October, 1977

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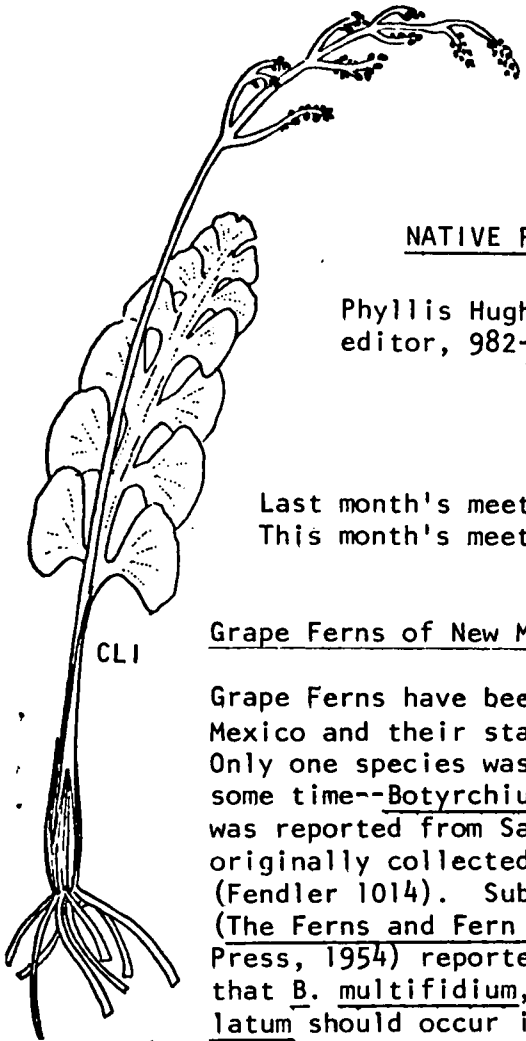

Botrychium lunaria (N.M.)

October Newsletter

NATIVE PLANT SOCIETY OF NEW MEXICO

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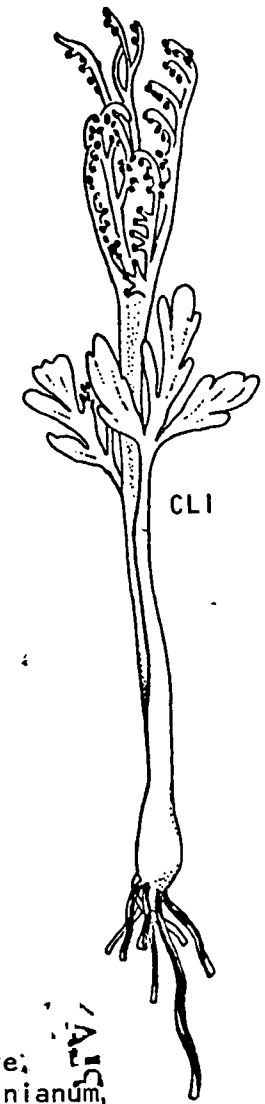
988-5918

Grape Ferns of New Mexico

Grape Ferns have been found very rarely in New Mexico and their status is poorly understood. Only one species was recorded for the state for some time--Botyrchium simplex. This species was reported from Santa Fe Canyon where it was originally collected by A. Fendler in 1847 (Fendler 1014). Subsequently, Dittmer et.al. (The Ferns and Fern Allies of New Mexico, UNM Press, 1954) reported in addition to B. simplex that B. multifidium, B. lunaria and B. lanceolatum should occur in New Mexico although there were no substantiating records. There have been rumors of collections of Grape Ferns over the years, but few specimens seem to have been actually collected.

Grape Ferns are very interesting. The leaves are fern-like, especially in B. multifidum and virginianum, while the fertile portion of the plant is separate from the vegetative portion. The first leaves unfold like typical ferns (circinnate vernation). This unfolding occurs very slowly (in July in B. lunaria)



B. lanceolatum (N.M.)

with the separate branch system at the top of the plant bearing the fertile sporangia. These sporangia are small and clustered, appearing like tiny groups of grapes--hence Grape Fern.

Grape Ferns are very closely related to ferns, but probably are rather more primitive. They are circumboreal in their distribution. There are two common genera in the family Ophioglossaceae--Ophioglossum and Botrychium. No collections of Ophioglossum apparently have been made in New Mexico, but O. engelmannii Prantl and O. vulgatum L. are to be expected here as they are known from Texas, Oklahoma and Arizona. Ophioglossum is differentiated from Botrychium by the entire (non-dissected) leaves and fertile spike that is unbranched with the sporangia two-ranked.

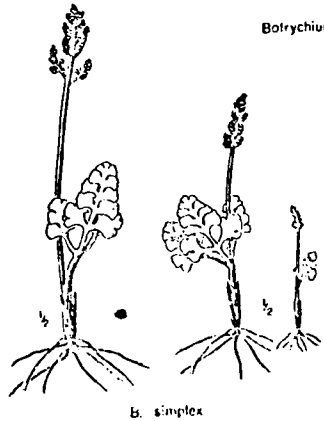
In New Mexico Botrychium species are expected to occur at higher elevations--up to 12,000 feet. Botrychium virginianum and multifidum should occur at lower elevations than other species. These latter Grape Ferns have bipinnately divided leaves usually over 7 cm long (though in New Mexico they could be slightly smaller). The smaller Grape Ferns that could occur in New Mexico include B. simplex E. Hitch., B. boreale Milde, B. lanceolatum (Gmel.) Angstrom, B. lunaria (L.) Swarta, and possibly B. matricarifolium (Doell) A. Braun ex Kock.

In July of this year I found a small population of Grape Ferns at the Santa Fe Ski Basin not far from one of the ski lifts at approximately 11,200 feet. This population has nearly been obliterated by the bulldozer activities above the Ski Lodge and is in grave jeopardy. I had found this small population some years ago, but could not relocate it again until this year. One reason for this is that the ferns begin to develop in mid-July and wilt by mid-August. Our plants are only up to 10 cm high and are very delicate. The patch I located was approximately 8 feet across and probably contained two dozen plants. It was necessary to get down on my hands and knees to find them, and I'm sure I missed locating quite a few. Two species were represented, B. lunaria and B. lanceolatum. The latter species does not seem to have been recorded from New Mexico. Anyone interested in crawling around on their hands and knees in mountain meadows should find these tiny ferns a real challenge.

BL Isaacs


Botrychium boreale
1.5
½
½
B. lanceolatum
1.5
½
B. matricariaefolium
1.5
½
JRJ
var. onondagense
var. lunaria
½
½
B. lunaria

Botrychium multifidum



B. simplex

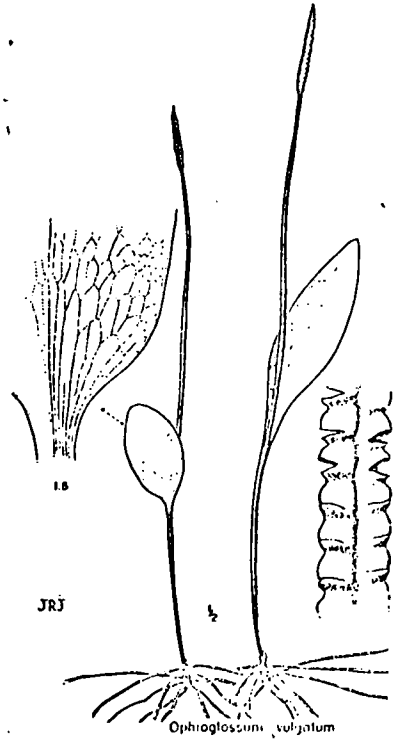
B. virginianum

JRJ

Phyllis Hughes, who has been editor of the Newsletter through the summer, has been very sick and in the hospital all of August. Her dedication to the NPS has been and will continue to be felt. We hope she is well soon.

Mr. and Mrs. Schooley will speak Saturday, October 15 at 7:30pm at the Central Clearing House, 338 E. De Vargas, Santa Fe. Their topic and slides concern the plant life of three biomes near Montezuma, N.M.

Don Lowrie who spoke September 28 had the enthusiasm to match the complicated subject of insect-plant relations. He outlined which parts of the orders of insects were plant eaters and which part of all the plant eaters this represented (butterfly larvae and beetles are the most damaging). And he spoke of insects as plant friends - i.e., primarily as flower pollinators. He was especially interested in one particular pollination story - the yucca and the yucca moth - little follow up work has been done since the story was unraveled by Riley in 1875. And no doubt many more discoveries remain to be made on the completely interdependent life cycles of these organisms.



Unlike most other insects, the yucca moth does not pollinate by brushing accidentally against anthers and stigmas. Instead, she first gathers pollen from anthers and rolls it into a ball that she takes to another yucca flower. Here she lays eggs in the ovary. Then she deposits the pollen on the stigma and pats it firmly into place. After pollination, the ovules develop as do the moth larvae. As the larvae grow they feed on the seeds, but because there are so many seeds and the larvae in the ovary are not so numerous, many of the seeds survive and the next year may grow into new yucca plants. Some of the larvae become adult female yucca moths the next year and pollinate new yucca flowers.

The New Mexico Wildlife Magazine (Dept. Game and Fish) Sept-Oct issue has a good article on the N.M. Heritage Program.

Drip irrigation ought to be seriously considered for any Santa Fe garden. It puts the water where it is needed as it is needed; it uses less water, less of the gardener's time, and the crop production is better. You can even experiment with it on a small scale (150 sq.ft.) for as little as $10.

The essential idea is that water is emitted so slowly that it soaks deep into the soil where the roots and nutrients are instead of spreading over the surface to encourage weeds and evaporate away. The long familiar canvas soaker hose and the perforated plastic sprinkling hose (if turned with holes down) tend to serve this same purpose provided that the water pressure is kept low. But both have disadvantages. The newer systems, adapted from large scale agricultural applications, utilize black plastic tubing to feed water from the garden hose or sill cock into smaller laterals which contain flow-control emitters spaced along their lengths close to the plants. An arrangement is rather easily designed and assembled by any home gardener to fit his planting plan.

Usually the tubing rests on the surface of the ground and is covered with mulch. For row crops such as beans, carrots, beets, sweet corn, etc., an emitter may be spaced every 10 to 18 inches, depending upon soil type, the linear horizontal spread being sufficient to provide moisture in a continuous pattern. As this spread is lateral as well, it is feasible to have one string of emitters halfway between two rows of crops sowed as close as 8 to 15 inches apart. This has been done locally with good success in clay soil for each of the crops mentioned above.

Frequency of irrigating has to be determined by experience. It depends upon the weather, the kind of crop, and the type of soil. Heavy clay will absorb more water and hold it longer than sandy soil. Therefore one can expect to irrigate clay longer at a time, but less frequently, than sand. When seed is germinating, or when roots are still small and shallow, daily irrigation may be advisable in any soil. As roots grow deeper, semi-weekly irrigation may be quite adequate.

In winter the plastic becomes hard and brittle. If handled or stepped on, it may crack and parts will need to be replaced. Also, if the garden is to be spaded or tilled in fall or spring, the tubing must be removed. Therefore, in this climate it seems advisable to disassemble the tubing into sections convenient to handle and store for winter. If done on a warm sunny fall day, the heaviest tubing will be flexible enough to roll up. Similarly, the assembling of a new system is easier on a warm day.

Equipment for assembling a home garden drip irrigation system hasn't become common in retail stores as yet. Those seen to date have been in a sealed package with so little description of contents and guidance for assembly that their satisfaction may be questioned. But there are numerous mail order firms specializing in such equipment and from which

you can order individual components or well described complete packages. Two examples follow. (Prices are more than 6 mos. old)

GroMor System. AG Drip Sales, 3156 E. La Palma, Suite J, Anaheim, CA 92806. Offers three complete kits: $9.95, $14.95, and $19.95 for 150, 235, and 435 sq.ft. respectively. Simple, versatile, easy to assemble and disassemble. Not as sophisticated and precisely controllable as some others but works. Uses 1/4-inch feeder tubing into sides of which 3/32-inch tubing is to be inserted to serve as emitters.

Leisure Time Watering System. 2999 Monterey-Saunas Hwy, Monterey, CA 93490. Heavier, more durable equipment than GroMor, higher cost, disassembly more difficult. But more professional. Uses 1/2-inch, 3/8-inch, and 1/4-inch tubing at 8¢, 6¢, and 3¢ per foot, respectively. Various emitters 12¢ to 45¢. Many accessories. Similar from various other firms.

Equipment from the above two suppliers and literature from others will be shown to interested members of NPS on request.

Dick O'Connor
471-5894

It was very exciting to see such a positive response to our mushroom exhibit held on Sunday, Sept. 19 at the State Fair. Special thanks go to Bill Isaacs for such an interesting array of mushrooms and such a lovely display set-up. Surely the outstanding mushroom there was Boletus barrowsii which was spoken about in last month's newsletter. Dorothy and Carper Tewinkel manned the exhibit along with Bill for the morning and, like us, felt great satisfaction in sharing in the enthusiasm this exhibit evoked. Many of the public had no idea New Mexico hosted such a variety of mushrooms--Bill had collected 46 species and subspecies to display in our small space. Several of those who came by were especially interested in the Boletus edulis and as we rearranged the exhibit at the end of the day we shared this species with those who were interested in sampling it. Because of the tremendous response we received we removed the damaged and poisonous mushrooms so that we could leave it unattended on Monday. We have Bill's list of the mushrooms collected at the Ski Basin if anyone wishes to see it. C. Hubbard

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Etymologies

Blooming together in the fall are Chrysothamnus nauseosus: Chryso from the Greek for yellow and thamnus from the Greek for shrub, nauseosus refers to the smell of the leaves;

and Aster bigelovii: Aster from the Latin for star and bigelovii for Mr. Biglow. M.D.