

INDIANA

The US Forest Service (USFS) released a Notice of Intent to revise the management plan for Hoosier National Forest in November of 2000. The agency is now gathering data and working on alternatives. It hopes to produce a draft management plan in 2003. The planning staff does not regard old growth as an issue. The current forest management plan sets aside 96,000 acres as "potential old growth." The set aside is not permanent, but will last as long as a forest plan providing for it is in effect. The staff is planning to maintain the 96,000-acre allocation in the revised plan. According to forest planner Regis Terny, actual old growth on the Hoosier is limited to Pioneer Mothers Memorial Forest Research Natural Area and perhaps one or two other relatively small sites (Terny 2002; see below).

In welcome contrast to the US Forest Service, the Indiana Department of Natural Resources (IDNR) actively protects old growth. The various divisions of the department own numerous preserves with old growth, and the department's Division of Nature Preserves administers a state-wide system of permanently protected natural areas. A private individual may dedicate land as a Nature Preserve, but most Nature Preserves are owned by organizations or by state agencies.

In addition to the sites described below, old-growth tracts in Indiana include **Eunice Hamilton Bryan Nature Preserve** (Clinton County): 29 acres of old-growth forest, including White Oak four feet in diameter (IDNR); **Shrader-Weaver Nature Preserve** (Fayette County): a 28-acre stand of upland hardwoods from which only dead wood and a few Tulip Trees were apparently removed; **Bendix Woods Nature Preserve**: 27 acres of old growth dominated by American Beech and Sugar Maple, without signs of cutting (Saint Joseph County); **Laughery Bluff Nature Preserve** (Ripley County): within an 81-acre preserve in Versailles State Park, 20 or more acres of old-growth bluff top forest dominated by maple and beech; **Dogwood Nature Preserve***: 20 acres of old-growth hardwoods, also within Versailles State Park (IDF); **Wells Woods Nature Preserve** (Jennings County): 20 acres of old growth, with American Beech, Sweetgum, Red Maple, Black Gum, White Oak, and Swamp Chestnut Oak, on "white clay flats" (level ground of Cobbsfork silt loam) (Spetich 1993, Huffman 1992, IDNR 1991);

Guthrie Woods (Jennings County): a 61-acre bluegrass Till Plain flatwoods, owned by The Nature Conservancy, within which are 20 acres of old growth (Huffman, 1992);

Scout Ridge Nature Preserve* (Monroe County): 15 acres of largely beech-maple old growth, a portion struck by a tornado, within Morgan-Monroe State Forest (IDNR 2002; Huffman 2001). All of the sites in this paragraph, except Bendix Woods Nature Preserve, are owned by IDNR. Bendix Woods is owned by the St. Joseph County Park and Recreation Board.

We did not include one preserve containing one hundred or more acres of old growth, at the request of IDNR, which fears that visitors would irreparably damage the site.

HOOSIER NATIONAL FOREST, in south-central Indiana

Dry Upland Forest. Perhaps as much as 10,000 acres that have apparently been subject only to some selective cutting for personal use prior to acquisition by the USFS, according to the agency's Steve Olson. Occasional stumps 50 to 80 years old testify to the personal cutting; but the trees grow too slowly and too out of proportion to be of obvious commercial value. Cross sections and increment borings have shown that many of the largest trees are more than 200 years old ([1993], 1993, and 2002).

Hank Huffman of IDNR believes that "as much as 10,000 acres" is overly generous but that there is more old growth, of one type or another, on the Hoosier than is recognized by the many people who limit the old growth to Pioneer Mothers Memorial Forest.

Until this century, the dry upland forest was subject to fire, which apparently occurred every five to ten years. Fire suppression began to make an impact in the thirties, and resulted in a thick understory of Sugar Maple and shrubs, and heavy leaf litter. Now the Forest Service is using prescribed burning.

Dry upland forest communities are found most often on the tops of ridges and high on slopes that face south or west. Depending on soil conditions in adjacent areas, they grade into barrens or dry-mesic upland forest. The dry forest is of two basic types, as a result of differences in soils.

Dry woods on moderately acidic soils with little exposed bedrock may be dominated by any of several canopy trees or combinations of trees, especially oaks. Black Oak, White Oak, Black Gum, and Pignut Hickory are common. Post Oak is often the dominant. Prominent in the understory are Red Maple, Shadbush, Flowering Dogwood, and Eastern Hophornbeam. Most common among the sparse shrubs are Lowbush Blueberry and Deerberry. Common Greenbrier often forms dense mats. Among the herbaceous species are Two-Flowered Cynthia, Woodland Sunflower, and Small Skullcap. Bushy Panic-grass is an abundant graminoid; and Ebony Spleenwort, the most common fern. Gray-shield Lichen covers large areas of tree trunks. Other lichens and also mosses are widespread on soil and rock. Some lichens may favor, or even be restricted to, old trees, research elsewhere suggests; and future research on mosses could show similar correlations with old forests.

In dry forest on calcareous sites, Chinquapin Oak is often prominent in the canopy, where it is accompanied by Black Oak, White Oak, and Pignut Hickory. In the understory are dogwood and Eastern Hophornbeam. Shrubs include Deerberry and Pasture Rose. Various species of greenbrier are abundant; and Poverty Oats and Bushy Panic-Grass, common. Calciphilic herbaceous species such as American Columbo and Sicklepod may be present. Again the most common fern is Ebony Spleenwort. Extensive areas of bryophytes and lichens may be found on tree bark, soil, and rock.

Barrens. Approximately 400 acres in the southern part of the Forest, mostly facing south or west. Two of the areas are sizeable. The barrens may have had a little cutting for such personal purposes as cleaning up a fence line or obtaining firewood. The age of trees and the history of fire, fire suppression, and prescribed burning is roughly the same as for dry upland forest, though trees in barrens tend to be smaller. Canopy closure ranges up to 75%. As in the dry upland forest, trees are "all branches," with conspicuous trunk taper; shrubbery ranges from absent to thick. Barrens grade into dry forest. There are two types of barrens, based on the soil and rock on which they lie.

Sandstone barrens are on thin, strongly acidic soil. Chestnut Oak or Black Oak and White Oak are the dominant trees. Post Oak is common, and Blackjack Oak also appears. In the understory, Red Maple, Flowering Dogwood, and Eastern Hophornbeam are most frequent. The most common shrubs are Coralberry, Lowbush Blueberry, and Black Huckleberry. Common Greenbrier is abundant. Grasses include Little Bluestem, Poverty Oats, and Loose-flowered Panic-grass. Prairie forbs mix with those of dry forests. Lichens grow on trees and exposed rock, and mosses cover the soil.

Barrens on limestone and calcareous shales occur in association with dry upland forest or sandstone barrens. In the limestone barrens, the lack of moisture, caused by rapid runoff, restricts tree growth. Stunted Post Oak and Blackjack Oak form an open canopy, sometimes as low as 20%. Flowering Dogwood, Redbud, and to a lesser extent Carolina Buckthorn compose an understory that is often little taller than the shrubs. The herbaceous layer, including Little Bluestem, Big Bluestem, and Indian-grass, forms a complete ground cover. A great variety of prairie forbs is present. Lichens grow on trees and exposed rock (Olson, [1993], 1993, and 1999).

--**Boone Creek Special Area*** (Perry County). A 700-acre area with unlogged barrens and dry upland forest of uncertain extent. USFS created the Special Area in November 2000. Richard Guyette and representatives of USFS's North Central Research Station have determined the age of a sampling of Post Oak on some 350 acres. The oldest fire scar that they found dates from 1661 (Olson 2002).

--**Pioneer Mothers Memorial Forest Research Natural Area** (Orange County). Within an 88-acre RNA, an old-growth beech-maple forest of uncertain extent. According to USFS, the entire 88 acres have never been logged although they have been grazed (Weigel 2002). Spetich, after a month-long inventory, believes that the RNA is composed of a 37-acre old-growth core, a former pasture, agricultural areas on which trees were planted in 1940, and other land that has experienced significant disturbance (Spetich 1999). The forest was owned from 1818-1940 by the Cox family, who protected it. To settle an estate, 203 acres including the 88 acres, were sold to a lumber company, from which the US Forest Service bought them, after local groups, including the Indiana Pioneer Mothers Association, raised half the purchase price (Lindsey et al. 1969, Hoosier 1990).

Big Walnut Nature Preserve, in west-central Indiana (Putnam County)

On both sides of Big Walnut Creek, a 682-acre preserve that includes forested floodplain, ravine, and upland. "Portions contain fine stands of old growth trees" (IDNR 1991). One of these stands, an upland beech forest, harbors a Great Blue Heron rookery first occupied around 1914. Hank Huffman of IDNR estimates the old growth as more than 200 acres (1992). Dominant tree species are beech, White Oak, Sassafras, and Black Oak. However, cool, north-facing slopes provide habitat for relict communities of hemlock and Canada Yew. Shinleaf, Spotted Wintergreen, and Snow Trillium are among the rare flora present. The Indiana Department of Natural Resources and The Nature Conservancy own the site. The Nature Conservancy is working on a long-term plan to buffer the site, by acquiring conservation easements on surrounding fields and planting them with trees. As of mid-2002, IDNR and TNC owned or had easements on a total of 2700 acres, and had planted seedlings on more than 180 acres. A one-mile loop trail was

to be completed by summer 2002 (Huffman 1992, IDNR 1991, Lindsey et al. 1969, Jacquart 2002).

Pine Hills Nature Preserve, in Shades State Park in west-central Indiana (Montgomery County)

Within a 480-acre preserve, old growth composed mainly of White Pine, Eastern Hemlock, and Canada Yew in ravine areas. Huffman estimates that the preserve contains more than 200 acres of old growth (1992). Spetich reports that the preserve's hemlock is "essentially undisturbed," but that a saw mill, set up in the 1850s at Pine Bluff, impacted "most of the large hardwoods" (1993). Possible deer over-browsing is the only threat (Helmick 2002).

Rocky Hollow--Falls Canyon Nature Preserve, in Turkey Run State Park between Indianapolis and the western border of Indiana (Parke County)

Old growth within a 1609-acre Nature Preserve. The forested upland is covered by mesophytic forest; terraces along Sugar Creek, are covered by alluvial forest (IDNR 1991). Huffman estimates the old growth to be more than 145 acres in extent (1992). Spetich writes that six acres of upland forest are undisturbed, but that most other hardwood areas suffered some cutting in the late nineteenth century and the beginning of the twentieth. A walnut stand near Sugar Creek may be undisturbed (1993).

Henry Kramer Original Woods Nature Preserve, in extreme southern Indiana (Spencer County).

On Ginat and Weinbach silt loam, which drain poorly, a 200-acre forest (Huffman 1992) harboring bottomland oaks: Southern Red Oak, Pin Oak, Shumard Oak, and Swamp Chestnut Oak. Sweetgum, Silver Maple, and Hackberry are also prominent. As of 1969, wood had been cut only "for use in farm buildings" (Lindsey et al. 1969). The DNR Nature Preserves owns the woods, which it received from The Nature Conservancy. The Conservancy holds a reverter on the deed: if the state does not live up to the terms of the transfer, the land will return to The Conservancy. Farm land surrounds the preserve (Abrell 2002)

Wesselman Park Woods Nature Preserve, in the middle of Evansville in the southwestern corner of the state (Vanderburgh County).

A 220-acre site of old growth lowland forest showing southern influences. Sweetgum and Tulip Poplar dominate the canopy, and Sugarberry, Southern Red Oak, and Cherrybark Oak are also present. The area occupied by the bases of the trees, 187 square feet/acre, is the highest known in Indiana. Only one stump is visible; grazing may have occurred "in the distant past, but there is only anecdotal evidence for that," according to Bob Dispenza of the center (Dispenza 1990). A canal and two railway lines that skirt the site have long since been abandoned and are overgrown. Several trails cross the site, which is owned by the city of Evansville. The city is having to bait and shoot deer in order to stop deer from eliminating entire species of plants (IDNR 1991, Hoffman 2002).

Ginn Woods,* east-central Indiana (Delaware County)

Within a 161-acre woodland, 151 acres of old-growth deciduous forest with varying land-use histories. Ball State University acquired the site in three transactions. It bought 111 acres from the Ginn family in 1971. The family reported that the northern 62 acres had not been burned, logged, or grazed since they acquired the land in 1832. The southern 49 acres had had some wood removed for construction of a house in 1924; and a few White Oak cut by a stave mill company. The university bought an additional 40 acres, Nixon Woods, in 1974. Nixon Woods may have been grazed in the past but shows no signs of logging. A final 10-acre tract purchased by the university was once fields.

Sugar Maple dominates the overstory and understory of all but the most moist areas. American Beech and American Basswood are next in prominence. Other overstory species present include American Elm, Slippery Elm, Northern Red Oak, and Hackberry. Researchers have identified 384 species of vascular plants, including 72 woody plants. Trees are not as large as in many Indiana old-growth forests, as dbhs (diameters at breast height) of more than 35 inches (90 cm) are uncommon. The reason may be a seasonally high water table, and a soil structure that prevents roots from penetrating deeply. Windfalls have been the primary disturbance.

Ball State's Department of Botany manages the forest "as a research natural area" (Badger et al. 1999, Ruch et al. 1999).

Manlove Woods, in eastern Indiana, northwest of Connersville (Fayette County)

A 90-acre, privately owned, forest of beech, Tulip Tree, Sugar Maple, and Black Cherry. Spicebush and Elderberry are prominent shrubs. For many years the maple were tapped for syrup, and the remains of an old wooden sugar house can be seen. As of 1969 only four large stumps were present, probably belonging to trees that died of old age (Lindsey et al. 1969).

Officer's Woods, in southeastern Indiana (Jefferson County)

The northeast and southeast portions of the Officer farm, comprising 85 acres of old-growth woods (Huffman 1992). "About 25 acres of the northern woods appear to have been undisturbed since before white settlement." As of 1969, beech and Sugar Maple, followed by Black Gum, dominated this segment. In the southern woods, which are less well drained, beech was dominant. Between the north and south, successional trees grow on formerly cleared land. The farm is privately owned (Lindsey et al. 1969, Head 1992, NPS 2003, NPS Park net www.nps.gov).

Hemmer Woods Nature Preserve, in southwestern Indiana (Gibson County)

Two areas of old growth, the larger of which lies entirely within Hemmer Woods Nature Preserve. IDNR owns the 73-acre preserve, which is composed of an old-growth upland oak-hickory forest and a smaller lowland mixed hardwoods forest. IDNR also owns a sliver, some 30 feet wide, of a 20-acre bottomland old-growth forest, which is separated from the larger tract by a dredged ditch. The balance of the 20 acres is in private hands. Brian Abrell reports that, according to the Hemmer family, about 5 acres in a corner of the upland site were logged selectively, but that the remainder of the two tracts was not logged (2002). Martin Spetich considers 65 acres (26.3 ha) of upland to have no "obvious significant disturbance" (Spetich et al. 1997, Spetich 1999). Lindsey et al. wrote in 1969 that the lowland tract had experienced only the removal of individual

trees that died of natural causes (Lindsey et al. 1969). The composition of the lowlands strongly reflects the woods' southern position. The species include Sweetgum, River Birch, American Sycamore, Sassafras, and Tulip Tree. Lindsey et al. noted that the privately owned lowland "may well be the only floodplain stand remaining in the state that has very large specimens of tulip poplar." The large specimens are still present.

The nature preserve has a small second-growth forest on its eastern side. Otherwise roads and fields abut it. Although the preserve is a National Natural Landmark, the old growth is threatened in the long term. Coal companies own the land surrounding the old growth, including much of the eastern buffer. Strip mining has already occurred in the area. The greatest fear of IDNR is that the site will be dewatered because strip mines use large quantities of water and mines may draw on drainages connected to the site. IDNR is also concerned that the coal companies will import exotic species for revegetation (Abrell 1998 and 2002).

Donaldson's Woods Nature Preserve, in Spring Mill State Park in south-central Indiana (Lawrence County)

A 67-acre woods "classified as a western mesophytic forest type because it is intermediate between beech-maple and oak-hickory types. However, studies indicate that beech and maple are assuming greater importance. An unusual feature of the woods is the high percentage of white oaks" (IDNR 1991). A few stumps from the occasional cutting of dead or wind-thrown trees, and traces of a wagon road could be seen in 1969 (Lindsey et al. 1969). Spetich, who examined all known old-growth areas in Indiana, believes that Donaldson's Woods is probably the least disturbed (1993).

Indiana Veterans' Home Woods Nature Preserve, in west-central Indiana (Tippecanoe County)

A 61-acre nature preserve with 50 acres of old-growth forest (Huffman 1992) on the southern part of the Veterans' Home property. A dry-mesic upland forest is "dominated by white, red and black oaks, sugar maple and bitternut hickory." The upland forest was probably grazed by livestock through the mid-1900s. A ravine forest and a buttonbush swamp are also present. A steep ravine bordering the site and the lack of trails make the site difficult to enter. The Indiana State Board of Health owns the area (IDNR 1991, Head 1992, Huffman 1992, Spetich 1993).

Davis Research Forest, in east-central Indiana (Randolph County)

A 51-acre (20.6-ha) old-growth tract dominated by oaks and hickories, accompanied by species typical of mesic to wet-mesic sites. Maples and ashes dominate the subcanopy. The living biomass of dominant early to mid-seral species is decreasing, while that of late-seral species is increasing.

The area was grazed by livestock prior to 1917 when the private owner donated it to Purdue University. In the 1940s and 1950s, fifty trees that were storm damaged, dead, or dying were removed; in the 1960s three to four Black Walnuts were stolen. As of 1998, Dutch elm disease and phloem necrosis had altered and were continuing to alter the structural status of American Elm and Slippery Elm (Lindsey et al. 1969; Spetich and Parker 1998).

Meltzer Woods, southeast of Indianapolis (Shelby County)

Forty-eight acres encompassing two distinct types of soil. On the well drained, slightly higher area (Crosby soil) are beech, Sugar Maple, Tulip Tree, and White Ash. The poorly drained area (Brookston soil) has Shumard Oak, beech, White Ash, and Bur Oak. The woods have been lightly, selectively logged. They are privately owned (Huffman 1992, Lindsey et al. 1969).

Calvert and Porter Woods (formerly Beckville Woods), in west-central Indiana (Montgomery County)

A 40-acre old-growth forest noted for the size of its trees. The major portion of the forest is mesic, upland beech-maple. Some canopy trees here are 60 inches dbh; many are over 36 inches dbh. The central part, which is usually ponded in the spring and late fall, is wet-mesic forest, with Red Maple, Pin Oak, and Red Elm. Spicebush is prominent in the understory. The forest, does not meet the strictest criteria for old growth, as it has been lightly and selectively logged (Lindsey et al. 1969). It belongs to the IDNR.

Kieweg Woods* (Vigo County)

A 43-acre (17.4-ha) old-growth beech-maple forest owned and managed by Indiana State University (Spetich et al. 1997, Spetich 1999)].

Bell-Croft Woods Nature Preserve* (Jay County)

A 40-acre mixed old-growth stand with Red, White, Bur, and Pin Oaks, beech, Sugar Maple, Slippery Elm, Black Cherry, Shagbark Hickory, basswood, and cottonwood. The woods has been minimally disturbed relative to the landscape. It is owned and managed by IDNR (Huffman 2001, Natural Area).

Woollen's Gardens Nature Preserve, in central Indiana (Marion County)

Thirty-eight acres of old-growth mesic upland forest, owned by the Indianapolis Parks and Recreation Department. In 1909, when William Woollen gave the tract to Indianapolis, it was in a rural area; but the city has developed around it (IDNR 1991, Huffman 1992, Spetich 1993). The state designated the donated land as a preserve in the 1980s. However, legal public access to the old growth was lost in 1966 when the city sold eleven acres at the east end of the preserve for Interstate 465. State highway officials would otherwise have taken the land by eminent domain (McLaren 2003). **Updated 11.25.05.**

Gilbert and Alma Neutrap Lubbe Nature Preserve (Dearborn County).

An upland and a ravine system with 35 acres of old growth dominated by beech, maple, and ash. The area is known to have had some cutting before it became a Nature Preserve (IDNR 1991, Huffman 1992, Spetich 1993). Since, thieves have since stolen at least one Black Walnut . The preserve, which is in the midst of cornfields, is owned by IDNR (Helmick 2002).

Tribbett Woods, in southeast Indiana (Jennings County)

A 34-acre "near virgin" bluegrass Till Plain flatwoods with beech and oak, some 150 feet high. A State Nature Preserve, it is owned and managed by the Nature Conservancy. Agricultural fields surround it (Sparks 1990, Maron 1993, Shuey 2001).

Charles McClue Nature Preserve, in the northeast corner of Indiana (Steuben County)

A 30-acre old-growth forest within the 80-acre nature preserve. Big Tulip Trees, and Red and White Oak form the canopy, Flowering Dogwood is among the trees in the understory. Young trees, and fields in the process of becoming woods occupy the balance of the preserve. Steuben County owns the preserve (Huffman 1992).

Hoot Woods (Owen County)

An 82-acre beech-maple forest, some 30 acres of which are old growth (Huffman 1992). The site includes huge beech, oak, Tulip Poplar, maple, and ash. Signs of past cutting are present. The Nature Conservancy holds a conservation easement, but the tract is still privately owned. Visits are by permission only through The Nature Conservancy's Indiana office (Sparks 1990, Shuey 2001).

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