umnar species of *Sarracenia (S. leucophylla, flava,* and *alata)* once were more limited to specific river valleys and that they have been spreading out and extending their ranges laterally to the east and west and extending into each other's territories. Breeding isolation factors for these partially sympatric species are not very good and hybridization incidence is high. Eventually, though certainly not for many human generations, these three species may eventually end up absorbed into a hybrid swarm. It is very interesting along the Gulf Coast to observe traveling eastward first of all only pure colonies of *S. alata,* then *S. leucophylla* appears and hybridizes with it for a short distance to Mobile. Then, east of Mobile, *S. alata* disappears completely and solid, magnificent stands of *S. leucophylla* predominate and then a few *S. flava Rugelii* (the tall, unveined Gulf Coast variant with a blood-red spot only in its throat) appear and hybridize for a distance with the predominating *S. leucophylla.* Finally, *S. leucophylla* dies out and pure stands of *S. flava* replace it. Through the whole area described, *S. purpurea venosa* occurs, usually sparingly, but *S. psittacina,* though inconspicuous, is generally rather abundant.

(Received April 14, 1978)

# New Jersey Pine Barrens

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On Tuesday, August 8, my friend Mike Hunt and I met Jim Bockowski at the General Store in Chatsworth for a one day CP expedition in the New Jersey Pine Barrens. The first place we went was south of Chatsworth and could be approached by two sand roads, one of which was blocked. After driving down a winding sand road in Jim's car we reached a suitable place from which to head into the bog.

After going down a hillside we suddenly saw thousands upon thousands of *Drosera filiformis filiformis.* The *D. filiformis* were growing on a mat of sphagnum moss, which lay on a sand base. The sphagnum mat is right along a tea colored river which is fed by springs percolating through the sphagnum mat. Intermixed with the *D. filiformis* were *Sarracenia purpurea, D. intermedia, D. rotundifolia,* and a species of *Utricularia,* all readily visible. Cedar trees grew thickly on the river bank and a few in the bog resulting in a very picturesque scene, complemented by water lilies and bladderwort flowers. There were so many *D. filiformis,* and for that matter every CP, that one could not help but step on them. In a way this crushing of the droseras may be beneficial in that the broken leaves might bud into more plants. The *D. filiformis* almost glow in the right light conditions, a yellowish-red color being most readily apparent.

This mat of sphagnum continued for some distance up the river and we followed it for quite some time. After searching for awhile we came upon *D.* x *hybrida* which was somewhat difficult to find due to the number of plants in the area. There was only one clump of *D.* x *hybrida* that we found, but I am certain there must be more in this area. As we continued our search of the area we came to a bank about six feet long and two feet wide which was totally covered with *D. rotundifolia,* an amazing sight. Moving along we came to another unusual sight; at the base of a cedar tree a spring had managed to poke its way through and fall about one foot from inside the

tree to a small pool in the base of the tree and then flow out.

Soon we came to a pure stand of possibly fifty *D. rotundifolia* x *D. intermedia* hybrids. These plants were growing on a sandy area fed by a spring and the plants were beautifully red. On each side of these plants were clearly segregated stands of *D. intermedia* and *D. filiformis.* As we continued walking we ran into the white fringed orchid and the distinctively small flowers of *U. subulata.* We found another species of *Utricularia,* possibly *U. cornuta,* with stalks of one foot and large yellow flowers.

*Sarracenia purpurea* were found all through the area, growing on the drier banks as well as on the sphagnum mats, but clearly flourishing in the sphagnum. I was unable to determine the subspecific designation but it is very likely that both subspecies of *S. purpurea* are found here. Many flower stalks were seen as well as thousands of seedlings. Obviously this bog is in no danger; it is also in a state park.

We proceeded back to Jim's car and on the way discovered a honeybee nest in one of the cedar trees. We were even fortunate enough to observe a hummingbird.

We continued our journey by going on a sand road near Ft. Dix. Right on this sand road were thousands of *D. filiformis,* noticeably smaller than those growing in the sphagnum mat near Chatsworth. To the side of the road we saw sphagnum moss with a few *D. intermedia* but that was all for this area.

The next place we went was along a railroad bed which had been torn up. To the right of this bed was a pond which had just about completely eutrophicated so that only the "eye" remained. The whole area was covered by a mat of very shaky sphagnum moss. Someone had put railroad ties through the bog so we had a convenient area from which to observe the plants. *S. purpurea* was found throughout along with *D. intermedia* and *D. rotundifolia.* This area received full sunshine so the pitcher plants were nicely colored and of good proportions. There was an area of peat near the eye of the bog and *D. intermedia* covered it.

To the left of the railroad bed was a small lake with cedar trees bordering it. Beavers had dammed the area so the shore of the lake had risen, perhaps thus explaining why we saw so many dead cedar trees. *S. purpurea* could clearly be seen across the lake growing in sphagnum moss. We were unable to reach the other side but the plants were of a nice red color and a robust size. We walked back along the railroad bed and came to where a bridge had been. The beavers had made their dam here some time ago and water now flowed over the top. An interesting feature noted at this bridge was the mass of *Utricularia* piled against the dam. I estimate the plants were six inches deep, packed together. The water rapidly flowing over the plants provided a good supply of food to the plants since all the bladders were black with dead prey. The whole area against the dam was filled with *Utricularia* waving gently in the current.

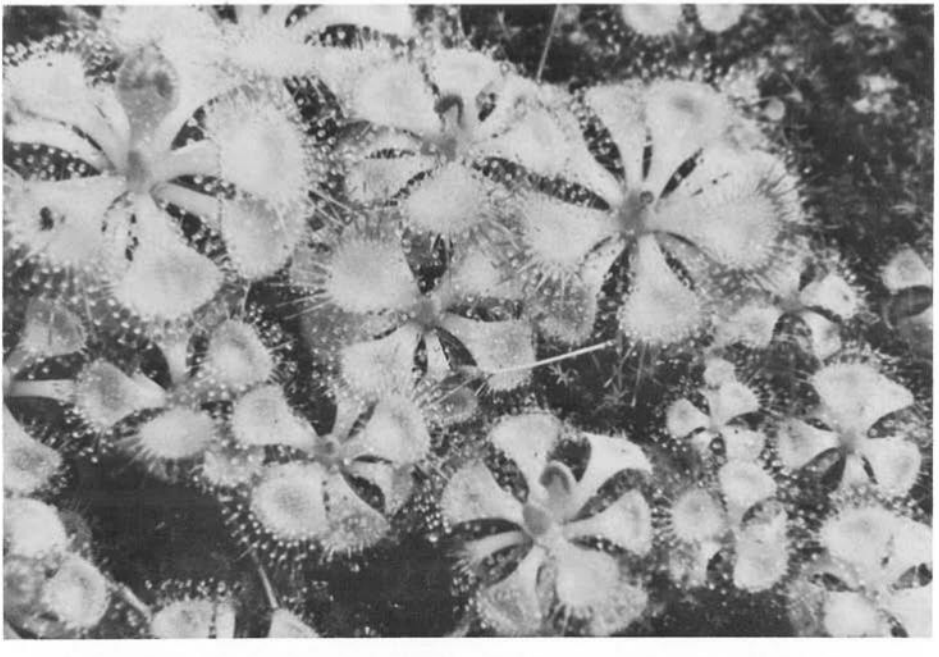
We then went to an area which Jim fondly calls "his bog" and rightly so. It is an excellent example of a cedar swamp. Jim has planted *S. flava, S. rubra, S. minor,* and *Dionaea muscipula* here, all surviving one winter in excellent shape. Walking through the bog among the cedar trees *D. rotundifolia* was growing in the sphagnum moss. *S. purpurea* also grows here, however a difference is noted from those near Chatsworth. Here in the lower light levels and with the sphagnum growing all over the plants the pitchers are noticeably longer and not as brightly colored. Possibly this is the *S. purpurea* var. *stolonifera* Macfarlane talked of. In any case the white fringed orchid was again observed as well as the beautiful yellow bladderwort flowers. A good point to bring up here is how some of these

bladderworts grow. The sphagnum moss tends to be higher near the cedar trees, sloping down gently until a small pool of water is seen. In these pools the bladderworts grow prolifically. The whole cedar swamp is constantly being infiltrated by slightly observable currents of underground water. This results in a constant supply of pure moving water for the bladderworts; also, the water is cool and the area is somewhat shaded. Perhaps this explains why some people have difficulty cultivating native aquatic *Utricularia;* they need a constant flow of cool, pure water.

As I walked further through the swamp I found streams cutting through the moss which, although only two feet wide, were four to five feet deep and moved quite swiftly; these filter through the whole swamp. I decided to collect some moss and began to pick a few handfuls here and there. When I headed back to the road I discovered how heavy a bag of wet sphagnum moss can really be when trudging through a swamp. I tried to carry the bag on my back but this resulted in too much weight with me consequently sinking several feet into the moss. I learned the best way to get a wet bag of moss out was to float it on the water and pull it out; unfortunately, this also resulted in torn bags. I finally made it back to the road and set down my bag of moss. I then explored the other side of the swamp at Mike's and Jim's urging. This side of the swamp had the same character as the other side although slightly more open. I again repeated my sphagnum collecting and was duly rewarded with much hard work.

It was beginning to get dark, so we headed back to Jim's car and went to the place where we had parked Mike's car. We said good-bye to Jim and headed home.

(Received October 31, 1978)



*Drosera burmanni*
Photo by Joe Mazrimas