

Longleaf Indicator Species

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Nomenclature from Radford, Ahles and Bell, Manual to the vascular flora of the Carolinas; modern nomenclature can be found at the USDA Plants Database, or the UNC herbarium (Weakley). I've translated some that have come into more common usage.

NatureServe Ecological systems are tentative. The parenthetical key references are to the "Key to Ecological Systems (and selected Alliances) of the Francis Marion National Forest – 15 Nov 2012".

GENERAL NOTES on longleaf ecosystems: longleaf-dominated ecosystems were once by far the dominant plant community on the Francis Marion National Forest. The terraces provide for almost the full range of longleaf sub-systems, from nearly as dry as longleaf can tolerate, to as wet. These are fire-maintained ecosystems, and most historical evidence indicates a fire return interval of 1-3 years. For a number of reasons, much of the longleaf habitat on the Francis Marion is now degraded, but restoration efforts are well underway.

Micro-topography is an important component of plant species distributions in the Lowcountry; very small changes in elevation can result in very different plant communities. I have divided the indicator lists into three units – xeric, mesic and wet savanna. However, in most cases the plants respond to the micro-topography and species from all 3 lists can be found in close proximity. To make an overall determination, many of the diagnostic indicators should be present, and the overall topographic position and the soils should be evaluated. I have not listed several common weedy species, since they are present throughout, and not diagnostic (eg: loblolly pine, sweetgum and (on wetter sites) cane).

XERIC SITES: The dry sites on the Francis Marion are along the leading terrace edges. These are areas that were former barrier islands – and are now dry sandy ridges. Even though overall drier than the surroundings, they are intermixed with wetter swales and ponds. The Francis Marion has few truly xeric sites, with the most xeric in the highest hills south of the Santee River. Some of the species listed here edge over to more mesic conditions.

NATURESERVE ECOLOGICAL SYSTEMS:

2347; CES203.281 (17a in key) – Atlantic Coastal Plain Upland Longleaf Pine Woodland

2347; CES203.? (12b in key) – Atlantic Coastal Plain Upland Longleaf Pine Woodland

Canopy Trees:

Diagnostic indicators

Longleaf pine – *Pinus palustris*

Usually present, but also found in other ecosystems and edaphic conditions

None in particular

Rare, but usually diagnostic

None in particular

Sub-canopy Trees:

Diagnostic indicators

Turkey oak – *Quercus laevis*

Blackjack oak – *Q. marilandica*

Post oak – *Q. stellata*

Usually present, but also found in other ecosystems

None in particular

Shrubs and Lianas:

Diagnostic indicators

Bluejack oak – *Quercus incana* – sometimes grows to sub-canopy tree size

Running oak – *Q. pumila* – sometimes *Q. minima* is split out

Scrubby post oak – *Q. margaretta*

Dwarf huckleberry – *Gaylussacia dumosa*

Dwarf wax myrtle – this is one of the few cases where I agree with Weakley's splits – I think the dry form of wax myrtle is real, and use *Morella pumila*

Wild rosemary – *Ceratiola ericoides* (very rare, very xeric, I'm not sure it's known from the Francis Marion)

Usually present, but also found in other ecosystems

None in particular

Herbaceous:

Diagnostic Indicators

Dry-site grasses – the only one I can reliably ID is Chalky bluestem – *Andropogon capillipes*, dry site version; in fruit, Splitbeard bluestem – *A. ternarius*

Poison oak – *Rhus toxicodendron* (now *Toxicodendron toxicodendron*)

Stinging nettle – *Cnidoscolus stimulosus*

Curly milkweed – *Asclepias amplexicaulis*

Sandhills milkweed – *A. humistrata*

Sundial lupine – *Lupinus perennis*

Lady lupine – *L. villosus*

Goats rue – *Tephrosia virginiana*

Sensitive brier – *Schrankia microphylla*

Squarrose blazing star – *Liatris squarrosa*

Elegant blazing star – *L. elegans*

Goldenasters – these used to be in the genus *Heterotheca*, now *Chrysopsis mariana* and *C. gossypina*

Silkgrass – also used to be in *Heterotheca*, now *Pityopsis graminifolia*

Silvery aster – used to be in the genus *Aster*, now *Symphyotrichum concolor*

Squarrose aster – used to be *A. squarrosus*, now *Symphyotrichum walteri*

Stiff-leaved aster – used to be *A. linariifolius*, now *Ionactis linariifolius*

Sandhills ironweed – *Vernonia angustifolia*

Rosinweed – *Silphium compositum*

Cross-leaved sunflower – *Helianthus atrorubens*

Black-root – *Pterocaulon pycnostachyum*

Dayflower – *Commelina erecta*

Roseling – *Tradescantia rosea*

Prickly pear – *Opuntia compressa*

Horsemint – *Monarda punctata*

Bluecurls – *Trichostema dichotomum* (uncommon on the Francis Marion)

Spanish bayonets – *Yucca filamentosa*, possibly *Y. gloriosa* and *Y. aloifolia*

Non-vascular

Reindeer moss – *Cladonia* spp.

MESIC SITES (flatwoods): these sites are often a broad ecotone between drier and wetter sites, but many are interspersed in the flats to the west of each terrace edge (the ancient orphaned salt marshes). Many of these species cross over into more dry and more wet systems. Mesic sites are typically less diverse than either sub-xeric or savanna sites.

NATURESERVE ECOLOGICAL SYSTEMS:

2450; CES203.536 (9a and first 12b in key) – Southern Atlantic Coastal Plain Wet Pine Savanna and Flatwoods

2347; CES203.? (second 12b in key) – Atlantic Coastal Plain Upland Longleaf Pine Woodland

Canopy Trees

Diagnostic indicators

Longleaf pine – *Pinus palustris*

Usually present, but also found in other ecosystems and edaphic conditions

None in particular

Rare, but usually diagnostic

None in particular

Sub-canopy Trees:

Diagnostic indicators

None in particular

Usually present, but also found in other ecosystems

None in particular

Shrubs and Lianas:

Diagnostic indicators

Sweet pepperbush – *Clethra alnifolia*

Usually present, but also found in other ecosystems and edaphic conditions

Fetterbush – *Lyonia mariana*

Sweet gallberry – *Ilex glabra*

Wild azalea – *Rhododendron canescens* (uncommon)

Dwarf wild azalea – *R. atlanticum* (uncommon)

Herbaceous:

Diagnostic Indicators

None in particular

Rare, but usually diagnostic

Chaffseed – *Schwalbea americana* (very rare)

Usually present, but also found in other ecosystems and edaphic conditions

Many bunch grasses

Bracken fern – *Pteridium aquilinum*

Various thistles – *Carduus spinosissimus*, *C. smallii*, *C. repandus*, *C. virginianus*
Phlox – *Phlox carolina*
Bush pea – *Lespedeza capitata*
Butterfly pea – *Centrosema virginianum* and *Clitoria mariana*
Whorled-leaf coreopsis – *Coreopsis major*
Boneset – many species of *Eupatorium*
Vanilla-leaf – *Carphephorus* / *Trilisa* spp.
Hooded pitcher plant – *Sarracenia minor* (on the wetter end only)

WET SITES (savannas): these are the wettest and most diverse longleaf ecosystems on the Francis Marion. Savannas are found in the lower parts of the flats to the west of the terrace edges, on shallow edges of ponds, and in shallow depression meadows. In years of normal rainfall, savannas can have standing water part of the year, generally in the winter and early spring. In very wet years, savannas can have standing water even at the end of the growing season. Even in very dry years, savanna soils are damp just below the surface. The soils supporting savannas tend to be finer textured than either dry or mesic site soils. Savanna diversity is tied to soil series (see notes on soil series characteristics).

NATURESERVE ECOLOGICAL SYSTEMS:

2450; CES203.536 (9a in key) – Southern Atlantic Coastal Plain Wet Pine Savanna and Flatwoods

2501; CES203.304 (7a in key) – Southern Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest (cypress savanna)

Canopy Trees:

Diagnostic indicators

Longleaf pine – *Pinus palustris*

Usually present, but also found in other ecosystems

Pond pine – *P. serotina* (on very wet, organic sites)

Pond cypress – *Taxodium ascendens* (on very wet but less organic sites)

Sub-canopy Trees:

Diagnostic indicators

None in particular

Usually present, but also found in other ecosystems

None in particular

Shrubs and Lianas:

Diagnostic indicators

Southern bayberry – *Morella caroliniensis* – again, this is following Weakley

Pineland hibiscus – *Hibiscus aculeatus*

Usually present, but also found in other ecosystems and edaphic conditions

Sweet bay – *Magnolia virginiana*

Many of the wetter flatwoods shrubs and many pocosin shrubs

Herbaceous:

Diagnostic Indicators

Toothache grass – *Ctenium aromaticum*

Chalky bluestem, wet version – *Andropogon capillipes*

Pink muhly – *Muhlenbergia capillipes*

Most of our orchids:

Grass pink – *Calopogon tuberosus*

Small grass pink – *C. barbatus*

Many-flowered grass pink – *C. multiflorus* (very rare)
Rose pogonia – *Pogonia ophioglossoides*
Rosebud orchid – *Cleistis divaricata*
Yellow fringed orchid – *Platanthera ciliaris* (genus is *Habenaria* in RAB)
Crested fringed orchid – *P. cristata*
Yellow fringeless orchid – *P. integra* (very rare)
White fringed orchid – *P. blephariglottis* (rare)
Snowy orchid – *P. nivea* (very rare)

Most of our carnivorous plants:

Trumpets – *Sarracenia flava*
Hooded pitcher plant – *S. minor*
Sweet pitcher plant – *S. rubra* (rare)
Purple pitcher plant – *S. purpurea* (I don't think this is known from the Francis Marion)
Blue butterwort – *Pinguicula caerulea*
Yellow butterwort – *P. lutea*
Sundews – *Drosera* spp.

Sunbonnets – *Chaptalia tomentosa*
Leopard's-bane – *Arnica acaulis*
Swamp milkweed – *Asclepias lanceolata*
Bogbuttons – *Eriocaulon decangulare*
Bay blue flag – *Iris tridentata*
Orange milkwort – *Polygala lutea*
Camass – *Zigadenus glaberrimus*
Pine lily – *Lilium catesbaei*

Non-vascular

Peat moss – *Sphagnum* spp. (in patches)