

I'M NOT DEAD YET, RE-FINDING *DROSERA* × *HYBRIDA* IN THE WILD

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In his 2011 CPN article “*Drosera* × *hybrida* rest in peace”, John Brittnacher (2011) declared *D. × hybrida* extinct in the wild. Indeed, the cover photo was one that I took, which, as it turned out later, would be the last known photo of that hybrid in the wild at that time. I am writing this article as an update to John's 2011 article by adding six new locations of *D. × hybrida* in two counties of southern New Jersey.

The first time I saw *D. × hybrida* was on a Mother's Day trip in 2008 with Rich Sivertsen, Fernando Rivadavia, Matt Hockburg, and Dave Evans. It was at the original site in Bass River State Park where Rich discovered the second known occurrence of this plant in 1974, and the only one that survived, identifiable, in cultivation. The Bass River SP clone is the only plant that has been in cultivation from a wild source. Any other plants are either missing their source of origin, or were created by hobbyists in cultivation. The single plant that remained was just waking from winter dormancy. Small and insignificant as this plant was, ironically for a sterile hybrid, it planted a seed in my brain.

I had since my teen years become a very close friend to Jim Bockowski. We talked about this plant and his finding of the third known locality on the Oswego River in 1978. He gave me directions to the site. I visited it many times, carefully inspecting every *Drosera* I could find up and down the banks of the river. I was not able to relocate the *D. × hybrida* plant, despite the presence of large numbers of both parent species. Over the years Jim and I spoke often about the idea that disturbance seems to be the key to breaking the reproductive barrier that naturally kept these species from hybridizing. It seems that there was a natural or manmade disturbance at each of the original three sites. This may have broken down barriers such as timing of flowering, by delaying a damaged *D. filiformis* flowering, increasing the slight overlap in time that it flowers with that of *D. intermedia*. Spatial barriers may be broken as well, if the flower scape of the *D. filiformis* is knocked down by the disturbance and is physically closer to the *D. intermedia* flower. A pollinator would be needed, and if the flowers were closer, it is simply more likely that a pollinator might take advantage of that proximity, and visit both flowers consecutively, even if there is a normal preference for one species over the other. Additionally, further disturbances could damage the already created hybrid and either destroy them, or break them up which would increase the numbers vegetatively (Brittnacher, pers. comm. 2017). With our conversations, I began targeting sites where I knew both parent species to occur with disturbance. For these purposes, there is fortunately or unfortunately a very high degree of disturbance to almost all areas within the Pinelands of New Jersey.

The first re-finding of *Drosera* × *hybrida* after John's 2011 paper happened in a totally unexpected way. On a rainy day, I was at a nursery where I had become acquainted with the staff. A customer came in, fascinated by the work I was doing with *Drosera* × *eloisiana* (the hybrid *D. rotundifolia* × *D. intermedia*). He mentioned a site with hybrid *Drosera* on it. I looked at him and said that *Drosera* × *eloisiana* are quite common. He explained that he thinks it is a different one. I jumped up and he offered to show me. We drove an hour away and got out in the pouring rain. We walked a trail and came to a site that had many large clumps, and many individual plants of *Drosera* × *hybrida* (Fig. 1)!!! I was ecstatic. It was June 12, 2012, only 7 months after John's article. I immediately noticed that the site was actually a truck trail driven by vehicles to access parts of the forest. This site



Figure 1: *Drosera* \times *hybrida* site showing the disturbance by vehicles (left). One of the many beautiful *D. x hybrida* plants found at this site (right). Note the false vivipary (arrow). This is one likely way that this hybrid is propagated (Brittnacher 2017).

happened to be wet enough for *Drosera* to grow. I quickly connected the dots and could see the role the vehicles played in the disturbance needed to break those reproductive barriers. I could easily see how the production of even one sterile hybrid could have made so many plants due to the breaking up of the leaves and clumps by the tires and water. It did however tickle my brain a bit thinking that perhaps it had gone tetraploid and was now fertile and reproductive. Later searches of the site found no evidence of this, though I am still checking periodically.

While there, I asked the gentleman who showed me the site if I could collect several pieces of these plants to bring into cultivation. With permission, I collected 15 pieces of 15 different clumps and leaf cuttings from smaller plants as well. These still remain with me as I continue to propagate them. The purpose of getting them into culture so quickly was to protect the plants if something should happen to the site. I am glad that we did this. On August 11, 2012, I had the pleasure of picking Fernando Rivadavia up at the airport when he flew in to the area for the ICPS conference in Massachusetts. I toured him around the pinelands a bit before we headed up to the conference. When we got to the *D. x hybrida* site, I was horrified to see that it had been mowed. Not so much because the plants couldn't take it, but because the shrubs that had protected the site from the adjacent sandy upland, were destroyed. The plants were mowed down, and I was not able to check that year for viable seed, but I feared worse things were on their way. Within 2 weeks, that area had been hit by a massive downpour of 20 cm of rain in 12 hours. I returned to investigate and the site had been nearly covered by sand and debris from the upland.



Figure 2: The main clump of *D. × hybrida* is to the right of center. Notice the slumping of the bank, with smaller divisions or leaf cuttings growing below the mother plant and closer to the water's edge.

I frantically began pulling piles of pine needles off of the site, and digging sand out with my hands. It is very difficult to remove sand with your hands from under water. Needless to say, I found many *D. × hybrida* that had been smothered and rotted under the tightly packed sand. There are still a number of plants at that site, but it is not nearly as impressive as when I first saw it.

Since then, the land manager has insisted that the employees strictly follow instructions. As it turns out, the person who destroyed the site was told not to mow it, but decided to do it anyway. He has since been told to cover the trail with trees, and allow brush to grow back to protect the site from further harm.

The summer of 2017 is here and the plants are recovering nicely. Still not as many impressive clumps as before, but I am satisfied that they are safe. I have also planted numerous propagations of these plants in very nice habitat at a nearby preserve, with permission.

On July 10, 2012, I was searching a forested riverbank for rare orchids known at the site. The bank was a short but fairly steep slumping bank of a very fine silty-clay texture. Above it was a sandy hillside, below it the river. I started seeing the typical wetland plants, including all three species of *Drosera* from New Jersey. Then, a peculiar clump of *D. filiformis* caught my eye. I carefully made my way to the plant and found it was actually another *D. × hybrida* (Fig. 2)! This was only one small clump of about 10 crowns, but it was another new occurrence. I was thrilled. I soon saw the same pattern of disturbance. This time, however, instead of vehicles causing it, it was the slope of the hill, and the looseness of the soil. The slumping of the crest of the bank brought the *D. filiformis* that were growing up there, down to the *D. intermedia*, on the bank itself. These two species regularly grow together throughout their range without hybridizing. It must be something in the disturbance that breaks either a physical or temporal barrier to reproduction.



Figure 3: The solitary clump of *D. x hybrida* is in the lower left of the left photo (arrow), appearing shorter and denser than the surrounding *D. filiformis*. This is essentially the search image I look for when in the field. A closer view of the single clump found at this disturbed site (right).

I returned to this site several weeks later, I found several pieces of the plant had washed down the bank and were rooted in at the water's edge in the mud. I collected these tiny plants and still have these as well. Again, I am glad that I did. The summer of 2013 saw quite a bit of rainfall. This river swells with the spring floods anyway, but this year was exceptional. The spot where the *D. x hybrida* was growing was under at least 60 cm of water for almost three months without reprieve. I thought for sure the plant would have been scoured off of the bank. Thankfully, as the water receded and I returned to check the plant, it held on tenaciously and was still growing. The other young divisions below were gone. On the one return trip I made in 2014, I found that the original plant had either died, or fell off of the bank and washed downstream. Only one tiny division remained with two crowns, growing about half way down the bank. While this site technically is still an extant occurrence, it is a very tenuous one, and most likely will be lost to natural flooding and erosion.

The above two sites are both in Burlington County, New Jersey. The remaining four that I have found so far are in Ocean County, New Jersey.

The first site was a sandy power-line cut that was regularly used for military maneuvers from one of the many military training areas in the Pinelands. I now had the *D. x hybrida* "bug" and was searching this site because the site had both parent species and regular disturbance from vehicles all over the plants. After quite some time, and a very sore neck, I did finally locate yet another single clump of plants (Fig. 3). The clump is just a few centimeters away from the main tire tracks in an area carpeted with both species. Everything was in place and it did not disappoint. I have looked for more plants at this site, and there well may be more, the cover of both species is vast. As of this writing, no other plants were found there.

On July 18, 2014, I was on the hunt again. This time at one of my favorite sites in the Pinelands, a large expanse of pure white sand dunes, spotted with wet seeps and streams. This area has the largest and densest cover of *D. filiformis* I have ever seen. Unfortunately, this site will be developed and turned into very high-income housing and storefronts. Currently, it is an illegal ORV park with

any wet or open area being regularly trashed by destructive use of off-road vehicles. Again, as we have already seen, this disturbance seems to be the key for making *D. × hybrida* possible, at quite a big cost however.

In the rutted bed of a severely damaged fen, I found another patch of plants. On the edge of this wet “trail”, I found an area with a few dozen small clumps of *D. × hybrida* spread around from the tire ruts to the forest edge about 2.5 m away (Fig. 4). Though each clump was small and isolated from each other, this edge was often assaulted by fast-moving vehicles causing powerful splashing and erosion of the bank. My guess is that the *D. × hybrida* here are of a single original plant that has been routinely broken up and scattered by the riding/splashing. But of course, there may be more than one genet here, this is just my guess based on what I see.

At the same area on August 16, 2015, but quite a good distance from this first site, I found another grouping of *D. × hybrida* (Fig. 5). Following the same stream, it opens up rather quickly to a very wide flat open expanse of permanently wet sand. There is very little plant



Figure 4: One of the attractive *D. × hybrida* clumps found in the tire ruts of this wet ORV trail.



Figure 5: One of the groupings of *D. × hybrida* found late in the year, and beginning to senesce for the coming dormancy.



Figure 6: You can see *Drosera filiformis* leaning over caused by the ORV's riding nearby and splashing the plants, knocking them over. This may be one way that the spatial separation of the species could break the reproductive barriers to hybridization. It is not very hard to think that such a disturbance may stress the plants or damage the emerging flowers, potentially delaying the bloom time, breaking down the temporal barrier to hybridization.

life left here due to the ORV use, but what is present is a fair number of both *D. filiformis* and *D. intermedia* (Fig. 6). The closer you get to the edge of the riding area, the more abundant the plants become, and you start getting a good cover of 3 different *Lycopodiella* (clubmoss) species, *Schizaea pusilla* (little curlygrass fern), *Pogonia ophioglossoides* (snakemouth orchid), and a good number of other interesting species. The area I am speaking of is the less disturbed area that is sandwiched between the xeric sandy dunes and the flat wet sandy area that is nearly devoid of the plants that once grew there. This zone is moderately disturbed, but largely intact. In the low vegetation, there was *D. × hybrida*, almost hidden amongst the mosses and grasses, but still unmistakable. There were several robust clumps scattered in this area of about 1.5 m squared.

On May 26, 2017, I found one additional small clump of *Drosera × hybrida* (Fig. 7). I had again targeted a site with a lot of disturbance. This time it was a power line where off-road vehicles had eroded the environment and left a lot of open wet areas. These areas are rimmed with *Drosera*, and like the other sites, these plants are repeatedly run over or disturbed by splashing as vehicles pass. As you can see, this clump is not very impressive. But it is the sixth new site where I have been able to find *Drosera × hybrida* in the wild.

It has been a great deal of fun finding these plants in the wild and being able to see the context in which they occur. Lots of hours spent in the Pinelands of southern New Jersey searching for these gems has rewarded me with a number of other interesting and beautiful finds. My hope for the future of this plant is to find that it has naturally gone tetraploid and reproductively successful in



Figure 7: This is the most recent occurrence of *Drosera* \times *hybrida* that I have found. To date, this small clump is number 6 in my ongoing search for this natural hybrid.

the wild, not just in collections. Additionally, I would like to find *D. x hybrida* in North Carolina at one of the few small sites where *D. filiformis* still occurs. Finding the analog of *D. x hybrida* among the all-red *Drosera* in the Florida Panhandle would be very exciting as well. Here's to hoping and exploring!

References

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