

**Appendix 2.3 Edited descriptions of existing NVC vegetation types in Florida and adjacent Georgia and associated constancy tables. Vegetation types are arranged from xeric to subxeric.**

**OVERVIEW**

**Database Code:** C EGL00xxx5

**Scientific Name:** *Pinus palustris* / *Quercus laevis* / *Aristida beyrichiana* – *Tephrosia chrysophylla*  
Woodland

**Common Name:** Longleaf Pine / Turkey Oak / Southern Wiregrass - Sprawling Goat's-rue Woodland

**Colloquial Name:** Florida Peninsula Xeric Sandhills

**Classif. Resp.:** Southeast

**Classif. Level:** Association    **Conf.:** 1 - Strong    **Stakeholders:** Southeast

**Status:** Standard    **Origin:** 15-May-2002    ID: 685254    **Maint. Resp.:** Southeast

**Concept Auth.:** K.A. Palmquist, R.K. Peet, & S.C. Carr (2014)

**Concept Ref.:** Palmquist, Peet, and Carr 2014 (this document)

**Description Author:** K.A. Palmquist, R.K. Peet & S.C. Carr (2014), in part adapted from description of 8569

**Status:** 2    **Version:** 15-Feb-2014

**Ecological Systems:**

- Florida Longleaf Pine Sandhill (CES203.284)

**ELEMENT CONCEPT**

**Concept Summary:** This association is restricted to ridge tops and upper slopes of the Ridges Physiographic provinces of north and central peninsular Florida and reaches the southern limits of its distribution on the southern Lake Wales Ridge near Sebring, Florida. These xeric sandhills occupy well- and excessively well-drained Entisols, which are notable for their lack of soil profile development. The sparse open canopy is dominated by *Pinus palustris* and typically lacks a well developed sub-canopy. However, the mid-story shrub layer may be well developed, even under frequent fire conditions, and is dominated by *Quercus laevis*, *Quercus incana*, and *Quercus geminata*. *Aristida beyrichiana* is the dominant species in the herbaceous layer, but *Sorghastrum secundum*, *Schizachyrium scoparium* var. *stoloniferum*, and *Sporobolus junceus* are also common and abundant. Other diagnostic herbaceous species include *Balduina angustifolia*, *Bulbostylis* spp., *Cnidoscolus stimulosus*, *Eragrostis refracta*, *Lechea sessiliflora*, *Pityopsis graminifolia*, *Tephrosia chrysophylla*, and *Stillingia sylvatica*.

**Classification Comments:** Concept and description changed based on 13 plots from the Carolina Vegetation Survey (<http://vegbank.org/cite/VB.ds.199700.CEGL00xxx5>). The Association corresponds almost exactly to type XU1 of Carr et al. 2010 (Peninsular Xeric Sandhills), and is also similar to 8569. However, 8569, while broadly applied, was originally based on 9 patches in the Ocala National Forest with the formal description making reference to NatureServe plots from Hughes and Syracuse Islands. We included NatureServe plots from these two locations in our analysis, but they did not fall out in xxx5, or even in G154, but rather represent the scrubby flatwoods of 7750 of group G596. Despite the narrow basis in plots of 8569, the verbal description and application of 8569 spans multiple Associations recognized in our analysis, including xxx5 and 4490. Owing to the broad and vague description of 8569 and its inconsistent use, we propose that it be retired.

CEGL4491 also represents extreme xeric sites of FL and adjacent GA, but is vaguely defined and appears to differ from xxx5 only in the consistency of occurrence of *Ceratiola*. As we found no plots originally assigned to or fitting the description of 4491, and as the definition is not significantly different from our broader xxx5, we propose demoting 4491 to be part of xxx5. However, examples of 4491 do occur in the sandhills of Alachua and Levy Counties FL in the northern reaches of the Brooksville Ridge (Susan Carr, personal observation) with the dominants across strata largely the same, except for *Ceratiola*. We propose to retire 4491 and recognize the concept as part of xxx5, until more data becomes available and it can be demonstrated as a distinct Association from xxx5.

**Diagnostic Characteristics:** The absence of the midstory oak, *Q. margaretta*, distinguishes this association from xeric sandhills of Panhandle Florida, as well as sandhills of more fertile soils. In addition, this type is distinguished from other sandhills by its occurrence in north and central peninsular Florida, a high level of endemic and range restricted plant species, low species richness relative to other xeric habitats (e.g. CEG003583), and dominance of *Aristida beyrichiana* in the herbaceous layer. *Balduina angustifolia* and *Bulbostylis warei* are indicative of this type.

**Concept History:** Previously 4491 and 8569.

**Internal Comments:**

**Related Concepts:**

- ~ Peninsula Xeric Sandhills (Carr et al. 2010)

#### ELEMENT DESCRIPTION

**Environment:** These north-south oriented Ridges are of marine origin, and approximate emergent portions of ancient Pliocene-Pleistocene shorelines and associated marine deposits (Puri and Vernon 1964, Rowley et al. 2013). Soils are Entisols, which are Coarse, sandy and generally yellowish in color, contain exceedingly low concentrations of clay and silt, are acidic, infertile, and generally have no discernible seasonal water table. This Association is known to occur on several soil series, including Astatula, Candler, and Adamsville.

**Vegetation:** The sparse open canopy is dominated by *Pinus palustris*, although *P. elliotii* var. *densa* increases in dominance in sandhills of the southern Lake Wales Ridge. The sub-canopy layer is relatively sparse, but the shrub layer is typically well developed and comprised of a mix of *Quercus laevis*, *Quercus geminata*, *Quercus incana*, *Licania michauxii*, and *Rhus copallinum*. *Quercus myrtifolia* may be present in clonal patches. Two palmettos species inhabit this association: *Serenoa repens* and *Sabal etonia*. The former is common in many upland and flatwoods communities, whereas the latter is endemic to xeric uplands of central Florida, and may be a good indicator of this association. The herbaceous layer is fairly well developed and dominated by *Aristida beyrichiana*, which often reaches high abundance. Among the most frequently encountered ( $\geq 85\%$  of plot) herbaceous species are *Andropogon elliotii*, *Andropogon ternarius*, *Balduina angustifolia*, *Bulbostylis* sp., *Carphephorus corymbosus*, *Cnidocolus stimulosus*, *Cyperus* sp., *Dichantherium angustifolium*, *Dichantherium ovale*, *Lechea sessiliflora*, *Liatris tenuifolia*, *Paspalum setaceum*, *Pityopsis graminifolia*, *Rhynchospora grayi*, *Schizachyrium scoparium*, *Scleria ciliate*, *Sorghastrum secundum*, *Sporobolus junceus*, *Stillingia sylvatica*, *Tephrosia chrysophylla*, and *Tragia urens*. Peninsular xeric sandhills are home to many range-restricted and endemic species, such as

*Chapmannia floridana*, *Solidago odora* var. *chapmanii*, *Liatris tenuifolia* var. *quadriflora*, *Bulbostylis warei*, *Sabal etonia*, and *Asimina incana*.

**High-ranked species:**

**Dynamics:**

**Similar Associations:**

- *Pinus palustris* - (*Pinus elliottii* var. *elliottii*) / *Quercus* (*chapmanii*, *myrtifolia*) - *Serenoa repens* / *Aristida beyrichiana* - *Chapmannia floridana* Woodland (CEGL007750)  
*Pinus palustris* / *Quercus laevis* - *Quercus geminata* / *Ceratiola ericoides* Woodland (CEGL004491)

**Similar Association Comments:**

CEGL007750: This association concept encompasses the xeric sandhills of Southern Lake Wales Ridge (FNAI 2010). This variant is not quantitatively represented in the CVS dataset, but has been documented elsewhere. In this type, south Florida slash pine co-occurs or replaces longleaf pine as a canopy dominant. Midstory dominants differ as well; the endemic *Carya floridana* is common, as well as increased abundance of *Quercus chapmanii*, *Q. myrtifolia*, and *Ceratiola ericoides*.

**Adjacent Associations:**

**Adjacent Association Comments:**

**OTHER COMMENTS: ELEMENT GLOBAL RANK & REASONS**

**GRank:** G2 **GRank Review Date:** 23-Oct-2002

**GReasons:** This type was formerly presumed to occur in 9 isolated patches or "islands" ranging in size from 60-4000 hectares, surrounded by sand pine-scrub vegetation on the Ocala National Forest, however it is now known to occur more broadly and actually overlap with 4490 (see below). Although it has been suggested this is an anthropogenic community, maintained by human-altered fire regimes, it is of high conservation interest. The U.S. Forest Service is maintaining known sites with necessary fire regimes, and the type appears to be stable.

**Ranking Author:** R.E. Evans **Version:** 23-Oct-2002

**ELEMENT DISTRIBUTION**

**Range:** This association is restricted to ridge tops and upper slopes of the Ridges Physiographic provinces of north and central peninsular Florida. The largest of these systems include the Brooksville, Deland, Trail, and Lake Wales Ridges. Known occurrences of this type are in Alachua, Clay, Gilchrist, Levy, Marion, Orange, Pasco, and Putnam counties, FL.

**Nations:** US

**Table 2.3.1:** Prevalent species in vegetation type xxx5 by growth form. Species shown are prevalent in at least one group, have > 20% constancy, and average cover class of > 2 in at least one group. Indicator species for each type are highlighted in grey. Homogeneity = 0.683.

<b>Tree species</b>	<b>Const.</b>	<b>Cover</b>
<i>Quercus laevis</i>	100%	6
<i>Quercus geminata</i>	92%	6
<i>Pinus palustris</i>	92%	5
<i>Quercus incana</i>	77%	2
<i>Diospyros virginiana</i>	54%	2
<i>Sabal etonia</i>	23%	2
<b>Vine species</b>	<b>Const.</b>	<b>Cover</b>
<i>Smilax auriculata</i>	77%	3
<b>Shrub species</b>	<b>Const.</b>	<b>Cover</b>
<i>Serenoa repens</i>	92%	4
<i>Licania michauxii</i>	85%	4
<i>Rhus copallinum</i>	77%	3
<i>Opuntia humifusa</i>	77%	2
<i>Asimina incana</i>	38%	2
<i>Asimina pygmaea</i>	38%	2
<i>Vaccinium stamineum</i>	31%	2
<i>Asimina reticulate</i>	23%	2
<i>Vaccinium myrsinites</i>	23%	2
<b>Herb species</b>	<b>Const.</b>	<b>Cover</b>
<i>Aristida beyrichiana</i>	100%	7
<i>Pityopsis graminifolia</i>	100%	4
<i>Bulbostylis [ciliatifolia + coarctata]</i>	100%	3
<i>Sorghastrum secundum</i>	100%	3
<i>Schizachyrium scoparium</i> var. <i>Stoloniferum</i>	100%	2
<i>Stillingia sylvatica</i>	100%	2
<i>Andropogon ternaries</i>	92%	2
<i>Carphephorus corymbosus</i>	92%	2
<i>Cnidoscolus stimulosus</i>	92%	2
<i>Cyperus [croceus + ovatus + retrorsus]</i>	92%	2
<i>Lechea sessiliflora</i>	92%	2
<i>Scleria ciliate</i>	92%	2
<i>Tephrosia chrysophylla</i>	85%	3
<i>Andropogon elliottii</i>	85%	2
<i>Balduina angustifolia</i>	85%	2
<i>Dichanthelium angustifolium</i>	85%	2
<i>Dichanthelium ovale</i>	85%	2
<i>Liatris tenuifolia</i>	85%	2

<i>Paspalum setaceum</i>	85%	2
<i>Rhynchospora grayi</i>	85%	2
<i>Sporobolus junceus</i>	85%	2
<i>Tragia urens</i>	85%	2
<i>Aristida condensate</i>	77%	3
<i>Bulbostylis warei</i>	77%	3
<i>Crotalaria rotundifolia</i>	77%	2
<i>Croton argyranthemus</i>	69%	2
<i>Galactia volubilis</i> var. <i>volubilis</i>	69%	2
<i>Triplasis Americana</i>	69%	2
<i>Eragrostis refracta</i>	62%	2
<i>Eriogonum tomentosum</i>	62%	2
<i>Palafoxia integrifolia</i>	62%	2
<i>Stylisma patens</i>	62%	2
<i>Commelina erecta</i>	54%	2
<i>Pterocaulon pycnostachyum</i>	54%	2
<i>Andropogon virginicus</i>	46%	2
<i>Aristida purpurascens</i>	46%	2
<i>Liatris pauciflora</i>	46%	2
<i>Polygonella gracilis</i>	46%	2
<i>Pteridium aquilinum</i>	38%	5
<i>Aristida mohrii</i>	38%	3
<i>Crocianthemum corymbosum</i>	38%	2
<i>Cuthbertia graminea</i>	38%	2
<i>Dyschoriste oblongifolia</i>	38%	2
<i>Eupatorium compositifolium</i>	38%	2
<i>Schizachyrium sanguineum</i>	38%	2
<i>Sericocarpus tortifolius</i>	38%	2
<i>Galactia floridana</i>	31%	5
<i>Chapmannia floridana</i>	31%	3
<i>Digitaria filiformis</i>	31%	3
<i>Andropogon floridanus</i>	31%	2
<i>Chamaecrista nictitans</i>	31%	2
<i>Chrysopsis scabrella</i>	31%	2
<i>Cyperus [filiculmis + lupulinus]</i>	31%	2
<i>Dichantherium fusiforme</i>	31%	2
<i>Galactia elliottii</i>	23%	4
<i>Conyza Canadensis</i>	23%	3
<i>Aristida gyrans</i>	23%	2
<i>Chamaecrista deeringiana</i>	23%	3
<i>Croton michauxii</i>	23%	2
<i>Dalea pinnata</i>	23%	2
<i>Dichantherium sabulorum</i>	23%	2

<i>Elephantopus elatus</i>	23%	2
<i>Euthamia caroliniana</i>	23%	2
<i>Houstonia procumbens</i>	23%	2
<i>Paronychia patula</i>	23%	2
<i>Polygonella robusta</i>	23%	2
<i>Solidago odora</i>	23%	2

## OVERVIEW

**Database Code:** CEGL003583

**Scientific Name:** *Pinus palustris* / *Quercus laevis* / *Licania michauxii* / *Pityopsis aspera* Woodland

**Common Name:** Longleaf Pine / Turkey Oak / Gopher-apple / Pineland Silk-grass Woodland

**Colloquial Name:** Longleaf Pine / Turkey Oak Woodland

**Classif. Resp.:** Southeast

**Classif. Level:** Association      **Conf.:** 1 - Strong

**Stakeholders:** Southeast

**Status:** Standard

**Origin:** 26-Nov-1997    ID: 687165

**Maint. Resp.:** Southeast

**Concept Auth.:** Kindell et al. (1997)

**Description Author:** K.A. Palmquist, R.K. Peet, and S.C. Carr (2014), in part adapted from description of 3583

**Status:** 2      **Version:** 15-Feb-2014

**Concept Ref.:** Kindell et al. 1997 [Name in concept ref, if different: ]

**Ecological Systems:**

- Florida Longleaf Pine Sandhill (CES203.284)
- East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland (CES203.496)

### ELEMENT CONCEPT

**Concept Summary:** This open *Pinus palustris* woodland is found in the Florida Panhandle on xeric, sandy soils with a slightly higher fine particle composition in the surface soils, and higher species richness than other FL sandhill types (e.g. CEGLxxx5). *Quercus laevis* is the most constant and abundant oak in the subcanopy/shrub layer, but *Quercus incana*, *Quercus geminata*, and *Quercus margarettae* are also common and typically abundant. *Schizachyrium scoparium* var. *stolonifera* is the most constant dominant species in the herbaceous layer, but *Aristida beyrichiana* is also often dominant, despite being slightly less constant in this type. Indicator species include *Gaylussacia dumosa*, *Licania michauxii*, *Vaccinium darrowii* among the shrubs, and *Aristida mohrii*, *Commelina erecta*, *Croton argyranthemum*, *Eriogonum tomentosum*, *Euphorbia floridana*, *Liatris gracilis*, *Pityopsis aspera*, *Rhynchosia cytisoides*, and *Schizachyrium tenerum* among the herbs. Many of these indicators are restricted to the panhandle of FL.

**Classification Comments:** Description changed based on 19 plots from the Carolina Vegetation Survey (<http://vegbank.org/cite/VB.ds.199701.CEGL003583>). This corresponds to type XU2 of Carr et al. 2010 (Panhandle Xeric Sandhills), except that xxx6 also belongs in XU2. This type largely corresponds to 3583, which is described as pertaining to xeric sites of the east Gulf Coast of FL Panhandle and adjacent AL, but reference is also made in the description to disjunct occurrences in GA and SC. SC and GA examples are floristically different and likely correspond to 7844. We re-define 3583 to occur exclusively south of GA. We change the name to put more emphasis on *Licania* and less emphasis on *Aristida beyrichiana*.

Note that 3587, which is described from the De Soto NF of southern MS, includes reference to occurrences in Eglin AFB in FL. We see the Eglin plots fitting in 3583 and suggest that 3587 is found exclusively in southern MS and possibly adjacent AL, and that it belongs in the new *Pinus palustris* / *Quercus laevis* / *Aristida condensata* Alliance.

**Diagnostic Characteristics:** This type is distinguished by its location in the FL panhandle, xeric, sandy soil, dominance by *Q. incana* and *Q. margarettae*, absence of scrub oaks (*Q. myrtifolia*, *Q. chapmanii*), and relatively high species richness. *Pityopsis aspera* is indicative of this type.

**Concept History:** CEG003583.

**Internal Comments:** REE 7-02: Some data for this association have been apparently been collected at Ichauway Plantation, southwestern Georgia, but it is unclear who did so or where it currently exists. REE 5-02: See plot APAL.51 (NatureServe unpubl. data), FLO68 (S. Carr unpubl. data). Ocala and Osceola deleted.

**Related Concepts:**

- < Panhandle Xeric Sandhills (Carr et al. 2010)

**ELEMENT DESCRIPTION**

**Environment:** This community is restricted to the western Florida Panhandle south of the Cody Scarp (Florida's most prominent ancient Pliocene-Pleistocene shoreline), and occupies two landscape contexts: 1) ridgetops and upper slopes of large sandy ridges associated with ancient marine shorelines, and 2) broad flat terrain with little apparent topographic variation on the Citronelle formation (i.e., Eglin Air Force Base; Carr, pers. obs.). Surface soils of this type are well to excessively-drained Entisols and Ultisols. Entisols are coarse sands with little soil profile development. However this type may also inhabit highly weathered Ultisols, which have argillic horizons below 40 inches depth. Accordingly, surface soils are notably higher in silt and clay content, relative to other sandhill types in FL. This contributes to higher available moisture capacity, and may contribute to overall higher species richness.

**Vegetation:** *Pinus palustris* dominates the open canopy of this association. In addition to *Quercus laevis*, several oak species dominate the mid-story (*Q. incana*, *Q. geminata*, *Q. margarettae*). Patchy growths of rhizomatous sub-shrubs typify this community, including *Licania michauxii*, *Gaylussacia dumosa*, and *Vaccinium darrowii*. Other common shrub species include *Serenoa repens*, *Opuntia humifusa*, and *Hypericum hypericoides*. *Aristida beyrichiana* is a characteristic and often dominant herbaceous species in this community, but in some parts of its range is replaced by *Schizachyrium scoparium* as the dominant in the herbaceous layer. Other species with high cover or indicator values are *Andropogon elliotii*, *Andropogon virginicus* var. *virginicus*, *Aristida mohrii*, *Bulbostylis ciliatifolia*, *Commelina erecta*, *Croton argyranthemus*, *Cyperus lupulinus*, *Dichanthelium angustifolium*, *Dichanthelium ovale*, *Eriogonum tomentosum*, *Euphorbia floridana*, *Liatris tenuifolia*, *Pityopsis aspera*, *Rhynchosia cytisoides*, *Rhynchospora grayi*, *Scleria ciliata*, *Schizachyrium tenerum*, *Solidago odora* var. *odora*, *Sorghastrum secundum*, *Sporobolus junceus*, *Stylisma patens*, and *Stylosanthes biflora*.

**High-ranked species:** *Clinopodium dentatum* (G3), *Copris gopheri* (G2), *Drymarchon couperi* (G3), *Gopherus polyphemus* (G3), *Lampropeltis extenuata* (G3), *Lithobates capito* (G3), *Peucea aestivalis* (G3), *Picoides borealis* (G3), *Pituophis melanoleucus mugitus* (G4T3), *Pityopsis flexuosa* (G3), *Podomys floridanus* (G3), *Sciurus niger shermani* (G5T3), *Warea amplexifolia* (G1)



**Dynamics:** This community is pyrogenic, generally being adapted to frequent, low-intensity surface fires every 2 to 5 years (FNAI 2010, Hardin 1990). These woodlands become increasingly dominated by oaks in the absence of fire. Hurricanes commonly impact this type.

**Similar Associations:**

- *Pinus palustris* / *Quercus laevis* / *Schizachyrium scoparium* - *Rhynchosia cytisoides* Woodland (CEGL003587)

**Similar Association Comments:**

CEGL003587: This type lacks *Aristida beyrichiana* and *Schizachyrium scoparium* is the dominant bunchgrass in the herbaceous layer.

**Adjacent Associations:**

**Adjacent Association Comments:**

**OTHER COMMENTS: ELEMENT GLOBAL RANK & REASONS**

**GRank:** G3 **GRank Review Date:** 23-Nov-1997

**GReasons:** This longleaf pine woodland is restricted to Pliocene-Pleistocene sand ridges, old river bars, and similar sediments, many of which were derived from the Pliocene-aged Citronelle Formation of the FL panhandle. It is part of the endangered Longleaf Pine Ecosystem, which once dominated the Coastal Plain landscape of the southeastern United States, and depends on frequent, low-intensity, growing-season fires to control understory vegetation and for the reproduction of *Pinus palustris*. *Pinus palustris*-dominated woodlands are susceptible to the effects of fire suppression, over-grazing, or conversion to commercial forest plantations or agriculture. Remaining examples are highly threatened by development, conversion, and alteration of fire regimes. This community is pyrogenic with fire frequencies of 2 to 5 years. Hurricanes commonly impact this type. Longleaf Pine - Turkey Oak Sandhills become increasingly dominated by oaks in the absence of fire. Threats to this community include fire suppression, lack of available *Pinus palustris* seed sources due to various historic timber management practices, and low-intensity winter fires which eliminate recently established pine seedlings without effectively impacting oaks. Most of those occurrences which have not been destroyed are severely degraded.

**Ranking Author:** Southeastern Ecology Group **Version:** 16-May-2002

**ELEMENT DISTRIBUTION**

**Range:** This community is restricted to the western Florida Panhandle south of the Cody Scarp (Florida's most prominent ancient Pleistocene shoreline). It has been documented in Liberty, Okaloosa, Santa Rosa, Walton, and Washington counties, FL.

**Nations:** US

**Table 2.3.2:** Prevalent species in vegetation type 3583 by growth form. Species shown are prevalent in at least one group, have > 20% constancy, and average cover class of > 2 in at least one group. Indicator species for each type are highlighted in grey. Homoteneity = 0.668.

<b>Tree species</b>	<b>Const.</b>	<b>Cover</b>
<i>Quercus laevis</i>	100%	6
<i>Diospyros virginiana</i>	100%	4
<i>Pinus palustris</i>	95%	6
<i>Quercus incana</i>	95%	4
<i>Quercus geminata</i>	84%	4
<i>Quercus margarettae</i>	74%	4
<i>Quercus hemisphaerica</i>	58%	4
<i>Ilex vomitoria</i>	37%	3
<i>Prunus umbellata</i>	32%	2
<i>Crataegus sp.</i>	32%	2
<b>Vine species</b>	<b>Const.</b>	<b>Cover</b>
<i>Smilax auriculata</i>	100%	3
<i>Smilax bona-nox</i>	37%	2
<i>Vitis rotundifolia</i>	37%	2
<i>Gelsemium sempervirens</i>	32%	2
<i>Smilax pumila</i>	26%	2
<i>Smilax glauca</i>	21%	2
<b>Shrub species</b>	<b>Const.</b>	<b>Cover</b>
<i>Licania michauxii</i>	100%	5
<i>Serenoa repens</i>	79%	3
<i>Gaylussacia dumosa</i>	74%	4
<i>Opuntia humifusa</i>	74%	2
<i>Hypericum hypericoides</i>	68%	2
<i>Vaccinium darrowii</i>	63%	4
<i>Yucca [flaccida + filamentosa]</i>	63%	2
<i>Vaccinium arboreum</i>	58%	3
<i>Rhus copallinum</i>	53%	2
<i>Vaccinium stamineum</i>	37%	3
<i>Rubus cuneifolius</i>	37%	2
<i>Hypericum gentianoides</i>	32%	2
<i>Quercus minima</i>	26%	5
<i>Ilex glabra</i>	21%	3
<i>Ceanothus microphyllus</i>	21%	2
<b>Herb species</b>	<b>Const.</b>	<b>Cover</b>
<i>Schizachyrium scoparium</i> var. <i>stoloniferum</i>	100%	5
<i>Andropogon elliotii</i>	100%	3
<i>Eriogonum tomentosum</i>	100%	3

<i>Dichantherium angustifolium</i>	100%	2
<i>Stylisma patens</i>	100%	2
<i>Croton argyranthemus</i>	95%	3
<i>Solidago odora</i>	95%	2
<i>Cyperus [filiculmis + lupulinus]</i>	95%	2
<i>Stylosanthes biflora</i>	95%	2
<i>Andropogon virginicus</i>	89%	4
<i>Galactia minor</i>	89%	4
<i>Bulbostylis [ciliatifolia + coarctata]</i>	89%	3
<i>Dichantherium ovale</i>	89%	3
<i>Schizachyrium tenerum</i>	89%	3
<i>Sporobolus junceus</i>	89%	3
<i>Liatris tenuifolia</i>	89%	2
<i>Rhynchospora grayi</i>	89%	2
<i>Pityopsis aspera</i>	84%	5
<i>Sorghastrum secundum</i>	84%	4
<i>Commelina erecta</i>	84%	2
<i>Euphorbia floridana</i>	84%	2
<i>Scleria ciliate</i>	84%	2
<i>Liatris gracilis</i>	79%	3
<i>Andropogon ternaries</i>	79%	2
<i>Eupatorium compositifolium</i>	79%	2
<i>Lechea sessiliflora</i>	74%	2
<i>Tragia urens</i>	74%	2
<i>Aristida beyrichiana</i>	68%	7
<i>Rhynchosia cytisoides</i>	68%	4
<i>Aristida purpurascens</i>	58%	2
<i>Hieracium gronovii</i>	58%	2
<i>Houstonia procumbens</i>	58%	2
<i>Vernonia angustifolia</i>	58%	2
<i>Aristida mohrii</i>	53%	4
<i>Tephrosia chrysophylla</i>	53%	3
<i>Mimosa microphylla</i>	53%	2
<i>Symphytotrichum concolor</i>	53%	2
<i>Pteridium aquilinum</i>	47%	4
<i>Euphorbia discoidalis</i>	47%	2
<i>Galactia erecta</i>	47%	2
<i>Paspalum setaceum</i>	47%	2
<i>Sericocarpus tortifolius</i>	47%	2
<i>Tephrosia mohrii</i>	42%	5
<i>Ageratina aromatic</i>	42%	2
<i>Cnidoscolus stimulosus</i>	42%	2
<i>Dichantherium villosissimum</i>	42%	2

<i>Euphorbia exserta</i>	42%	2
<i>Rhynchosia reniformis</i>	42%	2
<i>Tragia smallii</i>	42%	2
<i>Dalea pinnata</i>	37%	3
<i>Dichantherium tenue</i>	37%	2
<i>Lespedeza repens</i>	37%	2
<i>Liatris secunda</i>	37%	2
<i>Schizachyrium maritimum</i>	32%	4
<i>Panicum virgatum</i>	32%	4
<i>Callicarpa Americana</i>	32%	2
<i>Chamaecrista deeringiana</i>	32%	2
<i>Crocantemum carolinanum</i>	32%	2
<i>Polygonella gracilis</i>	32%	2
<i>Trichostema setaceum</i>	32%	2
<i>Triplasis purpurea</i>	32%	2
<i>Viola septemloba</i>	32%	2
<i>Baptisia lanceolata</i>	26%	2
<i>Chrysopsis mariana</i>	26%	2
<i>Crotalaria rotundifolia</i>	26%	2
<i>Cyperus [croceus + ovatus + retrorsus]</i>	26%	2
<i>Eragrostis refracta</i>	26%	2
<i>Pityopsis graminifolia</i>	26%	2
<i>Stillingia sylvatica</i>	26%	2
<i>Tephrosia florida</i>	26%	2
<i>Desmodium strictum</i>	21%	3
<i>Dichantherium sabulorum</i>	21%	3
<i>Aristida longispica</i>	21%	2
<i>Chrysopsis hyssopifolia</i>	21%	2
<i>Crotalaria purshii</i>	21%	2
<i>Dichantherium oligosanthes</i>	21%	2
<i>Digitaria cognate</i>	21%	2
<i>Diodia teres</i>	21%	2
<i>Galium pilosum</i>	21%	2
<i>Gaura filipes</i>	21%	2
<i>Hypoxis juncea</i>	21%	2
<i>Hypoxis wrightii</i>	21%	2
<i>Ionactis linariifolia</i>	21%	2
<i>Liatris chapmanii</i>	21%	2
<i>Physalis arenicola</i>	21%	2
<i>Ruellia ciliosa</i>	21%	2
<i>Salvia azurea</i>	21%	2
<i>Schizachyrium sanguineum</i>	21%	2

## OVERVIEW

**Database Code:** C EGL00xxx6

**Scientific Name:** *Pinus palustris* / *Quercus geminata* / *Conradina canescens* / *Aristida beyrichiana*  
Woodland

**Common Name:** Longleaf Pine / Sand Live Oak / Gray Rosemary / Southern Wiregrass Woodland

**Classif. Resp.:** Southeast

**Classif. Level:** Association

**Conf.:** 2 - Moderate

**Stakeholders:** Southeast

**Status:** Standard

**Origin:**

**Maint. Resp.:** Southeast

**Concept Auth.:** K.A. Palmquist, R.K. Peet, and S.C. Carr (2014)

**Concept Ref.:** Palmquist, Peet, and Carr 2014 (this document)

**Description Author:** K.A. Palmquist, R.K. Peet, and S.C. Carr (2014)

**Status:**           **Version:** 15-Feb-2014

### Ecological Systems:

- Florida Longleaf Pine Sandhill (CES203.284)
- East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland (CES203.496)

## ELEMENT CONCEPT

**Concept Summary:** This xeric sandhill association is restricted to lowland areas within a few miles of the Gulf Coast, in the western FL Panhandle (west of the Apalachicola River). Soils of this association are Entisols, however, they are often only moderately well drained due to higher water tables and, in some cases, the presence of weak spodic horizons. Surface soils are coarse sands, with very low fine silt content. *Pinus palustris* dominates the canopy of this association, while the midstory is comprised of equal parts *Quercus laevis*, *Q. incana*, and *Q. geminata*. The shrub layer is well developed and diverse and characterized by *Conradina canescens*, *Serenoa repens*, and indicators, *Ilex glabra*, *Licania michauxii*, and *Opuntia humifusa*. Dominant ground cover bunchgrasses include *Aristida beyrichiana*, *Sorghastrum secundum*, and *Schizachyrium scoparium*.

**Classification Comments:** Concept and description based on 4 plots from the Carolina Vegetation Survey (<http://vegbank.org/cite/VB.ds.199702.CEGL00xxx6>). Plots in this type were included in type XU2 of Carr et al. 2010 (Panhandle Xeric Sandhills), along with those of 3583. There are no Associations in the current USNVC that correspond to this type. The equivalent coastal fringe sandhills of eastern GA and northeastern FL are represented by the little-documented 4263 discussed in Section 4 above.

**Diagnostic Characteristics:** This type is characterized by its location in extreme western Panhandle FL and hence species with ranges restricted or nearly limited to the western Panhandle, including *Chrysopsis gossypina ssp. hyssopifolia*, *Chrysoma pauciflosculosa*, *Euphorbia discoidalis*, and *Conradina canescens*. It can also be distinguished from other sandhill types in FL by the presence of mesic and xeric flatwoods species (e.g. *Ilex glabra*).

**Concept History:** New type.

**Related Concepts:**

- < Panhandle Xeric Sandhills (Carr et al. 2010)

### ELEMENT DESCRIPTION

**Environment:** Soils of this Association are Entisols, however, they are often only moderately well drained due to higher water tables and, in some cases, the presence of weak spodic horizons. Surface soils are coarse sands, with very low fine silt content.

**Vegetation:** The sparse canopy of this association is dominated by *Pinus palustris*, while the scrub oak layer is comprised of equal parts *Quercus geminata*, *Quercus incana*, and *Quercus laevis*. The shrub layer is diverse and well-developed and characterized by *Serenoa repens*, *Conradina canescens*, *Ilex glabra*, *Licania michauxii*, and *Opuntia humifusa*; the last three are indicators of this type. The herbaceous layer is co-dominated by *Aristida beyrichiana* and *Schizachyrium scoparium* var. *stoloniferum*. Particularly diagnostic herbs include *Aristida mohrii*, *Baptisia lanceolata*, *Chrysopsis hyssopifolia*, *Dichantheium tenue*, *Euphorbia discoidalis*, *Mimosa microphylla*, *Pityopsis aspera*, *Polygonella gracilis*, *Rhynchospora megalocarpa*, *Sorghastrum secundum*, *Sporobolus junceus*, and *Triplasis americana*.

### Similar Associations:

- *Pinus palustris* / *Quercus laevis* / *Licania michauxii* / *Pityopsis aspera* Woodland (CEGL003583)

**Similar Associations Comments:** This Association is similar to 3583, which lacks the distinctive coastal fringe flora. In addition, xxx6 has affinities to Coastal Scrub and occurs in close proximity to it.

### ELEMENT DISTRIBUTION

**Range:** This association is restricted to lowland areas within a few miles of the Gulf Coast, in the western FL Panhandle (west of the Apalachicola River). Plot occurrences are from Gulf, Okaloosa, and Walton counties, FL.

**Nations:** US

**Table 2.3.3:** Prevalent species in vegetation type xxx6 by growth form. Species shown are prevalent in at least one group, have > 20% constancy, and average cover class of > 2 in at least one group. Indicator species for each type are highlighted in grey. Homogeneity = 0.738.

<b>Tree species</b>	<b>Const.</b>	<b>Cover</b>
<i>Pinus palustris</i>	100%	5
<i>Quercus geminata</i>	100%	5
<i>Quercus laevis</i>	100%	5
<i>Quercus incana</i>	100%	4
<i>Ilex vomitoria</i>	75%	3
<i>Quercus myrtifolia</i>	75%	3
<i>Quercus chapmanii</i>	75%	2
<i>Pinus clausa</i>	50%	4
<i>Pinus elliotii</i> var. <i>elliotii</i>	50%	4
<i>Quercus hemisphaerica</i>	50%	2
<i>Quercus elliotii</i>	25%	6
<b>Vine species</b>	<b>Const.</b>	<b>Cover</b>
<i>Smilax auriculata</i>	100%	3
<i>Smilax pumila</i>	25%	2
<i>Vitis rotundifolia</i>	25%	2
<b>Shrub species</b>	<b>Const.</b>	<b>Cover</b>
<i>Serenoa repens</i>	100%	6
<i>Conradina canescens</i>	100%	5
<i>Ilex glabra</i>	100%	5
<i>Licania michauxii</i>	100%	4
<i>Opuntia humifusa</i>	100%	2
<i>Chrysoma pauciflosculosa</i>	50%	4
<i>Gaylussacia dumosa</i>	50%	4
<i>Quercus minima</i>	50%	4
<i>Vaccinium darrowii</i>	25%	3
<i>Ceanothus microphyllus</i>	25%	2
<i>Hypericum gentianoides</i>	25%	2
<i>Polygonella polygama</i>	25%	2
<i>Vaccinium arboreum</i>	25%	2
<i>Yucca</i> [flaccida + filamentosa]	25%	2
<b>Herb species</b>	<b>Const.</b>	<b>Cover</b>
<i>Aristida beyrichiana</i>	100%	6
<i>Schizachyrium scoparium</i> var. <i>stoloniferum</i>	100%	5
<i>Bulbostylis</i> [ciliatifolia + coarctata]	100%	3
<i>Sorghastrum secundum</i>	100%	3
<i>Stylisma patens</i>	100%	3
<i>Andropogon elliotii</i>	100%	2

<i>Dichanthelium tenue</i>	100%	2
<i>Mimosa microphylla</i>	100%	2
<i>Pityopsis aspera</i>	100%	2
<i>Polygonella gracilis</i>	100%	2
<i>Scleria ciliate</i>	100%	2
<i>Sporobolus junceus</i>	100%	2
<i>Aristida mohrii</i>	75%	4
<i>Chrysopsis hyssopifolia</i>	75%	4
<i>Rhynchospora megalocarpa</i>	75%	4
<i>Schizachyrium tenerum</i>	75%	4
<i>Andropogon virginicus</i>	75%	3
<i>Triplasis Americana</i>	75%	3
<i>Baptisia lanceolata</i>	75%	2
<i>Commelina erecta</i>	75%	2
<i>Cyperus [filiculmis + lupulinus]</i>	75%	2
<i>Dichanthelium angustifolium</i>	75%	2
<i>Dichanthelium ovale</i>	75%	2
<i>Eriogonum tomentosum</i>	75%	2
<i>Euphorbia discoidalis</i>	75%	2
<i>Euphorbia floridana</i>	75%	2
<i>Helianthus radula</i>	75%	2
<i>Ionactis linariifolia</i>	75%	2
<i>Sericocarpus tortifolius</i>	75%	2
<i>Silphium compositum</i>	75%	2
<i>Solidago odora</i>	75%	2
<i>Sophronanthe hispida</i>	75%	2
<i>Stylosanthes biflora</i>	75%	2
<i>Tragia smallii</i>	75%	2
<i>Liatris chapmanii</i>	50%	4
<i>Dichanthelium fusiforme</i>	50%	3
<i>Krameria lanceolata</i>	50%	3
<i>Cnidoscolus stimulosus</i>	50%	2
<i>Cyperus [croceus + ovatus + retrorsus]</i>	50%	2
<i>Dichanthelium sabulorum</i>	50%	2
<i>Galactia minor</i>	50%	2
<i>Juncus biflorus</i>	50%	2
<i>Lupinus villosus</i>	50%	2
<i>Panicum virgatum</i>	50%	2
<i>Paspalum setaceum</i>	50%	2
<i>Rhynchospora grayi</i>	50%	2
<i>Seymeria cassiodies</i>	50%	2
<i>Tephrosia chrysophylla</i>	50%	2
<i>Tragia urens</i>	50%	2



<i>Balduina angustifolia</i>	25%	4
<i>Aristida tenuispica</i>	25%	3
<i>Croton argyranthemus</i>	25%	3
<i>Galactia floridana</i>	25%	3
<i>Paronychia erecta</i>	25%	3
<i>Schizachyrium sanguineum</i>	25%	3
<i>Andropogon capillipes</i>	25%	2
<i>Andropogon ternaries</i>	25%	2
<i>Asclepias cinerea</i>	25%	2
<i>Carphephorus odoratissimus</i>	25%	2
<i>Chamaecrista nictitans</i>	25%	2
<i>Chrysopsis godfreyi</i>	25%	2
<i>Crocantemum corymbosum</i>	25%	2
<i>Dichantherium chamaelonche</i>	25%	2
<i>Eupatorium compositifolium</i>	25%	2
<i>Euphorbia telephioides</i>	25%	2
<i>Euthamia caroliniana</i>	25%	2
<i>Gaillardia aestivalis</i>	25%	2
<i>Juncus marginatus</i>	25%	2
<i>Lechea minor</i>	25%	2
<i>Lespedeza repens</i>	25%	2
<i>Liatris pauciflora</i>	25%	2
<i>Liatris provincialis</i>	25%	2
<i>Paronychia patula</i>	25%	2
<i>Phoebanthus tenuifolius</i>	25%	2
<i>Polygala nana</i>	25%	2
<i>Polygala polygama</i>	25%	2
<i>Rhexia alifanus</i>	25%	2
<i>Rhexia mariana</i>	25%	2
<i>Rhynchospora globularis</i>	25%	2
<i>Rhynchospora pineticola</i>	25%	2
<i>Ruellia ciliosa</i>	25%	2
<i>Scleria pauciflora</i>	25%	2
<i>Seymeria pectinata</i>	25%	2
<i>Sporobolus floridanus</i>	25%	2
<i>Stillingia sylvatica</i>	25%	2
<i>Symphyotrichum concolor</i>	25%	2
<i>Xyris caroliniana</i>	25%	2

## OVERVIEW

**Database Code:** CEG004490

**Scientific Name:** *Pinus palustris* / *Quercus laevis* / *Aristida beyrichiana* – *Pterocaulon pycnostachyum*  
Woodland

**Common Name:** Longleaf Pine / Turkey Oak / Southern Wiregrass – Dense-spike Blackroot

**Classif. Resp.:** Southeast

**Classif. Level:** Association      **Conf.:** 1 - Strong      **Stakeholders:** Southeast

**Status:** Standard      **Origin:** 1-Jul-1996      ID: 688222      **Maint. Resp.:** Southeast

**Concept Auth.:** R.K. Peet, E. Kjellmark and A.S. Weakley

**Concept Ref.:** Carr et al. 2010 [Name in concept ref, if different: ]

**Description Author:** K.A. Palmquist, R.K. Peet, and S.C. Carr (2014)

**Status:**      **Version:** 15-Feb-2014

### Ecological Systems:

- East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland (CES203.496)

## ELEMENT CONCEPT

**Concept Summary:** This Association contains subxeric *Pinus palustris* communities of northern and central peninsular FL. Soils are Entisols and Ultisols with relatively high seasonal water tables, base saturation, and fine particle composition (although silt and clay composition remains very low, < 5% in the surface soil). This association is characterized by a scattered *Pinus palustris* canopy with a *Aristida beyrichiana* dominated ground layer. *Quercus laevis* is the most abundant and constant species in the subcanopy layer, but *Q. geminata* and *Q. incana* may also be present and typically less abundant than *Q. laevis*. Dominants, in addition to the nominals, include *Licania michauxii*, *Serenoa repens*, *Vaccinium stamineum* in shrub layer and *Pityopsis graminifolia* and *Schizachyrium scoparium* var. *stoloniferum* in the herbaceous layer. The herbaceous layer is considerably more species rich than xeric associations in peninsular FL, with particularly high diversity in the legume family.

**Classification Comments:** Concept and description based on 25 plots from the Carolina Vegetation Survey (<http://vegbank.org/cite/VB.ds.199703.CEGL00xx4490>). Type SSU2 of Carr et al. 2010 (North Florida Sub-xeric Sandhills) includes this Association, but also spans part of xxx7. This type is approximately equal to 4490 in the current USNVC. We revise the name and fine-tune the description based on existing plot data. Specifically, we put more emphasis on *Pterocaulon pycnostachyum*. Association 3569 is asserted to be a xeric sand Association FL and is replaced by xxx5, but as originally described the composition was vague and in some ways similar to 4490. Regardless, we propose to retire the vaguely 3569.

**Diagnostic Characteristics:** This type is distinguished by its high species richness (compared to xeric sandhills), absence of scrub oak species (*Q. myrtifolia* and *Q. chapmanii*), and lack of *Q. margarettae*. *Pinus elliottii* var. *densa* is notably lacking from this type.

**Concept History:** CEG004490.

**Related Concepts:**

- < North Florida Sub-xeric Sandhills (Carr et al. 2010)

### ELEMENT DESCRIPTION

**Environment:** This subxeric association occurs on Entisols and Ultisols with higher seasonal water tables, base saturation, and fine particle composition (although silt and clay composition remains very low, < 5% in the surface soil) than xeric types.

**Vegetation:** This association is characterized by a scattered *Pinus palustris* canopy with a *Aristida beyrichiana* dominated ground layer. *Quercus laevis* is the most abundant and constant species in the subcanopy layer, but *Q. geminata* and *Q. incana* may also be present, but typically less abundant than *Q. laevis*. Dominants, in addition to the nominals, include *Licania michauxii*, *Serenoa repens*, *Vaccinium stamineum* in shrub layer and *Pityopsis graminifolia* and *Schizachyrium scoparium* in the herbaceous layer. The shrub layer is relatively sparse, but still fairly species rich (>16 species occur in 20% or more of plots). The herbaceous layer is considerably more species rich than xeric associations in peninsular FL, with particularly high diversity in the legume family including *Crocantemum carolinanum*, *Crotalaria rotundifolia*, *Dalea pinnata*, *Lespedeza hirta*, *Rhynchosia reniformis*, *Stylosanthes biflora*, and *Tephrosia chrysophylla*. Other diagnostic species in the herbaceous layer include *Balduina angustifolia*, *Carphephorus corymbosus*, *Cnidoscolus stimulosus*, *Dyschoriste oblongifolia*, *Endodeca serpentaria*, *Eriogonum tomentosum*, *Palafoxia integrifolia*, *Pterocaulon pchnostachyum*, and *Ruellia ciliosa*.

#### Similar Associations:

- *Pinus palustris* / *Quercus margarettae* / *Aristida beyrichiana* – *Rhynchosia reniformis* Woodland (CEGLxxx7)
- *Pinus palustris* / *Quercus laevis* / *Aristida beyrichiana* – *Tephrosia chrysophylla* Woodland (CEGLxxx5)

#### Similar Association Comments:

CEGLxxx7: This type is slight more mesic than 4490 and slightly more species rich.

CEGLxxx5: This association is more xeric than 4490 and more species poor.

### ELEMENT DISTRIBUTION

**Range:** This subxeric association occupies the Ridges and Highlands physiographic provinces of North and Central peninsular Florida. More specifically, it is known from Alachua, Citrus, Clay, Gilchrist, Levy, Marion, Nassau, Orange, Pasco, Putnam, and Volusia counties, FL.

**Nations:** US

**Table 2.3.4:** Prevalent species in vegetation type 4490 by growth form. Species shown are prevalent in at least one group, have > 20% constancy, and average cover class of > 2 in at least one group. Indicator species for each type are highlighted in grey. Homogeneity = 0.638.

<b>Tree species</b>	<b>Const.</b>	<b>Cover</b>
<i>Quercus laevis</i>	96%	6
<i>Pinus palustris</i>	92%	6
<i>Quercus geminata</i>	84%	4
<i>Quercus incana</i>	80%	5
<i>Diospyros virginiana</i>	60%	3
<i>Quercus margaretta</i>	36%	4
<i>Quercus hemisphaerica</i>	32%	2
<i>Quercus chapmanii</i>	24%	2
<i>Quercus myrtifolia</i>	20%	3
<i>Sabal palmetto</i>	20%	2
<b>Vine species</b>	<b>Const.</b>	<b>Cover</b>
<i>Smilax auriculata</i>	76%	2
<b>Shrub species</b>	<b>Const.</b>	<b>Cover</b>
<i>Licania michauxii</i>	72%	4
<i>Serenoa repens</i>	68%	4
<i>Rhus copallinum</i>	60%	3
<i>Vaccinium stamineum</i>	56%	4
<i>Opuntia humifusa</i>	56%	2
<i>Yucca [flaccida + filamentosa]</i>	56%	2
<i>Rubus cuneifolius</i>	40%	3
<i>Asimina incana</i>	40%	2
<i>Asimina pygmaea</i>	36%	2
<i>Ceanothus microphyllus</i>	36%	2
<i>Hypericum hypericoides</i>	32%	2
<i>Vaccinium darrowii</i>	28%	5
<i>Vaccinium arboreum</i>	28%	2
<i>Asimina obovata</i>	20%	3
<i>Quercus minima</i>	20%	3
<i>Quercus elliotii</i>	20%	2
<b>Herb species</b>	<b>Const.</b>	<b>Cover</b>
<i>Aristida beyrichiana</i>	100%	7
<i>Pityopsis graminifolia</i>	100%	4
<i>Schizachyrium scoparium</i>	100%	3
<i>Sorghastrum secundum</i>	96%	4
<i>Stillingia sylvatica</i>	96%	2
<i>Crotalaria rotundifolia</i>	92%	2
<i>Dichanthelium ovale</i>	92%	2

<i>Paspalum setaceum</i>	92%	2
<i>Rhynchospora grayi</i>	92%	2
<i>Eupatorium compositifolium</i>	88%	3
<i>Tephrosia chrysophylla</i>	88%	2
<i>Tragia urens</i>	88%	2
<i>Andropogon elliotii</i>	84%	2
<i>Cnidocolus stimulosus</i>	84%	2
<i>Crocantemum carolinianum</i>	84%	2
<i>Houstonia procumbens</i>	84%	2
<i>Lechea sessiliflora</i>	84%	2
<i>Liatris tenuifolia</i>	84%	2
<i>Pterocaulon pycnostachyum</i>	84%	2
<i>Andropogon ternarius</i>	80%	3
<i>Andropogon virginicus</i>	80%	3
<i>Croton argyranthemus</i>	80%	2
<i>Eriogonum tomentosum</i>	80%	2
<i>Sericocarpus tortifolius</i>	80%	2
<i>Stylisma patens</i>	80%	2
<i>Sporobolus junceus</i>	76%	3
<i>Hieracium gronovii</i>	76%	2
<i>Lespedeza hirta</i>	76%	2
<i>Stylosanthes biflora</i>	76%	2
<i>Bulbostylis [ciliatifolia + coarctata]</i>	72%	2
<i>Dichantherium angustifolium</i>	72%	2
<i>Dyschoriste oblongifolia</i>	72%	2
<i>Rhynchosia reniformis</i>	72%	2
<i>Scleria ciliata</i>	72%	2
<i>Carphephorus corymbosus</i>	68%	3
<i>Ageratina aromatica</i>	68%	2
<i>Endodeca serpentaria</i>	68%	2
<i>Palafoxia integrifolia</i>	64%	2
<i>Ruellia ciliosa</i>	64%	2
<i>Elephantopus elatus</i>	60%	4
<i>Aristida purpurascens</i>	60%	2
<i>Cyperus [croceus + ovatus + retrorsus]</i>	60%	2
<i>Cyperus [filiculmis + lupulinus]</i>	60%	2
<i>Gymnopogon ambiguus</i>	60%	2
<i>Solidago odora</i>	60%	2
<i>Dalea pinnata</i>	56%	3
<i>Balduina angustifolia</i>	56%	2
<i>Galactia floridana</i>	52%	4
<i>Arnoglossum floridanum</i>	52%	2
<i>Chamaecrista nictitans</i>	52%	2

<i>Symphyotrichum concolor</i>	52%	2
<i>Tephrosia florida</i>	52%	2
<i>Digitaria filiformis</i>	48%	3
<i>Berlandiera subacaulis</i>	48%	2
<i>Crocantemum corymbosum</i>	48%	2
<i>Crotalaria purshii</i>	48%	2
<i>Desmodium floridanum</i>	48%	2
<i>Phoebanthus grandiflorus</i>	48%	2
<i>Triplasis americana</i>	48%	2
<i>Desmodium strictum</i>	44%	2
<i>Lygodesmia aphylla</i>	44%	2
<i>Pediomelum canescens</i>	44%	2
<i>Physalis walteri</i>	44%	2
<i>Polygala grandiflora</i>	44%	2
<i>Vernonia angustifolia</i>	44%	2
<i>Eupatorium album</i>	40%	3
<i>Commelina erecta</i>	40%	2
<i>Eragrostis elliottii</i>	40%	2
<i>Eragrostis refracta</i>	40%	2
<i>Indigofera caroliniana</i>	40%	2
<i>Polygonella gracilis</i>	40%	2
<i>Aeschynomene viscidula</i>	36%	2
<i>Centrosema arenicola</i>	36%	2
<i>Dichantheium tenue</i>	36%	2
<i>Eryngium aromaticum</i>	36%	2
<i>Silphium compositum</i>	36%	2
<i>Sisyrinchium xerophyllum</i>	36%	2
<i>Anthenantia villosa</i>	32%	2
<i>Clitoria mariana</i>	32%	2
<i>Physalis arenicola</i>	32%	2
<i>Salvia azurea</i>	32%	2
<i>Aristida condensata</i>	28%	3
<i>Chapmannia floridana</i>	28%	3
<i>Asclepias verticillata</i>	28%	2
<i>Galactia volubilis</i>	28%	2
<i>Liatris pauciflora</i>	28%	2
<i>Pteridium aquilinum</i>	24%	4
<i>Andropogon floridanus</i>	24%	2
<i>Asclepias cinerea</i>	24%	2
<i>Centrosema virginianum</i>	24%	2
<i>Helianthus radula</i>	24%	2
<i>Panicum anceps</i>	24%	2
<i>Piriqueta caroliniana</i>	24%	2

<i>Sisyrinchium nashii</i>	24%	2
<i>Symphotrichum dumosum</i>	24%	2
<i>Andropogon longiberbis</i>	20%	2
<i>Asclepias tuberosa</i>	20%	2
<i>Cenchrus gracillimus</i>	20%	2
<i>Chamaecrista deeringiana</i>	20%	2
<i>Croton michauxii</i>	20%	2
<i>Dichanthelium sabulorum</i>	20%	2
<i>Dichanthelium strigosum</i>	20%	2
<i>Galium pilosum</i>	20%	2
<i>Onosmodium virginianum</i>	20%	2
<i>Orbexilum lupinellum</i>	20%	2
<i>Schizachyrium sanguineum</i>	20%	2
<i>Zornia bracteata</i>	20%	2

## OVERVIEW

**Database Code:** C EGL00xxx7

**Scientific Name:** *Pinus palustris* / *Quercus margarettae* / *Aristida beyrichiana* – *Rhynchosia reniformis*  
Woodland

**Common Name:** Longleaf Pine / Sand Post Oak / Southern Wiregrass – Dollarweed Woodland

**Classif. Resp.:** Southeast

**Classif. Level:** Association    **Conf.:** 1 - Strong    **Stakeholders:** Southeast

**Status:** Standard    **Origin:**    **ID:**    **Maint. Resp.:** Southeast

**Concept Auth.:** K.A. Palmquist, R.K. Peet, and S. C. Carr (2014)

**Description Author:** K.A. Palmquist, R.K. Peet, and S. C. Carr (2014)

**Status:**    **Version:** 15-Feb-2014

**Concept Ref.:** Palmquist, Peet, and Carr 2014 (this document)

**Ecological Systems:**

- East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland (CES203.496)

## ELEMENT CONCEPT

**Concept Summary:** This sub-mesic association occupies the eastern Florida Panhandle extending into North Peninsular Florida, and adjacent Georgia. It occurs on several physiographic landforms, including the Northern Highlands and the Coastal Lowlands of the Eastern Panhandle (Puri and Vernon 1964). Included in this concept are ridgetop and upper slope communities of the Tallahassee Red Hills and Munson Hills Regions. Soils are Entisols and Ultisols with relatively high pH and surface silt content. The open canopy of this association is dominated by *Pinus palustris*. Several deciduous oak species populate the mid-story stratum including *Quercus laevis*, *Q. incana*, *Q. margarettae*, and *Q. hemisphaerica*. The more mesic status is indicated by the importance of *Asimina angustifolia* in the shrub layer along with *Rhus copallinum*, *Vaccinium arboreum*, and *Vaccinium stamineum*. The species-rich herbaceous layer is dominated by *Aristida beyrichiana*. Important diagnostic species include *Crocantemum carolianum*, *Dyscoriste oblongifolia*, *Gymnopogon ambiguus*, *Elephantopus elatus*, *Pteridium aquilinum*, *Rhynchosia reniformis*, *Symphotrichium concolor*, and *Vernonia angustifolia*.

**Classification Comments:** Concept and description based on 28 plots from the Carolina Vegetation Survey (<http://vegbank.org/cite/VB.ds.199704.CEGL00xxx7>). There are no types in the current USNVC that correspond to this proposed Association. Several plots from the *Aristida beyrichiana* free portion of Eglin Air Force Base have been attributed to 3587, but our analysis suggests they fit better in 3583. This Association also overlaps SSU1 (North Florida Longleaf Woodlands) and SSU2 (North Florida Sub-xeric Sandhills) of Carr et al. (2010).

**Diagnostic Characteristics:** This type is distinguished from other xeric and subxeric types by the prevalence of *Quercus margarettae*, notable absence of *Q. geminata* and *Q. myrtifolia*, and the presence of *Vaccinium arboreum* and *V. stamineum* distinguish this association from more xeric communities. This association is the most “mesic” and species rich of the G154 types in Florida.

**Concept History:** New type.

**Related Concepts:**



- >< North Florida Sub-xeric Sandhills (Carr et al. 2010)
- >< North Florida Longleaf Woodlands (Carr et al. 2010)

### ELEMENT DESCRIPTION

**Environment:** Included in this concept are ridgetop and upper slope communities of the Tallahassee Red Hills and Munson Hills Regions, where this association may co-occur with mesic “clayhills” and flatwoods in lower slope positions. Soils are Entisols and Ultisols with relatively high pH and surface silt content.

**Vegetation:** The open canopy of this association is dominated by *Pinus palustris*. Several deciduous oak species populate the mid-story stratum including *Quercus laevis*, *Q. incana*, *Q. margarettae*, and *Q. hemisphaerica*. The more mesic status is indicated by the importance of *Asimina angustifolia* in the shrub layer along with *Rhus copallinum*, *Vaccinium arboreum*, and *Vaccinium stamineum*. The herb layer is dominated by *Aristida beyrichiana* and other bunchgrass species; *Sorghastrum secundum*, *Schizachyrium scoparium* var. *stoloniferum*, *Elephantopus elatus*, *Dyschoriste oblongifolia*, *Pityopsis graminifolia*, *Solidago odora*, and *Pteridium aquilinum*. Other common grasses are *Andropogon elliotii*, *Dichantherium angustifolium*, *Dichantherium ovale*, and *Gymnopogon ambiguus*. This association is distinguished by its high species richness at all spatial scales and the relative abundance of ground cover species in the Fabaceae and Asteraceae families. Important diagnostic species include *Crocantemum carolianum*, *Dyscoriste oblongifolia*, *Gymnopogon ambiguus*, *Elephantopus elatus*, *Pteridium aquilinum*, *Rhynchosia reniformis*, *Symphotrichium concolor*, and *Vernonia angustifolia*.

### Similar Associations:

- *Pinus palustris* / *Quercus laevis* / *Aristida beyrichiana* – *Pterocaulon pycnostachyum* Woodland (CEGL4490)

### Similar Association Comments:

CEGL4490: This type is more xeric and less species rich than xxx7. These two types can also be differentiated by the dominant oak species in the subcanopy/shrub layer: *Q. margarettae* in the case of xxx7 and *Q. laevis* in the same of 4490.

### ELEMENT DISTRIBUTION

**Range:** This submesic association occupies the eastern Florida Panhandle extending into North Peninsular Florida, and adjacent Georgia. Known occurrences are from Wakulla, Leon, Jefferson, Thomas, Grady, Jackson, Gilchrist, Alachua, Suwannee, Columbia, Hamilton, & Madison counties, FL and the adjacent Red Hills region of GA (Thomas & Grady counties). This type is common near Brooksville, FL.

**Nations:** US

**Table 2.3.5:** Prevalent species in vegetation type xxx7 by growth form. Species shown are prevalent in at least one group, have > 20% constancy, and average cover class of > 2 in at least one group. Indicator species for each type are highlighted in grey. Homogeneity = 0.635.

<b>Tree species</b>	<b>Const.</b>	<b>Cover</b>
<i>Quercus incana</i>	93%	5
<i>Pinus palustris</i>	89%	6
<i>Quercus margarettae</i>	86%	5
<i>Diospyros virginiana</i>	86%	2
<i>Quercus laevis</i>	82%	5
<i>Prunus serotina</i>	68%	3
<i>Quercus hemisphaerica</i>	68%	3
<i>Sassafras albidum</i>	46%	4
<i>Quercus geminata</i>	39%	3
<i>Carya alba</i>	36%	4
<i>Quercus falcata</i>	36%	4
<i>Cornus florida</i>	29%	2
<i>Quercus virginiana</i>	29%	2
<i>Prunus umbellata</i>	25%	3
<i>Quercus nigra</i>	25%	2
<i>Persea palustris</i>	21%	2
<b>Vine species</b>	<b>Const.</b>	<b>Cover</b>
<i>Smilax auriculata</i>	82%	4
<i>Smilax glauca</i>	43%	2
<i>Vitis rotundifolia</i>	43%	2
<i>Vitis aestivalis</i>	39%	2
<i>Gelsemium sempervirens</i>	25%	4
<i>Smilax bona-nox</i>	25%	2
<i>Parthenocissus quinquefolia</i>	21%	2
<b>Shrub species</b>	<b>Const.</b>	<b>Cover</b>
<i>Rhus copallinum</i>	96%	4
<i>Asimina [angustifolia + spatulata]</i>	82%	2
<i>Vaccinium stamineum</i>	82%	3
<i>Vaccinium arboreum</i>	75%	4
<i>Hypericum hypericoides</i>	71%	2
<i>Licania michauxii</i>	61%	4
<i>Rubus cuneifolius</i>	61%	3
<i>Gaylussacia dumosa</i>	54%	4
<i>Vaccinium darrowii</i>	50%	3
<i>Vaccinium myrsinites</i>	46%	4
<i>Toxicodendron pubescens</i>	43%	3
<i>Serenoa repens</i>	32%	6

<i>Quercus elliotii</i>	29%	4
<i>Ceanothus americanus</i>	25%	2
<i>Morella cerifera</i>	25%	2
<i>Quercus minima</i>	21%	5
<i>Asimina incana</i>	21%	2
<b>Herb species</b>	<b>Const.</b>	<b>Cover</b>
<i>Aristida beyrichiana</i>	100%	7
<i>Dichanthelium ovale</i>	100%	2
<i>Schizachyrium scoparium</i>	96%	3
<i>Dichanthelium angustifolium</i>	96%	2
<i>Scleria ciliata</i>	96%	2
<i>Vernonia angustifolia</i>	96%	2
<i>Sorghastrum secundum</i>	93%	5
<i>Rhynchosia reniformis</i>	93%	2
<i>Stillingia sylvatica</i>	93%	2
<i>Stylisma patens</i>	93%	2
<i>Elephantopus elatus</i>	89%	4
<i>Andropogon elliotii</i>	89%	3
<i>Sericocarpus tortifolius</i>	89%	3
<i>Dyschoriste oblongifolia</i>	86%	4
<i>Pityopsis graminifolia</i>	86%	4
<i>Solidago odora</i>	86%	4
<i>Hieracium gronovii</i>	86%	2
<i>Tragia urens</i>	86%	2
<i>Pteridium aquilinum</i>	82%	5
<i>Crocianthemum carolinianum</i>	82%	2
<i>Gymnopogon ambiguus</i>	82%	2
<i>Symphyotrichum concolor</i>	82%	2
<i>Crotalaria rotundifolia</i>	79%	2
<i>Eupatorium compositifolium</i>	79%	2
<i>Lespedeza hirta</i>	79%	2
<i>Paspalum setaceum</i>	79%	2
<i>Stylosanthes biflora</i>	79%	2
<i>Ageratina aromatica</i>	75%	2
<i>Endodeca serpentaria</i>	75%	2
<i>Houstonia procumbens</i>	75%	2
<i>Sporobolus junceus</i>	71%	3
<i>Aristida purpurascens</i>	71%	2
<i>Chamaecrista nictitans</i>	71%	2
<i>Croton argyranthemus</i>	71%	2
<i>Ruellia ciliosa</i>	71%	2
<i>Andropogon ternarius</i>	68%	2

<i>Cnidocolus stimulosus</i>	68%	2
<i>Commelina erecta</i>	68%	2
<i>Rhynchospora grayi</i>	68%	2
<i>Lechea sessiliflora</i>	64%	3
<i>Andropogon virginicus</i>	64%	2
<i>Dichantheium tenue</i>	64%	2
<i>Galium pilosum</i>	64%	2
<i>Liatris gracilis</i>	64%	2
<i>Liatris tenuifolia</i>	64%	2
<i>Mimosa microphylla</i>	64%	2
<i>Desmodium floridanum</i>	61%	2
<i>Physalis walteri</i>	61%	2
<i>Desmodium strictum</i>	57%	2
<i>Palafoxia integrifolia</i>	57%	2
<i>Piriqueta caroliniana</i>	57%	2
<i>Pterocaulon pycnostachyum</i>	57%	2
<i>Sorghastrum nutans</i>	54%	4
<i>Bulbostylis [ciliatifolia + coarctata]</i>	54%	2
<i>Eupatorium album</i>	54%	2
<i>Scutellaria multiglandulosa</i>	54%	2
<i>Clitoria mariana</i>	50%	3
<i>Symphotrichum dumosum</i>	50%	3
<i>Asclepias verticillata</i>	50%	2
<i>Centrosema virginianum</i>	50%	2
<i>Euphorbia exserta</i>	50%	2
<i>Pityopsis aspera</i>	46%	3
<i>Tephrosia florida</i>	46%	3
<i>Pediomelum canescens</i>	46%	2
<i>Polygala grandiflora</i>	46%	2
<i>Chrysopsis gossypina</i>	43%	2
<i>Cyperus [filiculmis + lupulinus]</i>	43%	2
<i>Desmodium lineatum</i>	43%	2
<i>Galactia volubilis</i>	39%	3
<i>Schizachyrium maritimum</i>	39%	3
<i>Eragrostis elliottii</i>	39%	2
<i>Tephrosia chrysophylla</i>	39%	2
<i>Salvia azurea</i>	36%	3
<i>Acalypha gracilens</i>	36%	2
<i>Cyperus plukenetii</i>	36%	2
<i>Dichantheium strigosum</i>	36%	2
<i>Lespedeza repens</i>	36%	2
<i>Muhlenbergia expansa</i>	36%	2
<i>Phlox floridana</i>	36%	2

<i>Digitaria filiformis</i>	32%	4
<i>Eupatorium glaucescens</i>	32%	4
<i>Desmodium viridiflorum</i>	32%	3
<i>Anthenantia villosa</i>	32%	2
<i>Dalea albida</i>	32%	2
<i>Desmodium ciliare</i>	32%	2
<i>Eragrostis spectabilis</i>	32%	2
<i>Sisyrinchium nashii</i>	32%	2
<i>Sporobolus clandestinus</i>	32%	2
<i>Desmodium marilandicum</i>	29%	3
<i>Asclepias tuberosa</i>	29%	2
<i>Callicarpa americana</i>	29%	2
<i>Cyperus [croceus + ovatus + retrorsus]</i>	29%	2
<i>Eryngium yuccifolium</i>	29%	2
<i>Galactia erecta</i>	29%	2
<i>Helianthus radula</i>	29%	2
<i>Lespedeza angustifolia</i>	29%	2
<i>Lygodesmia aphylla</i>	29%	2
<i>Orbexilum lupinellum</i>	29%	2
<i>Paspalum bifidum</i>	29%	2
<i>Strophostyles umbellata</i>	29%	2
<i>Tragia smallii</i>	29%	2
<i>Tridens carolinianus</i>	29%	2
<i>Galactia floridana</i>	25%	4
<i>Panicum virgatum</i>	25%	4
<i>Crocantemum corymbosum</i>	25%	2
<i>Eragrostis refracta</i>	25%	2
<i>Eustachys floridana</i>	25%	2
<i>Gaura filipes</i>	25%	2
<i>Lechea minor</i>	25%	2
<i>Onosmodium virginianum</i>	25%	2
<i>Pityopsis flexuosa</i>	25%	2
<i>Schizachyrium tenerum</i>	25%	2
<i>Stylodon carneus</i>	25%	2
<i>Viola septemloba</i>	25%	2
<i>Baptisia lecontei</i>	21%	4
<i>Triplasis americana</i>	21%	3
<i>Aristida condensa</i>	21%	2
<i>Berlandiera pumila</i>	21%	2
<i>Chrysopsis mariana</i>	21%	2
<i>Dichantherium commutatum</i>	21%	2
<i>Dichantherium oligosanthes</i>	21%	2
<i>Diodia teres</i>	21%	2

<i>Eriogonum tomentosum</i>	21%	2
<i>Galactia regularis</i>	21%	2
<i>Lespedeza stuevei</i>	21%	2
<i>Liatris elegans</i>	21%	2
<i>Rudbeckia hirta</i>	21%	2

## OVERVIEW

**Database Code:** CEGLO0xxx8

**Scientific Name:** *Pinus palustris* / *Quercus falcata* / *Erythrina herbacea* / *Aristida condensata* Woodland

**Common Name:** Longleaf Pine / Southern Red Oak / Coral Bean / Big Three-awn

**Classif. Resp.:** Southeast

**Classif. Level:** Association      **Conf.:** 2 - Moderate

**Stakeholders:** Southeast

**Status:** Standard

**Origin:**

**Maint. Resp.:** Southeast

**Concept Auth.:** K.A. Palmquist, R.K. Peet, and S. C. Carr (2014)

**Concept Ref.:** Palmquist, Peet, and Carr 2014 (this document)

**Description Author:** K.A. Palmquist, R.K. Peet, and S. C. Carr (2014)

**Status:**      **Version:** 15-Feb-2014

### Ecological Systems:

- East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland (CES203.496)

## ELEMENT CONCEPT

**Concept Summary:** This subxeric association represents upland longleaf pine woodlands of isolated sand ridges of the Highlands physiographic province of the North Florida peninsula and may be remnants of formally widespread mixed pine-hardwood woodland of this region, colloquially known as “Red Oak Woods”. Soils are sandy with high calcium content and low silt %. The open canopy is dominated by *Pinus palustris*, while the subcanopy layer is characteristically dominated by mesic upland hardwood species, including *Quercus falcata*, *Carya alba*, *Quercus stellata*, *Vaccinium arboreum*, *Vaccinium stamineum*, and *Myrica cerifera*. *Erythrina herbacea* is a particularly diagnostic shrub species. The ground cover of this association is notable for its lack of *Aristida beyrichiana* as the dominant bunchgrass. Ground cover indicators of this community are species typical of mesic and subxeric woodlands, such as *Ageratina aromatica*, *Andropogon* spp., *Aristida condensata*, *Aristida lanosa*, *Clitoria mariana*, *Cyperus plunkenetti*, *Dichantherium angustifolium*, *D. oligosanthes*, *Pteridium aquilinum*, *Solidago odora*, *Sorghastrum secundum*, *Sporobolus clandestinus*, and *Tridens caroliniana*.

**Classification Comments:** Concept and description based on 5 plots from the Carolina Vegetation Survey (<http://vegbank.org/cite/VB.ds.199705.CEGL00xxx8>). There are no types in the current USNVC that correspond to this type. The Association is largely contained in SSU1 (North Florida Longleaf Woodlands) of Carr et al. (2010).

**Diagnostic Characteristics:** Presence of mesic uplands hardwood species, lack of wiregrass, and presence of mesic woodland forbs.

**Concept History:** New type.

### Related Concepts:

- < North Florida Longleaf Woodland (Carr et al. 2010)

## ELEMENT DESCRIPTION

**Environment:** Surface soils have high sand and low silt content. In contrast to other xeric types, this association may be restricted to Ultisols and Alfisols (rather than Entisols), which are loamy soils overlain by sandy deposits. These weathered soils have higher moisture retention and base saturation due to subsoil argillic horizons. Calcium content is very high in surface soil layers, perhaps an artifact of well developed and shallow karst of this region.

**Vegetation:** The open canopy is dominated by *Pinus palustris*, while the subcanopy layer is characteristically dominated by a diverse mix of mesic upland hardwood species, including *Quercus falcata*, *Carya alba*, *Quercus stellata*, *Vaccinium arboreum*, *Vaccinium stamineum*, and *Myrica cerifera*. *Quercus geminata* occurs with 100% constancy in this type. Other common and fairly abundant tree species include *Persea palustris*, *Quercus myrtifolia*, *Quercus margarettae*, and *Symplocos tinctoria*. The shrub layer is characterized by several indicator species including *Vaccinium arboreum*, *Vaccinium stamineum*, *Asimina angustifolia*, *Hypericum hypericoides*, and *Erythrina herbacea*. The ground cover of this association is notable for its lack of *Aristida beyrichiana*. Rather, the herbaceous layer is a rich assortment of patchy grasses and forbs. *Sorghastrum secundum* is the most abundant grass, followed by *Dichantheium angustifolium*, *D. oligoanthes*, *Andropogon elliotii*, and *Andropogon ternarius*. Other indicators in the herbaceous layer include several species typical of mesic and subxeric conditions, such as *Ageratina aromatica*, *Aristida lanosa*, *Aristida purpurascens*, *Clitoria mariana*, *Cyperus plunkenetti*, *Dichantheium commutatum*, *Endodeca serpentaria*, *Panicum anceps*, *Pteridium aquilinum*, *Schizachyrium scoparium*, *Solidago odora*, *Sorghastrum secundum*, *Sporobolus clandestinus*, and *Tridens caroliniana*.

**Similar Associations:** *Pinus palustris* / *Quercus margarettae* / *Aristida beyrichiana* – *Rhynchosia reniformis* Woodland (CEGL00xxx7)

**Similar Association Comments:** This type is most similar to xxx7, which has a substantially less developed upland hardwood component in the sub-canopy and shrub layers.

#### ELEMENT DISTRIBUTION

**Range:** This subxeric association represents upland longleaf pine woodlands of isolated sand ridges of the Highlands physiographic province of the North Florida peninsula and may be remnants of formally widespread mixed pine-hardwood woodland of this region, colloquially known as “Red Oak Woods”. This association is adjacent to Upland Hardwood Forests (FNAI 2010), which are likely remnants of a historically large expanse of upland hardwoods in the North Florida karst region (Davis 1967). More specifically, this type has been documented in Alachua & Levy counties, FL.

**Nations:** US



**Table 2.3.6:** Prevalent species in vegetation type xxx8 by growth form. Species shown are prevalent in at least one group, have > 20% constancy, and average cover class of > 2 in at least one group. Indicator species for each type are highlighted in grey. Homogeneity = 0.765.

<b>Tree species</b>	<b>Const.</b>	<b>Cover</b>
<i>Pinus palustris</i>	100%	5
<i>Quercus geminata</i>	100%	5
<i>Quercus falcata</i>	100%	3
<i>Carya alba</i>	80%	4
<i>Persea palustris</i>	80%	2
<i>Quercus myrtifolia</i>	60%	5
<i>Quercus margarettae</i>	60%	3
<i>Symplocos tinctoria</i>	60%	3
<i>Pinus taeda</i>	40%	5
<i>Quercus stellata</i>	40%	5
<i>Diospyros virginiana</i>	40%	4
<i>Liquidambar styraciflua</i>	40%	3
<i>Quercus hemisphaerica</i>	40%	3
<i>Crataegus uniflora</i>	40%	2
<i>Ilex vomitoria</i>	40%	2
<i>Prunus umbellata</i>	40%	2
<i>Quercus nigra</i>	40%	2
<i>Sabal palmetto</i>	40%	2
<i>Cornus florida</i>	20%	4
<i>Ilex opaca</i>	20%	2
<i>Malus angustifolia</i>	20%	2
<i>Nyssa sylvatica</i>	20%	2
<i>Pinus glabra</i>	20%	2
<i>Quercus chapmanii</i>	20%	2
<i>Quercus laevis</i>	20%	2
<i>Quercus laurifolia</i>	20%	2
<b>Vine species</b>	<b>Const.</b>	<b>Cover</b>
<i>Smilax auriculata</i>	100%	2
<i>Smilax pumila</i>	60%	4
<i>Smilax bona-nox</i>	60%	2
<i>Vitis rotundifolia</i>	60%	2
<i>Smilax glauca</i>	40%	2
<i>Toxicodendron radicans</i>	40%	2
<i>Gelsemium sempervirens</i>	20%	2
<i>Smilax rotundifolia</i>	20%	2
<i>Vitis aestivalis</i>	20%	2
<b>Shrub species</b>	<b>Const.</b>	<b>Cover</b>

<i>Vaccinium arboreum</i>	100%	5
<i>Vaccinium stamineum</i>	100%	3
<i>Erythrina herbacea</i>	100%	2
<i>Morella [cerifera + pumila]</i>	80%	3
<i>Asimina [angustifolia + spatulata]</i>	80%	2
<i>Hypericum hypericoides</i>	80%	2
<i>Serenoa repens</i>	60%	6
<i>Licania michauxii</i>	60%	2
<i>Sideroxylon reclinatum</i>	40%	2
<i>Zamia floridana</i>	40%	2
<i>Rhus copallinum</i>	20%	5
<i>Asimina pygmaea</i>	20%	2
<i>Lyonia ferruginea</i>	20%	2
<i>Mitchella repens</i>	20%	2
<i>Rubus cuneifolius</i>	20%	2
<i>Vaccinium myrsinites</i>	20%	2
<i>Viburnum obovatum</i>	20%	2
<i>Yucca [flaccida + filamentosa]</i>	20%	2
<b>Herb species</b>	<b>Const.</b>	<b>Cover</b>
<i>Ageratina aromatica</i>	100%	3
<i>Dichanthelium angustifolium</i>	100%	3
<i>Dichanthelium oligosanthes</i>	100%	3
<i>Solidago odora</i>	100%	3
<i>Sorghastrum secundum</i>	100%	3
<i>Andropogon elliotii</i>	100%	2
<i>Andropogon ternarius</i>	100%	2
<i>Cyperus plukenetii</i>	100%	2
<i>Panicum anceps</i> var. <i>rhizomatum</i>	100%	2
<i>Pteridium aquilinum</i>	100%	2
<i>Sericocarpus tortifolius</i>	100%	2
<i>Clitoria mariana</i>	80%	4
<i>Aristida condensa</i>	80%	3
<i>Aristida lanosa</i>	80%	3
<i>Dichanthelium commutatum</i>	80%	3
<i>Schizachyrium scoparium</i> var. <i>stoloniferum</i>	80%	3
<i>Andropogon virginicus</i>	80%	2
<i>Aristida purpurascens</i>	80%	2
<i>Cnidoscolus stimulosus</i>	80%	2
<i>Cyperus [croceus + ovatus + retrorsus]</i>	80%	2
<i>Dichanthelium ovale</i>	80%	2
<i>Endodeca serpentaria</i>	80%	2
<i>Eupatorium album</i>	80%	2

<i>Houstonia procumbens</i>	80%	2
<i>Paspalum setaceum</i>	80%	2
<i>Scleria ciliata</i> var. <i>ciliata</i>	80%	2
<i>Scleria triglomerata</i>	80%	2
<i>Sporobolus clandestinus</i>	80%	2
<i>Centrosema arenicola</i>	60%	3
<i>Galactia volubilis</i>	60%	3
<i>Indigofera caroliniana</i>	60%	3
<i>Salvia azurea</i>	60%	3
<i>Tridens carolinianus</i>	60%	3
<i>Dichantherium lancearium</i>	60%	2
<i>Dichantherium tenue</i>	60%	2
<i>Galium pilosum</i>	60%	2
<i>Hieracium gronovii</i>	60%	2
<i>Lactuca floridana</i>	60%	2
<i>Lechea sessiliflora</i>	60%	2
<i>Lespedeza hirta</i>	60%	2
<i>Liatris tenuifolia</i>	60%	2
<i>Piptochaetium avenaceum</i>	60%	2
<i>Pityopsis graminifolia</i>	60%	2
<i>Rhynchosia cinerea</i>	60%	2
<i>Rhynchosia reniformis</i>	60%	2
<i>Rhynchospora grayi</i>	60%	2
<i>Ruellia ciliosa</i>	60%	2
<i>Desmodium glabellum</i>	40%	3
<i>Lespedeza stuevei</i>	40%	3
<i>Andropogon floridanus</i>	40%	2
<i>Aristida patula</i>	40%	2
<i>Brickellia eupatorioides</i>	40%	2
<i>Centrosema virginianum</i>	40%	2
<i>Chamaecrista nictitans</i>	40%	2
<i>Crocanthemum carolinianum</i>	40%	2
<i>Crotalaria rotundifolia</i>	40%	2
<i>Desmodium fernaldii</i>	40%	2
<i>Desmodium strictum</i>	40%	2
<i>Dyschoriste oblongifolia</i>	40%	2
<i>Elephantopus elatus</i>	40%	2
<i>Eragrostis elliottii</i>	40%	2
<i>Eriogonum tomentosum</i>	40%	2
<i>Eustachys floridana</i>	40%	2
<i>Galium hispidulum</i>	40%	2
<i>Hypoxis juncea</i>	40%	2
<i>Ipomoea pandurata</i>	40%	2

<i>Pterocaulon pycnostachyum</i>	40%	2
<i>Rhynchosia difformis</i>	40%	2
<i>Stillingia sylvatica</i>	40%	2
<i>Tephrosia florida</i>	40%	2
<i>Tragia smallii</i>	40%	2
<i>Tragia urens</i>	40%	2
<i>Vernonia angustifolia</i>	40%	2
<i>Baptisia [alba + albescens]</i>	20%	4
<i>Cyperus tetragonus</i>	20%	3
<i>Dichanthelium laxiflorum</i>	20%	3
<i>Saccharum alopecuroides</i>	20%	3
<i>Sporobolus junceus</i>	20%	3
<i>Andropogon gerardii</i>	20%	2
<i>Apocynum cannabinum</i>	20%	2
<i>Aristida longispica</i>	20%	2
<i>Balduina angustifolia</i>	20%	2
<i>Bulbostylis [ciliatifolia + coarctata]</i>	20%	2
<i>Callicarpa americana</i>	20%	2
<i>Chasmanthium sessiliflorum</i>	20%	2
<i>Chrysopsis latisquamea</i>	20%	2
<i>Coelorachis cylindrica</i>	20%	2
<i>Commelina erecta</i>	20%	2
<i>Croton argyranthemus</i>	20%	2
<i>Croton glandulosus</i>	20%	2
<i>Desmodium laevigatum</i>	20%	2
<i>Desmodium lineatum</i>	20%	2
<i>Dichanthelium ravenelii</i>	20%	2
<i>Dichanthelium sabulorum</i>	20%	2
<i>Eustachys neglecta</i>	20%	2
<i>Galactia regularis</i>	20%	2
<i>Lespedeza repens</i>	20%	2
<i>Liatris elegans</i>	20%	2
<i>Liatris gracilis</i>	20%	2
<i>Matelea flavidula</i>	20%	2
<i>Onosmodium virginianum</i>	20%	2
<i>Paspalum notatum</i>	20%	2
<i>Pedimelum canescens</i>	20%	2
<i>Physalis arenicola</i>	20%	2
<i>Physalis walteri</i>	20%	2
<i>Polygala grandiflora</i>	20%	2
<i>Rhynchospora megalocarpa</i>	20%	2
<i>Rudbeckia hirta</i>	20%	2
<i>Salvia lyrata</i>	20%	2

<i>Sanicula canadensis</i>	20%	2
<i>Schoenocaulon dubium</i>	20%	2
<i>Scutellaria integrifolia</i>	20%	2
<i>Setaria parviflora</i>	20%	2
<i>Sorghastrum [apalachicolense + elliotii]</i>	20%	2
<i>Strophostyles umbellata</i>	20%	2
<i>Stylosanthes biflora</i>	20%	2
<i>Tephrosia chrysophylla</i>	20%	2
<i>Tephrosia hispidula</i>	20%	2
<i>Tridens chapmanii</i>	20%	2

## OVERVIEW

**Database Code:** C EGL00xxx9

**Scientific Name:** *Pinus palustris* / *Quercus minima* / *Aristida beyrichiana* – *Carphephorus odoratissimus*  
Woodland

**Common Name:** Longleaf Pine / Dwarf Live Oak / Southern Wiregrass / Vanilla-leaf Woodland

**Classif. Resp.:** Southeast

**Classif. Level:** Association      **Conf.:** 1 - Strong

**Stakeholders:** Southeast

**Status:** Standard

**Origin:**

**Maint. Resp.:** Southeast

**Concept Auth.:** K.A. Palmquist, R.K. Peet, and S.C. Carr (2014)

**Concept Ref.:** Palmquist, Peet, and Carr 2014 (this document)

**Description Author:** K.A. Palmquist, R.K. Peet, and S.C. Carr (2014)

**Status:**              **Version:** 15-Feb-2014

### Ecological Systems:

- East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland (CES203.496)

## ELEMENT CONCEPT

**Concept Summary:** This subxeric community occurs in the Apalachicola Embayment region of the Florida Panhandle Lowlands physiographic province, east of the Apalachicola River. Generalizations regarding soil types are difficult, as this association inhabits Entisols, Ultisols, and Spodosols. However, deposits are all of Pleistocene origin. Soils are typically moderately well drained, and located on low rises embedded in large landscapes of mesic flatwoods. This association has strong mesic flatwoods affinities, which is not surprising considering its landscape context. *Pinus palustris* is the canopy dominant; the midstory is strongly dominated by *Quercus laevis*, but *Q. incana*, and *Q. hemisphaerica* may also be present. The sub-shrub ground cover is remarkable in its mixture of typically sandhill and flatwoods species; *Licania michauxii* (typical of sandhills) co-occurs with an assortment of flatwoods sub-shrubs, including *Gaylussacia dumosa*, *Ilex glabra*, *Serenoa repens*, *Vaccinium myrsinites*, *Morella pumila*, and *Quercus minima*. The herbaceous layer is dominated by *Aristida beyrichiana*. Herbaceous indicators include several species typical of mesic flatwoods, such as *Carphephorus odoratissimus*, *Mimosa microphylla*, and *Symphotrichium adnatum*.

**Classification Comments:** Concept and description based on 20 plots from the Carolina Vegetation Survey (<http://vegbank.org/cite/VB.ds.199706.CEGL00xxx9>). There are no types in the current USNVC that correspond to this type. As this type represents slightly siltier sites than other Associations in this Alliance, the Association borders on Group G009, and has overlap with both XU2 (Panhandle Xeric Sandhills) and SU2 (Panhandle Silty Longleaf Woodlands) of Carr et al. 2010. Association 3601 described from the De Soto National Forest of southern MS has been asserted to occur in the Apalachicola National Forest, but our analysis associates this plot with xxx9; we suggest that 3601 be viewed as occurring only in southern MS & AL.

**Diagnostic Characteristics:** The type is transitional between mesic flatwoods and low rise sandhills, and hence contains a distinctive mix of sandhill and flatwood species in both the mid-story and herbaceous layers.

**Concept History:** New type.

### Related Concepts:

- >< Panhandle Xeric Sandhills (Carr et al. 2010)
- >< Panhandle Silty Longleaf Woodlands (Carr et al. 2010)

### ELEMENT DESCRIPTION

**Environment:** Generalizations regarding soil types are difficult, as this association inhabits Entisols, Ultisols, and Spodosols. However, sites are typically moderately well drained, and located on low rises embedded in large flat landscapes of mesic flatwoods. It is likely that these rises are small sandy ridges of marine depositional origin. Subsurface silt content is the highest in this type of any of the FL associations in G154.

**Vegetation:** *Pinus palustris* is the canopy dominant; the midstory is strongly dominated by *Quercus laevis*, but *Q. incana*, and *Q. hemisphaerica* may also be present. The sub-shrub ground cover is remarkable in its mixture of typically sandhill and flatwoods species; *Licania michauxii* (typical of sandhills) co-occurs with an assortment of flatwoods sub-shrubs, including *Gaylussacia dumosa*, *Ilex glabra*, *Serenoa repens*, *Vaccinium myrsinites*, *Morella pumila*, and *Quercus minima*. The herbaceous layer is dominated by *Aristida beyrichiana*. Herbaceous indicators include several species typical of mesic flatwoods, such as *Carphephorus odoratissimus*, *Mimosa microphylla*, and *Symphyotrichum adnatum*. Species with distributions restricted to the central Panhandle are also indicators of this association, including *Baptisia simplicifolia*, *Angelica dentata*, and *Euphorbia exserta*. Other common species include *Asimina* sp., *Chrysopsis mariana*, *Pityopsis aspera*, *Pteridium aquilinum*, and *Schizachyrium scoparium*.

**Similar Associations:** *Pinus palustris* / *Quercus laevis* / *Serenoa repens* – *Clinopodium coccineum* Woodland (CEGL003601)

**Similar Association Comments:** This type is similar to 3601, which occurs exclusively in MS and AL.

### ELEMENT DISTRIBUTION

**Range:** This subxeric community occurs in the Apalachicola Embayment region of the Florida Panhandle Lowlands physiographic province, east of the Apalachicola River. This has been documented from several counties in the central and eastern Panhandle including Leon, Liberty, and Wakulla counties, FL.

**Nations:** US

**Table 2.3.7:** Prevalent species in vegetation type xxx9 by growth form. Species shown are prevalent in at least one group, have > 20% constancy, and average cover class of > 2 in at least one group. Indicator species for each type are highlighted in grey. Homogeneity = 0.518.

<b>Tree species</b>	<b>Const.</b>	<b>Cover</b>
<i>Pinus palustris</i>	100%	6
<i>Quercus laevis</i>	80%	6
<i>Quercus incana</i>	55%	5
<i>Quercus hemisphaerica</i>	40%	2
<i>Quercus nigra</i>	35%	2
<i>Quercus falcata</i>	30%	4
<i>Quercus geminata</i>	30%	2
<i>Osmanthus americanus</i>	25%	2
<i>Diospyros virginiana</i>	20%	3
<i>Quercus myrtifolia</i>	20%	3
<b>Vine species</b>	<b>Const.</b>	<b>Cover</b>
<i>Smilax auriculata</i>	95%	4
<i>Smilax pumila</i>	55%	3
<i>Vitis rotundifolia</i>	45%	4
<i>Gelsemium sempervirens</i>	25%	2
<b>Shrub species</b>	<b>Const.</b>	<b>Cover</b>
<i>Serenoa repens</i>	95%	5
<i>Gaylussacia dumosa</i>	90%	3
<i>Quercus minima</i>	80%	6
<i>Asimina [angustifolia + spatulata]</i>	80%	2
<i>Ilex glabra</i>	70%	5
<i>Licania michauxii</i>	70%	4
<i>Morella [cerifera + pumila]</i>	60%	2
<i>Vaccinium myrsinites</i>	50%	5
<i>Vaccinium darrowii</i>	45%	4
<i>Quercus elliotii</i>	40%	6
<i>Hypericum microsepalum</i>	35%	2
<i>Gaylussacia nana</i>	30%	4
<i>Vaccinium arboreum</i>	30%	3
<i>Ceanothus microphyllus</i>	30%	2
<i>Hypericum suffruticosum</i>	30%	2
<i>Rhus copallinum</i>	30%	2
<b>Herb species</b>	<b>Const.</b>	<b>Cover</b>
<i>Aristida beyrichiana</i>	100%	6
<i>Schizachyrium scoparium</i> var. <i>stoloniferum</i>	95%	3
<i>Sericocarpus tortifolius</i>	90%	2
<i>Stylisma patens</i>	85%	2



<i>Pteridium aquilinum</i>	80%	5
<i>Andropogon elliotii</i>	80%	2
<i>Carphephorus odoratissimus</i>	75%	3
<i>Baptisia simplicifolia</i>	75%	2
<i>Hieracium gronovii</i>	70%	2
<i>Stillingia sylvatica</i>	70%	2
<i>Pityopsis aspera</i>	65%	3
<i>Houstonia procumbens</i>	65%	2
<i>Stylosanthes biflora</i>	65%	2
<i>Symphyotrichum adnatum</i>	65%	2
<i>Tragia smallii</i>	65%	2
<i>Tragia urens</i>	65%	2
<i>Andropogon virginicus</i>	60%	2
<i>Angelica dentata</i>	60%	2
<i>Crotalaria rotundifolia</i>	60%	2
<i>Dichanthelium angustifolium</i>	60%	2
<i>Dichanthelium ovale</i>	60%	2
<i>Dichanthelium tenue</i>	60%	2
<i>Mimosa microphylla</i>	60%	2
<i>Scleria ciliatavar. ciliata</i>	60%	2
<i>Symphyotrichum concolor</i>	60%	2
<i>Vernonia angustifolia</i>	60%	2
<i>Commelina erecta</i>	55%	2
<i>Dichanthelium strigosum</i>	55%	2
<i>Helianthus radula</i>	55%	2
<i>Pityopsis graminifolia</i>	50%	4
<i>Andropogon ternarius</i>	50%	3
<i>Chrysopsis mariana</i>	50%	2
<i>Solidago odora</i>	50%	2
<i>Tephrosia florida</i>	50%	2
<i>Sorghastrum secundum</i>	45%	3
<i>Bulbostylis [ciliatifolia + coarctata]</i>	45%	2
<i>Elephantopus elatus</i>	45%	2
<i>Eriogonum tomentosum</i>	45%	2
<i>Euphorbia exserta</i>	45%	2
<i>Lygodesmia aphylla</i>	45%	2
<i>Tephrosia chrysophylla</i>	45%	2
<i>Aureolaria pectinata</i>	40%	2
<i>Chamaecrista nictitans</i>	40%	2
<i>Cyperus [filiculmis + lupulinus]</i>	40%	2
<i>Ionactis linariifolia</i>	40%	2
<i>Lespedeza repens</i>	40%	2
<i>Liatris chapmanii</i>	40%	2

<i>Phoebanthus tenuifolius</i>	40%	2
<i>Rhynchospora grayi</i>	40%	2
<i>Liatris tenuifolia</i>	35%	3
<i>Chrysopsis gossypina</i>	35%	2
<i>Galactia erecta</i>	35%	2
<i>Pterocaulon pycnostachyum</i>	35%	2
<i>Viola septemloba</i>	35%	2
<i>Galactia minor</i>	30%	4
<i>Agalinis divaricata</i>	30%	2
<i>Euphorbia curtisii</i>	30%	2
<i>Gymnopogon brevifolius</i>	30%	2
<i>Palafoxia integrifolia</i>	30%	2
<i>Rhynchosia reniformis</i>	30%	2
<i>Anthenantia villosa</i>	25%	2
<i>Aristida purpurascens</i>	25%	2
<i>Cnidoscolus stimulosus</i>	25%	2
<i>Crotalaria purshii</i>	25%	2
<i>Desmodium lineatum</i>	25%	2
<i>Endodeca serpentaria</i>	25%	2
<i>Eupatorium album</i>	25%	2
<i>Eupatorium compositifolium</i>	25%	2
<i>Galactia floridana</i>	25%	2
<i>Liatris gracilis</i>	25%	2
<i>Paspalum setaceum</i>	25%	2
<i>Polygala nana</i>	25%	2
<i>Ruellia ciliosa</i>	25%	2
<i>Seymeria cassioides</i>	25%	2
<i>Trichostema setaceum</i>	25%	2
<i>Berlandiera pumila</i>	20%	2
<i>Crocanthemum carolinianum</i>	20%	2
<i>Dichantherium villosissimum</i>	20%	2
<i>Eragrostis refracta</i>	20%	2
<i>Eryngium yuccifolium</i>	20%	2
<i>Gymnopogon ambiguus</i>	20%	2
<i>Lechea minor</i>	20%	2
<i>Muhlenbergia expansa</i>	20%	2
<i>Rhexia alifanus</i>	20%	2
<i>Salvia azurea</i>	20%	2
<i>Sorghastrum nutans</i>	20%	2
<i>Sporobolus junceus</i>	20%	2
<i>Xyris caroliniana</i>	20%	2