. Pages 127-142.

Mitchell, R.S. 1983. *Berberidaceae through Fumariaceae of New York State*. Bull. No. 451, Contributions to a Flora of New York State V (R.S. Mitchell, ed.). New York State Museum, Albany.

Mitchell, R.S. & G.C. Tucker. 1997. Revised Checklist of New York State Plants. Bull. No. 490, Contributions to a Flora of New York State V (R.S. Mitchell, ed.). New York State Museum, Albany.
Oldham, M.J. 2017. List of the Vascular Plants of Ontario's Carolinian Zone (Ecoregion 7E). Carolinian Canada & Ontario Ministry of Natural Resources & Forestry, Peterborough, ON.
Olsen, J.M. & B.K. Ehlers. 2011. Age determination of individuals of *Corydalis* species & other perennial herbs. *Nordic Journal of Botany* **21(2):** 187-193.
Palmer, E.J. 1935. Supplement to the spontaneous flora of the Arnold Arboretum. *Journal of the Arnold Arboretum* 16(1): 81-97.
PPQ. 2017. Weed risk assessment for *Corydalis incisa* (Thunb.) Pers. (Papaveraceae) – Incised fumewort. United States Department of Agriculture, Animal & Plant Health Inspection Service, Plant Protection & Quarantine (PPQ), Raleigh, NC.
Reznicek, A.A., E. G. Voss & B. S. Walters. 2011. *Michigan Flora Online*. University of Michigan. Web. March 10, 2018. http://michiganflora.net/species.aspx?id=1889.
Richardson, D.M., P. Pyšek, M. Rejmánek, M.G. Barbour, F.D. Panetta & C.J. West. 2000. Naturalization & invasion of alien plants: concepts & definitions. *Diversity & Distributions* **6:** 93-107.
Sorrie, B.A. & P. Somers. 1999. *The Vascular Plants of Massachusetts: A County Checklist*. Natural Heritage & Endangered Species program, Massachusetts Division of Fisheries & Wildlife, Westborough.
Stern, K.R. 1997. *Corydalis*. In: Flora North America Editorial Committee, eds. Flora of North America North of Mexico. 20+ vols. New York & Oxford. Vol. 3, Pages 348-355.
Stolle, J. 2004. Biological flora of Central Europe: *Corydalis pumila* (Host) Rchb. *Flora* 199: 204-217.
Tebbitt, M., M. Lidén & H. Zetterlund. 2008. *Bleeding Hearts, Corydalis, & their Relatives*. Timber Press, Portland, OR.
Tutin, T.G. et al. 1993. *Flora Europaea, Vol. 1 (Psilotaceae to Platanaceae)*. Cambridge University Press, Cambridge, UK.
University of Connecticut. George Safford Torrey Herbarium, Virtual Herbarium. Accessed 2017—05-17.
van Groenendael, J.M., L. Klimes, J. Klimesova & R.J.J. Hendriks. 1996. Comparative ecology of clonal plants. *Phil. Trans. Royal Society of London B* 351: 1331-1339.
Vandelook, F. & J.A. Van Assche. 2009. Temperature conditions control embryo growth & seed germination of *Corydalis solida* (L.) Clairv., a temperate forest spring geophyte. *Plant Biology* 11: 899-906.
Ziemiański, M.A. & M. Zych. 2016. Pollination biology of the urban populations of an ancient forest, spring ephemeral plant. *Acta Societatis Botanicorum Poloniae* 85(2): Art. 3489, 15pp. http://dx.doi.org/10.5586/ asbp.3489



An Ode to Botany (and Smart Phones!)

By Scott Ward

As a botanist and naturalist, my adventures are now often accompanied by a smart phone. Sometimes I reflect on the sheer breadth of resources now available with a few swipes of the thumb: eBird, iNaturalist, Instagram, Facebook, floral atlases, Avenza maps, and now even plant identification apps such as PlantSnapp. I admit that I have yet to try the last one, perhaps out of reluctance, perhaps out of fear of feeling obsolete, or perhaps because I just don't have enough space on my phone.

I first started learning the botanical diversity of New York with a Newcomb's and Harlow in hand. There was no Instagram, there was no Flickr. Facebook had just come to be, and the internet still lived in a faraway land called "the computer". I was in my late teens, and I was about to witness a revolution unlike any other I had seen before: that of the smart phone. Smart phones would find their way into the hands of my friends, family, and eventually mine. Within only a few years, a majority of those around me had some sort of smart phone and even the few of my friends who reluctantly held onto their flip phones have since converted to the dark (and data-ridden) side. Now, if one were so inclined, he or she could learn almost the same amount of wildflower diversity with just a smart phone that I learned with field guides almost a

decade ago. By simply uploading a wildflower picture to any form of social media or an app like iNaturalist, you can have at least a genus-level identification in a matter of minutes. However, I must still express skepticism over posting a *Carex* or grass species onto Facebook without necessary magnification. For the more advanced botanists, smart phones may be an unnecessary addition to their well-develop arsenal of knowledge but having these botanists on social media to lend a hand to those just starting to catch the botany bug is of great help.

For those with storage issues such as myself, Google drive makes accessing personal databases instantaneous. On my drive sit numerous little bits of metadata related to phenology, GPS coordinates, and other important information from when I collected, witnessed, or photographed various species. And just dropping pins on Google Maps is a great substitute for when I don't have a hand-held Garmin in tow. When I messaged my friend Eric (a North Carolina resident) once on Instagram with questions about the NC endemic, *Carex lutea*, within moments he messaged back with information on its whereabouts, best times to view, and pictures he took at one of the extant sites. This was all done within moments and made the interaction even more personal. The ability to organize, store, and retrieve information is surprisingly beneficial when in the field or back at home with a plant press and the ambition to catalogue.

One ability I feel botanists now possess—more so than any generation before—is the capacity to connect with botanists from literally anywhere in the world, all on one single app: Instagram. And as I wind down from a busy summer, my Instagram feed still blossoms with suites of orchids, heaths, and unheard-of but fascinating genera. Or come March, before New York's leatherwoods have broken bud and the Hepaticas have sparked their violet fireworks, I know that Spring is only around the corner as my Instagram friends to the south begin to post their spring ephemerals. Even now, as I write this in January from my apartment in Rochester, I could be scrolling through my Instagram feed (admittedly with a sense of jealousy) to look for interesting botanical happenings in Florida, or on Facebook reading the *Florida Flora and Ecosystematics* page. And this goes for any time of year, whether I'm hoping to catch a glimpse of the botanical activities occurring in Singapore, northern Canada, Indonesia, Ecuador, or even just other parts of New York State.

Another great joy of Instagram is just learning so many new and random facts about species, some I've seen, and others I have never heard of. Or when I trip up on a species' identification, someone is usually there to correct or help me (always kindly, I might add). Even reaching out directly to regional botanists for helpful identification hints, species whereabouts, or advice on hot spots for botanical trips is a wondrous way to benefit from the vast knowledge of others. And having informative resources such as the NY Flora Atlas, Biota of North America Program (BONAP), or eFloras in my pocket makes botanizing that much more special, knowing that as I stand at one singular point on earth, marveling at its diversity, I can pull myself out into a powerful, more global perspective. I mean, how cool is it to know that this circumboreal species I currently marvel at is possibly brightening up some other botanist's day thousands of miles away? Or conversely, if this species is found almost nowhere else on earth, then what a time to appreciate such an opportunity to be in its presence!

Most of us Instagram botanists hail from far-reaching parts of the globe and so have never met in person, but that does nothing to hinder our appreciation for each others' discoveries. And while we all may have varying levels of "addictions" to our phones, there is also an equivalent level of education, appreciation, and nerdiness that exists on these apps. I mean where else are you going to get such themed days as #MonocotMonday, #TurionTuesday, (or even #SchizachyriumSaturday and #SedgeSunday if the week finds you too busy). These avenues for education and citizen-science are driving society into what E.O. Wilson described as the metamorphosis of "technology-based science." It is amazing to be alive at this confluence, but it is

also scary, as many public endeavors now yield a sea of silent faces, both young and old, staring deep into the glow of smart phones.

What kinds of repercussions exist for a society that no longer needs to be truly present? Will society look at this period as the beginning of A.P. (After Phones), and all times before as B.P. (Before Phones)? Perhaps botany is not the best example for these questions, but after all, am I certain to remember things like a species' range, conservation status, varieties, and hybrids if those answers are now just on my phone? Is this the end of true field studies, or is it merely a transition into a more technology-based era? These are all important questions that I must remind myself of on a continual basis, but I offer a few thoughts below.

Although the smart phone is an endlessly useful tool and great way to connect botanists on a global scale, it is no replacement for the knowledge, experience, and dedication to the craft of field botany or natural history. Nothing is more inspiring to a younger botanist than to spend time in the field with someone who instinctually recites the beautiful prose of their expertise by heart, with terms like stipitate-glandular, fimbriate, and suffrutescent rolling from their tongues with impressive ease. Knowledge of taxonomy and natural history brings us closer to the taxa we so dearly appreciate, and sometimes it can feel like our phones impede our instinctual connectivity with the natural world and the wonder it inspires. So maybe smart phones are here to stay, but hundreds of years of botanical tradition are too.

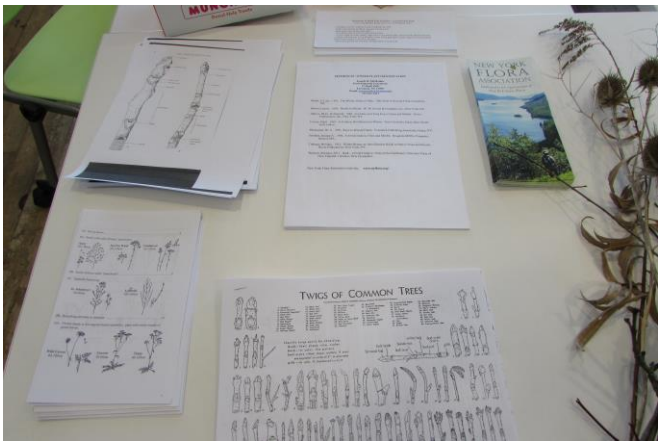
Top Left: Eric Ungberg (@ericungberg) photographs *Rhynchospora macrostachya* in the coastal plain of NC. Top Right: Steve Young (@newyorkflora) photographs *Anticlea elegans* at Lucky Star Alvar, Jefferson County, NY. Bottom: Alex Ebert (@everyplantever) photographs *Pedicularis lanceolata* at Mendon Ponds Park, Monroe County, NY. All three united on Instagram by their love of Botany. All pictures of botanists using phones taken by a botanist…with a phone.

Second Annual Winter Plant Identification Workshop

by Joe McMullen (joymcmullen2@msn.com)

On January 20, 2018, I led the second annual (hopefully) winter plant identification workshop. The workshop was again held at the Onondaga Lake Visitors Center just west of Syracuse. Workshop attendees were a diverse mix of nineteen individuals, including: students, professors, consultants, agency representatives, interested land owners, and even three from the Royal Botanical Gardens in Ontario, Canada. If you missed this year's workshop, I am planning to hold it again in January 2019.

As with the 2017 workshop, there was a classroom portion and an afternoon field trip. The classroom part included a review of terms used to describe winter twig parts, with twig samples provided for reference; a list of field guides; handouts of illustrations and keys; and a power point presentation. About 60 labeled specimens (woody and herbaceous species) were provided for review.



Some of the handouts provided at the workshop.

The afternoon field trip was held at the nearby Long Branch Park, which is a county-owned park at the north end of Onondaga Lake. Long Branch Park actually get its name from the long branches of large American chestnut (*Castanea dentata*) trees that once occurred there. Although the park is not large, there are nice stands of large oaks and hickories in the uplands and forested wetlands dominated by maples and ash. A large pignut hickory (*Carya glabra*) tree we encountered at the park was of interest to the group.

Many samples were collected to review at the workshop.

Perhaps weather during the 2017 growing season (very wet during spring and early summer, with a warm, dry late fall) resulted in the abundance of cone production on our evergreens, especially Norway spruce (*Picea abies*), and the persistence of leaves and fruits on many deciduous species going into the 2017-2018 winter season. Persistent (marcescent) leaves and fruit characterize certain species, such as American beech (*Fagus grandifolia*) and box elder (*Acer negundo*), respectively. Be careful when using persistent fruits to identify box elder from a distance, because the species is dioecious (two houses), with male and female flowers produced on different trees.

Surprisingly, staghorn sumac (*Rhus typhina*) is dioecious, shown here with female plants (left) and male (right).

Boxelder (*Acer negundo*) has V-shaped fruits that persist in winter, and glaucous branchlets.

Star-shaped flower receptacles characterize goldenrods (*Solidago* spp.).

We saw several oaks at Long Branch Park, including representatives of both the red oak and white oak groups. Oaks are generally characterized by clusters of buds at the tip of the twig; the red oaks have pointed buds, while the white oaks have rounded buds. We have about seventeen oak species in New York. The red oak group (red, black, pin, scarlet, etc.) is characterized by sharply pointed leaf lobes often tipped with a bristle, while the white oak group (white, swamp white, bur, etc.) has rounded leaf lobes and entire leaf margins. The wood of the two groups is distinctly different and the lumber is distinguished and sold separately. Red oak lumber often has a reddish or pinkish color and is less dense than the tan or cream-colored, heavier white oak. The difference in density results from structures called tyloses, which occlude the large vessel cells in the early wood of white oaks and make it ideal for making barrels to hold liquid, like whiskey.

Workshop attendees in the field.

Our pines have needles of varying numbers bound together at the base in bundles. Pitch pine (*Pinus rigida*) is the only pine in NY with three needles in a bundle.

Drooping branches of Norway spruce (*Picea abies*) readily identify it at a distance.

A New Look For *nyflora.org*

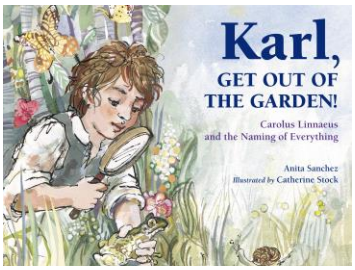
You may have noticed that an updated ***nyflora.org*** debuted in the last couple of weeks, after a brief spell of nonexistence (and much handwringing by the NYFA board). More than just a bright new look, the site incorporates new features to better serve and inform NYFA members.

Going forward, members joining or renewing via the new site will be prompted to fill out a membership form, much like the paper form that you have filled out in years past (and still can, if you prefer; a link to the form is at the bottom of the "Join" page). Members who have already paid dues for 2018 should log in and set up their membership account. This will ensure that mailing and e-mail addresses are current so you won't miss any correspondence. In addition, you'll gain online access to the current years' newsletters.

The new site is secure and NYFA will not use any of your personal info for anything but NYFA business, but if you have any questions or concerns about this, please e-mail us: info@nyfa.org. So take a look, tell us what you think, and keep an eye on ***nyflora.org*** in the coming months for more features and news!

NYFA Notes and Photos

Botanizing in the winter I: this is the mouth of the Saranac where it empties into Lower Saranac Lake. Note: skating, NOT skiing. Photo Dan Spada.



Frank McKnight wrote to let us know that the book *Karl: Get Out of the Garden!*, which he reviewed last year in NYFA Newsletter, has won some prestigious awards. Author Anita Sanchez earned the NYS Outdoor Education Association Arts and Literary Award at their Conference last fall, and the book will receive the John Burroughs Riverby Award on April 2nd at the Yale Club in NYC.

Botanizing in the winter II: the ice meadows on 9 Jan 2018; a mixture of broken surface ice, frazil ice and snow, after two weeks of cold. Photo Jerry Jenkins, copyright Northern Forest Atlas Project. If you haven't yet taken a look at Jerry's spectacular sedge (and other) photos, check out http://northernforestatlas.org/

NYFA Field Trips and Workshops for 2018

For more detail see: http://www.nyflora.org, Field Trips and Workshops page. Note: We are still in the planning stage for a sedge workshop with Tony Reznicek in June. Please check our website for an update.

28 April (Saturday), 10:00 am to 3:00 pm. FIELD TRIP: Flora of Jaycox Run (Wheelers Gully). (Livingston County). Leader: Kyle Webster.

20 May (Sunday). 10:00 am to 3:30 pm. FIELD TRIP: Late Spring Border Flora. (Chestnut Hill and/or Battenkill State Forests, Washington County). Leader: Rich Ring.

3 June (Sunday). 9:30 am to 4:30 pm. FIELD TRIP: Sonyea State Forest Flora. (Livingston County). Leaders: Ed Fuchs and Richard Cook. Joint trip with the Rochester Area Mycological Association and Niagara Frontier Botanical Society.

5 June (Tuesday). 9:00 am to 3:00 pm. FIELD TRIP: Valcour Island. (Near Plattsburgh, Clinton County). Leaders: Steve Young and Ray Curran. Joint trip with the Adirondack Botanical Society.

10 June (Sunday). 9:30 am to 3:30 pm. FIELD TRIP: Eastman Hill Flora. (Tompkins County). Leader: David Werier. Joint trip with the Finger Lakes Native Plant Society.

30 June (Saturday). 10:00 am to 5:00 pm. FIELD TRIP: Tug Hill Gulf Flora. (Tug Hill, Lewis County). Leaders: Steven Daniel and Anne Johnson.

14 July (Saturday). 1:00 pm to 5:00 pm. WORKSHOP: Learn 10 . . . Trees. (The Wild Center, Franklin County). Instructor: Dan Spada.

21-22 July (Saturday and/or Sunday). 10:00 am to 4:00 pm. FIELD TRIP: Harlem Valley Fens and Knolls. (Dutchess County). Sign up for one or both days. Leader: Hudsonia Biologist Chris Graham.

27-29 July (Saturday). 7:00 pm Friday to Sunday afternoon. WORKSHOP: Grasses of New York. (Bailey Hortorium, Cornell University, Ithaca, Tompkins County). Instructor: David Werier. Workshop co-sponsored by NYFA and the Bailey Hortorium.

4 August (Saturday). 10:00 pm to 1:00 pm. FIELD TRIP: Whiteface Mountain Flora. (Essex County). Leader: Steve Young. Joint with the Adirondack Botanical Society.

11 August (Saturday). 10:00 am to 2:00 pm. WORKSHOP: The Composite Family (Asteraceae) of New York. (Bailey Hortorium, Cornell University and Beebe Lake, Ithaca, Tompkins County). Instructor: Arieh Tal.

19 August (Sunday). 9:00 am to 3:00 pm. FIELD TRIP: Boating the Ausable River Delta. (South of Plattsburgh, Clinton County). Leader: David Werier.

25 August (Saturday). 10:00 am to 4:00 pm. FIELD TRIP: Wildflowers of Graham Mountain, Catskills. (Ulster County). Leader: Michael Kudish.

26 August (Sunday). 10:00 am to 2:00 pm. FIELD TRIP: Petal pedal along the Ausable River. (Route 9N Upper Jay to Jay, Essex County). Leader: Steve Young. Joint with the Adirondack Botanical Society.

8 September (Saturday). 10:00 am to 3:00 pm. FIELD TRIP: Hempstead Plains Flora. (Hempstead Plains Preserve, Nassau County). Leader: Steve Young and Greg Edinger. Joint trip with the Long Island Botanical Society.

14 September (Friday), 5:00 to 7:00 pm. WORKSHOP: Learn 10 . . . Wetland Plants (Woodlawn Preserve, Schenectady County). Leader: Steve Young. Joint with the Capital District Friday Field Group.

22 September (Saturday). 10:00 am to 2:00 pm. FIELD TRIP: Smartweeds of the Lower Hudson Region. (Rockland Lake State Park, Rockland County). Leader: Daniel Atha.

A photo just to prove that botanical learning does not need to come to a halt in the winter... these are the winter plant identification workshop attendees at Long Branch Park this past January.

Jackie Donnelly took this photo of an emerging *Corylus* flower on March 26th. See her blog Saratoga Woods and Waterways (http://saratogawoodswaters.blogspot.com/) for more delightful pictures and tales of the outdoors.

While perusing a favorite childhood book, I came across a poem that may be of interest to natural history buffs:

From the book "**the Moon is shining bright as day**, an anthology of good-humored verse selected, with an introduction", by Ogden Nash, 1953, pg. 91:

To Nature Seekers, by Robert W. Chambers

Where the slanting forest eves
Shingled light with greenest leaves
Sweep the scented meadow sedge
Let us snoop along the edge,
Let us pry in hidden nooks
Laden with our nature books,
Scaring birds with happy cries,
Chloroforming butterflies,
Rooting up each woodland plant,
Pinning beetle, fly and ant
So we may identify
What we've ruined by and by.

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Find them at www.nyflora.org and www.nyfablog.org

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We are only accepting credit card payments through PayPal at this time. If you would like to use a credit card, please use the link on our website: http://www.nyflora.org/join-make-a-donation/

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