

SAND BARREN (TYPIC SUBTYPE)

Concept: Sand Barrens are the driest, most barren naturally occurring non-maritime sandy communities of the Coastal Plain, with low vegetation cover in all strata and a prominent suite of sand-tolerant (psammophyte) plants. They typically are on Carolina bay rims or on the younger inland sand dunes. The Typic Subtype covers the typical examples in most parts of the Coastal Plain, which lack the plants characteristic of the Coastal Fringe Subtype.

Distinguishing Features: Sand Barrens are distinguished from Xeric Sandhill Scrub and all other longleaf pine communities in natural condition by low cover of grasses and high cover of specialized psammophytes, macrolichens, and bare sand. Characteristic plants include *Polygonella polygama*, *Stipulicida setacea*, *Minuartia caroliniana*, *Bryodesma (Selaginella) acanthonota*, and *Cnidioscolus stimulosus*, as well as *Aristida stricta* at low density. All vegetation strata typically have low cover. Distinguishing natural Sand Barrens from disturbed sandhill communities of more mesic types can sometimes be difficult. Old-looking or gnarled-looking (though small) longleaf pines and turkey oaks, presence of wiregrass at least in more mesic microsites, a diversity of psammophytes, and absence of weedy plants such as *Andropogon virginicus*, *Eupatorium capillifolium*, and *Eupatorium compositifolium*, are indicators of natural conditions. The Typic Subtype is distinguished from the Coastal Fringe Subtype by the absence of plants that are (in North Carolina at least) confined to the coastal zone -- *Cladina evansii*, *Rhynchospora megalocarpa*, *Ilex vomitoria*, and *Quercus geminata*.

Synonyms: Xeric Sandhill Scrub (Sand Barren Variant); *Pinus palustris* / *Quercus laevis* / *Aristida stricta* / *Cladonia* spp. Woodland (CEGL003584).

Ecological Systems: Atlantic Coastal Plain Fall-Line Sandhills Longleaf Pine Woodland (CES203.254). Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281).

Sites: Sand Barrens occur on the coarsest, purest sands, elevated well above the water table. They occur on the highest parts of Carolina bay rims, of younger dunes associated with Carolina bays, and of relict dune systems on the east sides of rivers.

Soils: Soils are Typic Quartzipsamments, generally mapped as the Kureb or Lakeland series. Most areas mapped as these series support Xeric Sandhill Scrub, and only the most extreme minority supports Sand Barrens. The coarse sand, with almost no fine particles and little organic matter, has extremely low capacity for nutrient storage as well as for water retention.

Hydrology: Sites are excessively drained, with rain water quickly passing through the coarse soil, leaving surface soils extremely dry most of the time. These settings have been described as “deserts in the rain” (Wells 1932?). However, the water table may be within reach of the roots of larger plants; trees are sometimes described as acting as phreatophytes.

Vegetation: Vegetation is sparse in all strata. The canopy is almost exclusively *Pinus palustris*, but consists of widely scattered individuals or small clumps, the trees small in stature. The midstory is sparse and patchy, but may be naturally more extensive than in less extreme sandhill communities. *Quercus laevis* strongly dominates, but sparse individuals of *Quercus margarettiae*, *Diospyros virginiana*, or *Sassafras albidum* often are present. Individuals of unexpected species,

such as *Quercus nigra*, *Pinus taeda*, *Pinus serotina*, or *Ilex opaca* may also be found in sites with long fire exclusion. The shrub layer consists of low-stature species in a patchy distribution. *Gaylussacia dumosa*, *Vaccinium tenellum*, and *Lyonia mariana* are characteristic, the distinctive dwarf form of *Vaccinium stamineum* may occasionally be seen, and in a few notable sites *Chrysoma pauciflosculosa* is abundant. A variety of species of more moist communities may occasionally be present, including *Gaylussacia frondosa*, *Clethra alnifolia*, and *Arundinaria tecta*. Most of these species have clonal growth and can spread from rare establishment sites, or even from adjacent communities. Vines, though sparse, may be prominent in patches, especially *Muscadinia rotundifolia* or *Gelsemium sempervirens*. The herb layer is sparse, with much area of bare sand and often high cover of *Cladonia* spp. lichens. *Aristida stricta* is present as scattered individuals or dominating favorable patches in a minority of the area. *Polygonum polygamum* may be equally abundant. Other frequent species include *Stipulicida setacea*, *Bryodesma acanthonota*, *Cnidocolus stimulosus*, *Cuthbertia graminea*, and *Sabulina caroliniana*. As with shrubs, species of wetter areas are occasionally present, especially clonal species such as *Pteridium latiusculum*. The open sand appears to have a cryptogamic crust in many places where undisturbed. Patches have the sand cemented by black material while in other areas a green layer may be found by scraping away 1-2 millimeters of sand.

Range and Abundance: Ranked G2. The Typic Subtype is scattered in the middle and inner Coastal Plain and occasional in the Sandhills region. The largest concentration is in the Bladen Lakes area of Bladen and Cumberland counties. This subtype ranges into northern South Carolina.

Associations and Patterns: Sand Barrens typically grade to Xeric Sandhill Scrub and Wet Pine Flatwoods on lower parts of the dune systems. Pond Pine Woodland or other peatland communities are often nearby in adjacent Carolina bays and swales.

Variation: Two variants are recognized:

1. Typic Variant: Examples in the Bladen Lakes region and Sandhills, fitting the description above and lacking *Chrysoma psuciflosculosa*.
2. Woody Goldenrod Variant: Examples on river sand dunes along the Lumber River and likely in similar sites in South Carolina, characterized by *Chrysoma pauciflosculosa*.

Dynamics: Sand Barrens differ from all other Dry Longleaf Pine Communities and Wet Longleaf Pine Communities in not necessarily being dependent on frequent fire. The sparse, patchy vegetation makes fire spread irregular; many parts may escape ignition in any given fire. Examples may persist in the absence of fire, long after surrounding communities have been degraded, but slow accumulation of litter may eventually lead to changes and loss of the distinctive character in the absence of fire.

Comments: Tiger beetles (*Cicindella* spp.) can often be seen in these communities, and may be a more important animal component than elsewhere.

Rare species: *Stylisma pickeringii*

References:

Wells...