

FORKED LEAFED *DROSERA TRACYI*

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Abstract: Normal *Drosera tracyi* plants occasionally produce individual leaves with slightly forked ends, (usually < 25 mm deep). Very rarely, groups of individuals may be found within otherwise normal populations that appear genetically inclined to exhibit regular and extreme forking of their leaves. Plants from seed or leaf cuttings of these carry on the trait and it appears that the trait may eventually be developed even further by selective breeding.

In the mid 1970's, I purchased my first *Drosera tracyi* Macf. (see Rice 2011 for discussion of taxonomy) and it would be the only one I would see for some time. This plant eventually produced a leaf with a "split end". At this time, I had no way of knowing that this is a fairly common occurrence with this species and thought that I had made an amazing discovery. I begged my dear mother to drive me to the other side of Richmond to the nearest hobby store to buy clear acrylic to embed it in, (and of course she did). Because of this I can say with certainty that the first forked leaf *D. tracyi* (FLT) that I ever discovered was forked 15 mm deep (Fig. 1A). I have since seen leaves with forks

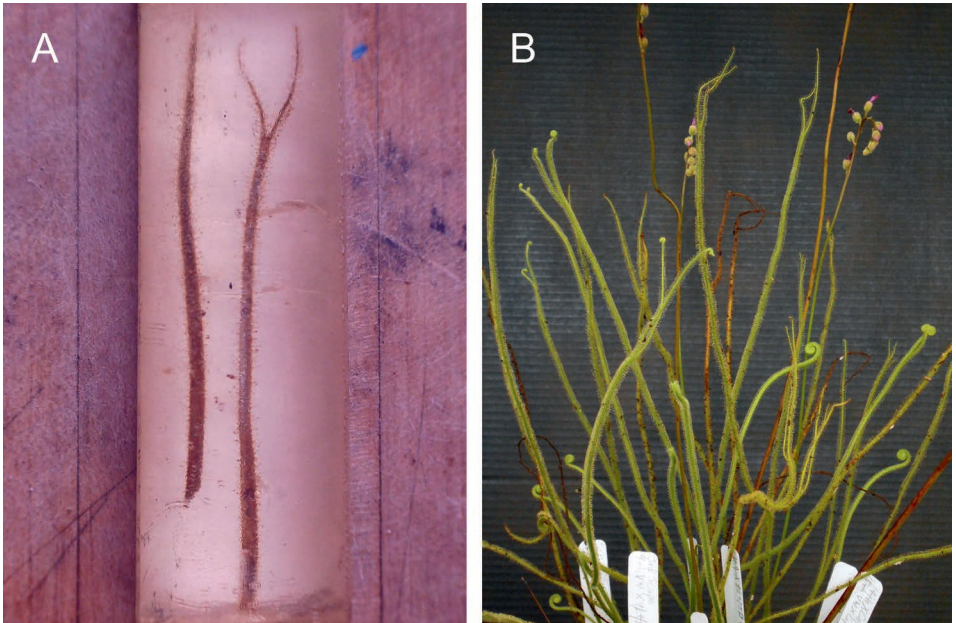


Figure 1: A) Ends of two leaves of *Drosera tracyi* embedded in acrylic in the 1970's. The leaf on the right is forked 15 mm deep. B) Potted FLT plant with nearly every leaf forked to some degree. The older, yellowing leaf to the lower right of center had forked into 6 points and bent down from the weight.

over 200 mm deep, some leaves forked into as many as seven points, and some very healthy plants with every active leaf noticeably forked (Fig. 1B).

When I began making trips to the Gulf coast, I noticed that the small split ends on individual leaves were relatively easy to find in nearly all large populations of *D. tracyi*, especially when the plants were growing vigorously. These appeared to merely be random mutations and plants propagated from seed and leaf cuttings of these seemed to be perfectly normal. Eventually I found a small group of plants growing in a very wet area of a bog in Georgia that had many leaves with small split ends. With the land owner's permission, I took some divisions and leaf cuttings. A few of the plants from leaf cuttings actually produced noticeable forks while they were still small (25-50 mm). This was very encouraging, and is still the only time I have noticed immature plants producing forked leaves. These plants however grew up to be perfectly normal, so I began to suspect some environmental factor might be the cause. While I'm sure most people who have worked with this plant have noticed the occasional split ends, I have only heard of one other person reporting a plant or plants that regularly produced forked leaves. This was Brooks Garcia, who I am told had or has a plant or plants that produce forked leaves (Aaron Calvin, pers. comm.). I have not, however, been able to contact him or find any details of his plant or plants.

In 2003, I purchased property in Liberty County, Florida and although I wasn't able to move from Virginia until 2016, I began spending a lot of time botanizing the Apalachicola National Forest and surrounding area. While I was still very interested in finding or breeding *D. tracyi* that reliably produced forked leaves, I was unable to find anything more than the occasional split ends and began doubting that I ever would.

In August of 2015, I found a colony of *D. tracyi* growing in a bog on private property that turned out to be one of the two best wild FLT sites I have seen so far (Fig. 2A). The bog is in a disturbed, grassy area maintained by mowing. I found FLT in approximately one-fourth of the bog, but by far the best examples, with the most and deepest forks, were concentrated in a much smaller area. Here I took leaf cuttings from 4 plants. One of them had 7 out of 14 leaves forked, most over 25 mm deep. One plant had 8 out of 9 leaves forked, one had 10 out of 16 leaves forked, and one had 2 of 5 healthy mature leaves split twice into 3 points on each leaf that were between 25 and 50 mm deep. Now that I was nearly certain that the trait was genetic, I again began searching for other FLT sites. I was unable until the next year to find anything more than the normal split ends, here and there, even in the large colonies of *D. tracyi* on the national forest. In May of 2016, I found another FLT bog, approximately 8 km away from the first, also on private property, outside of the national forest boundary. This bog had roughly 50-100 plants with small split ends but no plants here were forked

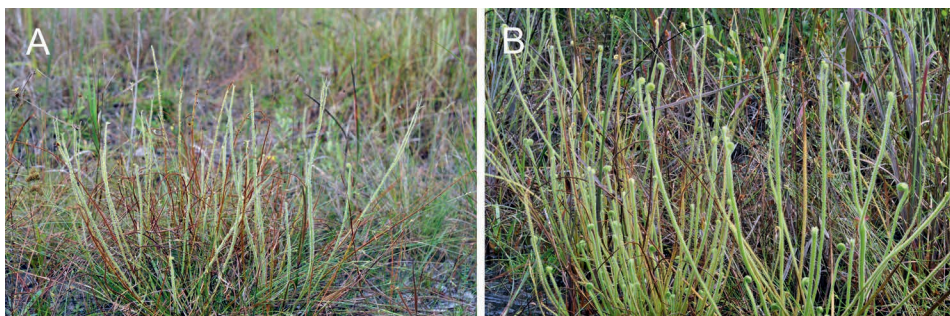


Figure 2: A) Plants propagated by leaf cuttings from the first wild FLT site, growing on author's property. B) Plants from seed of "stock" plants sown in 2019 on author's property.

deeply. I collected cuttings from only one plant that day. This bog is very similar to the first one and the FLT here are also mostly in one area. When I revisited the site a month later, I found many plants now had substantially forked leaves. I collected leaf cuttings from two of these, one with two 2-point leaves each 30 mm deep and two 3-point leaves up to 70 mm deep. The other had six of six healthy leaves noticeably forked 13 to 100 mm deep.

The plants from these cuttings, and a few others, have been further propagated both by seed and leaf cuttings to produce a large number of individuals. Most, if not all of these, reliably produce at least a few noticeably forked leaves a year. However, even the best clones vary from year to year and most of the forked leaves appear after flowering. The health and vigor of the plants seems to be the most important factor, and individuals that are seriously overcrowded in pots, infested with pests, or otherwise growing poorly tend to produce fewer and smaller forks or none at all. In the last few years, I have started 3 new colonies on my property exclusively from seed of these “stock” plants. The first of these colonies, started in 2019, produced its first few mature plants in 2020 and a reasonable number of these had at least some forked leaves. As of July 2021, this site had approximately 75 mature plants, most of these clones already had divided into multiple growth points and many had flowered. Nearly all of the mature plants had produced some noticeably forked leaves and many were producing very few non-forked leaves. A lot of leaves had forked between 100 mm and 150 mm deep, several had 3- and 4-point leaves and one leaf had 5 points (Fig. 2B). The other 2 sites, sown more recently, have no mature plants yet.

In April of 2021, a plant resulting from a cross of two of my best stock clones flowered for its first time and it produced two flowers in a row that had double ovaries with two sets of stigmas and stamens and two sets of petals (Fig. 3B). The next flower had 6 petals, instead of the normal 5, and

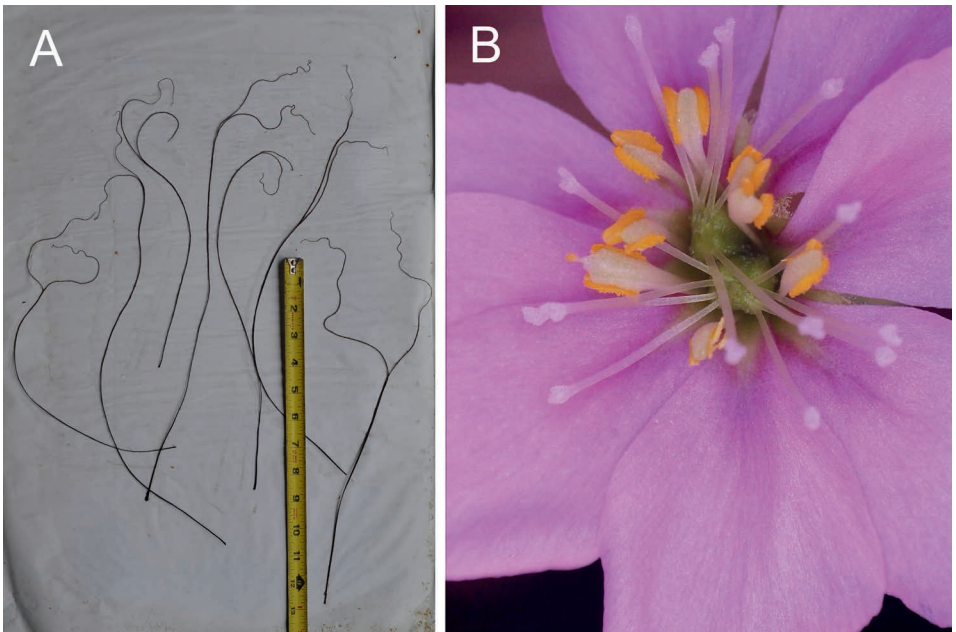


Figure 3: A) Pressed and dried leaves from a single specimen of FLT, while they were collected individually as they died off, all of these leaves were active at the same time. B) Flower with doubled ovary, stigmas, stamens, and petals.

the other flowers were all normal. I don't know if this has anything to do with the forked leaf trait, or is just a coincidence, but I think it is interesting nonetheless.

It seems almost certain that the forked leaf trait in *D. tracyi* is genetic and can at least to some extent be enhanced by selective breeding since my colony started from seed of FLT's pollinated by other FLT's has a much higher percentage of forked leaved plants than the wild sites. I still have to emphasize the facts that even the best clones do not produce all forked leaves, and vary from year to year, also anything causing these plants to grow poorly seems to cause them to produce mostly or all normal leaves. Indeed, my potted stock plants, having not been weeded or repotted for 2 or 3 years, and growing under shade, are now producing only a few small split ends. I now intend to continue breeding the better clones with the hope of developing more dependable and possibly more extreme ones.

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References

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