



#### **Chapter 4: The Post Oak Savannas**

The Post Oak Savanna or Post Oak Belt encompasses 9.5 million acres and extends more than 300 miles in a northeast-southwest strip extending from Oklahoma to Bexar and Atascosa counties in South Texas. A separate belt runs on Tertiary sandstones south of the Fayette Prairie and parallel to the Gulf coast from Goliad County to Washington County. Most of the region receives between 35 and 40 inches of annual rainfall, though the northeastern end of the belt receives somewhat more and the southwestern end receives less. Soils of the Post Oak Savannas are generally well-drained sands or sandy loams with or without clay substrata (Frost 1949). The dominant type of vegetation is a

somewhat open deciduous forest or woodland composed of post oak, blackjack oak, and other drought-tolerant southeastern species. The Post Oak Savannas separates the Pineywoods from the former tall grasslands of the Blackland Prairies and represent the southernmost extension of the transitional oak forests that separate the eastern United States and the Great Plains. Similar vegetation occurs in the Eastern and Western Cross Timbers farther west (see Chapter 9), the Llano Uplift (see Chapter 8), and at scattered sites on relatively dry, sandy uplands throughout the eastern two-thirds of Texas (Tharp 1926).

Historical accounts describe the Post Oak Savannas as a mixture of open or closed woodlands and prairie openings. Though large areas have been converted to non-native pasture, a significant amount of forested land in various successional stages remains. Bottomlands are also dominated by hardwood trees, with southeastern species such as water oak and willow oak reaching the western edge of their ranges (Yantis 1984). Species of central Texas bottomlands (e.g. sugarberry, cedar elm, eastern cottonwood) become more dominant in the Brazos River basin (Brackett 1939).

### **Plant Communities of the Post Oak Savannas**

#### **21. Post oak-blackjack oak upland forests and woodlands.**

Synonyms: Post Oak Parks/Woods, Post Oak Woods/Forest (McMahan et al. 1984); Post Oak-Blackjack Oak Series (Diamond 1993); Post Oak-Blackjack Oak Forest Alliance, Post Oak-Blackjack Oak Woodland Alliance (Weakley et al. 2000).

Description: Throughout the Post Oak Savannas, open or closed woodlands on uplands, ridges, hills, and flatwoods (poorly drained uplands over impermeable clays) are dominated by combinations of post oak, blackjack oak, and black hickory. These species may also be codominant on rapidly draining sandy ridges in the East Texas Pineywoods (Marietta 1979). Similar woodlands form the dominant vegetation in the Cross Timbers (see Chapter 9), on the belts of

sandstone that separate the Fayette Prairie and Gulf Coastal Prairies, and as open savannas on the Llano Uplift (see Chapter 8). These forests are of lower stature and contain fewer woody species than forests in the Pineywoods. American beautyberry, flowering dogwood, yaupon, farkleberry, and winged elm are often abundant. Eastern redcedar may be dominant on slopes and in recently cleared areas. Water oak may be codominant at mesic sites near the eastern edges of the region. Bluejack oak is often mixed in woodlands on more xeric sites and may be the dominant species on xeric sand ridges. Grass openings are frequently dominated by little bluestem and other bluestems, Indiangrass, purpletop, curly threeawn, and longleaf spikegrass. Poison-ivy, Virginia-creeper, grapes, southern dewberry, caric-sedges, whip nutrush, greenbriars, and other graminoids and forbs, especially composites and legumes, are abundant (Tharp 1939, Brackett 1939, Correll and Johnston 1970, Yantis 1984, TPWD 1989d, Orzell 1990, USDA 1996). More than 20 endemic forbs grow in sand soils in oak woodlands of south-central Texas, primarily on the Carrizo, Sparta, and Queen City formations (Carr pers. comm.).

Status: Many sites within the post oak belts are dominated by non-native pasture grasses or overgrown with species unpalatable to cattle, but sizeable areas can still be classified as disturbed woodland. More than 25,000 acres of this vegetation type occurs in parks and refuges, with somewhat undisturbed examples at Fort Boggy and Buescher State Parks, Gus Engeling WMA and other sites (TPWD 1996, Singhurst et al. 2000). Deep sand areas that support clusters of endemic species are not protected in conservation areas (Sinhurst pers. comm.).

Suggested Priority for Further Protection of Community: Fairly Low

## **22. Loblolly pine-post oak upland forest.**

Synonyms: Loblolly Pine-Post Oak (McMahan et al. 1984).

Description: Small, very disjunct patches of loblolly pine forest occur on water-retaining, gravelly clay soils derived from the Weches Formation in the southern

Post Oak Belt, mainly in Bastrop County (the "Lost Pines"). Loblolly pine shares dominance with post oak, blackjack oak, and yaupon on upland sites, with other common species including American beautyberry, farkleberry, little bluestem, threawns, bracken fern, and St. Andrew's cross (Riskind and Moreland 1973, TPWD 1990f).

Status: Encroachment by residential development is rapid, but about 4,000 acres are protected in the Bastrop and Buescher State Parks (TPWD 1996).

Suggested Priority for Further Protection of Community: Fairly Low

### **23. Eastern redcedar chalk glades.**

Synonyms: (Eastern Red-cedar)/Little Bluestem-(Sideoats Grama) Wooded Herbaceous Alliance (Weakley et al. 2000).

Description: Glades communities occur very infrequently at scattered sites in the Post Oak Savannas on exposures of Anona, Gober, and other chalk formations. These sites may be dominated by rock moss or by Texas grama, sideoats grama, poverty dropseed, and other grasses. Forbs include *cobaea penstemon*, coneflowers, Parks nailwort, and numerous other species; colonies of *Nostoc commune* are common. Scattered eastern redcedar are typical (TPWD 1996b, Singhurst pers. comm.).

Status: These communities are local and uncommon and have been little described. Shallow slopes at Bonham State Park are perhaps the only example at a protected site. Glades also occur on sandstone exposures in the Post Oak Savannas (Singhurst pers. comm.).

Suggested Priority for Further Protection of Community: High

### **24. Herbaceous seeps and bogs (Post Oak Savannas).**

Synonyms: Sphagnum-Beakrush Series, in part (Diamond 1993).

Description: Seepage areas and "muck bogs" occur in deep sands derived from the Carrizo, Sparta, and other sandstone formations in Lee, Robertson, Milam, Wood, and other counties. Floristically, these sites are somewhat depauperate

equivalents of the herbaceous seeps and seepage forests of the East Texas Pineywoods, containing southern wax-myrtle, yaupon, sphagnum, beaksedges, spikesedges, nutrushes, panicums, bluestems, yellow-eyed grasses, stagger-bush, ferns, St.-John's-worts, and other shrubs and forbs, including a number of southeastern species at the limits of their ranges. The largest examples contain areas of open water with aquatic plants. Surrounding vegetation may be floodplain forests or upland post oak woodlands (Bogusch 1928, Morrow 1931, Potzger and Tharp 1947, Rowell 1949, Raun 1959).

Status: Examples of this uncommon vegetation type are fairly small and vulnerable to hydrologic disturbance. The Palmetto State Park was established to protect the Ottine Swamp, an area of bottomland swamps and bogs in Gonzales County; however, the bogs in the park were later re-sold to a private owner. However, outstanding examples of seeps and bogs are protected at Fort Boggy State Park and Gus Engeling WMA (TPWD 1996).

Suggested Priority for Further Protection of Community: High

#### **25. Water oak floodplain forests.**

Synonyms: Water Oak-Elm-Hackberry Forest (McMahan et al. 1984).

Description: Water oak may be dominant in low-lying flatwoods, drainages, and floodplains throughout the eastern Post Oak Belt (e.g. the Navasota watershed), with American elm, green ash, sugarberry, and other floodplain species. Dense growths of vines (grapes, poison ivy, rattan-vine) and a sparse groundcover of switchcane, sedges, Virginia wildrye and other grasses are typical. Southeastern species such as willow oak and coastal live oak may also be present (Yantis 1984, McMahan et al. 1984, Dolezel 1986).

Status: This community is not highly species-rich and is probably not threatened, as it occurs in relatively undisturbed bottomlands. Protected examples include approximately 300 acres in the Tawakoni WMA (TPWD 1996).

Suggested Priority for Further Protection of Community: Fairly Low

## **26. Sugarberry-elm floodplain forests.**

Synonyms: Elm/Hackberry Parks/Woods (McMahan et al. 1984); Sugarberry-Elm Series (Diamond 1993); Sugarberry-Cedar Elm Temporarily Flooded Forest Alliance, in part (Weakley et al. 2000).

Description: Woody slopes and floodplains of smaller streams draining base-rich soils of the Blackland Prairies and adjacent Post Oak Savannas, Cross Timbers, Coastal Prairies, northern South Texas, and eastern Edwards Plateau and Rolling Plains support forests of cedar elm, sugarberry, green ash, American elm, boxelder, pecan, western soapberry, and other species. Sugarberry, elms, green ash, and boxelder may be common in early-successional woodlands in drainages and floodplains throughout eastern and central Texas. Vines are often abundant, including Virginia-creeper, rattan-vine, poison-ivy, and peppervine. Giant ragweed and other weedy forbs may be abundant. If relatively undisturbed, the understory may include long-leaf spikegrass, sedges, switchgrass, Virginia wildrye, coralberry, white avens, ruellias, Turk's-cap, and other forbs and grasses. River banks may support large specimens of American elm, eastern cottonwood, pecan, sycamore, and in some basins baldcypress (Dyksterhuis 1946, Petranka and Holland 1980, Cox 1983, TPWD 1993). This is a widespread vegetation type, arguably occurring in every region of Texas except the High Plains and Trans-Pecos; floodplain forests in the South Texas Plains are similar but contain somewhat different species (see Chapter 7).

Status: This vegetation type is abundant and well represented in conservation areas, but most examples are young stands. Somewhat mature stands occur at Palmetto State Park, Kerr WMA, and a few other sites (TPWD 1996).

Suggested Priority for Further Protection of Community: Low

Table 4. Conservation areas in the Post Oak Savannas, with types of vegetation occurring within each area.

Conservation Area and Manager	Vegetation Types Occurring in Area (fair condition or better)	Acreage of Conservation Area	Source
Bastrop State Park (TPWD)	21,22	4,506	TPWD 1996
Big Lake Bottom State WMA (TPWD)	15a (4%),15b (45%),26 (45%),32	4,929	Singhurst pers. comm.
Buescher State Park (TPWD)	21 (45%),22 (30%)	1,017	TPWD 1996
Cedar Creek Islands State WMA (TPWD)	3 (100%)	159	Singhurst pers. comm.
Cooper Lake State Park and WMA (TPWD)	3 (6%),21 (25%),25 (1%),26 (15%)	12,510 (land)	TPWD 1996
Fairfield Lake State Park (TPWD)	21 (55%),28,29 (2%),32 (15%)	1,460	TPWD 1996
Fort Boggy State Park (TPWD)	3 (3%),15a (8%), 20 (15%),21 (31%),24 (2%), 28 (14%),29 (4%)	1,847	TPWD 1996
Fort Parker State Park (TPWD)	18 (3%),19 (2%), 21,25 (4%),28 (5%)	1,503	TPWD 1996
Keechi Creek State WMA (TPWD)	3 (1%),21 (2%),15a (86%),16 (3%),18	1,590	TPWD 1996
Lake Bastrop State Park (TPWD)	21 (43%),22 (19%)	773	TPWD 1996
Lake Somerville State Park/Trailway (TPWD)	21 (35%),26 (21%), 25 and 37 (35%),28 (3%)	6,290	TPWD 1996
Lake Tawakoni State Park and WMA (TPWD)	21 (60%),25 (20%)	1,963	TPWD 1996
Lick Creek Park (City of College Station)	15a,21,25,28	515	Reed pers. comm.
M.O. Neasloney State WMA (TPWD)	21 (60%)	99	TPWD 1996
McKinney Roughs Preserve (LCRA)	21,26	1,550	
Palmetto State Park (TPWD)	21 (5%),23,26 (65%),32,41	267	TPWD 1996
Purtis Creek State Park (TPWD)	21 (73%)	867 (land)	TPWD 1989d, 1996
Richland Creek State WMA (TPWD)	15a (<1%),16,18, 19,20,26	13,796	Singhurst pers. comm.
Somerville State WMA (TPWD)	15a (5%),16 (2%), 21 (3%), 25 (13%), 26,37 (1%)	3,110	TPWD 1996
Total: 58,749 acres (.5 percent of region)			
Abbreviations of Managing Entities: TPWD=Texas Parks and Wildlife Dept. LCRA=Lower Colorado River Authority			