

ARKANSAS

The Arkansas Natural Heritage Commission and its predecessors have been locating and describing exemplary natural communities for twenty years, but they did not at first look for old growth as such. As the concept of old growth developed, the Commission applied the concept to the natural areas that it had previously identified. Most Arkansas forests "composed of 100 to 150 year old mid to late successional species are old growth," as they are showing "reduced net production" and "increased mortality," Thomas Foti of the Arkansas Natural Heritage Commission writes. Large-scale logging did not begin in Arkansas until around 1890; and the first cut was not completed until about 1950. Therefore, any forest without signs of logging and with "a substantial number of trees older than 100 years" is likely to have come into being as a result of natural forces only, rather than as the result of timbering (Foti 1993). In Arkansas, lightning, native Americans, and European-American settlers impacted large areas by starting fires.

In part because of recent fire suppression, a severe outbreak of the Red Oak Borer is heavily impacting old growth in Arkansas's Ouachita and Ozark National Forests, as in the Mark Twain National Forest in Missouri. In the Ouachita National Forest 30,000 acres of forest have been affected. In infected areas, mortality is as high as 50-60% in red oaks, less severe in white oaks (Hedrick 2003). The damage is even worse in Ozark National Forest. The Ozark has 700,000 acres of hardwoods, of which 300,000 have been impacted. USFS staff have not been able to determine the effect on old growth in particular, but they do know that the degree of impact varies with the stand. Some stands have been so heavily damaged that USFS would no longer classify them as old growth, while others might be classified as old growth with little red oak. Some old growth stands are doubtless as they were before the outbreak (Davis 2003).

The Red Oak Borer is a native insect that has been present in Ozark oak ecosystems for millennia (Simon 2002). The severity and scope of the present Red Oak Borer outbreak is, however, unprecedented (Hedrick 2003). Lack of fire combined with drought appear to have made the outbreak possible. Drought, like the borer, is part of Ozark oak ecosystems. However, as a result of fire suppression for the last 80-100 years, shrubs and trees have become unnaturally dense. With more, smaller trees competing for the same resources that were available a hundred years ago, they are stressed and vulnerable to insects and disease (Simon 2002). In 2003 USFS is using prescribed burns on a larger scale than previously to encourage oak regeneration (Hedrick 2003).

Evaluating Ouachita National Forest in relation to types and extent of old growth, USFS has found that the forest is well stocked with old-growth hardwoods, at least on high, dry sites. However, it has little Shortleaf Pine-bluestem old growth. The staff therefore has developed and codified, in an amendment to the 1986 forest management plan, a program to restore old-growth Shortleaf Pine-bluestem. USFS will manage 80,000 acres of forest, including 50,000 acres classified as suitable for logging, to this

end. On the land that is suitable for logging, the staff will use a 160-year rotation, conduct prescribed burns regularly, and thin if necessary. Hedrick remarks that the program has already made "good progress" and shows visible results (2003).

USFS is currently revising the management plans for the Ouachita National Forest and the Ozark-St. Francis National Forests. The Ouachita and Ozark-St. Francis Forests have separate plans, but they are revising them on approximately the same schedule. Notices of intent were released in April 2002. The plans are expected to be completed in 2004 or 2005. No field inventories of old growth specifically for the plans are envisaged (Dipert 2003).

The state has at least two sites that would be old growth were it not for a history of fire suppression. **Crystal Mountain Scenic Area** (Montgomery County) is a 100-acre area of Shortleaf Pine-White Oak-hickory, reputed to be virgin except for salvage cutting (Foti 1992). What makes the area unique is the pine, which was part of the original forest. The pine may be 200 years old, but the hardwoods are probably less than 100, as they presumably grew up after the suppression of fire (Hedrick 1993). **Turkey Mountain Savanna**, in Lower Buffalo Wilderness, Buffalo National River (Marion County) is comprised of some 1000 acres of "grown up savanna" with no evidence of cutting, on the south side of Turkey Mountain and the north and south sides of adjacent mountains. Given the history of activities in the area, the site can be assumed to have been grazed by livestock although no evidence of grazing is apparent. Post Oak and Chinquapin Oak are scattered over limestone, dolomite, and sandy dolomite substrates. The trees are up to 16 inches in diameter, and most are hollow and scarred because of fires. The area is a fire-influenced community but has been denied fire for 40 or 50 years. As a result, "brush," composed of oaks, hickories, sumac, Persimmon, hawthorn, and briars, grows between the trees. Fire has been reintroduced to a portion of the area on an experimental basis, and effects on vegetation are being monitored by the Park Service (Foti 2001).

Bayou DeView, east-central Arkansas (Monroe County)

Several thousand acres of small to medium sized Water Tupelo with scattered Baldcypress, primarily in back swamps behind the natural levee of Bayou DeView. The swamps, which the Arkansas Natural Heritage Commission describes as old growth, extend along some five to ten miles of the bayou, a tributary of the Cache River. The cypresses are very large. They do not have much buttressing, but trunks are up to six feet in diameter above the swell. The trees are also very old, some approaching 1000 years in age. Although the forest is changing in composition, from cypress to tupelo dominance, logging does not seem to be the reason: large cypress stumps are lacking. "There has, however, been logging," especially of Overcup Oak on the natural levee. "The change in dominance within the swamp may represent natural succession of an even-aged cypress stand that became established hundreds of years ago" (Foti 1992, 1993).

The US Army Corps of Engineers owns 8000 acres along Bayou DeView, all of which it obtained as mitigation for failed attempts to channelize the Cache River and Bayou DeView. Of the 8000 acres, 4500 support the old cypress-tupelo swamps. The remaining old cypress-tupelo swamps are privately owned; or within a portion of the Arkansas Game and Fish Commission's Dagmar Wildlife Management Area (Foti 1992,

Sharp 1993). In the Management Area "Some logging appears to have been conducted many years ago," but cypress as old as 860 years were spared. Under the Dagmar Master Plan, the old-growth portion of the Wildlife Management Area has been placed into a reserved class that will insure its protection (Coker 1992). The US Fish and Wildlife Service is creating a Cache River National Wildlife Refuge, encompassing parts of the basins of both Bayou DeView and the Cache River. As of early 2003, it had obtained 55,000 acres, including 33,000 acres of bottomland forest (Johnson 2003).

A dissenting voice as to the old-growth status of Bayou DeView comes from the manager of the Cache River Refuge, Dennis Sharp. He says that no forest "that would be considered old growth" is on the 25,000 acres that FWS had acquired as of 1993. The "majority" of the Cache and Bayou DeView floodplain has "a long history" of logging. To his knowledge, the only exceptions are "a few isolated very small tracts of old cypress along the Bayou DeView River." "Probably the most readily identifiable of these tracts" is in the Dagmar Wildlife Management Area (1993).

Black Swamp, east-central Arkansas (Woodruff County)

A complex of several thousand acres of selectively logged swamp and bottomland hardwood forest, broken occasionally by logged and developed areas or cropland, in the floodplain of the Cache River. The area includes old-growth Baldcypress, tupelo, and cypress-tupelo stands and hardwood areas with Overcup Oak, Nuttall Oak, and Willow Oak. The Arkansas Natural Heritage Commission has a conservation easement on 1000 of the several thousand acres owned by the Arkansas Game and Fish Commission as its Black Swamp Wildlife Management Area (Stahle et. al. 1985, Foti 1993).

Little River Swamp, southwestern Arkansas (Hempstead County)

In a backswamp along Little River, a privately owned, 2145-acre "virgin stand of baldcypress type," with various age classes represented (Foti 1992). Stahle et. al. describe the area as 3500 acres, "mostly wooded with virtually pure stands of large, virgin baldcypress," probably "few if any trees over 250 years old" (1985). Unfortunately, though, flood control projects elsewhere have reduced the frequency of inundations by turbid waters, and, as a result, the owners introduced grass carp in the seventies to control the growth of aquatic vegetation (Stahle et. al. 1985, Goodwin & Niering 1975).

Big Lake National Wildlife Refuge, in northeastern Arkansas (Mississippi County)

Over 1500 acres of uncut Baldcypress in an 11,038-acre Refuge on the Little River. The virgin cypress occupy the 500-acre Baldcypress RNA, and portions of the adjacent 2100-acre Big Lake Wilderness Area. The number of acres of virgin Baldcypress in the Wilderness is not known. Researchers believe that the Baldcypress stands may have originated as a result of the New Madrid Earthquake of 1811-12. Cypress have been cored and found to be no older than the earthquake; and researchers have discovered in the material on the lake bottom evidence that a riverine system gave way to a lacustrine system at the time of the earthquake.

The Refuge includes swamps with Baldcypress, Water Tupelo, Black Willow, and Buttonbush and, at a slightly higher level, bottomland hardwood forest with cottonwood, oaks, River Birch, Green Ash, Red Maple It also has 2600 acres of open water. Nevertheless, the Refuge is "only a little swath of land surrounded by agricultural land,"

Brian Braudis, Refuge manager states; and flooding has severely impacted it. Flowing into the Little River are a series of straight, manmade ditches that drain more than 2000 square miles of cropland in the Missouri Bootheel. For this cropland, the Refuge serves as a sump.

Whenever one of the area's frequent floods occurs, the Refuge is subject to sediment-laden floodwaters that may inundate virtually the entire area. In the northern end of the Refuge, where the RNA is located, more than five feet of silt and trash have collected around the trees. Because thousands of acres have been covered by silt, digging it out would be a monumental task. Early succession with grasses and young trees is taking place on the silt. Furthermore, according to a study conducted by the Secretary of the Interior for the US House of Representatives in 1995, the lake at the Refuge had lost one-third of its volume since 1935 due to sedimentation. Both the cypress and the hardwoods are suffering (Eggering 1993, Foti 1992, Braudis 2003).

White River National Wildlife Refuge, in southeastern Arkansas (Desha County)

A 157,000-acre Refuge, with several areas of old growth, including virgin tracts. The staff believes that old individual trees are scattered throughout the present Refuge--intermixed cypress, oak, sycamore, Sugarberry, and elm.

--**Sugarberry Natural Area.** A 973-acre bottomland hardwood forest. There are no stumps or other proof that the site has been cut, but the staff speculate that it may have been cut very lightly around the turn of the century, just an occasional tree here or there next to a bayou. The area has four forest types: a) Sweetgum-Nuttall Oak-Willow Oak; b) Sugarberry-American Elm-Green Ash; c) sycamore-Pecan-American Elm; and d) Baldcypress. The Baldcypress has replaced an Overcup Oak-Water Hickory community as a result of flooding caused by Beaver. Beaver impoundments have caused roughly 30% of the once completely forested natural area to become swamp. Trying to prevent additional damage to the old-growth forest, the staff operates an "aggressive direct beaver control program," which includes removing Beaver dams annually.

--**The Striplin Tract.** Thirty acres thought to be virgin, between a county road and the White River. On the upland, red oak, White Oak, and hickory dominate; in the bottomland, Sweetgum, Nuttall Oak, and Willow Oak are the main trees.

--**Big Island.** On a portion of the island, approximately 60 acres, very lightly cut at the turn of the century. Species have never been inventoried, but include Sugarberry, American Elm, Green Ash, and Nuttall Oak.

Two additional areas have been administratively removed from cutting: a 3700-acre Natural Area that was selectively cut in the 1930s but not much since; and the approximately 4200-acre Brooks Island, which was cut in the early 1970s, but which is now protected from logging and motor vehicles. These two areas are on opposite sides of the river, about a mile apart (Hurdle 1993, Denman 1993 and 2003, Foti 1992, 2001).

Ouachita National Forest, in western Arkansas

In the Ouachita Mountains, woodlands of stunted oak are common at elevations over 2500 feet and on steep, dry slopes. The trees in these woodlands are almost all oak (Northern Red Oak, White Oak, Post Oak, and Blackjack Oak). Presumably the stands have not been logged, as they would not have been worth harvesting. The Forest Service manages this type of woodland today for diversity, old growth, and wildlife. Blackfork

Mountain, described below, may be the best known, he says, because it has been cored (1993, Stahle et. al. 1985).

Larry Hedrick of USFS has the same view of old growth on steep, dry slopes as Bill Pell. He told us that 800,000 acres in Ouachita National Forest are not under vegetation management. They are mostly hardwood and hardwood-pine forests on steep slopes at relatively high elevations. Most of the 800,000 acres have never been logged as they are what USFS calls "non-commercial" sites. The upper-elevation old growth can be readily seen from the Talimena Scenic Byway over Winding Stair and Rich Mountains between Mena, Arkansas, and Talihina, Oklahoma (2003).

At lower elevations in the Ouachita Mountains, particularly along streams, are dry, old-growth woodlands with Eastern Red-cedar, Gum Bumelia, Winged Elm, and Yaupon, among other species. Small, scattered stands can be found in the Cossatot River State Park adjacent to Ozark National Forest, for example.

--**Blackfork Mountain Wilderness Area** (Polk County). Within the 7568-acre Wilderness Area, a complex of old-growth communities, some of them very large, but for the most part acreage has not been determined. Along the ridge line of Rich Mountain is an "extensive," almost pure stand of stunted but very old White Oak, with a sedge understory and lichens and mosses. A steep north-facing slope has an area of old growth in which Sugar Maple is prominent. Stunted Post Oak and Blackjack Oak form a ridgeline woodland, reputed to be virgin (Foti 1992, Hedrick 1993). Stahle et. al. write of a 60-acre "virgin dwarf oak-hickory forest" (1985) on the 24-km-long crest of Blackfork Mountain, and note that "several thousand acres of stunted old-growth post oak, and some shortleaf pine" can be found elsewhere along the ridge (1985). In *A Journal of Travels into the Arkansas Territory during the Year 1819*, Nuttall wrote of crossing Rich Mountain "through thickets of dwarf oaks none of them scarcely exceeding the height of a man." Larry Hedrick of Ouachita National Forest reports that the stunted White Oak forests on Rich and Blackfork Mountains appear to be just as they were when Nuttall saw them (1993).

--**Roaring Branch Research Natural Area**, central-western Arkansas (Polk County). Three hundred and thirty acres of "old-growth hardwood and shortleaf pine, probably components of the virgin stand." There is "no evidence of commercial harvest or recent fires," a Southern Forest Experiment Station report states (Fountain and Sweeney 1985). However, according to another Forest Service description, "there is abundant evidence for past fires" (USFS [nd]b). The south-facing slope is dominated by Shortleaf Pine. The north-facing slope has a mixture of White Oak, Northern Red Oak, and hickory. Both grade into mixtures of basswood, beech, Black Gum, and Sweetgum. Black Locust, Witch-hazel, Ozark Chinquapin, dogwood, and Eastern Redbud are among the trees along the stream (USFS 1968).

--**Lake Winona Research Natural Area**, western Arkansas (Saline County). A stand of virgin Shortleaf Pine and hardwoods, particularly White Oak, which occupies most of the 280-acre Research Natural Area. The soil is rocky and thin. The Shortleaf Pine is not reproducing as well as other species, and many of the pines are reaching maturity (150 to 200 years) and seem to have red heart rot. As they die, shade-tolerant species such as White and Black Oak are replacing them. Yellow Lady Slipper, on the Arkansas endangered or threatened species list, is present and, as of 1975, the Red-cockaded Woodpecker. In 1982 a tornado did extensive damage. The boundaries of the

RNA were redrawn to add other areas of undisturbed Shortleaf Pine and to eliminate the damaged acres, 120 of which were salvage cut and the other 25 left as was for research purposes. According to the Forest Service, human disturbance in the original RNA appeared to be limited to a Forest Service road and the cutting of a few trees near the road (Pell 1993, Fountain and Sweeney 1987, USFS 1975, USFS 1983, USFS [nd]a).

OZARK NATIONAL FOREST, in northwestern and north-central Arkansas

During the winter of 1991-92 the Arkansas Tree Ring Laboratory sampled forest on Enders soils on south-facing slopes in the Arkansas Ozarks. Based on their findings, Cleaveland and Stahle estimate that, on this type of site alone, the Boston Mountain portion of the Ozarks has, in scattered areas, the equivalent of 70 square miles of old growth; and Stahle notes that there are other "likely soil types and slope aspects" they have not yet sampled. As in the Ouachita Mountains, the trees on the sampled sites are oak, in particular here Post Oak, with trees up to 400 years in age (Spencer 1993). Foti of the Arkansas Natural Heritage program says that the whole Boston Highlands plateau was heavily logged around 1890, but he thinks that "steep slopes/unproductive sites" on Bean Mountain and in the Boston Highlands as a whole may have "a significant amount of old growth," as Stahle claims (Foti 1993).

--**Bean Mountain** (Newton County). Old-growth hardwoods of uncertain extent on and around Bean Mountain. Hardwood stands on the mountain over 50 years old are uneven aged and include old-growth remnants, local conservationists asserted in 1993. Some areas, such as Bean Point and Magnolia Grove, are particularly rich in old growth (Bonar 1993, Alexander 1993). Bean Mountain is drained on the east by the East Fork of the Little Buffalo River and on the west by Stepp Creek. At the bottom of the east side of the mountain are four big hollows: Dismal Hollow, Buckner Hollow, Lee Hollow, and Thomas Hollow. On the west side are several shorter hollows including Coon Hollow. Jimmy Dixon, Silviculturist for the Buffalo District, states that uncut forest is likely to be found at the bottom of these and other hollows scattered through the Buffalo District. The hollows are often lined by very steep bluffs. On the creeks in the bottom there may be big boulders. Loggers working with mules would have had to climb over the bluffs with their animals before they could descend to the bottoms and, when they succeeded in doing so, they were likely to find boulders that the mules could not get around (2003). The Forest Service has protected a portion of Dismal Hollow as a Research Natural Area (see below).

--**Dismal Hollow Research Natural Area** (Newton County). According to the Arkansas Natural Heritage Inventory, an estimated 400 acres of undisrupted forest in the 670-acre bottom of a steep canyon (Smith 1993, Foti 1992). Beech, with dbh (diameter at breast height) up to 37 inches, dominate. Also abundant are Northern Red Oak, basswood, and magnolia. The "rich understory includes several relictual species" (Foti 1992). The Forest Service says that "parts of the RNA may in fact be old growth while other parts have been disturbed to one degree or another" (Smith 1993). Local conservationist Doug Alexander believes that Dismal Hollow has much more than 400 acres of old growth (1993).

--**Clifty Canyons Special Interest Area** (Baxter County). Tracts of "very high quality old growth forest of red and white oaks" within a 1655-acre Special Interest Area. The SIA is a complex of different forest communities and conditions (Foti 1992, 1993).

Data are not yet available to say exactly what is old growth or how extensive the old growth is. Sugar Maple, Black Walnut, White Ash, and several hickories are present, in addition to the oak (Tucker 1990). The understory is rich (Foti 1992).

--**Magazine Mountain** (Logan County). Small areas of old-growth hardwood scattered through several thousand acres of mature forest on the slopes and top of the mountain. The old-growth areas have never been mapped and distinguished from the forest in general. Northern Red Oak is dominant. Sugar Maple, walnut, Chinquapin Oak, and hickory are also frequent. The understory is diverse (Foti 1992). The Forest Service has proposed that Magazine Mountain be designated a Special Interest Area (Smith 1993, Foti 2001).

--**Mixed Mesophytic Forest**, in the Upper Buffalo Wilderness Area (Newton County). An 85-acre "high quality stand of beech, oaks, basswood, and magnolias" on a rugged slope that faces north (Foti 1992).

--**Wedington Mountain** (Washington County). "A relatively undisturbed post oak dominated forest along the xeric upper slopes of Wedington Mountain." Trees were cored in 1977 and 1982 on a 40-acre site, which was later artificially disturbed by firewood cutting and clearing of a power line corridor. As of 1985, the upper slopes of the mountain still had many other areas of old-growth Post Oak. The trees had not been cut, because they were small, hard to reach, and unshapely. The canopy was 12 to 15 meters tall, and the biggest trees had only 60 to 75 centimeter dbhs. The mountain is on a western border of the National Forest, and is partly privately owned (Stahle et. al. 1985).

Big Creek Bottoms, southeastern Arkansas (Columbia County)

A 720-acre privately owned old-growth area that apparently extends across several creek channels through bottomland a mile wide. Lowland pine-oak occupies the high ground; Willow Oak, the flats; Overcup Oak and cypress, the depressions. A "few stumps" dot the site; but along the creek there is "little evidence of management." Willow Oak are up to 40 inches dbh; Overcup Oak, to 30 inches. The site also has large specimens of beech, Water Oak, and Sweetbay; but many trees are smaller. A cored pine was estimated to be 120 years old. Beaver and wind have helped shape the site (Foti 1992).

Hot Springs National Park, in central Arkansas (Garland County)

--**North Mountain and Hot Springs Mountain**. A 230-acre old-growth Shortleaf Pine-oak forest, within the park's 4000 acres of forest. The south-facing portion of the acreage is xeric; the north-facing dry. The southern supports a fairly open, stunted forest; the northern a more luxuriant, closed forest. Many trees are older than 130 years. Blackjack Oak is mixed with the pines of the south-facing slope; White Oak is frequent on the north-facing. Some wood was cut for fuel in the nineteenth century, but there are no signs that the forests have had "extensive cutting during the last 150 years."

--**Sugarloaf Mountain**. Approximately 90 acres of old-growth Shortleaf Pine-oak forest, similar to that on North and Hot Springs Mountains. A tree on the south-facing slope was cored at 191 years; and a tree on the north-facing slope had 242 growth rings (Foti 1992, Giddings 1993, Pell 1982).

Beech Creek Tract*, in Overflow Bottoms National Wildlife Refuge (Ashley County)

A 230-acre unlogged forest with an overstory of diverse hardwoods, including large American Beech. The understory is dominated by large Sugar Maple. The presence of large Sugar Maple in Arkansas is unusual. The tract was owned by Georgia Pacific, but the company's foresters left it alone, because they recognized its distinctiveness. The Nature Conservancy purchased it in 1996 and transferred it to the US Fish and Wildlife Service, which added it to the southern end of the Overflow Bottoms Wildlife Refuge (Shepherd 2003, Sundell 2003).

Coastal Plain Beech Forest, in southeastern Arkansas (Columbia County)

A 200-acre beech-terrace hardwood forest, with beech to 42 inch dbh, also large Sweetgum and White Oak. The understory is mostly Muscadine Grape and Partridge-Berry. "A" quality, the area has a "very few stumps" but no other signs of disturbance. It is privately owned, and is in the well-drained bottoms of Cornie Creek, where it is associated with a high-quality lowland pine-oak forest and an aquatic community. (Foti 1992).

Sugarberry-Elm-Ash Forest, in southeastern Arkansas (Hempstead County)

A 160-acre old-growth forest with no evidence of disturbance. Owned by a private hunting club, the forest is inside a bend in the Little River. A Sugarberry-elm-ash complex is here succeeding to lowland oak-hickory. Typical species and maximum sizes are American Elm, 40 inches; Green Ash, 32 inches; Cherrybark Oak, 32 inches; Pecan, 30 inches; Nuttall Oak, 40 inches (Foti 1992).

Moro Creek Bottoms Natural Area, in south-central Arkansas (Cleveland County)

Within the 173-acre preserve, approximately 100 acres with two types of old-growth forest: lowland oak-Sweetgum and, along a creek, Baldcypress. The former is a "mature, little-disturbed forest of Sweetgum, Water Oak, and Cherrybark Oak, with trees up to 50 inches dbh and 100 feet tall. The latter has "large well-formed" Baldcypress but also "some stumps." The Arkansas Natural Heritage Commission (a state agency) and the Arkansas chapter of The Nature Conservancy jointly own the tract, which they acquired from Georgia-Pacific Corporation (Foti 1992, 1993).

Devil's Knob--Devil's Backbone Natural Area, north-central Arkansas (Izard County)

A complex of old-growth juniper-hardwood woodlands, younger successional communities, and glades. The old growth, which is dominated by Ashe Juniper, may occupy 60 to 80 acres of the flat top of the steep-sided plateau that comprises the Natural Area. The Arkansas Natural Heritage Commission owns the Area (Foti 1992, 1993).

The Lost 40,* south-central Arkansas (Calhoun County)

Forty acres of land that may never have been never logged or have been only selectively logged. Scattered, huge Loblolly Pines, up to 53" dbh, may be 150 years old. A few very large hardwoods--Water Oak, Sweetgum and a single Mockernut Hickory (all up to 3' dbh), and Sassafras (up to 18" dbh--may be 120 years old. Most of the hardwoods are noticeably smaller. The high understory includes Ironwood and Sweetleaf (*Symplocos tinctoria*). Common in the groundcover are American Beautyberry (*Callicarpa americana*) and the grass *Chasmanthium sessiliflorum*. No herbaceous

species that would indicate disturbance are present, but the tract's early disturbance history is not known. The tract was for some time the subject of a dispute about ownership, which was decided in favor of the Potlatch Corporation, the present owner. A tornado crossed the northwestern corner of the tract in the 1990s. The corner has been allowed to regenerate, but the land managers have a policy of salvaging the occasional large pine that succumbs to pine beetles. The forest is buffered by uneven-aged Potlatch forest on three sides and by another landowner on the fourth side (Foti 1996).

Cossatot River State Park Natural Area, western Arkansas (Howard County)

Small areas of old-growth pine, pine-hardwood, and glade communities with Eastern Red-cedar. Not enough inventorying has been done to calculate acreages. The 4000-acre Natural Area is owned by the Arkansas Natural Heritage Commission and Arkansas State Parks (Devall and Rudis 1991, Pell 1993, Foti 1993).

Shrub Swamp, in the Sulphur River Wildlife Management Area, southwestern Arkansas (Miller County)

A 20-acre Planertree forest "in a backwater low swamp behind the natural levee along the Sulphur River." The Water Elm reach up to 50 feet in height and 18 inches dbh. Other smaller trees nearby have been cored and found to be 120+ years old. Although the area is almost pure Planertree, it has a few scattered locust and willow as well as Water Elm. The site is owned by the Arkansas Game and Fish Commission, and is well buffered (Foti 1992).

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