VNPS Site Registry Updates for July through September, 2016

Rod Simmons and Charles Smith, September 8, 2016

On July 7, 2016, Rod Simmons and Carl Taylor joined Gary Fleming and Chip Morgan on a field foray to the pristine Central Appalachian Basic Seepage Swamp: *Acer rubrum - Fraxinus americana - Fraxinus nigra - (Betula alleghaniensis) / Veratrum viride - Carex bromoides* Forest (USNVC: CEGL008416) overlying a large, seepage-fractured Neoproterozoic metadiabase dike at G. Richard Thompson Wildlife Management Area in an attempt to finally determine the large stand of *Dryopteris* spp.

Several specimens were collected by Carl, a botanist and pteridologist, and taken to the fern collection at the United States National Herbarium (US), Smithsonian Institution for comparison with material there and further study.

Carl determined the specimens to be *Dryopteris* x *clintoniana*:

"Dear Fellows,

After a time researching, it appears that the large pinnate-pinnatifid to bipinnate Dryopteris we saw on Friday is D. x clintoniana. This plant produces abortive spores and therefore it is probably not the allohexaploid D. clintoniana (LLSSGG) that produces uniform, vialble spores. Instead, it is likely the allotriploid precursor (LSG) to D. clintoniana. It is a sterile hybrid that produces irregular, abortive spores. These hybrids both have D. cristata and D. goldiana as their genomes. Attached is a voucher specimen from the Yale Herbarium that seems to look like our plant.

A specimen that looked like Dryopteris goldiana also appears to be producing irregular spores. It might be Dryopteris neo-wherryi but, more study is needed on that plant. I'll have more to say about this shortly.

Sure had a good time botanizing with you last Friday. Let's do it again.

Regards,

Carl”

Gary’s comments:

“Hi Carl - thanks for your insights. Makes sense and most interesting. But I still have one nagging question: if it is a completely sterile hybrid, how has a "population" with ~100 discrete plants (some apparently young) formed at this site? Could it be clonal? Or could an occasional spore be fertile?”

Carl’s reply:

“Gary,

It is possible that all of these represent a single clone or there could be rare instances of unreduced spores that might germinate to produce gameophytes yielding unreduced gametes. So both scenarios you mention are possible. Like some angiosperm clones, this Dryopteris clone could be thousands of years old. Rod's recent discovery of a population of D. x boottii that could be over 130 years old is a case in point. Years ago, I rediscovered a population of D. x leedsii that is at least 100 years old. I agree it might be a stretch but, it is a possible explanation.”

We also located a new station (not county record though) for Pear Hawthorn (*Crataegus calpodendron*), with several plants observed growing upslope of the seepage swamp in the same community, though not nearly as saturated. Pear Hawthorn is state rare (S1) in Virginia. This also adds another state-tracked R,T,&E species known for G. Richard Thompson Wildlife Management Area.

On July 22, 2016 per request of FCPA, Rod Simmons and Mark Strong checked the identification of rare Huntley Meadows Park sedges (*Carex* spp.):

"Hi Karla, Max, and all,

Mark and I finished with the Huntley Meadows rare sedges today. All were just as you determined - excellent work by Karla!

The 4 are:

Carex buxbaumii S2
Carex vestita S2
Carex pellita S3
Carex bullata - not ranked, but very rare now (post 19th century and underreported? then) in Fairfax County and northern Virginia.
The other carice is *Carex gracilecens*, as you detd.

Huntley Meadows is indeed a floristically very diverse and fascinating landscape!

All the best,

Rod"

Dave Lawlor, Huntley Meadows Park Natural Resource Manager, replied"

"Hi Rod,

Thank you very much for identifying the sedges for us!! We appreciate all your support over the years.

We have confirmed about 5 or 6 new C. vestita populations and 1 new C. buxbaumii population in the park this summer. We are still working on getting the data downloaded and mapped in GIS. We are also spraying the microstegium in the area to keep it at bay and out of these rare plant communities."

Huntley Meadows Natural Area Preserve Status:

VNPS registry staff along with the Friends of Huntley Meadows Park met with Fairfax County Park Authority staff on August 10, 2016 to continue the discussion on making Huntley Meadows Park a Virginia Natural Area Preserve. The Park Authority committed to getting their board to pass an action item in December 2016 stating that it is their intention of making Huntley Meadows Park a Virginia Natural Area Preserve and authorizing their staff to enter into agreements with the Virginia Department of Conservation and Recreation to do so. They also committed to having a schedule prepared by January 2017 for achieving Natural Area Preserve status. The process is likely to take several years.

Update re: last year's foray to Calmes Neck and G. Richard Thompson Wildlife Management Area with Smithsonian Institution botanists/agrostologists Rob Soreng and Kostya Romaschenko to collect Black-seed Ricegrass (*Patis racemosa*):

Rob Soreng:

"Hi Rod

I talked to Chen Wen-Li in London, she had not done anything yet. Said it was on schedule for this year. Not sure if that was exactly the case as English understanding and speaking is always a possible issue. That's how these things go.....

Could get results in a month, but personnel, priorities, time, and money issues often delay progress.

Best,

Rob

Robert Soreng, PhD, Research Associate
Dept. of Botany - US National Herbarium (US)
National Museum of Natural History
Smithsonian Institution
202-633-0981
sorengr@si.edu
http://tropicos.org/Project/CNWG

September 4, 2015 Calmes Neck *Patis racemosa* collecting foray. Photo by R.H. Simmons.

Rob Soreng at September 4, 2015 G. Richard Thompson Wildlife Management Area *Patis racemosa* collecting foray. Photo by R.H. Simmons.

Rob Soreng: "We know precious little about most species. In this case, the geography of the species is of interest as Patis has only 3 species, 2 in SW Asia, and 1 in eastern North America, a huge disjunction. We think all 3 are polyploid. We have a hypothesis for the origin in China of the genus Patis, and our evidence indicates our species evolved after the origin of the genus, splitting off from a derived linage. We are interested in the genetics of populations of the genus. My Chinese colleague is working on the population genetics of the 2 Chinese species, and would like to be able to compare those results with a population from NA or the third species.

Our Patis racemosa is not rare at all, it is in most of the counties in the Appalachian mts, but tends to be rather local. It will be interesting to learn something more of its genetics. Did it go through a bottle neck in getting to NA? Is it possibly apomictic? Are there hidden copies of genes that may clone to give us more insight into the origin of Patis? There is also a push in taxonomy to study whole genomes. One needs fresh material for mass sequencing of DNA."

Manassas National Battlefield Park:

VNPS members Karen Monroe and John Dodge, working as Virginia Master Naturalists, relocated the population of *Buchnera americana* at Manassas National Battlefield Park. Their activities were on behalf of the Virginia Natural Heritage Program as part of the new effort to have master naturalists assist Natural Heritage staff in relocating records of occurrence for rare species and communities. This program was funded in part by a grant from VNPS.

In mid-August, VNPS members discovered that National Park Service staff had mowed half of the Deep Cut meadow registry site. The timing was very poor ecologically as many of the late summer and fall flowering species were fully mature and beginning to flower, and many summer blooming species had not fully set seed. Timing was also poor for the many invertebrate species trying to complete their life cycles. Natural resource staff at the battlefield were not consulted on the mowing and only became aware after the fact. VNPS members will take the matter up with the park superintendent and maintenance staff as part of efforts to improve communication and natural resource management at the battlefield.

American Bluehearts (*Buchnera americana*) at Manassas National Battlefield Park. Photo by Charles Smith.