

# Floristic Inventory of the McCurtain County Wilderness Area, Oklahoma

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## INTRODUCTION

The 5,701-ha McCurtain County Wilderness Area (MCWA) is the largest representative tract of unlogged, old-growth oak-shortleaf-pine habitat known to remain in the United States (1). It has been owned by the Oklahoma Department of Wildlife Conservation (ODWC) since 1918 (2). The overstory of the upland communities is dominated by *Pinus echinata*, *Quercus stellata*, *Quercus velutina*, and *Carya* spp. on south slopes, while more mesic north slopes are dominated by *Quercus alba*, *Quercus rubra*, *Quercus stellata*, *Carya tomentosa*, and to a lesser extent *Acer* spp. (3). Common understory taxa are *Vaccinium* spp. and *Hypericum* spp. (2,3). The riparian forest along the Mountain Fork River in the MCWA was lost when Broken Bow Reservoir was constructed. (4). This community may have had constituents, e.g., *Taxodium distichum*, *Quercus bicolor*, and *Carya glabra*, that are currently absent from the area.

The appearance of the Wilderness today is quite different from that prior to the arrival of European settlers. Historical evidence (3,5-7) suggests that frequent anthropogenic and lightning-caused fires maintained a mosaic of open woodland plant communities. The understory was likely dominated by grasses such as bluestems or by woody sprouts (7). Fire suppression in the area fostered a rapid increase in the density of the forest and a shift in the landscape mosaic of the dominant forest cover types (3,7).

The ODWC is implementing an ecosystem-based management plan for the Wilderness. The primary goal is to restore the open pine-grassland or open hardwood-woodland with a grass or shrub understory that existed before the advent of fire suppression in the mid-1920s. Restoration is important in order to increase understory forage and improve habitat quality for many species of wildlife, including the red-cockaded woodpecker, *Picoides borealis*, which is listed as endangered by federal authorities. Prescribed burning and limited midstory removal are principal tools for restoring open forest conditions.

Prior to this study, our knowledge of the plant species and understory communities in the Wilderness was scanty. No formal inventory of the plants present had been made. Previous work involved only surveys for rare plants conducted by personnel of the Oklahoma Natural Heritage Inventory and The Nature Conservancy. Knowledge of the woody species was also incomplete, although Masters and coworkers conducted some sampling of woody species in ecological studies of the area (3,7). This lack of information is especially significant because of the high floristic diversity of the region. The Oklahoma Natural Heritage Inventory (8) lists 84 species as rare in McCurtain County, many of which occur in the forests of the Wilderness. In addition, knowledge of the plants present is needed to evaluate success in restoring pre-settlement forest conditions. As noted above, the absence of fire has resulted in dramatic shifts in the nature of the forest community. Baseline information is needed in order to make comparisons as fire regimes are developed. Thus, the objective of our study was to inventory the vascular flora of the MCWA. This note summarizes our findings and provides a reference to information compiled in Smith (9). Information on the understory communities will be presented in a later publication.

## THE WILDERNESS AREA

The MCWA is located at the north end of the Broken Bow Reservoir (T3S, R25E & R26E) and situated in the Kiamichi Mountain Range of the Ouachita Highlands. The topography consists of narrow, strongly dissected ridges that are oriented generally east to west and range in elevation from 183 m to 415 m (7). The MCWA extends east to west 11.3 km and north to south 8.1 km and is dissected by the Mountain Fork River and 5 major creeks (10). Soil associations of the MCWA are part of the Goldston-Carnasaw-Sacul steep (GsF) and Hector-Rock outcrop complex, 35-60% slopes (HkF). The former comprises moderate to deep, and moderately to excessively drained, loamy soils over sandstone and shale. The latter is found on dissected ridge tops and escarpments and consists of shallow, steep, well-drained, gravelly loams and exposures of sandstone bedrock (10).

Climate of the area is warm, moist, and warm temperate (10,11). Summers are hot with high humidity levels. Temperatures above 0.0 °C average 228 days per year. The growing season averages approximately 200 days and generally extends from 15 April to 22 October; the winters are short, but well-defined. The mean annual temperature is 23.3 °C. July and August are typically the warmest months averaging 33.9 °C, and January and February the coldest, averaging 12.2 °C. Average annual precipitation is 122 cm, with April and May the wettest months. Days with snow cover of 2.5 cm or more are typically only three per year.

## INVENTORY of the FLORA

A systematic collection of the vascular plants of the Wilderness was conducted during the growing seasons of 1993-1997. Several times each season, the area was traversed on foot by 2-6 individuals for a total of 24 trips. Collecting focused on management compartments 1-3, 5, and 6 because of related studies on understory plant communities in those areas. We used standard taxonomic methods (12) to identify each plant to species or variety, and subsequently inventoried each plant. Specimens typically were collected in fertile condition. Nomenclature for taxa follows *Flora of North America* (13) for the pteridophytes and gymnosperms; and Waterfall (14), Cronquist (15), and Correll and Johnston (16) for the flowering plants. Common names were taken from Taylor and Taylor (17). Designations of rarity follow those of the Oklahoma Natural Heritage Inventory (8). Vouchers are deposited in the Oklahoma State University Herbarium (OKLA.).

## FLORA of the MCWA

We encountered 359 species in 236 genera and 95 families in this inventory (Table 1). A list of all taxa is available in Smith (9). Native species composed 94.2% of the flora. Three families, Poaceae (55 taxa), Asteraceae (39 taxa), and Fabaceae (32 taxa), composed 35.1% of the vascular flora of the Wilderness. Other large families were the Cyperaceae (20 taxa) and the Lamiaceae (12 taxa). Pteridophytes (12 taxa) represented 3.3% of the flora. The largest genera present in the area were *Panicum* (15 species) and *Carex* (12 species).

Plant species designated by the U.S. Fish and Wildlife Service (18) as endangered, threatened, or candidate (formerly category 1) were not encountered. Species designated rare by the Oklahoma Natural Heritage Inventory (8) and present were *Phaseolus polystachios* (S1), *Ribes curvatum* (S1), *Streptanthus squamiformis* (S1), *Brachyelytrum erectum* (S1), *Carex latebracteata* (S2), *Carex oxylepis* (S2), *Amorpha ouachitensis* (S2), *Hamamelis virginiana* (S2), *Baptisia nuttalliana* (S2), *Iris cristata* (S2), *Chionanthus virginicus* (S2), *Mitchella repens* (S2S3), *Ilex opaca* (S2S3), and *Panicum brachyanthum* (S2S3).

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TABLE 1. Taxa Constituting Flora of MCWA.

|                | Species and Intraspecific Taxa |        |        |            |       |
|----------------|--------------------------------|--------|--------|------------|-------|
|                | Families                       | Genera | Native | Introduced | Total |
| Polypodiophyta | 8                              | 10     | 12     | 0          | 12    |
| Coniferophyta  | 2                              | 2      | 2      | 0          | 2     |
| Magnoliophyta: |                                |        |        |            |       |
| Magnoliopsida  | 75                             | 175    | 239    | 13         | 252   |
| Lilliopsida    | 10                             | 49     | 85     | 8          | 93    |
| Total Taxa     | 95                             | 236    | 338    | 21         | 359   |

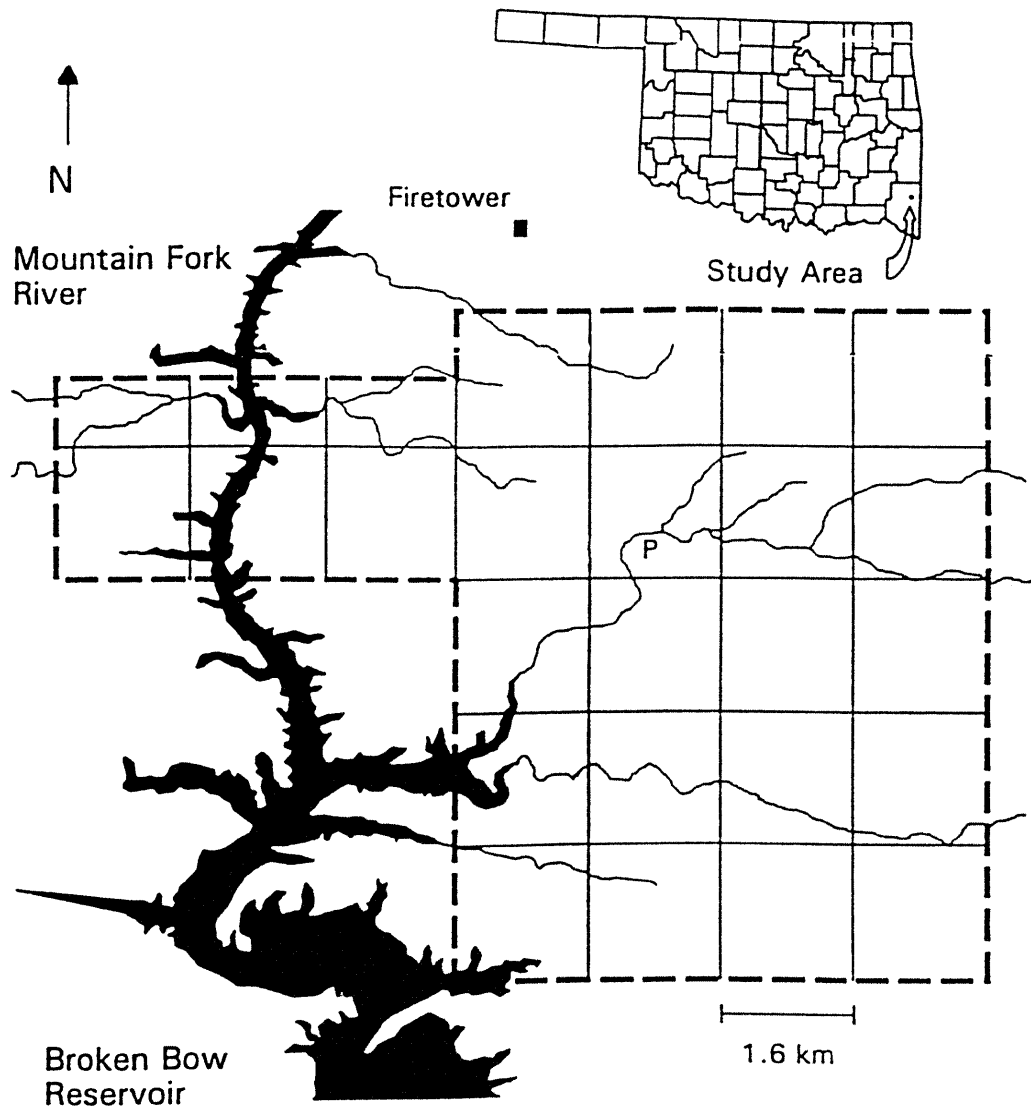


Figure 1. McCurtain County Wilderness Area, Southeastern Oklahoma

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