

CHECKLIST OF THE FERNS, NATURAL FALLS STATE PARK

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Natural Falls State Park, formerly known as Dripping Springs is located in northeast Oklahoma. The park's natural beauty and flora have attracted visitors since 1907. In a 1988 visit to the Oklahoma State University Herbarium, I noticed that several herbarium sheets of ferns were collected from Dripping Springs. This was intriguing and made me want to visit the area. Due to my interest in floristics and taxonomy, Natural Falls State Park seemed the perfect place to create a checklist of ferns. Thus, the objective of this study was to create an inventory of the ferns of Dripping Springs using my collection and the collections and observations from earlier botanists. A systematic collection of the ferns of Dripping Springs was conducted on August 7, 1998, October 15, 1998, and October 20, 2001. Using standard taxonomic methods, each plant was identified to species and subsequently inventoried. In three days of collecting, 17 species from 6 families and 12 genera were encountered. Since 1925 a total of 19 species from 6 families and 12 genera have been reported to occur.

INTRODUCTION

Natural Falls State Park, formerly known as Dripping Springs is located in northeast Oklahoma. The Park's natural beauty and flora have attracted visitors since 1907. Botanists such as Harriet Barclay, Charles Wallis, Edgar Wherry and several others have taken a special interest in the park because of its interesting flora, especially the ferns. In the 1980's the privately owned park was closed due to the poor condition of the buildings on the property (1). In 1990 Dripping Springs was purchased by the Oklahoma Tourism and Recreation Department with plans to make it once again accessible to the public (2).

In a 1988 visit to the Oklahoma State University Herbarium I noticed that several herbarium sheets of ferns were collected from Dripping Springs. This was intriguing and made me want to visit the area. In July 1989, while on vacation in northeast Oklahoma my family and I visited the park only to find that it had closed. In 1998 I learned through a fellow botanist that the area was once again open to the public. Due to my interest in floristics and taxonomy, Natural Falls

State Park seemed to be the perfect place to create a checklist of ferns. Thus, the objective of this study was to create an inventory of the ferns of Dripping Springs by using my collection and the collections and observations from earlier botanists.

THE STUDY AREA

Dripping Springs is located west of Siloam Springs in the southeast corner of Delaware County R25E, T20N, Sec. 32 (3). The most eye-catching feature in the park is the 25-meter waterfall (2). The surrounding area above the waterfall and ravine below was the site of this study and past studies by other botanists. As is common in the Ozarks, the surface rock contains chert that gives rise to acid soils. Underlying the spring is a stratum of limestone of both Fernvale and Fite Formations. Thus the soils at the lower levels (ravine) are somewhat alkaline (4). Soils in the sampling areas include Clarkesville very cherty silt loam, Clarkesville stony silt loam, and Staser gravelly loam. Climate of the area is moist and warm temperature (5).

INVENTORY OF FERNS

A systematic collection of the ferns of Dripping Springs was conducted on August 7, 1998 and October 20, 2001. Collecting focused on the ferns that grew in the ravine floor and rock surfaces. Using standard taxonomic methods, each plant was identified to species and subsequently inventoried. Specimens typically were collected in fertile condition with the exception of *Botrychium virginianum*. Nomenclature for the taxa follows Flora of North America (6). Vouchers will be deposited in the Oklahoma State University Herbarium (OKLA).

FLORA OF NATURAL FALLS STATE PARK (DRIPPING SPRINGS)

In three days of collecting, 17 species from 6 families and 12 genera were encountered (Table 1). Fern collections and recordings from 1925-1977 are listed in Tables 2 and 3. From 1925-2001 a total of 19 species from 6 families and 12 genera have been reported to occur. Ferns designated as rare by the Oklahoma Natural Heritage Inventory (7) were *Asplenium bradleyi* (S1).

ACKNOWLEDGEMENTS

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2. News Release Oklahoma Tourism and Recreation Department. Oklahoma City, OK (1997).
3. The Roads of Oklahoma. Map. Fredericksburg, TX (1997).
4. Wherry, E. "Ferns of Dripping Springs, Oklahoma." *American Fern Journal* 18:61 (1928).
5. Cole, E., Soil Survey of Cherokee and Delaware Counties, Oklahoma, U.S. Government Printing Office, Washington, D.C. (1970).
6. Flora of North America Editorial Committee, *Flora of North America, Vol. 2, Pteridophytes and Gymnosperms*. Oxford University Press, New York (1933).
7. Oklahoma Natural Heritage Inventory. Short Working List of Rare Plants 22 May 2001. Oklahoma Biological Survey, Norman (2001).

**TABLE 1. CHECKLIST OF FERNS, NATURAL FALLS STATE PARK (DRIPPING SPRINGS)
Collected by Bruce Smith August 7, 1998 and October 15, 1998, and October 20, 2001****ASPLENIACEAE**

- Asplenium bradleyi* D.C. Eaton.
Bradley's Spleenwort, August 7, 1998
3590 (OKLA)
- Asplenium platyneuron* (L.) Britton, Sterns, &
Poggenb.
Ebony Spleenwort, 3578 (OKLA)
- Asplenium rhizophyllum* L.
Walking Fern 3562 (OKLA)
- Asplenium trichomanes* L.
Maidenhair Spleenwort 3619 (OKLA)

DRYOPTERIDACEAE

- Cystopteris bulbifera* (L.) Bernh.
Bulblet Bladder Fern 3589 (OKLA)
- Cystopteris tennesseensis* Shaver
Tennessee Bladder Fern 3573 (OKLA)
- Dryopteris marginalis* (L.) A. Gray
Marginal Shield Fern 3568 (OKLA)
- Onoclea sensibilis* L.
Sensitive Fern 3774 (OKLA)
- Polystichum acrostichoides* (Michx.) Schott.
Christmas Fern 3580 (OKLA)
- Woodsia obtusa* (Spreng.) Torr.
Blunt Lobed Woodsia 3622 (OKLA)

OPHIOGLOSSACEAE

- Botrychium virginianum* (L.) Sw.
Rattlesnake Fern 3773 (OKLA)

POLYPODIACEAE

- Pleopeltis polypodioides* (L.) E.G. Andrews &
Windham
Resurrection Fern 3772 (OKLA)

PTERIDACEAE

- Adiantum capillus-veneris* L.
Southern Maidenhair Fern 3565 (OKLA)
- Adiantum pedatum* L. Northern Maidenhair
Fern 3576 (OKLA)
- Cheilanthes lanosa* (Michx.) D.C. Eaton.
Hairy Lip Fern 3584 (OKLA)
- Pellaea atropurpurea* (L.) Link
Purple Cliff Brake Fern 3582 (OKLA)

THELYPTERIDACEAE

- Phegopteris hexagonoptera* (Michx.) Fee Broad
Beech Fern 3571 (OKLA)

**TABLE 2. CHECKLIST OF FERNS NATURAL FALLS STATE PARK (DRIPPING SPRINGS)
Reported by John K. Small and Edgar T. Wherry May 3, 1925 (4)****ASPLENIACEAE**

- Asplenium bradleyi* D.C. Eat.
Bradley's Spleenwort
- Asplenium platyneuron* (L.) Britton, Sterns, &
Poggenb.
Ebony Spleenwort
- Asplenium resiliens* Kunze
Little Ebony Spleenwort
- Asplenium rhizophyllum* L.
Walking Fern
- Asplenium trichomanes* L.
Maidenhair Spleenwort

DRYOPTERIDACEAE

- Cystopteris bulbifera* (L.) Bernh.
Bulblet Bladder Fern
- Cystopteris fragilis* (L.) Bernh.
Brittle Fern
- Dryopteris marginalis* (L.) A. Gray
Marginal Shield Fern
- Polystichum acrostichoides* (Michx.) Schott.
Christmas Fern

PTERIDACEAE

- Adiantum capillus-veneris* L.
Southern Maidenhair Fern
- Cheilanthes lanosa* (Michx.) D.C. Eaton
Hairy Lip Fern

**TABLE 3. CHECKLIST OF FERNS NATURAL FALLS STATE PARK (DRIPPING SPRINGS)
Collected from 1928-1977**

ASPLENIACEAE

- Asplenium platyneuron* (L.) Britton, Sterns &
Poggenb. June 30, 1957 Charles Wallis 4454
(OKLA)
Asplenium rhizophyllum L.
May 4, 1928 Robert Stratton 798 (OKLA)
July 17, 1929 Robert Stratton (OKLA)
July 7, 1950 U.T. Waterfall 9571 (OKLA)
June 30, 1957 Charles Wallis 4456 (OKLA)
June 16, 1972 John and Connie Taylor
10792 (OKLA)
Asplenium trichomanes L.
May 7, 1938 Milton Hopkins 3250 (OKLA)
July 7, 1950 U.T. Waterfall 9561 (OKLA)

DRYOPTERIDACEAE

- Cystopteris bulbifera* (L.) Bernh.
June 30, 1957 Charles Wallis 4449 (OKLA)
Cystopteris tennesseensis Shaver
July 7, 1950 U.T. Waterfall 9569 (OKLA)
June 16, 1972 John and Connie Taylor
10791 (OKLA)
Dryopteris marginalis (L.) A. Gray
May 4, 1928 T.A. Tripp 137 (OKLA)
May 7, 1938 Milton Hopkins 3235
(OKLA)
June 16, 1972 John & Connie Taylor
10794 (OKLA)
September 4, 1977 T.A. Zanoni 3349
(OKLA)
Polystichum acrostichoides (Michx.) Schott
June 30, 1957 Charles Wallis 4451
(OKLA)
Woodsia obtuse (Spreng.) Torr.
July 16, 1929 Robert Stratton 1722
(OKLA)
July 8, 1957 Charles Wallis 4724 (OKLA)

POLYPODIACEAE

- Pleopeltis polypodioides* (L.) E.G. Andrews &
Windham
June 30, 1957 Charles Wallis 4455
(OKLA)

OPHIOGLOSSACEAE

- Botrychium virginianum* (L.) Sw.
April 28, 1957 Charles Wallis 3660
(OKLA)

PTERIDACEAE

- Adiantum capillus-verneris* L.
June 2, 1963 Charles Wallis 8760 (OKLA)
July 7, 1950 U.T. Waterfall 9570 (OKLA)
June 16, 1972 John and Connie Taylor
10788 (OKLA)
Adiantum pedatum L.
May 4, 1928 Robert Stratton 804 (OKLA)
May 7, 1938 Milton Hopkins 3254
(OKLA)
Cheilanthes lanosa (Michx.) D.C. Eaton
August 11, 1932 Featherly and Still
(OKLA)
May 7, 1938 Milton Hopkins 3251
(OKLA)
Pellaea atropurpurea (L.) Link
July 7, 1950 U.T. Waterfall 9560 (OKLA)

THELYPTERIDACEAE

- Phegopteris hexagonoptera* (Michx.) Fee
July 18, 1929 Robert Stratton (OKLA)