

CRESTING IN ILLINOIS FERNS

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ABSTRACT.—Five crested forms of ferns are reported, four for the first time from Illinois.

The phenomenon of forking in ferns, known as crestring, has been discussed by various authors, notably Tryon (1938) and Wagner (1966). Tryon (1938) reported crestring in 12 species of ferns, and described the various forms of crestring known. Fernald (1950) reported an additional eight species of ferns showing forking. Most of these plants have been given *forma* epithets, but Wagner (1966) suggests, on the basis of experimental evidence, that it is unwise to name these forms.

Heretofore, crestring has been reported on only one fern from Illinois, although of the known Illinois ferns, 19 have been known to exhibit crestring. *Dryopteris marginalis* f. *davenportii* has been reported by Mohlenbrock (1965) from Pope County.

Exploration for plants in southern Illinois not only resulted in the discovery of a second station for *D. marginalis* f. *davenportii*, but also the discovery of four additional crested forms.

Two specimens of *Dryopteris marginalis* (L.) Gray forma *davenportii* (Floyd) A. R. Prince have been found in Illinois, both from Pope County. The first specimen was found in 1959 at Dixon Springs State Park, growing from the crevice of a huge sandstone boulder in a mesic woods. Of the six fronds possessed by the plant, only two exhibited crestring. In all other respects,

the specimen appeared to be typical for *Dryopteris marginalis*. The specimen, *R. H. Mohlenbrock s. n.*, is in the SIU herbarium. The second specimen of forma *davenportii* was found growing from a crevice on a small sandstone boulder at Bell Smith Springs (SE, NW, NE, Section 33, T 11 S, R 5 E, Union Township), near Eddyville, on August 26, 1966. The plant possessed only four fronds of which one exhibited forking of equal dichotomy. The specimen, *S. L. Wunderle 663*, is in the Winston Churchill College herbarium.

A specimen of *Polystichum acrostichoides* (Michx.) Schott forma *cristatum* Clute has been discovered filed in the herbarium of Southern Illinois University. It had been collected in Union County, at Bald Knob, November 5, 1921, by Mary Steagall, a former staff member at Southern Illinois University. The forked frond of the specimen is not dichotomously forked since the upper shank is larger than the lower.

On July 22, 1966, a crested form of *Asplenium pinnatifidum* Nutt. was discovered at Bell Smith Springs (SW, SW, SW, Section 34, Union Township) in Pope County. It was found growing under a shallow sandstone overhang. The habitat under the overhang was moist and several typical plants of *Asplenium pinnatifidum* were found.

Asplenium pinnatifidum exhibits great variation of leaf forms. Mohlenbrock (1956) reported the occurrence of a form with greatly reduced laminae. The specimen found on July 22, 1966, how-

ever, had one frond that showed cresting (FIG. 1). The plant shows an extremely deep form of leaf-cutting of equal dichotomy with both shanks of the fork curving inward and exhibiting equal size. The crested form of *A. pinnatifidum* has apparently never been given an epithet. The collection data for the Illinois specimen are: sandstone boulder, Bell Smith Springs, July 22,

1966, S. L. Wunderle 661 (specimen in the Winston Churchill herbarium).

A fourth species observed which exhibited forking was the walking fern *Asplenium rhizophyllum* L. This specimen (FIG. 2) was found growing in a large colony of walking ferns on a small, moss covered, east-facing sandstone boulder in a mesic valley at Bell Smith Springs (SE, NW, NE, Section



FIGURE 1.—Crested form of *Asplenium pinnatifidum* (Wunderle 661) from Pope County, Illinois.



FIGURE 2.—Crested form of *Asplenium rhizophyllum* (Wunderle 662) from Pope County, Illinois.

33, Union Township), near Eddyville, on August 26, 1966. The colony of walking ferns was approximately 20 feet away from a large boulder covered with fragile fern (*Cystopteris fragilis* (L.)



FIGURE 3.—Crested form of *Athyrium filix-femina* (Hopkins, Schwegman, & Mohlenbrock 14121) from Pope County, Illinois.

Bernh.), marginal fern (*Dryopteris marginalis* (L.) Gray), maidenhair spleenwort (*Asplenium trichomanes* L.), a colony of shining clubmoss (*Lycopodium lucidulum* Michx.), partridgeberry (*Mitchella repens* L.), and numerous bryophytes. The forked specimens show Y-shaped forks of equal dichotomy with the shanks widely spreading and of equal size.

Asplenium rhizophyllum often shows much variation in leaf-cutting, but crested forms are seemingly rare. The Illinois collection is *S. L. Wunderle* 662 (in Winston Churchill herbarium).

An extensive colony of lady fern (*Athyrium filix-femina* (L.) Roth var. *rubellum* Gilb.) growing at the edge of a wooded spring marsh was half composed of specimens which exhibited extensive crestring. (FIG. 3) This crestring was not confined to the tip of the blade but to most or all of the pinnae. This form has been described as forma *cristatum* (Hopkins) Clute. The data for the collected specimen are: wooded spring marsh, just north of the corners of Sections 15, 16, 21, 22, T 15S, R 6 E, 4 miles west of Bay City, Pope County, September 29, 1966, W. Hopkins, J. Schwegman, & R. Mohlenbrock 14121, deposited in SIU.

The illustrations have been prepared by Mr. Kenneth L. Weik.

LITERATURE CITED

- FERNALD, M. L. 1950. Gray's manual of botany. American Book Co., New York. 1632 pp.
- MOHLENBROCK, R. H. 1956. An unusual form of *Asplenium pinnatifidum* Nutt. American Fern Journal 46: 91-93.
- . 1965. Habits and habitats of southern Illinois ferns. Southern Illinois University Printing Service, Carbondale. 24 pp.
- TRYON, R. M. 1938. The phenomenon of forking in ferns. American Fern Journal 28: 81-90.
- WAGNER, W. H. 1966. Illustrations of transient fern forms. American Fern Journal 56: 101-107.

Manuscript received January 5, 1967.