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Chapter 4: The Post Oak Savannas

The Post Oak Belt or Post Oak Savanna region encompasses 9.5 million acres in Texas and extends more than 300 miles in a northeast-southwest strip from Oklahoma to Bexar and Atascosa counties in South Texas. Separate belts of similar vegetation occur on Tertiary sandstones south of the Fayette Prairie and parallel to the Gulf coast from Washington County southwest to Goliad County, covering about 2 million acres. Upland soils in these two areas are generally well-drained sands or sandy loams with or without clay substrata (Frost 1949). Annual rainfall varies significantly from the northeastern end of the main Post Oak Belt (42-46 inches) to its southwestern extent (29-30 inches). Historical accounts describe these areas as a mixture of prairie openings and open deciduous woodlands or savannas of intermediate stature dominated by post oak, blackjack oak, and other drought-tolerant southeastern species. Trees become gradually

shorter and openings larger in the southwestern part of the region, presumably reflecting climatic conditions. The Post Oak Savanna separates the Pineywoods from the former tall grasslands of the Blackland Prairies and represents the southernmost extension of the predominantly deciduous forests that occur widely between the Appalachians and the Great Plains. Similar vegetation occurs on sandy soils of the Cross Timbers farther west (see Chapter 9), the Llano Uplift (see Chapter 8), and on dry uplands in the East Texas Pineywoods (Tharp 1926).

Though much acreage has been converted to cultivated pasture land, a significant amount of forested area in various successional stages remains. This is more true of slopes and bottomlands in the region. Southeastern species such as water oak and willow oak may be dominant in mesic sites in the eastern part of the region (Yantis 1984) with species abundant in central Texas bottomlands (e.g. sugarberry, cedar elm, pecan) becoming dominant farther west (Brackett 1939).

Plant Communities of the Post Oak Savannas

21a. 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 region, open or closed woodlands both on dry uplands and flatwoods (poorly drained uplands over impermeable clays) are dominated by deciduous species, primarily post oak, blackjack oak, and black hickory. These species may also be codominant species on sandy ridges in the East Texas Pineywoods (Marietta 1979). Water oak may be codominant on more mesic sites, especially near the eastern edge of the region. Eastern redcedar is common and invasive in the Post Oak Savannas and may become dominant in formerly cleared areas or on slopes. Bluejack oak occurs in woodlands on drier sites. Yaupon, winged elm, American beautyberry, and

farkleberry are common or abundant in the understory; common vines include grapes, greenbriars, peppervine, and Virginia-creeper. Little bluestem, panicums and rosettegrasses, purpletop, and whip nutrush are common in the understory and dominant in openings (Tharp 1939, Brackett 1939, Correll and Johnston 1970, Yantis 1984, TPWD 1989d, Orzell 1990, USDA 1996). Woodlands or savannas of post oak and blackjack oak are widely distributed throughout the central part of the state on sandstone-derived soils, including the Cross Timbers (see Chapter 9), in belts between the Fayette Prairie and Gulf Coastal Prairies, and (as open savannas) on the Llano Uplift (see Chapter 8). These woodlands differ somewhat in species composition, with fewer woody species and a more significant forb and grassland component than examples in East Texas.

Status: Many sites in the Post Oak Savannas have been converted to non-native pasture grasses or are overgrown with species unpalatable to cattle; however, extensive areas can still be classified as disturbed woodland. More than 25,000 acres of this vegetation type occurs in parks and refuges, with less disturbed examples at Gus Engeling WMA, Fort Boggy, Purtis Creek, and Buescher State Parks, and other sites (TPWD 1996, Singhurst et al. 2000).

Suggested Priority for Further Protection of Community: Fairly Low

21b. Xeric sandhill woodlands (Post Oak Savannas).

Synonyms: Little Bluestem - Narrowleaf Pinweed - Round Copperleaf Herbaceous Vegetation (Weakley et al. 2000).

Description: Areas of deep loose sand occur locally within post oak woodlands over Eocene sandstones (especially the Carrizo, Queen City and Sparta formations), occasionally forming small dunes or “blowouts”; vegetation on these sites ranges from open woodland to prairie openings. Curly threeawn, little bluestem, purple sandgrass, Pickering daisy, narrowleaf pinweed, woolly-whites, snake-cottons, weakstem sunflower, spikemosses, and many other forb species may be common. More than 20 narrowly distributed and/or endemic plants are associated with these deep sands (Singhurst et al. 2000; Carr pers.

comm.). Seepage bogs may be located nearby where the sand hills contact with other soils.

Status: These sites are diverse, with substantial variation in species composition across the region. Most examples are limited in areal extent. Roughly 3,000 acres is protected at Gus Engeling, Fort Boggy, Keechi Creek, Neasloney, and Somerville WMAs; Bastrop, Fort Parker and Tyler State Parks; and the Yegua Knobs Preserve. However, most of the rarest endemic plants associated with this type are not protected in conservation areas (Singhurst pers. comm.).

Suggested Priority for Further Protection of Community: High

22. Loblolly pine-post oak upland forest.

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

Description: Very disjunct areas of loblolly pine forest occur on water-retaining, gravelly clay and sand soils spread over Eocene formations at isolated locales in the south-central region, with the largest area centered on Bastrop County (the "Lost Pines"). Loblolly pine shares dominance with post oak, blackjack oak, and yaupon on upland sites; other common species include American beautyberry, farkleberry, little bluestem, pineywoods dropseed, threeawns, and bracken fern. Where the edges of dry sandhills make contact with clay soils, seepage may support eastern species such as blackgum, water oak, American holly, southern wax-myrtle and netted chain-fern (Riskind and Moreland 1973, TPWD 1990f).

Status: Residential development has fragmented examples of these communities. Bastrop State Park contained more than 6,000 acres of this vegetation type, but virtually all burned in a stand-replacement forest fire in 2011 and the success of regeneration is uncertain (TPWD 1996).

Suggested Priority for Further Protection of Community: Fairly Low

23. Eastern redcedar limestone glades.

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

Description: Glades communities occur at a few scattered sites in the northern Post Oak Savanna and Blackland Prairie on exposed outcrops of the Annona, Gober, Pecan Gap and Austin Chalk Formations. These sites may support thin-soiled grassland communities with Texas grama, sideoats grama, little bluestem, poverty dropseed, and other grasses as well as glades dominated by rock-moss; *Nostoc commune* may be present. Common forbs include cobaea penstemon, narrowleaf coneflower, Parks nailwort, and numerous others. Scattered eastern redcedar are usually present on chalk exposures; most outcrops support woodlands of oaks, white ash, roughleaf dogwood, redcedar, sugarberry, redbud, blackhaw viburnum and other species common in limestone areas in central Texas (TPWD 1996b, Singhurst pers. comm.).

Status: These communities are uncommon and localized, and further description is warranted. Shallow slopes at Bonham and Fort Parker state parks are perhaps the only examples at protected sites (Sinhurst 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 sand formations in Robertson, Lee, Milam, Freestone, Leon, and other counties. Floristically, these sites are similar to herbaceous and forested seeps of the East Texas Pineywoods but with some differences in species composition. Southern wax-myrtle, yaupon, spikesedges, rushes, beaksedges, sphagnum, bluestems, yellow-eyed grasses, ferns, stagger-bush, sundews, St. John's worts, and other shrubs and forbs may be common, including a number of southeastern species at the limits of their ranges. The largest examples may contain ponds or flowing swamps with spikesedges, rushes, beaksedges, maidencane, and other aquatic plants. Surrounding areas are usually upland post oak woodland or savanna (Bogusch 1928, Morrow 1931, Potzger and Tharp 1947, Rowell 1949, Raun 1959, Singhurst pers. comm.).

Status: Examples of this vegetation type are limited in size and are vulnerable to hydrologic disturbances such as dams and brush invasion. The Palmetto State Park was established to protect the Ottine Swamp, an area of bottomland swamps and bogs in Gonzales County, but the bogs in the park were later re-sold to a private owner. Examples of bogs and seeps in the northeast part of the region are protected at Gus Engeling WMA and Fort Boggy State Park (TPWD 1996).

Suggested Priority for Further Protection of Community: High

25. Water oak-post oak floodplain forests.

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

Description: Water oak and post oak may be codominant in low-lying flatwoods and along drainages; water oak is often dominant in floodplains, with elms, green ash, sugarberry, and Shumard oak.. Vines (poison-ivy, rattan-vine, peppervine) and a ground layer of long-leaf spikegrass, caric-sedges, Virginia wildrye and other grasses, and forbs are common. Southeastern species such as willow oak and southern red oak become important near the eastern edge of the region (Yantis 1984, McMahan et al. 1984, Dolezel 1986).

Status: This community is desirable wildlife habitat; while not greatly threatened, there are not many protected examples. Approximately 300 acres of this type occurs 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, Cross Timbers, and eastern Edwards Plateau and flowing through adjacent areas of the Pineywoods, Post Oak Savannas, Coastal Prairies, northern South Texas, and the eastern Rolling Plains support forests of

cedar elm, sugarberry, green ash, American elm, boxelder, pecan, western soapberry, and other species. Vines are often abundant, including Virginia-creeper, rattan-vine, poison-ivy, and peppervine. Giant ragweed and other forbs may be abundant. If relatively undisturbed, the understory should include long-leaf spikegrass, sedges, Virginia wildrye, 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, occurring in every region of Texas except the High Plains and Trans-Pecos; floodplain forests in the southern part of the South Texas Plains are similar but may contain some different species (see Chapter 7). Status: This vegetation type is widespread and well represented in conservation areas, though many examples are somewhat disturbed. Somewhat mature stands occur at Palmetto State Park 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)/ Stengl Station (UT)	21a,21b,22	5,926 (TPWD) 208 (UT)	TPWD 1996
Big Lake Bottom WMA (TPWD)	15a (4%),15b (45%),26 (45%),32	4,929	Singhurst pers. comm.
Buescher State Park (TPWD)	21a (45%),22 (30%)	1,017	TPWD 1996
Cedar Creek Islands WMA (TPWD)	3 (100%)	159	Singhurst pers. comm.
Cooper Lake State Park and WMA (COE/TPWD)	21a (30%),25 (1%),26 (15%),31	12,510 (land)	TPWD 1996
Fairfield Lake State Park (TPWD)	21a (55%), 29 (2%),32 (15%)	1,460	TPWD 1996
Fort Boggy State Park (TPWD)	3 (3%),15a (8%), 20 (15%),21a (31%),21b (14%),24 (2%),29 (4%)	1,847	TPWD 1996
Fort Parker State Park (TPWD)	18 (3%),19 (2%), 21a,21b (5%), 23,25 (4%)	1,503	TPWD 1996
Gus A. Engeling WMA (TPWD)	4 (1%),7 (7%),10a (<1%),15a (5%),15b (6%),16 (1%),20, 29 (<1%),21a (56%),21b (18%)	11,035	Singhurst et al. 2000
Keechi Creek WMA (TPWD)	3 (1%),15a (86%),16 (3%),18,21a (2%), 21b (6%)	1,590	TPWD 1996
Lake Somerville State Park/ Trailway (COE/TPWD)	21a (35%),21b (5%), 26 (21%),25 and 37 (35%)	6,290	TPWD 1996
Lake Tawakoni State Park and WMA (TPWD)	21a (60%),25 (20%)	1,963	TPWD 1996
Lick Creek Park (City of College Station)	15a,21a,21b,25	515	Reed pers. comm.
M.O. Neasloney WMA (TPWD)	21a (60%),21b (10%)	99	TPWD 1996
McKinney Roughs (LCRA)	21a,26	1,550	
Palmetto State Park (TPWD)	21a (5%),23,26 (65%),32,41	267	TPWD 1996
Purtis Creek State Park (TPWD)	21a (73%)	867 (land)	TPWD 1989d, 1996
Richland Creek WMA (TPWD)	15a (<1%),16,18, 19,20,26	13,796	Singhurst pers. comm.
Somerville WMA (COE/TPWD)	15a (5%),16 (2%),21a (3%),21b (8%),25 (13%),26,37 (1%)	3,110	TPWD 1996
South Shore Woods (PPLT)		210	

Yegua Knobs Preserve (PPLT)	21a,21b	302
Total: 70,641 acres (.6 percent of region) Abbreviations of Managing Entities: UT=University of Texas TPWD=Texas Parks and Wildlife Dept. PPLT=Pines and Prairies Land Trust LCRA=Lower Colorado River Authority		