



THE NATIVE ORCHID CONFERENCE JOURNAL



VOLUME 19.2



The Native Orchid Conference, Inc.

P. O. Box 2047 Boone, NC 28607-2047

Websites

www.nativeorchidconference.org
www.facebook.com/groups
www.facebook.com/page

Officers

President: Robert Sprague
bobsatcyndal@aol.com

Vice-President: Rick Burian
bur.rick@att.net

Secretary: Janice Yates
jyates4110@gmail.com

Treasurer: Richard Barmore
rebster61@yahoo.com

Board Members at Large

Cathy Bloome /catbloome@sbcglobal.net

David McAdoo /ncorchid@yahoo.com

Judy McCrary /jmccray2190@gmail.com

Mark Rose /rmarkrose_2000@yahoo.com

Ben Rostron, Ph.D. /ben.rostron@ualberta.ca

Dave Taft /orchiddave99@gmail.com

Case Grant Committee Chair

Doug Martin, Ph.D. /dofrma44@gmail.com

Publicity Chair

Linnea Hanson /linneachanson@gmail.com

IT/Communication Chair

Kyle Langford /klangfor@verizon.net

Webmaster

Amy Levensgood /all70@dejazzd.com

Technical Advisor

Paul Catling, Ph.D. /brenda.kostiuk@gmail.com

Editor

Chelsea Kieffer /chelseakieffer@gmail.com

THE NATIVE ORCHID CONFERENCE JOURNAL

VOLUME 19, ISSUE 2 : TABLE OF CONTENTS

FRONT COVER	<i>Platanthera</i> × <i>canbyi</i> Photo: Robert Sprague
3	Foreword By Robert Sprague
4-10	<i>Platanthera cristata</i> , <i>P.</i> × <i>canbyi</i> , & <i>P. blephariglottis</i> — When is a Keyhole Triangular and Why Does it Matter? By Ralph Graeser & David Taylor
11-17	Valmont Bog Update- Part 1 Orchids and Backhoes By Robert Sprague
18-22	<i>Isotria verticillata</i> , The Large Whorled Pogonia By David Taft
23	2022 Case Fund Grant Recipients
BACK COVER	<i>Isotria verticillata</i> Photo: David Taft

Summer 2021 was anything but normal. Public health concerns impacted almost everything we do as native orchid enthusiasts... little or no air travel, a cancelled Symposium and very few group activities. One exception however, was the NOC's response to Covid-19. In March we launched a series of virtual presentations which have consistently attracted nearly 100 viewers. We also sponsored mini field trips which found small groups of curious (vaccinated) attendees searching for orchids in California, New Hampshire, Maryland and New Jersey. It was on one of those trips that we met Ralph Graeser.

Ralph is a new NOC member. Originally from Switzerland, he now works in Germany for a pharmaceutical firm which sent him on temporary assignment to Connecticut (he does get around). Accustomed to admiring and photographing *Ophrys*, *Orchis*, *Dactylorhiza* and other European orchids, Ralph is now like the proverbial “kid in a candy store.” Traveling in the field with Ralph is quite a treat. Everything he sees is new to him and his enthusiasm is infectious. It was on an NOC field trip that he “discovered” several new (for him) *Platantheras* and was inspired to share the experience via an article which appears in this issue.

In early May Ralph and his wife Chizuko embarked on an extraordinary, cross-country tour of the United States. They will be seeking orchids (as well as other plants and wildlife), visiting iconic natural wonders and taking in some popular tourist attractions. Ralph has promised a trip report which will be featured in a future edition of the Journal.

-RES

PLATANThERA CRISTATA, *P. × CANBYI*, & *P. BLEPHARIGLOTTIS*—
WHEN IS A KEYHOLE TRIANGULAR AND WHY DOES IT MATTER?

By Ralph Graeser (r.graeser17@gmail.com) & David Taylor (drtscratch@yahoo.com)

This article is the result of two great days spent together observing orchids in southern New Jersey and then multiple weeks trying to figure out what we saw...

Platanthera is the most diverse orchid genus in the United States. Flowers range from small to large, green to spectacular white, orange or purple, and plain to playfully fringed. To make things even more interesting, some species hybridize to generate additional variation. While this is often just a beautiful experiment of nature, some of these hybrids may propagate to form stabilized hybrid swarms with the potential to eventually evolve to a new species.

Hybrids cannot form between just any two species. Co-occurrence, related genetic make-up, overlapping flowering season, shared pollinators, position of the pollen on the pollinator...these are only some of the prerequisites necessary for hybrid formation. *P. cristata* and *P. blephariglottis* are among the species between which hybrids may form. This pairing is known as *P. × canbyi* (Ames, 1908; Luer, 1975), named after William M. Canby, who first collected such a hybrid from Delaware in 1878.

How does one determine whether a plant is an actual hybrid rather than a random, perhaps location-specific, variant of either parental species? The amount of light and moisture as well as soil composition and other growing conditions may cause morphological aberrations which can create doubt. Ideally, the offspring will exhibit features not evident in either of the parents. However, William M. Canby's description of his discovery was "Intermediate in color, size of flowers, openness of panicle, etc. between the two [parental] species." While suggestive, this does not provide us with tangible classifiers that would allow for an unambiguous identification of this hybrid.

In a cross between an orange and a white species, color would spring to mind as an obvious discriminator. Mix orange and white and you'll end up somewhere in a pale orange/yellow color range. However, according to Luer, while the color of *P. cristata* "...is usually a deeper orange than that of *P. ciliaris*, ... light yellow color is encountered in small, few-flowered seedlings as well as in some isolated colonies" (Luer, 1975). Luer's reference to *P. ciliaris* acknowledges the fact that it may occur in the same geography and habitat as the two aforementioned species. As you will see, *P. ciliaris* must be considered when attempting to identify *P. × canbyi*.

A pale yellow form for *P. cristata* has been described as f. *straminea* by P.M. Brown (Brown, 1995). Moreover, an entirely new species with pale yellow flowers, *P. pallida*, which resembles *P. cristata*, was described for Long Island, NY (Brown, 1992). There is considerable debate, however, as to whether this is a true species, an extreme of *P. cristata*, or a stabilized hybrid swarm that became independent of its parents (neither *P. blephariglottis*, nor *P. cristata* are found anywhere near that site). So, color does not seem to work as a reliable differentiator.

What about height? *P. blephariglottis* var. *blephariglottis*, the Northern White Fringed Orchid, tends to be taller than *P. cristata*, the Orange Crested Orchid, and it bears noticeably larger flowers – but a massive overlap in the height range (8-80 for the former vs. 18-90 cm for the latter) as well as lip length (6-13 × 2-9 and 4-8 × 4-8 mm (efloras) is described for the two species. Thus size on its own is not really decisive. That said, on the two NJ sites discussed here, the White Fringed Orchids were 40-50 cm, considerably taller than the probable Orange Crested Orchids at 20-25 cm, except for one unique plant described below.

Spur length? Both *P. blephariglottis* and *P. ciliaris* have spurs that exceed the length of the ovary, whereas the spurs of *P. cristata* are considerably shorter, reaching only about half of the length of the ovary. The spur of *P. × canbyi* is somewhat intermediate and approximates the length of the ovary (Luer, 1975; Brown, 1992).

Finally, the nectary opening. While both *P. blephariglottis* and *P. ciliaris* have round openings that may extend to form a round keyhole, *P. cristata* tends to have a triangular or keyhole shaped opening. Table 1 summarizes the above morphological differentiators.

Table 1*	height	color	spur length (vs ovary)	spur opening
<i>P. blephariglottis</i> var. <i>blephariglottis</i>	8-80 cm	white	longer	round
<i>P. ciliaris</i>	24-100 cm	orange	longer	round
<i>P. cristata</i>	18-90 cm	orange	half	triangular or keyhole-shaped
<i>P. cristata</i> f. <i>straminea</i>	18-90 cm	pale yellow	half	triangular or keyhole-shaped
<i>P. × canbyi</i>	n/a	pale yellow	similar	triangular or keyhole-shaped

*compiled from Brown, 1992; efloras; Luer, 1975

In this report we focus on two sites on the Atlantic Coastal Plain of New Jersey, and three (among several) *Platanthera* species, subspecies, and hybrids that are found there. Site 1 is a bog which shows obvious signs of natural succession. Site 2 is a somewhat drier pine/oak woodland. The entrance to site 1 is very wet, with many *P. blephariglottis* var. *blephariglottis* plants (e.g. Fig. 1a), and one tall, orange-flowered *Platanthera*. This plant had rather large flowers with triangular nectary openings and spurs that were roughly equal to the ovaries in length. Despite bearing considerable resemblance to *P. ciliaris*, the latter two characteristics suggest this may indeed be a *P. × canbyi* hybrid (Fig. 3a). As a comparison to how closely this plant resembles *P. ciliaris*, an exemplary plant from another location is shown (Fig. 1d).

One of the authors has been observing this site over many years, and recorded a plant similar to the potential *P. × canbyi* hybrid found during this trip in previous years, growing ca. 3 m away (Fig. 3b). Lacking appropriate molecular analysis methods, however, it is currently impossible to determine whether the plant found during this trip is an offspring of that previously observed plant, or a second instance of a similar hybridization event.

In an adjacent, slightly drier, wooded area, many smaller plants, likely *P. cristata*, were found. Some were orange, others rather pale yellow. Like the typical orange plants, the pale-flowered individuals had spurs that were shorter than the ovaries, and triangular or round keyhole spur openings, indicating that no hybridization with *P. blephariglottis* had occurred (Fig. 1b/c). As such, it seems most likely that these plants are merely pale forms of *P. cristata* (f. *straminea*). For an overview, see table 2.

Table 2		height*	color	spur length (vs ovary)	spur opening	species (?)
Site 1	1. a	tall	white	longer	round keyhole	<i>P. blephariglottis</i>
	1. b	short	orange	shorter	triangular	<i>P. cristata</i>
	1. c	short	pale yellow	shorter	triangular keyhole	<i>P. cristata</i> f. <i>straminea</i>
	3. a	tall	orange	similar	triangular keyhole	<i>P. × canbyi</i>
	3. b	tall	orange	similar	triangular keyhole	<i>P. × canbyi</i>
Site 2	2. a	tall	white	longer	round	<i>P. blephariglottis</i>
	2. b	short	orange	shorter	triangular keyhole	<i>P. cristata</i>
	2. c	short	pale yellow	shorter	round keyhole	<i>P. cristata</i> f. <i>straminea</i>
	2. d	short	pale yellow	shorter	triangular keyhole	<i>P. cristata</i> f. <i>straminea</i>
	3. c	tall	pale yellow	longer	round	<i>P. × canbyi</i>
	3. d	short	pale yellow	similar	triangular keyhole	<i>P. × canbyi</i>

6 *in the absence of proper measurements, the plants are characterized either as 'tall', i.e. white-fringed-like, or 'short', orange crested-like

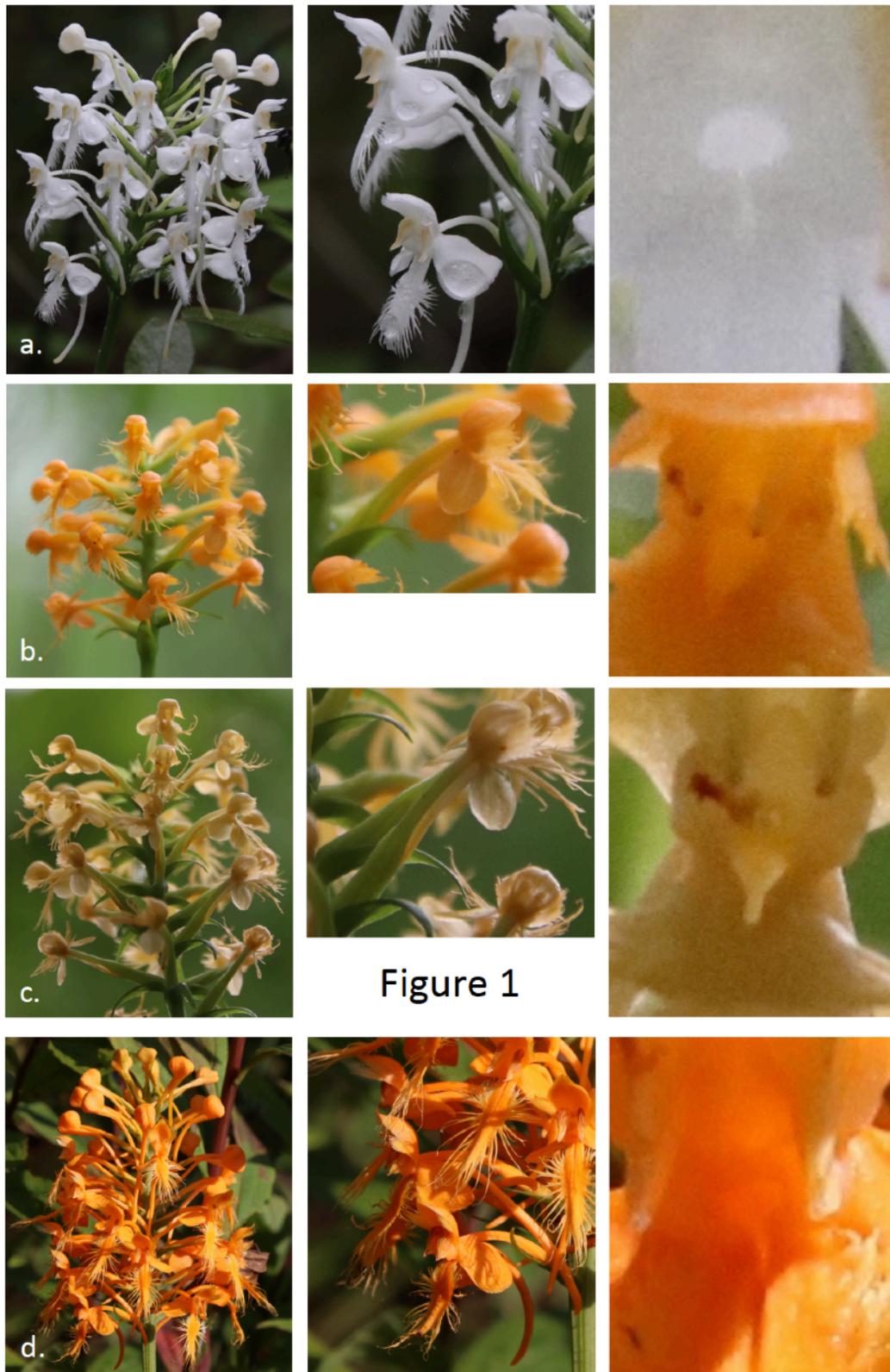


Figure 1. Racemes, spur/ovary lengths, and spur openings of selected parental plants from site 1 (a-c), and an example of a *P. ciliaris* plant from an unrelated site (d). The left column shows the raceme, middle column spur/ovary lengths, and the right column spur openings.

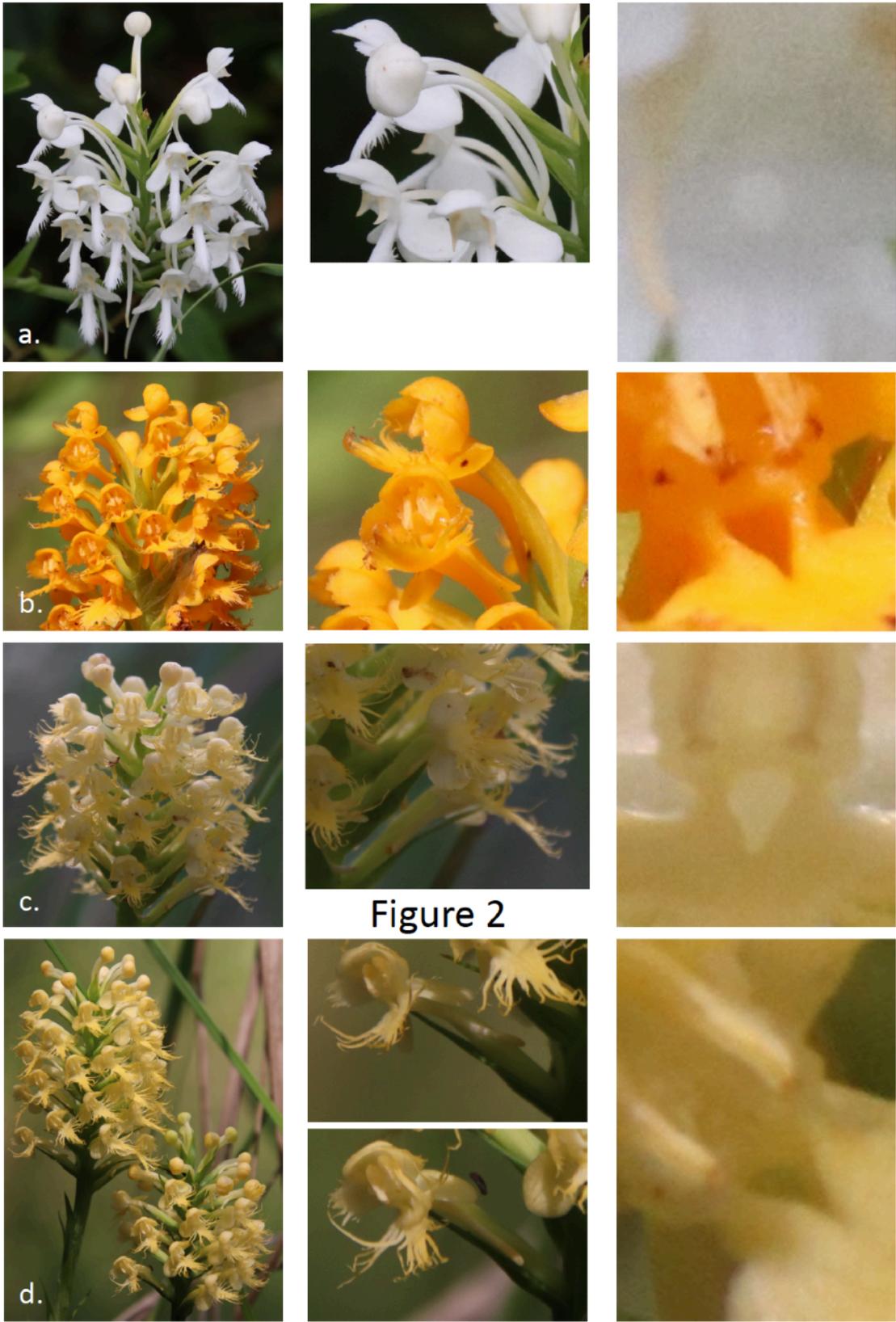


Figure 2

Figure 2. Racemes, spur/ovary lengths, and spur opening of some selected parental plants from site 2. The left column shows the raceme, middle column spur/ovary lengths, and the right column spur openings.



Figure 3. Racemes, spur/ovary lengths, and spur opening of selected potential *P. × canbyi* hybrid plants from site 1 (a/b) and site 2 (c/d). The left column shows the raceme, middle column spur/ovary lengths, and the right column spur openings.

In site two, on a small patch of ca. 100m², white, yellow, and orange *Platanthera* plants were found. While the taller, white, and shorter, deep orange plants were most likely *P. blephariglottis* and *P. cristata* (Fig. 2a/b), respectively, the yellow flowered plants were more ambiguous. Some were a uniformly lemon yellow, while others showed a lot of white (Fig. 2c/d; 3c/d). Were they *P. cristata*, f. *straminea* or *P. × canbyi*? Applying the above criteria, two plants with short spurs, round keyhole spur openings, and yellow flowers may be tentatively classified as *P. cristata* f. *straminea* (Fig. 2c/d; Table 2). The remaining two plants discussed here, shown in figure 3c/d, were less obvious. One was very tall, with creamy yellow flowers, long spurs, but round spur openings (Fig. 3c). The other one was shorter, but with longer spurs than *P. cristata*, and triangular keyhole spur openings (Fig. 3d). The latter two plants may represent *P. × canbyi* hybrids, or, the former, potentially a backcross with *P. blephariglottis*. For an overview, see table 2.

Ultimately, these morphological analyses, while fun, will always leave room for discussion and will rarely give a definitive answer. For an unambiguous determination, molecular characterization would be required. Fortunately, for these two sites, this is underway.

Being able to see these plants, however, is a privilege as is. The intermediates clearly suggest that evolution is still underway and that selection by growth advantages through habitat, pollinator, climate etc. will eventually tell which of the newly generated plants will make it and propagate and which ones were just experiments of nature.

References

- Ames, O. 1908. *Rhodora* 10: 70.
- Brown, P.M. 1992. *Novon* 2(4), 308-311
- Brown, P.M. 1995. *North American Native Orchid J.* 1(1): 12
- eFloras (2008). Published on the Internet <http://www.efloras.org> [accessed 22 February 2022] Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA
- Luer, C.A. 1972. *Native Orchids Florida* 151.
- Luer, C.A. 1975. *Native Orchids of the United States and Canada (excluding Florida)*, New York Botanical Garden, New York

Orchids & Backhoes



Backhoes and endangered orchids may seem like strange bedfellows. However, mutual understanding and a little cooperative planning can go a long way toward enabling this unlikely duo to coexist. Consider the Valmont Industrial Park (VIP) in West Hazleton, PA.

Once a thriving manufacturing and warehousing site that dates back to the mid-1950's, VIP experienced its share of ups and downs as the economy fluctuated during the last seven decades. Now home to such companies as Johns Manville, Atlantic Packaging, Bemis, Henkel, Silgan Closures and others, VIP remains an important part of the local economy. It will surprise most people to learn, however, that VIP is under scrutiny by the Smithsonian Environmental Research Center (SERC) and Longwood Gardens. SERC of Edgewater, MD and Longwood Gardens of Kennett Square, PA are conducting research as part of a years-long project the ultimate purpose of which is to preserve rare plants ... yes, in an industrial park!

Several factors helped set this stage (this is a review for those who missed the 2011 NOC Symposium):

1) Coal Formation and Tectonic Upheaval -

When our planet was very young, it's likely that Hazleton was underwater. Giant ferns and other plants thrived in the vast swampland that was part of the prehistoric landscape. As these plants collapsed and decayed they formed peat which became lignite and finally coal. Buried deep underground, it was thrust closer to the surface (and within reach of the mining industry) by the same tectonic forces which formed the Appalachian Mountains.

2) Coal Mining and the Industrial Revolution -

High quality anthracite was discovered near Hazleton in 1818. Miners, many from Eastern Europe, arrived in droves. Steam power, generated by coal, helped drive the Industrial Revolution as an agrarian economy gave way to manufacturing. From 1820-1950 coal reigned supreme, the railroad industry boomed, factories prospered and Hazleton thrived.

3) Conversion to Oil -

By the end of WWII, however, coal had lost favor and was supplanted by oil. Hazleton's economy collapsed and unemployment skyrocketed. The determination and ingenuity of locals merged to combat this reversal of fortune. VIP was a result of their effort and its history is well documented. Development of the park included installation of significant infrastructure ... railroad and electrical power-line rights-of-way (ROW) were created, roads were built and most of the property was developed.

4) The Ice Age -

A small area in the center of the park remains undeveloped. Situated at a slightly lower elevation, and composed of several parcels, it is part woodland and part wetlands that are overtopped by electrical transmission lines. It's likely that another prehistoric force helped shape this area. The most recent glacial ice to reach the Hazleton area occurred approximately 25,000 years ago during a time known as the Late Wisconsin period. When glaciers retreat, they often leave behind topographic features called "kettles" or glacial lakes. These depressions in the landscape fill in over time to become bogs and eventually forest. It is thought that the wet depression in VIP is a remnant bog originally created by glaciation.

5) Natural Areas Inventory

The Pennsylvania Natural Heritage Program maintains extensive records of plant and animal species that occur within the state. A Natural Areas Inventory, updated in 2006, included what is now known as the Valmont Bog. Extensive field work, conducted in large part by Ann Rhoads, PhD. from the University of Pennsylvania's Morris Arboretum, revealed several threatened or endangered species in this most unlikely place. Among them were several native orchids.

Armed with that inventory, the North Branch Land Trust (NBLT) embarked on what would become a multi-year odyssey to acquire and preserve the property. Numerous organizations and agencies were involved in this project, among them, the Native Orchid Conference (NOC) headquartered in North Carolina. NBLT volunteers and citizen scientists who monitored the bog were aware of five orchid species on the property. The NOC took an interest and helped lobby the state to provide funds for the acquisition of fifty-nine acres which were finally purchased by NBLT in 2012. Unfortunately, the fifty-nine acres surrounds but do not include, the bog, which remains under the ownership of the utility company. Continued observation by the NOC confirmed the presence of five additional orchid taxa in the area ... an extraordinary occurrence on such a small parcel. Several additional rare plant and insect species are also present.

Valmont's orchids include Pink Lady's-slipper (*Cypripedium acaule*), Grass pink (*Calopogon tuberosus*), Lily-leaved Twayblade (*Liparis liliifolia*), Loesel's Twayblade (*Liparis loeselii*), Club-spur orchid (*Platanthera clavellata*), Ragged Fringed Orchid (*Platanthera lacera*), Nodding Ladies'-tresses (*Spiranthes cernua*), White Fringed Orchid (*Platanthera blephariglottis*) and Yellow Fringed Orchid (*Platanthera ciliaris*), which typically produces orange, not yellow, flowers. But wait ... there's more!

Astute readers will have counted just nine orchids above. Number ten is what set Valmont Bog apart and catapulted it to celebrity status in the world of botany. Many native plants (including some orchids) naturally hybridize. A few things are necessary for hybridization to occur: 1) The parent species must be closely related such that their physical structure allows for pollination by the same pollinator or pollination mechanism; 2) bloom times must overlap; and 3) physical separation between the parent species must not exceed the normal range of pollinators. The White Fringed and Yellow Fringed orchids are closely related; in fact, to the casual observer they differ only in color. Both are present in the Valmont Bog, both are pollinated by swallowtail butterflies and a sphinx moth and their bloom times overlap by approximately two weeks.

The hybrid of those two species is called *Platanthera* × *bicolor*, individual examples of which are occasionally found at widely separated locations in coastal plain habitat, especially in the Carolinas. The hybrids exhibit various colors that are a mix of the white and orange parents. At Valmont, their numbers are staggering. Hybrids back-cross with the parents or cross with each other and the result is a wide array of color combinations known as a hybrid swarm. Only one other comparable example of this phenomenon (with those species) is known but it's on an inaccessible military installation in Georgia. Thus, the scene is set for serious research at Valmont.



White Fringed Orchid (*Platanthera blephariglottis*) [left]
and Yellow Fringed Orchid (*Platanthera ciliaris*) [right]



Platanthera × *bicolor*

Valmont Bog is not without issues ... it is, after all, in a power-line ROW. It's bisected by a dirt road which Pennsylvania Power and Light Corp. (PPL) uses to access its equipment. Erosion of that road has covered orchids. An occasional dirt bike or ATV gets buried in the bog and invasive species (e.g. Crown Vetch and Ox-eye Daisy) have infiltrated the area. In 2015 routine spraying of herbicide accidentally killed hundreds of orchids. Road maintenance covered the last known Loesel's Twayblade two years later. Periodic replacement of PPL's poles is a major project which has the potential to obliterate what little bog remains. Worst of all, the bog is trying hard to become a forest through the process of natural succession (more about natural succession in Part 2).



Poorly maintained service road resulted in erosion which covered orchid habitat [left]
Invasive species have infiltrated the bog [right]



Careless use of Aminocyclopyrachlor killed hundreds of orchids in 2015 [left]
Routine road maintenance covered the last known Loesel's Twayblade in 2017. Cooperative planning, such as that recently implemented, can prevent such damage [right]

There is good news, however. PPL has become an active participant in the crusade to protect the orchids. When work is necessary in the ROW, PPL collaborates with NBLT and NOC in order to determine how best to accomplish their objectives without harming the plants or sensitive habitat. For example, in October 2019 PPL contacted NBLT to divulge plans for replacing wooden poles with huge steel structures and they sought guidance. The new poles were to be placed literally within inches of orchids and heavy equipment would have been driven across the bog. NBLT contacted NOC and a meeting was arranged.

As the unofficial local NOC rep, I drove to Hazleton with visions of the aforementioned backhoes dancing in my head. I was pleasantly surprised to be met by a delegation of PPL personnel which included two engineers, a construction manager, the ROW administrator, an environmental compliance manager and a public relations representative. These folks were serious! I was shown blueprints and we toured the site. By identifying specific plants in the proposed work area, I was able to recommend minor changes to the plans. PPL cooperated by preparing revised drawings that moved the work area away from the orchids. Subsequent visits revealed that the entire bog had been cordoned off with construction fencing and the work area was confined to the existing dirt road. Signs designating "Wetlands" and "Endangered Plants" were erected as an additional safeguard. The project was completed in 2020 with no apparent impact on the orchids.



Work area cordoned off to protect sensitive orchid habitat [left]
PPL fenced the wetlands and restricted heavy equipment from damaging the wetland [right]



These large steel poles were erected without damaging orchid habitat.

Why all the attention; what's the big deal, anyway?

It is obvious (or at least it should be) that enormous benefit accrues to individuals and entire societies from a healthy natural environment. In addition to providing purely aesthetic value, a stable environment is essential for the health and well-being of our citizens and our economy. Serious threats to our environment are many, varied and well-known. There are those who disregard science or who simply don't care but, I suspect there are many more who do. The effort at Valmont provides clear evidence, albeit on a small scale, that conservation and economic stability need not be at odds. Mutual understanding and cooperative planning does, in fact, work. If applied on a larger scale, the example provided by Pennsylvania Power and Light, North Branch Land Trust and the Native Orchid Conference could play an important role in assuring that some of our natural heritage will survive to benefit future generations.

ISOTRIA VERTICILLATA, THE LARGE WHORLED POGONIA

By David Taft, orchiddave99@gmail.com

It is mid-May on the terminal moraine, and on this delightful spring day, it is hard to conceive that I am standing where the Laurentide Ice Sheet stopped more than 20,000 years ago. My feet are firmly planted on ancient materials dragged here by glaciers.

Part of what melted out of this massive wall of ice is now known as Long Island, New York.

Today, the sun is shining on the season's final oak flowers as they drift down from the canopy. They have completed their mission; the world — including a few female oak flowers — is now dusted with pollen. These are familiar woods, where I occasionally stop to convalesce when politics are too much, or when the 23 million other residents of the greater New York metropolitan area seem to be traveling on the same road I am. Early mornings are best here, when the light is soft and dew brightens the world, but I frequently stop in the evening on my way home. At this time of year, young leaves are expanding to form a light-blocking canopy as trees jockey for sunlight. And despite the lengthening days of spring, the forest floor seems measurably less bright with each passing day. Trailing arbutus (*Epigaea repens*) has already finished blooming, as has Trout Lily (*Erythronium americanum*); Skunk Cabbage (*Symplocarpus foetidus*) is already a leafy mass, living large where wet spots remain in these dry, sandy woods. Warblers are everywhere, and just today, there is the adrenaline producing drumming of a Yellow-billed Cuckoo (*Coccyzus americanus*) well off in the distance.

For just a few moments, I consider how fortunate I am to be the one heading deeper into these dappled woods. I am carrying a bottle of water, a camera, and a dog-eared sketch pad, with the utter privilege of the time and means to sit and consider the beauty of all this.

I have always loved Long Island's hardscrabble heath woods. The gift of several glaciations, soils here are sandy, extremely acidic and very well drained. The dry ridges are the home of countless Pitch Pines (*Pinus rigida*), occasional old groves of White Pine (*Pinus strobus*) and a wide variety of oaks (*Quercus* spp.). There are often Red Maple (*Acer rubrum*) swamps sunken into the poorly drained clefts between the slopes, and even occasional White Cedar (*Thuja occidentalis*) stands clogged with sphagnum and insectivorous plants. A blanket of blueberry and huckleberry (*Vaccinium* and *Gaylussacia* spp.) and other ericaceous species hide some genuine treasures on the drier slopes. I know of few places as productive for *Cypripedium acaule*, the strangely beautiful Moccasin Flower. The less showy, but equally exotic Large Whorled Pogonia (*Isotria verticillata*) can also be found here sporadically. This latter orchid, with its odd growth habit and spidery flower has always been a personal favorite.

Both *Cypripedium acaule* and *Isotria verticillata* bloom in the height of spring in this part of the world, and generally speaking, if you encounter *Isotria verticillata* in these woods, you will usually find *Cypripedium acaule* nearby. Sadly, the opposite is not necessarily true, as the Moccasin Flower's notoriously showy bright pink pouch is far easier to locate than the subtle green and purple *Isotria* blooms. In the crazy-quilt patchwork of the woodland understory, these orchids hold out their blooms in the hopes of attracting springtime pollinators.



Isotria verticillata is normally single-flowered. The leaves, four to six are whorled at the top of the maroon, hollow stem. *Isotria verticillata* rarely produces two flowers [right].

Isotria verticillata is not a small plant, each flowering stem stands anywhere from 4 to 5 inches (10–12.5 cm) to more than a foot (30 cm) tall. Where conditions are favorable, it can grow as a large colony; one plant sending up many flowering stems along underground rhizomes. The orchid's flowers are also sizable, often measuring 3–4 inches (7.5–10 cm) across from sepal to sepal, but they are slim, cryptically colored, and fairly short-lived. The showiest part of the flower — at least from a distance — is the surprisingly visible white apex of the flower's lip. It is probable that pollinators flying by are also drawn to this same target.

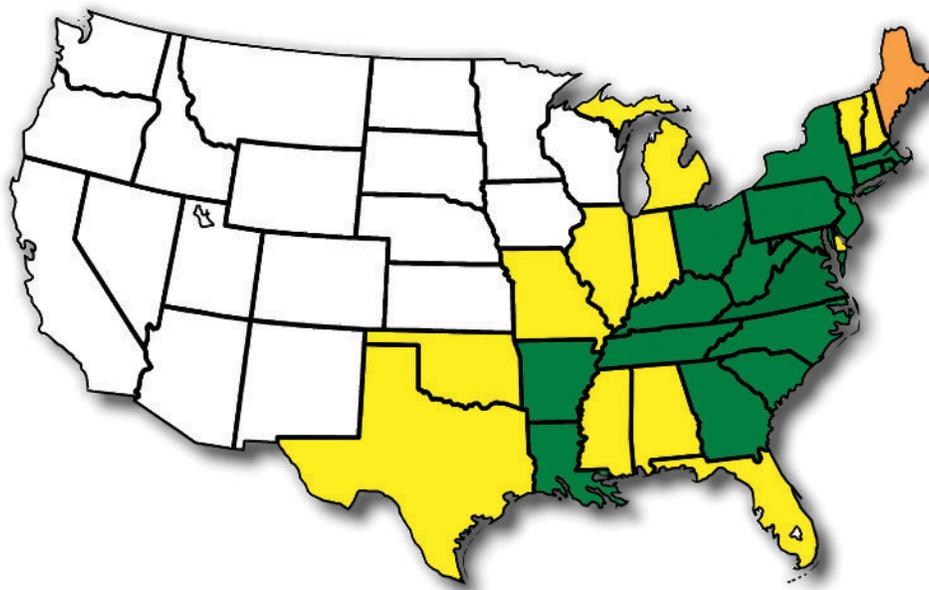
By late summer, it is clear that at least some of the flowers have been successfully pollinated; in fact, by autumn, the seed capsules of *Isotria* are conspicuous, sitting upright on reinforced stems, enduring even through snowstorms. Interestingly, unpollinated stems seem to collapse during the late autumn or early winter.

Even out of bloom, *Isotria verticillata* is vegetatively unusual for an orchid. A whorl of five — rarely four or six — leaves about 2 or 3 inches (5–7.5 cm) long sits high on a purple stem. Among the many differences between the closely related, but extremely rare, Small Whorled Pogonia (*Isotria medeoloides*), the leaves of *Isotria verticillata* are still enlarging and face upwards as the very odd flower bud emerges from their center. Though superficially similar to Indian Cucumber Root (*Medeola virginiana*) and Star Flower (*Trientalis borealis*), these whorls of leaves are very recognizable in the woods, once you develop “the knack.”



Isotria plants spread by long, slender, hairy, underground shoots. Here the author has captured a mass emergence of *Isotria verticillata* plants on New York’s Long Island. Imagine this area in about a week’s time. Small Whorled Pogonia, *Isotria medeoloides*, is predominantly self-pollinating, has green, odorless, flowers [right]

Unfortunately, in any area as densely populated as southeastern New York State, complacency only spells the end of plants like these. Human activity, including habitat degradation, development, illegal recreational use and introduction of nonnative plant species, threaten many of the region's last colonies of this orchid. Most recently, the rapid spread of the Southern Pine Beetle (*Dendroctonus frontalis*) has altered many of these woodlands irrevocably, killing young and old pitch pines with equal abandon. It remains to be seen what long term impacts will result from these insects' expansion into the northeast.



Isotria verticillata distribution in the United States. Orange indicates areas of only historical reports suggesting the plants are extinct there. Yellow indicates the presence of plants although rare and green indicates areas where plants are present and not rare.

Isotria verticillata can be a tough survivor. Miraculously, scattered examples still persist in New York City. Unfortunately, even here, where battles over conservation of open space have mostly been won or lost decades ago, the lack of effective enforcement of regulations regarding off road bicycles, illegal dumping and curbing dogs has impacted all of them. Sadly, in my lifetime, I have witnessed one site eliminated for the construction of 20-plus townhouses. They were gone — virtually without notice — in the course of a single silent winter.



Oak flowers continue to fall as I jot down a few notes, and locating one of the plants in full bloom, I carefully position myself to sketch a few impressions. In the distance, the Yellow-billed Cuckoo (*Coccyzus americanus*) has been replaced by the “chik-burr” of a Scarlet Tanager (*Piranga olivacea*). In the back of my mind, I hope he finds his way closer so I can see him, but it really will not matter, his call is evidence enough, and he has far more important business to attend to.

A soft breeze ruffles the flower gently, and I continue with a new image, on the same page.

— *Dave Taft was born and raised in Brooklyn, New York and currently works for the National Park Service. His popular native orchid presentations, often encompass New York City and vicinity. Mr. Taft’s photos have recently been featured on the Smithsonian’s North American Orchid Conservation Center (NAOCC) website and his writing has appeared bimonthly in the NYC Nature column of the New York Times and in other publications. The winner of the 2011 Dillon-Peterson Essay contest of the American Orchid Society, Mr. Taft credits his wife Debbie, daughter Abby, and a misspent Canarsie Childhood, for much of his interest in the nature of wild spaces, urban and other.*

Chosen quite by chance to represent the Native Orchid Conference, *Isotria verticillata* has been the official NOC logo since 2005. Although it has a decidedly Eastern U.S. distribution, it is nonetheless, a rather exotic looking representative of our native orchid flora. David Taft wrote an excellent article highlighting this species which appeared in *Orchids* (the official publication of the American Orchid Society) in June 2017. We have received permission to reprint it here. -Editor

2022 CASE FUND GRANT RECIPIENTS

The Native Orchid Conference is proud to sponsor a research grant program in memory of Mr. Frederick W. Case, Jr.—teacher, botanist and an internationally acclaimed expert on the North American Orchidaceae, Sarraceniaceae and Trilliaceae. The purpose of the grant is to support basic or applied research on orchids native to North America north of Mexico to university undergraduate or graduate students, or other approved researchers.

This year we are pleased to award Case Grant to two researchers:

Kevin Allen

Texas Tech University

Symbiotic In Vitro Culture of Immature and Mature Seeds of Three Congeneric, Temperate, Terrestrial Orchids

Mr. Allen will compare the rates of germination and development of immature and mature seeds of three North American species of *Platanthera*: *blephariglottis*, *chapmanii* and *ciliaris*. The seeds will be cultured in vitro symbiotically with their associated mycorrhizal fungi and asymbiotically without the fungi. The results of this study will facilitate the production of seedlings of these species for reintroduction and cultivation. Funds from the Case Grant will be used to purchase the supplies for this study. He will carry out the work at Longwood Gardens in Pennsylvania.

Dylan Sedmak

The Ohio State University

Mycorrhizal Fungi of *Platanthera grandiflora* (Bigelow) Lindl.: Isolation and Identification

Mr. Sedmak will collect samples of roots, protocorms and seedlings of *Platanthera grandiflora*, then isolate and characterize fungi from the samples. Identification of mycorrhizal fungi associated with *P. grandiflora* will aid conservation efforts by helping to identify potential reintroduction sites. It will also aid *ex situ* propagation efforts. Case Grant funds will be used to purchase kits to isolate the DNA of the fungi and for the DNA to be sequenced.

The Case Fund Grant is made possible by membership fees and donations. For more information contact Doug Martin, dofrma44@gmail.com To make a donation please contact NOC Treasurer, Dick Barmore, rebster61@yahoo.com

The Native Orchid Conference Journal is published by the Native Orchid Conference, Inc. as a service to its members. The organization is devoted to fostering the study, conservation, and enjoyment of orchids native to North America.

Membership dues are \$15 (student), \$30 (individual), \$35 (family). Apply online: www.nativeorchidconference.org/membership

Address inquiries about membership and requests for copies of the bylaws to: Richard Barmore, Treasurer, rebster61@yahoo.com

For printed back issues of the Native Orchid Conference Journal, contact: Jean Stefanik, jeango4it@aol.com

Thanks for our contributors and our peer-review editors from our Publications Committee:
John Gange
Katharine Gregg, Ph.D.

We are looking for articles and peer-review editors to join our Publication Committee. Please inquire or send articles to: Chelsea Kieffer, Editor chelseakieffer@gmail.com

Organization registered as 501(C)(3) with Federal EIN number 20-0216770

Native Orchid Conference Journal registered with ISSN 1554-1169

Copyright 2021



nativeorchidconference.org

NOC Facebook Group: www.facebook.com/groups

NOC Facebook Page: <https://www.facebook.com/The-Native-Orchid-Conference-Inc>

ISSN 1554-1169