PINE/SCRUB OAK SANDHILL (BLACKJACK SUBTYPE)

Concept: The Pine/Scrub Oak Sandhill type covers dry longleaf pine communities that are less xeric and infertile than the Xeric Sandhill Scrub type, and are characterized by a scrub oak layer containing a mixture of oak species. The Blackjack Subtype covers examples where *Quercus marilandica* is a significant component. They are associated with soils having clay below a sandy surface. These are common in the Sandhills region but occur only occasionally in other parts of the Coastal Plain.

Distinguishing Features: The Pine/Scrub Oak Sandhill type is distinguished from Xeric Sandhill Scrub and Sand Barren communities by the substantial presence of scrub oaks other than *Quercus laevis: Quercus marilandica, Q. incana, Q. margarettiae, Q. hemisphaerica*, or *Quercus geminata*. However, *Quercus laevis* may still be the most abundant oak. Pine/Scrub Oak Sandhill is distinguished from Mesic Pine Savanna and wetter longleaf pine communities by the presence of scrub oaks (other than the occasional presence of *Quercus marilandica*). In frequently burned sites, most or all scrub oaks may exist as sprouts. In sites where land managers have treated stands with herbicide, scrub oaks may be artificially absent, and this type will have to be distinguished from Mesic Pine Savanna by the lack of the more mesophytic herbaceous and shrub species characteristic of that type. Fire-suppressed Mesic Pine Savannas may contain forest oaks such as *Quercus stellata, Q. falcata, Q. velutina*, and *Q. nigra*, but little or none of the scrub oaks characteristic of this type. Pine/Scrub Oak Sandhill (other than the Northern Subtype) is distinguished from Piedmont Longleaf Pine Forest by the presence of *Aristida stricta*, by the absence of characteristic Piedmont upland forest species such as *Oxydendrum arboreum, Quercus montana*, and *Quercus coccinea*, and in the most natural examples, by the absence of a substantial component of *Pinus taeda.* Substrate and location readily distinguish these two types in altered examples where *Aristida* may have been lost.

The Blackjack Subtype is distinguished from the Mixed Oak Subtype by the presence of appreciable amounts of *Quercus marilandica*. It is distinguished from the Clay/Rock Hilltop Subtype, which may contain substantial *Quercus marilandica*, by the presence of *Quercus laevis*, the absence of *Vaccinium crassifolium* and other wetland species, and the presence of sand at the soil surface. It is distinguished from the Mesic Transition Subtype, which may contain substantial *Quercus marilandica* but generally has little *Quercus laevis*, by the absence of characteristic more-mesic herbs and shrubs; though the herb layer may be fairly diverse, it is less rich in plant species than the Mesic Transition Subtype. The Blackjack Subtype is distinguished from the Northern Subtype by the presence, at least historically, of *Aristida stricta*.

Synonyms: *Pinus palustris / Quercus marilandica / Gaylussacia dumosa / Aristida stricta* Woodland (CEGL003595).
Ecological Systems: Atlantic Coastal Plain Fall-Line Sandhills Longleaf Pine Woodland (CES203.254). Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281) (rarely).

Sites: The Blackjack Subtype occurs in sites with sandy surface material overlying a clay layer near the surface. Most occurrences are on side slopes in the dissected terrain of the Sandhills Region, where stream erosion has exposed interbedded sands and clays beneath the aeolian sand

layer that covers the flatter uplands. A few examples occur in other parts of the Coastal Plain in similar settings.

Soils: Soils are coarse sands with a clay layer beneath. They are classified as Ultisols, but the clay layer apparently generally is part of the parent material rather than solely a result of translocation of clay material. Plinthite is common. The most common soil map units are Candor (Arenic Paleudult), Blaney (Arenic Hapludult), Vaucluse (Typic Hapludult), Gilead (Aquic Hapludult), and Fuquay (Plinthic Paleudult), less often Dothan (Plinthic Paleudult) and Ailey (Arenic Kanhapludult). Many examples are also mapped as Lakeland, a sandy Entisol, but these likely represent inclusions.

Hydrology: These sites are usually dry to xeric, but may have a perched water table for brief periods. Weaver (1969) demonstrated that, during drought, the scrub oaks in this community endured more water stress than those in nearby Xeric Sandhill Scrub, presumably because clay layer restricted root access to the deeper soil and held remaining water too tightly for it to be used.

Vegetation: Vegetation structure is characteristic of most longleaf pine communities, with an open, patchy woodland to savanna canopy and a dense grassy herbaceous layer. *Pinus palustris* usually is the only canopy species, but occasional *Pinus echinata* or *Pinus taeda* may be present. The midstory and low shrub layer are sparse and patchy when the community is frequently burned, but become increasingly dense with fire exclusion. The midstory is dominated by *Quercus laevis* and *Quercus marilandica*. Other frequent species, seldom abundant, include *Quercus incana, Quercus margarettiae, Diospyros virginiana, Sassafras albidum, Nyssa sylvatica, Carya pallida,* and *Cornus florida*. *Gaylussacia dumosa* and *Toxicodendron pubescens* usually are the most abundant shrubs, and *Vaccinium tenellum* and *Rhus copallinum* var. *copallinum* may be frequent. The herb layer is moderate to dense and fairly diverse. *Aristida stricta* dominates, and a number of grasses and forbs are frequent but not dominant under natural conditions. This include *Schizachyrium scoparium* var. *scoparium, Andropogon gyrans, Andropogon ternarius, Sporobolus junceus, Tephrosia virginiana, Pityopsis adenolepis, Baptisia cinerea, Solidago odora, Carphephorus bellidifolius, Symphyotrichum walteri, Ionactis linariifolia, Sericocarpus tortifolius, Silphium compositum, Coreopsis major, Cirsium repandum, Liatris pilosa, Euphorbia curtisii, Tragia urens, Galactia regularis, Stylosanthes biflora, Danthonia sericea, Scleria nitida, Scleria ciliata, Iris verna, Vernonia angustifolia,* and *Dichanthelium* spp. In the transition to wetter communities, *Pteridium aquilinum, Lyonia mariana,* and *Clethra alnifolia* appear and may be abundant.

Dynamics: The dynamics of this subtype are typical of longleaf pine communities in general.

Range and Abundance: Ranked G2G3. The Blackjack Subtype is one of the most extensive communities in intact areas of the Sandhills Region, with large acreage occurring on Fort Bragg and the Sandhills Game Land. However, good examples are scarce beyond these areas, and the limited range and limited number of good examples leave it vulnerable. It is rare elsewhere in the Coastal Plain. It ranges into northern South Carolina, where it also is abundant. This community is confined to the range of *Aristida stricta*, and is replaced by a different "wire grass gap" community in central South Carolina, and by the Northern Subtype in northern North Carolina.

Associations and Patterns: In the Sandhills, this is a matrix community. It occurs in a mosaic, occupying most of the side slopes while Xeric Sandhill Scrub (Typic Subtype) covers the deeper sands on the rolling uplands and Streamhead Pocosin fills most of the numerous drainages. This mosaic covers most of the Sandhills landscape, with other communities embedded in it as small patches. Sandhill Seep, Pine/Scrub Oak Sandhill (Mesic Transition Subtype), Mesic Pine Savanna, Sandhill Streamhead Swamp, Streamhead Atlantic White Cedar Forest, Streamhead Canebrake, and Coastal Plain Semipermanent Impoundment are among the communities that may border the Blackjack Subtype. The transition to other longleaf pine communities is often very gradual. The transition to the wetland communities is usually abrupt. It may be more gradual under a natural fire regime, but the shift in soil from sand to muck surface creates an ecological discontinuity. This edge often is a diverse ecotonal zone that resembles a wetter pine savanna community.

Variation:

1. Typic Variant: Typical common examples in the Sandhills Region.
2. Coastal Plain Variant: The rare examples in the middle to outer Coastal Plain. Differences are not well known, but there are floristic differences between the Sandhills and the outer Coastal Plain.

Comments: The Blackjack Subtype, in a general sense, fit into a moisture and fertility gradient between Xeric Sandhill Scrub and Mesic Pine Flatwoods. However, this is complicated by varying conditions in areas with clay layers near the surface. These areas may be moist or even wet at times, but the clay layer may limit rooting depth. Weaver (1969) found that sites with Quercus marilandica were drier than those with just Q. laevis, and that Q. marilandica endured greater moisture stress during droughts. He suggested that lack of nutrients rather than dryness was responsible for excluding Q. marilandica from Xeric Sandhill Scrub

Rare species:

References:

Platt, W.J., G.W. Evans, and S. L. Rathbun. 1988. The population dynamics of a long-lived conifer (**Pinus palustris**). American Naturalist 13: 491-525

Weaver, T.W. 1969. Gradients in the Carolina Fall-line Sandhills: environment, vegetation, and comparative ecology of the oaks. Ph.D. Dissertation, Duke Univ.

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