Appendix 2.1 Edited descriptions of existing NVC vegetation types in North Carolina and South Carolina and associated constancy tables. Vegetation types are arranged from xeric to subxeric.

OVERVIEW

Database Code: CEGL003584
Scientific Name: *Pinus palustris / Quercus laevis / Stipulicida setacea - Selaginella acanthonota* Woodland
Common Name: Longleaf Pine / Turkey Oak / Carolina Wiregrass / Wireplant - Spiny Spikemoss Woodland
Classif. Resp.: Southeast
Classif. Level: Association **Conf.:** 1 - Strong **Stakeholders:** Southeast
Status: Standard **Origin:** 1-Nov-1994 ID: 685300 **Maint. Resp.:** Southeast
Concept Auth.: M.P. Schafale and A.S. Weakley (1994)
Concept Ref.: Southeastern Ecology Working Group n.d. [Name in concept ref, if different:]
Description Author: (1) M.P. Schafale and A.S. Weakley (1994), (2) modified by M. Pyne (2008), (3) modified by K.A. Palmquist, R.K. Peet & S.Carr (2014)
Status: 3 **Version:** 12-Feb-2014
Ecological Systems:

- Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281)

ELEMENT CONCEPT

Concept Summary: This is one of the driest longleaf pine types that occurs on coarse, infertile sands on the Atlantic Coastal Plain of North Carolina and northern South Carolina. The sparse canopy is dominated by *Pinus palustris* with strong dominance of *Quercus laevis* in the subcanopy/shrub layer. The herbaceous layer is sparse and species poor, lacking *Aristida stricta* and characterized by *Selaginella acanthonota* and *Stipulicida setacea*.

Classification Comments: Description changed based on 8 plots from the Carolina Vegetation Survey (http://vegbank.org\cite\VB.ds.199635.CEGL003584). This Association is the same as the established Association 3584, except that we have provided greater detail as to floristic composition and environmental setting. We have modified the name to more explicitly suggest the extremely xeric nature of the Association by inclusion of *Stipulicida* and *Selaginella*.

Diagnostic Characteristics: This Association can be distinguished from other xeric community types because it is extremely dry, has a scrub oak layer strongly dominated by *Quercus laevis* and an herbaceous layer lacking *Aristida stricta.*

Concept History: CEGL003584.

Internal Comments:
Related Concepts:

- < IB6b. Southeastern Coastal Plain Xeric Sandhill (Allard 1990)
- < Xeric Sandhill Scrub (Schafale and Weakley 1990)
- < Atlantic Xeric Longleaf Woodland (Peet and Allard 1993)
- = Xeric Sandhill Scrub, Sand Barren Variant (Schafale 1994)

- = *Pinus palustris / Quercus laevis / Arstida stricta / Caldonia spp.* Woodland (Peet 2006) [1.2.2]
- = Sand Barren, Typic Subtype (Schafale 2012)

ELEMENT DESCRIPTION

Environment: This Association occurs on extremely dry, coarse, infertile sands in the Atlantic Coastal Plain region of NC and SC. These are often located on dunes along the northeast side of major rivers and on the rims of Carolina bays. Soil types of this Association include Typic Quartzipsamments, Aquic Arenic Paleudults, Spodic Quartzipsamments, and Typic Psammaquents.

Vegetation: In stands of this extremely xeric type, the very sparse canopy is dominated by *Pinus palustris*, while the sub-canopy is dominated almost exclusively by *Quercus laevis*. Other canopy and sub-canopy species that occur with some constancy include: *Pinus taeda* and *Quercus nigra* (38% of plots). The herbaceous layer is very sparse, but characteristic understory species include: *Stipulicida setecea, Selaginella acanthonota, Aureolaria pectinata, Minuartia caroliniana, Tillandsia usneoides, Cnidoscolus stimulosus, Cuthbertia graminea,* and *Polygonella polygama. Aristida stricta* is not found in this extremely xeric type.

Dynamics: Fire frequencies are naturally low in this vegetation because of lack of fuel.

Similar Associations:

- *Pinus palustris / Quercus laevis / Aristida purpurascens - Stipulicida setacea - (Rhynchospora megalocarpa, Selaginella acanthonota)* Woodland (CEGL003590)
- *Pinus palustris / Quercus laevis / Gaylussacia* dumosa / *Aristida stricta* Woodland (CEGL003586)

Similar Association Comments:
CEGL003590: CEGL003590 occurs nearer to the coast than 3584 and includes characteristic coastal fringe flora (e.g. *Rhynchospora megalocarpa*).

CEGL003586: CEGL003586 is less xeric and typically has a somewhat dense herbaceous layer dominated by *Aristida stricta*.

Adjacent Associations:
Adjacent Association Comments:
Other Comments:
Acknowledgements:

ELEMENT GLOBAL RANK & REASONS

GRank: G2G3 **GRank Review Date:** 31-Dec-1997
GReasons: This xeric longleaf pine sandhill woodland association is found in a restricted range and specific set of habitat conditions. It is one of the driest longleaf pine types on the Atlantic Coastal Plain of North Carolina and northern South Carolina, and occurs only in dry, sandy uplands. It is part of the endangered Longleaf Pine Ecosystem, which once dominated the Coastal Plain landscape of the southeastern United States, and depends on somewhat infrequent, 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. Most of those occurrences which have not been destroyed are severely degraded.
Ranking Author: Southeastern Ecology Group **Version:** 31-Dec-1997

ELEMENT DISTRIBUTION

Range: This xeric longleaf pine sandhill woodland is found in the middle and inner coastal plain region of North and northern South Carolina. Known occurrences of this type are found in Bladen, Scotland, Robeson, and Columbus counties, NC and Dillon and Sumter counties, SC.
Nations: US

Table 2.1.1: Prevalent species in vegetation type 3584 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 = 0.622.

Tree species	**Const.**	**Cover**
Quercus laevis	100%	7
Pinus palustris	50%	5
Pinus taeda	38%	3
Quercus nigra	38%	2
Ilex opaca	25%	4
Sassafras albidum	25%	2
Vine species	**Const.**	**Cover**
Gelsemium sempervirens	50%	2
Shrub species	**Const.**	**Cover**
Polygonella polygama	63%	2
Vaccinium tenellum	38%	3
Lyonia mariana	38%	2
Opuntia humifusa	38%	2
Chrysoma pauciflosculosa	25%	5
Vaccinium fuscatum	25%	5
Gaylussacia dumosa	25%	3
Gaylussacia frondosa	25%	2
Herb species	**Const.**	**Cover**
Stipulicida setacea	100%	2
Selaginella acanthonota	75%	3
Tillandsia usneoides	63%	3
Cnidoscolus stimulosus	50%	2
Cuthbertia graminea	50%	2
Aureolaria pectinata	38%	2
Minuartia caroliniana	38%	2
Rhynchospora megalocarpa	25%	3
*Agalinis*sp.	25%	2
Lechea sessiliflora	25%	2

OVERVIEW

Database Code: CEGL003590
Scientific Name: *Pinus palustris / Quercus laevis - Quercus geminata* / *Rhynchospora megalocarpa* Woodland
Common Name: Longleaf Pine / Turkey Oak - Sand Live Oak / Sandhill Beaksedge Woodland
Colloquial Name: Atlantic Coastal Plain Xeric Sandhill Scrub
Classif. Resp.: Southeast
Classif. Level: Association **Conf.:** 1 - Strong **Stakeholders:** Southeast
Status: Standard **Origin:** 1-Apr-1995 ID: 688578 **Maint. Resp.:** Southeast
Concept Auth.: A.S. Weakley
Concept Ref.: Southeastern Ecology Working Group n.d. [Name in concept ref, if different:]
Description Author: K.A. Palmquist, R.K. Peet & S. Carr (2014), in part adapted from description of 3590
Status: 3 **Version:** 12-Feb-2014
Ecological Systems:

- Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281)

ELEMENT CONCEPT

Concept Summary: These are extremely xeric longleaf pine sandhills, typically with a very sparse *Pinus palustris* canopy (5-25%). The scrub oak layer is sparse to dense, consisting of mostly *Quercus laevis*, but also often with *Quercus hemisphaerica* and *Quercus geminata*, in contrast to other sand barrens, which are dominated only by *Q. laevis*. Stands of this type are so xeric that *Aristida stricta* is either sparse or absent. Species diversity in the herb layer is generally very low and consists primarily of extreme xerophytes.

Classification Comments: Description changed based on 4 plots from the Carolina Vegetation Survey (http://vegbank.org\cite\VB.ds.199638.CEGL003590). This type equivalent to CEGL003590 in the existing NVC hierarchy. However, 3590 is a broad and vague community type of xeric sands occurring on the coastal fringe, but also in the Fall-line Sandhills of both central SC and Ft. Benning, GA. Our revised description is essentially equivalent to the use of 3590 by Schafale 2012. We narrow the geographic scope of the existing CEGL003590 and exclude sites south of northern SC and designate them as more closely associated with xxx1 and 7844. We revise the name to put more emphasis on coastal fringe indicators.

Diagnostic Characteristics: This type can be distinguished from other sandhill types because it is extremely xeric, has a very sparse canopy cover of *Pinus palustris*, and has an extremely species poor and undeveloped herbaceous layer. In contrast to other sand barrens, it is found exclusively in the outer Coastal Plain and hence coastal species, such as *Quercus geminata* and *Quercus hemisphaerica* are diagnostic.

Concept History: CEGL003590.

Internal Comments:

Related Concepts:

- < Xeric Sandhill Scrub (Schafale and Weakley 1990)
- > *Pinus palustris* / *Quercus laevis* / *Aristida purpurascens – Stipulicida setacea –* (*Rhynchospora megalocarpa, Selaginella acanthonota*) Woodland (Peet 2006) [1.1.1]
  = Sand Barren, Coastal Fringe Subtype (Schafale 2012)

ELEMENT DESCRIPTION

Environment: This Association is restricted to extremely xeric sandhills in NC and SC and has been documented on the following soil types: Spodic Quartzipsamments, Aericalaquods, and Typic Quartzipsamments.

Vegetation: This type has a sparse overstory canopy of *Pinus palustris.* The sub-canopy/shrub layer is dominated by *Quercus laevis,* but *Quercus geminata* and *Quercus hemisphaerica* are also common and diagnostic. Other common species in the understory layer include: *Cnidoscolus stimulosus, Stipulicida setacea, Euphorbia ipecacuanhae, Galactia* sp., *Rhynchospora megalocarpa, Selaginella acanthonota, Opuntia humifusa,* and *Polygonella polygama*. *Aristida stricta* is often present, but typically sparse (< 5% cover).

High-ranked species: Stylisma pickeringii var. pickeringii (G4T3)

Dynamics: Fire frequencies are naturally low in this vegetation because of lack of fuel.

Similar Associations:

- *Pinus palustris / Quercus laevis / Aristida stricta / Cladonia* spp. Woodland (CEGL003584)

Similar Association Comments:
CEGL003584: 3584 lacks the presence of several coastal fringe species (e.g. *Quercus geminata, Rhynchospora megalocarpa*) characteristic of CEGL003590.

Adjacent Associations:

- Hypericum reductum / Aristida stricta Dwarf-shrubland (CEGL003954)

Adjacent Association Comments:
Other Comments:
Acknowledgements:

ELEMENT GLOBAL RANK & REASONS

GRank: G2 **GRank Review Date:** 10-Oct-1997
GReasons: This longleaf pine woodland community is restricted to sites that are so extremely xeric that *Aristida stricta* is sparse . It is part of the endangered Longleaf Pine Ecosystem, which once dominated the Coastal Plain landscape of the southeastern United States, and depends on somewhat infrequent, 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. Most of those occurrences which have not been destroyed are severely degraded.
Ranking Author: Southeastern Ecology Group **Version:** 10-Oct-1997

ELEMENT DISTRIBUTION

Range: This Association is found in the Mid Atlantic Coastal Plain of NC and SC. Plot occurrences are located in New Hanover county, NC and Horry county, SC.

Nations: US

Table 2.1.2: Prevalent species in vegetation type 3590 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 = 0.679.

Tree species	**Const.**	**Cover**
Quercus laevis	100%	7
Pinus palustris	100%	4
Quercus geminata	100%	3
Quercus hemisphaerica	50%	5
Diospyros virginiana	50%	2
Magnolia virginiana	25%	2
Prunus serotina	25%	2
Vine species	**Const.**	**Cover**
Vitis rotundifolia	50%	2
Smilax glauca	25%	2
Shrub species	**Const.**	**Cover**
Opuntia humifusa	50%	2
Polygonella polygama	50%	2
Hypericum tenuifolium	25%	2
Lyonia mariana	25%	2
Vaccinium crassifolium	25%	2
Vaccinium stamineum	25%	2
Vaccinium tenellum	25%	2
Herb species	**Const.**	**Cover**
Cnidoscolus stimulosus	100%	2
Aristida stricta	75%	4
Euphorbia ipecacuanhae	75%	2
Galactia sp.	75%	2
Rhynchospora megalocarpa	75%	2
Stipulicida setacea	75%	2
Selaginella acanthonota	50%	5
[*Andropogon* + *Schizachyrium*]	50%	2
Tillandsia usneoides	50%	2
Aristida purpurascens	25%	2
Bulbostylis [*ciliatifolia* + *coarctata*]	25%	2
Chrysopsis [*gossypina* + *trichophylla*]	25%	2
Commelina erecta	25%	2
Cuthbertia rosea	25%	2
Cyperus grayi	25%	2
Liatris [*pilosa* + *virgata*]	25%	2
Minuartia caroliniana	25%	2
Pityopsis aspera	25%	2

Scleria sp.	25%	2

OVERVIEW

Database Code: CEGL00xxx1
Scientific Name: *Pinus palustris / Quercus laevis - Quercus geminata / Schizachyrium scoparium* Woodland
Common Name: Longleaf Pine / Turkey Oak - Sand Live Oak / Little Bluestem Woodland
Classif. Resp.: Southeast
Classif. Level: Association **Conf.:** 2 - Medium **Stakeholders:** Southeast
Status: Standard **Origin:** 14-Feb-2014 **Maint. Resp.:** Southeast
Concept Auth.: K.A. Palmquist, R.K. Peet & S. Carr 2014
Concept Ref.: Palmquist, Peet & Carr 2014 (this document)
Description Author: (1) K.A. Palmquist, R.K. Peet & S. Carr (2014).
Status: **Version:** 14 Feb 2014

Ecological Systems:

- Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281)

ELEMENT CONCEPT

Concept Summary: This extremely xeric type occurs on coarse, white sands in the outer Coastal Plain of South Carolina in the wiregrass gap. *Pinus palustris* forms an open canopy, with *Quercus laevis* dominating in the sub-canopy/shrub layer, although *Quercus geminata* and *Quercus hemisphaerica* are also diagnostic. Common shrubs include *Gaylussacia dumosa*, *Vaccinium arboretum*, and *Vaccinium tenellum*. The herbaceous layer is sparse and species poor and lacking *Aristida stricta*.

Classification Comments: This type is based on 7 plots located in Georgetown county, SC (http://vegbank.org\cite\VB.ds.199679.CEGL003590A). Although similar to CEGL003590, which is located further north in the outer Coastal Plain, we designate this as a new type because it lacks *A. stricta* and is characterized by unique diagnostic taxa, particularly in the herbaceous layer. Additional plots in the wiregrass gap region outside of Georgetown county are needed to more fully circumscribe this type.

Diagnostic Characteristics: This type is defined by its location in the outer Coastal Plain of the wiregrass gap region of SC and hence it's lack of *Aristida stricta* and prevalence of coastal fringe indicators (e.g. *Quercus geminata*).

Concept History: New type.

ELEMENT DESCRIPTION

Environment: This extremely xeric Association occurs on coarse, white sands in the outer Coastal Plain of SC. Soils are extremely dry and sandy and are typically Typic Quartzipsamments.

Vegetation: *Pinus palustris* forms an open canopy, with *Quercus laevis* dominating in the sub-canopy/shrub layer. *Quercus geminata* and *Quercus hemisphaerica* are also diagnostic in the sub-canopy/shrub layer, but less constant and abundant than *Q. laevis*. Common shrubs include *Gaylussacia dumosa*, *Vaccinium arboretum*, and *Vaccinium tenellum*. The herbaceous layer is sparse and species poor and lacking *Aristida stricta*. Common and diagnostic herbaceous species include *Schizachyrium*

scoparium, Cnidoscolus stimulosus, *Euphorbia ipecacuanhae*, *Pityopsis graminifolia*, *Rhynchospora megalocarpa*, *Stipulicida setacea*, *Stylisma patens*, and *Galactia* sp.

Dynamics: Fire frequencies are naturally low in this vegetation because of lack of fuel.

Similar Associations:

- *Pinus palustris / Quercus laevis / Aristida purpurascens - Stipulicida setacea - (Rhynchospora megalocarpa, Selaginella acanthonota)* Woodland (CEGL003590)

Similar Association Comments: This type is similar to CEGL003590, but occurs further south in the wiregrass gap region of South Carolina and hence lacks *Aristida stricta*. In addition, it has a lesser constancy of *Q. geminata* and *Q. hemispherica* and unique indicators in the shrub layer.

ELEMENT DISTRIBUTION

Range: This xeric Association occurs in the outer Coastal Plain of the wiregrass gap region of SC. Plot occurrences are from Georgetown county, SC.
Nations: US

Table 2.1.3: Prevalent species in vegetation type xxx1 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 = 0.546.

Tree species	**Const.**	**Cover**
Pinus palustris	100%	6
Quercus laevis	100%	6
Pinus taeda	43%	4
Quercus geminata	43%	2
Quercus hemisphaerica	43%	2
Quercus virginiana	29%	2
Vine species	**Const.**	**Cover**
Smilax bona-nox	43%	2
Gelsemium sempervirens	29%	2
Shrub species	**Const.**	**Cover**
Gaylussacia dumosa	43%	6
Vaccinium arboreum	43%	6
Vaccinium tenellum	43%	5
Morella [*cerifera* + *pumila*]	29%	5
Herb species	**Const.**	**Cover**
[*Andropogon* + *Schizachyrium*]	71%	5
Cnidoscolus stimulosus	71%	2
Euphorbia ipecacuanhae	71%	2
Pityopsis graminifolia	71%	2
Rhynchospora megalocarpa	71%	2
Stipulicida setacea	71%	2
Stylisma patens	71%	2
Galactia sp.	57%	4
Schizachyrium scoparium	57%	2
Tillandsia usneoides	57%	2
Amorpha herbacea	43%	4
Bulbostylis [*ciliatifolia* + *coarctata*]	43%	2
Dichanthelium angustifolium	43%	2
Sporobolus junceus	29%	3
Aristida purpurascens	29%	2
Carphephorus bellidifolius	29%	2
Dichanthelium aciculare	29%	2
Selaginella acanthonota	29%	2

OVERVIEW

Database Code: CEGL003577
Scientific Name: *Pinus palustris / Quercus geminata - Quercus hemisphaerica / Osmanthus americanus* Woodland
Common Name: Longleaf Pine / Sand Live Oak - Darlington Oak / Wild Olive Woodland
Colloquial Name: Carolina Coastal Longleaf Pine Sandhill
Classif. Resp.: Southeast
Classif. Level: Association **Conf.:** 1 - Strong **Stakeholders:** Southeast
Status: Standard **Origin:** 1-Nov-1994 ID: 683143 **Maint. Resp.:** Southeast
Concept Auth.: Peet and Allard 1993 ["Atlantic Maritime Longleaf Woodland"]
Concept Ref.: Peet and Allard 1993.
Description Author: (1) M.P. Schafale and A.S. Weakley (1994), (2) modified by A.S. Weakley (date unknown), (3) modified by K.A. Palmquist and R.K. Peet (2014).
Status: 2 **Version:** 12 Feb 2014
Ecological Systems:

- Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281)

ELEMENT CONCEPT

Concept Summary: This community occurs on xeric sands within several miles of the coast in southeastern North Carolina and northeastern South Carolina. The canopy is sparse, and consists of *Pinus palustris* and *Pinus taeda* with a subcanopy/shrub layer of broadleaved evergreen and semi-evergreen coastal fringe species. *Aristida stricta* sometimes dominates the herbaceous layer.

Classification Comments: Description changed based on 5 plots from the Carolina Vegetation Survey (http://vegbank.org\cite\VB.ds.199634.CEGL003577). This treatment provides a quantitative basis for the description of the extant association 3577. We change the formal name to be more reflective of the typical composition. Specifically, we delete reference to *Aristida stricta* as the SC occurrences are south of the range of this species. Two additional plots have affinities to this Association and also to 3590. We believe these plots represent an intermediate Association, but do not have enough plot data to circumscribe it. We include a table below to compare the vegetation in these two plots (~3577), 3577, and 3590. When more data become available this type can be flushed out more fully.

Diagnostic Characteristics: This type is distinguished from other xeric types in NC-SC by its location along the coastal fringe and its strong signature of broadleaf evergreen and semi-evergreen coastal fringe shrub and small tree species.

Concept History: CEGL003577.

Internal Comments: CWN 2004-01-14: Present on Croatan NF, Mike Schafale (pers. comm. 2004). REE 10-02. Palmquist and Peet 2013: this type not present on Croatan NF, presumably the notation above describes a different but related type.

Related Concepts:

- >< Coastal Fringe Sandhill (Schafale and Weakley 1990)
- = Atlantic Maritime Longleaf Woodland (Peet and Allard 1993)
- = Type 4 (Coastal Fringe Sandhill Forest) (Wentworth et al. 1993)
- = *Pinus palustris - Pinus taeda / Quercus geminata - Quercus hemisphaerica / Osmanthus americana / Aristida stricta* Woodland (Peet 2006) [[1.1.4]]
- = Pine/Scrub Oak Sandhill (Coastal Fringe Subtype) (Schafale 2012)

ELEMENT DESCRIPTION

Environment: This community occurs on xeric sands within several miles of the coast in southeastern North Carolina and northeastern South Carolina. Soils are usually Typic Quartzipsamments or Typic Haplohumods.

Vegetation: Subassociation 1 has a sparse canopy of *Pinus palustris* and *Pinus taeda* and a sparse to dense scrub oak subcanopy/shrub layer dominated by *Quercus geminata, Quercus hemisphaerica, Osmanthus americanus var. americanus, Ilex vomitoria, Quercus laevis* (but of less importance than *Q. hemisphaerica* or *Q. geminata*), and *Vaccinium arboreum*. *Aristida stricta* dominates the herbaceous layer. Other characteristic species include *Vitis rotundifolia var. rotundifolia, Smilax auriculata, Morella cerifera (*typically= *Myrica cerifera var. pumila), Persea borbonia/palustris, Quercus incana,* and *Ilex opaca var. opaca*.

Dynamics:

Similar Associations:

- *Pinus palustris / Quercus (hemisphaerica, laevis) / Morella cerifera / Aristida beyrichiana* Woodland (CEGL004263)
- *Pinus palustris / Quercus laevis-Quercus geminata / Vaccinium tenellum / Aristida stricta* Woodland (CEGL003589)

Similar Association Comments:
CEGL004263: This Association is located in Georgia and Florida and is considered a southern version of CEGL003577. *Quercus myrtifolia* is a subcanopy dominant in addition to *Quercus laevis* and *Quercus hemisphaerica*. *Aristida beyrichiana* replaces *Aristida stricta* as the dominant species in the herbaceous layer.

CEGL003589: This Association is drier than CEGL003577, contains more *Quercus laevis*, less *Quercus* spp. cover, and less cover of broadleaved evergreens like *Osmanthus americanus* and *Persea borbonia/palustris.* In addition, CEGL003589 has a more developed herbaceous layer comprised of *Aristida stricta, Cnidoscolus stimulosus, Carphephorus bellidifolius, Euphorbia ipecacuanhae,* and *Pityopsis graminifolia*.

Adjacent Associations:
Adjacent Association Comments:
Other Comments:
Acknowledgements: M.P. Schafale

ELEMENT GLOBAL RANK & REASONS

GRank: G2 **GRank Review Date:** 31-Dec-1997

GReasons: The canopy of this mixed pine woodland association is dominated by longleaf pine and loblolly pine. It is found only in a very restricted range and under a specific set of habitat conditions; it only occurs on xeric sands within several miles of the coast of southeastern North Carolina and adjacent South Carolina. Soils are usually Typic Quartzipsamments or Typic Haplohumods. This association depends on frequent, low-intensity, growing-season fires to control understory vegetation and for the reproduction of *Pinus palustris*. Native fire-dependent, pine-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. Most of those natural occurrences which have not been destroyed are severely degraded.

Ranking Author: Southeastern Ecology Group **Version:** 31-Dec-1997

ELEMENT DISTRIBUTION

Range: This community is known to occur on xeric sands within several miles of the coast in southeastern North Carolina in Brunswick and New Hanover Counties and Georgetown County, South Carolina. It might be expected to occur from Morehead City, North Carolina south to Georgetown, South Carolina.

Nations: US

Table 2.1.4: Prevalent species in vegetation type 3577 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 = 0.707.

Tree species	**Const.**	**Cover**
Pinus taeda	100%	6
Quercus hemisphaerica	100%	6
Pinus palustris	100%	5
Ilex vomitoria	100%	2
Sassafras albidum	100%	2
Quercus geminata	80%	6
Quercus laevis	80%	6
Osmanthus americanus	80%	3
Ilex opaca	80%	2
Persea [*borbonia + palustris*]	80%	2
Quercus incana	60%	5
Nyssa sylvatica	60%	4
Quercus virginiana	20%	5
Cornus florida	20%	2
Cyrilla racemiflora	20%	2
Liquidambar styraciflua	20%	2
Magnolia virginiana	20%	2
Quercus falcate	20%	2
Quercus margaretta	20%	2
Vine species	**Const.**	**Cover**
Vitis rotundifolia	80%	5
Smilax auriculata	80%	2
Gelsemium sempervirens	60%	3
Smilax bona-nox	20%	3
Toxicodendron radicans	20%	2
Shrub species	**Const.**	**Cover**
Vaccinium arboreum	100%	6
Morella cerifera	80%	4
Vaccinium tenellum	60%	2
Gaylussacia dumosa	40%	4
Polygonella polygama	40%	2
Lyonia mariana	20%	4
Gaylussacia frondosa	20%	3
Lyonia lucida	20%	3
Aronia arbutifolia	20%	2
Clethra alnifolia	20%	2
Ilex glabra	20%	2

Vaccinium fuscatum	20%	2
Vaccinium stamineum	20%	2
Herb species	**Const.**	**Cover**
Aristida stricta	80%	5
Andropogon spp.	60%	2
Euphorbia ipecacuanhae	60%	2
Amorpha herbacea	40%	2
Cnidoscolus stimulosus	40%	2
Coreopsis sp.	40%	2
Cuthbertia graminea	40%	2
Dichanthelium sp.	40%	2
Euphorbia pubentissima	40%	2
Asclepias humistrata	20%	2
Carphephorus bellidifolius	20%	2
Pityopsis graminifolia	20%	2
Pteridium aquilinum	20%	2
Schizachyrium scoparium	20%	2
Solidago odora	20%	2
Stylisma patens	20%	2

Table 2.1.5: Prevalent species and CVS cover class codes for vegetation types ~3577 (2 plots), 3577, and 3590.

Plot	001-01-0203	001-01-0206	001-05-0206	001-05-0207	001-05-0208	044-02-0605	044-09-0607	044-04-0610	044-04-0611	044-09-0605	044-09-0606
Association	3577	3577	3577	3577	3577	~3577	~3577	3590	3590	3590	3590
[*Andropogon+Schizachyrium*]	0	2	2	1	2	2	1	2	1	3	2
Agalinis setacea	0	0	0	0	0	0	0	0	0	2	0
Amorpha herbacea	0	0	0	2	2	0	0	0	0	2	2
Andropogon virginicus	0	0	0	0	0	0	0	0	0	0	1
Aristida purpurascens	0	0	0	0	0	0	0	2	0	0	2
Aristida stricta	0	5	4	5	5	0	0	0	0	0	0
Aristida virgata	0	0	0	0	0	0	0	0	0	2	0
Aronia arbutifolia	0	0	2	0	0	0	0	0	0	0	0
Arundinaria tecta	0	1	0	0	0	0	0	0	0	0	0
Asclepias humistrata	0	0	0	0	2	0	0	0	0	2	0
Bulbostylis [*ciliatifolia+coarctata*]	0	0	0	0	0	0	0	1	0	2	0
Bulbostylis capillaries	0	0	0	0	1	0	0	0	0	0	0
Carphephorus bellidifolius	0	2	0	0	0	0	0	0	0	2	0
Carya glabra	0	1	0	0	0	0	0	0	0	0	1
Centrosema virginianum	0	0	0	0	0	0	0	0	0	0	0
Chrysopsis spp.	0	0	0	0	0	0	0	0	0	0	0
Cirsium repandum	0	0	0	0	0	0	0	0	0	0	0
Claytonia virginiana	0	0	0	0	0	0	0	0	0	0	0
Clethra alnifolia	0	0	2	0	0	0	0	0	0	0	0
Cnidoscolus stimulosus	0	0	0	2	2	0	0	2	0	2	0
Conyza Canadensis	0	0	0	0	0	0	0	0	0	0	0
Cornus florida	2	0	0	0	0	0	0	0	0	0	0
Cuthbertia graminea	0	1	0	0	2	0	0	0	0	0	0
Cyrilla racemiflora	0	2	0	0	0	0	0	0	0	0	0
Dichanthelium [*aciculare+angustifolium+fusiforme*]	0	0	0	0	0	0	0	0	0	0	0
Dichanthelium tenue	0	0	0	0	0	0	0	0	0	2	0

Diospyros virginiana	0	1	0	1	0	2	3	0	0	0	0
Eupatorium capillifolium	0	0	0	0	0	0	0	0	0	0	0
Euphorbia [*corollata+pubentissima*]	2	1	0	0	0	0	0	0	0	0	0
Euphorbia ipecacuanhae	2	0	0	2	2	1	0	2	0	2	1
Galactia [*minor+mollis+regularis+volubilis*]	0	0	0	0	0	0	0	0	1	0	0
Gaylussacia dumosa	0	2	0	4	0	2	2	0	7	0	2
Gaylussacia frondosa	0	0	3	0	0	1	0	0	0	0	0
Gelsemium sempervirens	4	0	0	2	2	0	0	0	0	0	2
Hypericum hypericoides	0	0	0	1	0	0	0	0	0	0	0
Ilex glabra	0	0	2	0	0	2	0	0	0	0	0
Ilex opaca	2	0	3	3	1	0	0	0	0	0	0
Ilex vomitoria	2	2	2	2	2	0	0	0	0	0	0
Ionactis linariifolia	0	0	0	0	0	0	0	0	0	0	0
Liatris cokeri	0	0	0	0	0	0	0	0	0	0	0
Liquidambar styraciflua	0	2	0	0	0	0	0	0	0	0	0
Lyonia lucida	0	0	3	0	0	2	2	0	0	0	0
Lyonia mariana	0	4	0	0	0	0	0	0	0	0	0
Magnolia virginiana	0	0	2	0	0	0	0	0	0	0	0
Morella [*cerifera + pumila*]	0	4	3	3	4	2	0	0	0	2	0
Muhlenbergia capillaries	0	0	0	0	0	0	0	0	0	0	0
Nyssa sylvatica	3	2	5	0	0	0	0	0	0	0	0
Osmanthus americanus	0	3	3	4	2	0	0	0	0	0	0
Parthenocissus quinquefolia	1	0	0	0	0	0	0	0	0	0	0
Persea borbonia	2	1	2	2	0	0	0	0	0	0	0
Persea palustris	0	0	0	0	0	1	0	0	0	0	0
Pinus palustris	5	5	5	5	2	3	7	6	7	6	6
Pinus taeda	7	3	3	5	6	0	0	0	0	1	2
Pityopsis graminifolia	0	0	0	0	2	0	0	1	0	0	2
Polygonella polygama	0	2	0	0	2	0	0	0	0	0	0
Pteridium aquilinum	0	0	2	0	0	5	3	0	0	0	0
Pterocaulon pycnostachyum	0	0	1	0	0	0	0	0	0	0	0

Quercus falcate	0	0	0	2	0	0	0	0	0	0	0
Quercus geminata	0	6	6	7	4	8	9	0	2	1	1
Quercus hemisphaerica	8	6	6	3	2	2	0	0	2	1	2
Quercus incana	0	4	0	4	6	0	0	0	0	0	0
Quercus laevis	1	6	0	6	6	5	0	6	6	7	6
Quercus margaretta	0	2	0	0	0	0	0	0	0	0	1
Quercus virginiana	5	0	0	0	0	0	0	0	0	0	0
Rhynchospora baldwinii	0	1	0	0	0	0	0	0	0	0	0
Rhynchospora grayi	0	0	0	0	0	0	0	0	0	0	0
Rhynchospora megalocarpa	0	0	0	0	0	0	2	0	2	0	2
Sassafras albidum	3	1	2	2	1	0	0	0	0	0	0
Schizachyrium scoparium	0	2	0	0	0	2	1	2	1	3	2
Scleria pauciflora	0	0	0	0	0	1	0	0	0	0	0
Selaginella acanthonota	0	0	0	0	0	0	0	3	0	0	0
Smilax auriculata	0	2	2	2	2	0	0	0	0	0	0
Smilax bona-nox	3	0	0	0	0	0	0	0	0	0	1
Smilax glauca	0	1	0	0	0	0	0	0	0	0	0
Solidago odora	2	0	0	0	0	1	0	0	0	0	0
Sporobolus junceus	0	0	0	0	0	0	0	0	0	0	0
Stipulicida setacea	0	0	0	0	1	0	0	2	1	0	0
Stylisma patens	0	0	0	0	2	0	0	1	0	2	2
Tillandsia usneoides	0	0	0	0	1	0	0	2	2	2	2
Toxicodendron radicans	0	0	0	2	0	0	0	0	0	0	0
Triplasis purpurea	0	0	0	0	0	0	0	1	0	1	0
Vaccinium arboretum	8	3	2	2	6	0	0	0	7	0	6
Vaccinium crassifolium	0	0	1	0	0	0	0	0	0	0	0
Vaccinium fuscatum	0	2	0	0	0	0	0	0	0	0	0
Vaccinium stamineum	0	0	2	0	0	0	0	0	0	0	0
Vaccinium tenellum	0	2	2	2	0	6	2	0	6	0	2
Vitis rotundifolia	6	2	3	2	0	0	0	0	0	0	0

OVERVIEW

Database Code: CEGL003592
Scientific Name: *Pinus palustris – Pinus taeda / Quercus laevis / Gaylussacia frondosa – Gaylussacia baccata* Woodland
Common Name: Longleaf Pine – Loblolly Pine / Turkey Oak / Blue Huckleberry –Black Huckleberry Woodland
Colloquial Name: Longleaf Pine / Scrub Oak Sandhill (Northern Type)
Classif. Resp.: Southeast
Classif. Level: Association **Conf.:** 1 - Strong **Stakeholders:** Southeast
Status: Standard **Origin:** 1-Nov-1994 ID: 687535 **Maint. Resp.:** Central
Concept Auth.: M.P. Schafale and A.S. Weakley
Concept Ref.: Southeastern Ecology Working Group n.d. [Name in concept ref, if different:]
Description Author: K.A. Palmquist, R.K. Peet & S. Carr (2014), in part adapted from description of 3592
Status: **Version:** 12-Feb-2014
Ecological Systems:

- Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281)

ELEMENT CONCEPT

Concept Summary: This Association is a longleaf pine / scrub oak sandhill community that occurs in the northern portion of the Mid Atlantic Coastal Plain and hence differs substantially in floristic composition from more southern types. *Pinus palustris* and *Pinus taeda* dominate the canopy with a variety of scrub oaks in the subcanopy layer. The shrub layer is often dense and diverse, dominated by *Gaylussacia* spp. and *Vaccinium tenellum*, in contrast to the herbaceous layer, which is often sparse and relatively species poor.

Classification Comments: Description changed based on 3 plots from the Carolina Vegetation Survey (http://vegbank.org\cite\VB.ds.199640.CEGL003592) and 7 plots from the VA Natural Heritage Database. The concept of this type remains the same, but we fine tune the description based on existing plot data. We also fine-tune the name and exclude *Q. incana* and *Gaylussacia dumosa* and include *Pinus taeda*.

Diagnostic Characteristics: This type is constrained to the northern portion of the Mid Atlantic Coastal Plain and hence is characterized by very different species than other xeric types including: *Quercus nigra, Sassafras albidum, Smilax glauca, Gaylussacia frondosa, Gaylussacia baccata*, and *Vaccinium pallidum.* The herbaceous layer is sparse and species poor.

Concept History: CEGL003592.

Internal Comments: KDP 11-12: as of now, VAHP is crosswalking the one state level longleaf pine community type to two NVC associations (this one and CEGL003647). In Virginia, longleaf pine vegetation is very limited and remaining examples are of low quality. Protected areas are being intensely managed with Rx fire, removal of loblolly pine, and planting of VA native P. palustris stock. It is difficult to apply these concepts on the remaining sites, as vegetation that might fit into either association occur together at small scales. ASW 9-01: NC changed from S1 to S?, VA from S1 to S?.

Related Concepts:

- = *Pinus palustris - (Pinus serotina) / Quercus laevis / Gaylussacia frondosa - Kalmia angustifolia - Vaccinium tenellum* Woodland (Fleming et al. 2006)
- < Pine/Scrub Oak Sandhill (Schafale and Weakley 1990)
- > *Pinus palustris* / *Quercus laevis – Quercus incana* / *Gaylussacia dumosa – Gaylussacia* (*baccata, frondosa*) Woodland (Peet 2006) [1.1.2]
- > Pine/Scrub Oak Sandhill, Northern Subtype (Schafale 2012)

ELEMENT DESCRIPTION

Environment: This Association is a longleaf pine / scrub oak sandhill community located in the northern portion of the Mid Atlantic Coastal Plain of VA and NC on sandy loam soils. Even the slightest change of elevation at these sites can result in significant differences of soil moisture, thus, "wet" and "dry" variants occur in small-scale mosaics. Soil types this community has been documented on include: Spodic Quartzipsamments, Aquic Quartzipsamments, and Typic Quartzipsamments.

Vegetation: This northern longleaf pine sandhill community differs substantially in floristic composition from other, more southern types. In part, this is a matter of many species occurring to the south being absent, but other, more northern species atypical of longleaf sandhills are also present. The overstory canopy is comprised of equal parts *Pinus palustris* and *Pinus taeda* and the subcanopy layer is comprised primarily of scrub oaks including *Quercus laevis*, *Quercus nigra*, and *Quercus falcata*. Other common trees in this type include *Pinus serotina*, *Diospyros virginiana*, *Sassafras albidum*, and *Castanea pumila*. The shrub layer is dominated by *Gaylussacia frondosa*, *Gaylussacia dumosa*, and *Vaccinium tenellum*. Other common shrubs include *Gaylussacia baccata*, *Gaultheria procumbens*, *Morella cerifera*, *Vaccinium pallidum*, and *Vaccinium stamineum*. The herbaceous layer is relatively sparse and species poor. *Aristida stricta* is lacking in this type. Other characteristic understory species include *Euphorbia ipecacuanhae*, *Smilax glauca*, *Schizachyrium scoparium*, *Carphephorus bellidifolius*, and *Pteridium aquilinum*. In Virginia, where longleaf pine vegetation is very limited and remaining sites are intensely managed with prescription fire, removal of loblolly pine, and planting of longleaf pine, existing association concepts are difficult to apply. The pre-settlement nature of these communities is somewhat obscure, because so few examples remain, and none of which are in very good condition.

Dynamics:

Similar Associations:

- *Pinus palustris - (Pinus serotina) / Ilex glabra - Gaylussacia frondosa - (Kalmia carolina)* Woodland (CEGL003647)

Similar Association Comments:

CEGL003647: This type is considerably wetter than CEGL003592 and has greater abundance of both *Pinus serotina* and *Ilex glabra*.

Adjacent Associations:

Adjacent Association Comments:

Other Comments:

Acknowledgements:

ELEMENT GLOBAL RANK & REASONS

GRank: G1 **GRank Review Date:** 19-Jan-1999
GReasons: This woodland community is restricted to the northern range of the longleaf pine ecosystem. It is only found in North Carolina and adjacent southeastern Virginia. Very few examples remain, and none of them are in very good condition. This obscures the pre-settlement nature of these communities. 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. Most of those occurrences which have not been destroyed are severely degraded.
Ranking Author: Southeastern Ecology Group **Version:** 19-Jan-1999

ELEMENT DISTRIBUTION

Range: This woodland community is only found in North Carolina and adjacent southeastern Virginia. Examples are known from the Blackwater Ecological Preserve (Isle of Wight County, VA), Wyanoke Sandhills (Gates County, NC), and Cool Springs Landing (Craven County, NC).

Nations: US

Table 2.1.6: Prevalent species in vegetation type 3592 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 = 0.507.

Tree species	**Const.**	**Cover**
Quercus laevis	100%	6
Sassafras albidum	100%	3
Pinus taeda	90%	7
Pinus palustris	90%	5
Quercus nigra	90%	4
Castanea pumila	60%	3
Diospyros virginiana	60%	2
Quercus falcata	50%	5
Pinus serotina	40%	7
Acer rubrum	40%	2
Ilex opaca	40%	2
Nyssa sylvatica	30%	5
Pinus echinata	30%	3
Quercus velutina	30%	3
Quercus incana	20%	5
Oxydendrum arboreum	20%	3
Quercus margarettae	20%	2
Vine species	**Const.**	**Cover**
Smilax glauca	80%	2
Gelsemium sempervirens	30%	2
Smilax rotundifolia	20%	2
Shrub species	**Const.**	**Cover**
Gaylussacia frondosa	100%	7
Vaccinium pallidum	80%	4
Vaccinium tenellum	80%	4
Gaylussacia dumosa	60%	5
Gayluasscia baccata	50%	6
Kalmia angustifolia	50%	5
Morella [*cerifera* + *pumila*]	40%	4
Lyonia mariana	40%	2
Gaultheria procumbens	30%	2
Toxicodendron pubescens	30%	2
Vaccinium formosum	30%	2
Vaccinium corymbosum	20%	4
Asimina parviflora	20%	2
Eubotrys racemosa	20%	2
Herb species	**Const.**	**Cover**

Carphephorus bellidifolius	60%	2
Euphorbia ipecacuanhae	60%	2
Pteridium aquilinum	40%	7
[*Andropogon* + *Schizachyrium*]	40%	3
Schizachyrium scoparium	30%	3
Dichanthelium consanguineum	20%	2
Pyxidanthera barbulata	20%	2

OVERVIEW

Database Code: CEGL00xxx2
Scientific Name: *Pinus palustris – Pinus serotina / Quercus laevis / Gaylussacia frondosa / Schizachyrium scoparium*
Common Name: Longleaf Pine – Pond Pine / Turkey Oak / Blue Huckleberry / Little Bluestem
Classif. Resp.: Southeast
Classif. Level: Association **Conf.:** 2 - Medium **Stakeholders:** Southeast
Status: Standard **Origin:** 14-Feb-2014 **Maint. Resp.:** Southeast
Concept Auth.: K.A. Palmquist, R.K. Peet & S. Carr 2014
Concept Ref.: Palmquist, Peet & Carr 2014 (this document)
Description Author: (1) K.A. Palmquist, R.K. Peet & S. Carr (2014).
Status: **Version:** 14 Feb 2014

Ecological Systems:

- Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281)

ELEMENT CONCEPT

Concept Summary: This somewhat xeric Association occurs inland on coarse, dry sands. However, it appears to be ecotonal in nature, and hence includes a unique mix of xerophytes and mesic species. The open canopy is dominated by *Pinus palustris*, although *Pinus serotina* and *Pinus taeda* are often common and abundant. *Gaylussacia frondosa* is the most diagnostic and abundant species in the shrub layer. Other common shrub species include *Gaylussacia dumosa*, *Vaccinium tenellum*, *Lyonia mariana*, and *Morella cerifera*. The herbaceous layer of this type is relatively sparse and co-dominated by *Aristida stricta* and *Schizachyrium scoparium*.

Classification Comments: Concept and description based on 10 plots from the Carolina Vegetation Survey (http://vegbank.org/cite/VB.ds.199876.CEGL00xxx2). Currently, this type does not map onto any exisiting types with the NVC hierarchy.

Diagnostic Characteristics: This type is digtinguished by others from its location primarily in the inner Coastal Plain and its unique mixture of xerophytic and mesic species.

Concept History: New type.

ELEMENT DESCRIPTION

Environment: This type occurs on dry, coarse sands inland from the coast. Despite being coarse sands, soils support some mesic species, likely because they occur in very close proximity to rivers and moister soils. Soils are typically Aericalaquods, Spodic Quartzipsamments, Typic Quartzipsamments, and Typichumaquepts.

Vegetation: The open canopy of this Association is dominated by *Pinus palustris*, but *Pinus serotina* and *Pinus taeda* are also common and can be abundant. The sub-canopy layer is relative diverse and is

dominated by *Quercus laevis*. Other common sub-canopy components include *Diospyros virginiana, Sassafras albidum, Quercus nigra,* and *Quercus margarettae*. The shrub layer is also diverse and comprised primarily of *Gaylussacia frondosa, Gaylussacia dumosa, Vaccinium tenellum*, and *Lyonia mariana.* The diverse sub-canopy and shrub layers are comprised of a unique mix of xerophytes (e.g. *Q. laevis*) and more mesic species (e.g. *Pinus serotina* and *Gaylussacia frondosa*). *Gelsemium sempervirens* and *Smilax glauca* are two common vine species in this Association. The herbaceous layer is relatively sparse and species poor, perhaps due to the xeric nature of this type and also fire-suppression. *Aristida stricta* and *Schizachyrium scoparium* are the most abundant and constant herbaceous species. Other common species include *Tillandsia usneoides* and *Stipulicida setacea*.

Dynamics: This type shows some evidence of fire suppression.

Similar Associations:

- *Pinus palustris / Quercus laevis / Aristida stricta / Cladonia* spp. Woodland (CEGL003584)

Similar Association Comments: This type is similar to CEGL003584, which occurs inland on coarse sands, but is more mesic, which is reflected in species composition (e.g. *Pinus serotina, Gaylussacia frondosa*).

ELEMENT DISTRIBUTION

Range: This type occurs primarily in the inner Coastal Plain of North Carolina and South Carolina. Plot occurrences are from Bladen, Columbus, Craven, and Cumberland counties, NC and from Clarendon, Dillon, and Georgetown counties, SC.

Nations: US

Table 2.1.7: Prevalent species in vegetation type xxx2 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 = 0.518.

Tree species	**Const.**	**Cover**
Pinus palustris	100%	6
Diospyros virginiana	100%	2
Quercus laevis	90%	6
Pinus taeda	80%	4
Sassafras albidum	80%	2
Pinus serotina	70%	5
Quercus nigra	70%	3
Quercus margarettae	60%	5
Persea palustris	50%	2
Quercus hemiphaerica	40%	5
Magnolia virginiana	30%	3
Castanea pumila	20%	3
Nyssa sylvatica	20%	3
Cyrilla racemiflora	20%	2
Osmanthus americanus	20%	2
Quercus falcata	20%	2
Vine species	**Const.**	**Cover**
Gelsemium sempervirens	70%	3
Smilax glauca	50%	2
Shrub species	**Const.**	**Cover**
Gaylussacia frondosa	90%	6
Gaylussacia dumosa	90%	5
Vaccinium tenellum	80%	5
Lyonia mariana	60%	4
Morella [*cerifera + pumila*]	60%	3
Ilex glabra	40%	2
Hypericum tenuifolium	30%	2
Opuntia humifusa	30%	2
Polygonella polygama	30%	2
Vaccinium formosum	30%	2
Vaccinium stamineum	30%	2
Vaccinium crassifolium	20%	4
Rhododendron atlanticum	20%	3
Clethra alnifolia	20%	2
Herb species	**Const.**	**Cover**
[*Andropogon + Schizachyrium*]	80%	3
Aristida stricta	80%	3

Tillandsia usneoides	70%	3
Schizachyrium scoparium	50%	2
Stipulicida setacea	50%	2
Cuthbertia graminea	30%	2
Dichanthelium lancearium	30%	2
Euphorbia ipecacuanhae	30%	2
Pityopsis graminifolia	30%	2
Rhynchospora megalocarpa	30%	2
Selaginella acanthonota	30%	2
Xyris caroliniana	30%	2
Pteridium aquilinum	20%	5
Carphephorus bellidifolius	20%	2
Cnidoscolus stimulosus	20%	2
Solidago odora	20%	2

OVERVIEW

Database Code: CEGL003586
Scientific Name: *Pinus palustris / Quercus laevis / Aristida stricta – Baptisia cinerea* Woodland
Common Name: Longleaf Pine / Turkey Oak / Carolina Wiregrass – Carolina Wild Indigo Woodland
Classif. Resp.: Southeast
Classif. Level: Association **Conf.:** 1 - Strong **Stakeholders:** Southeast
Status: Standard **Origin:** 1-Nov-1994 ID: 689367 **Maint. Resp.:** Southeast
Concept Auth.: M.P. Schafale and A.S. Weakley
Concept Ref.: Southeastern Ecology Working Group n.d. [Name in concept ref, if different:]
Description Author K.A. Palmquist, R.K. Peet & S. Carr (2014), in part adapted from description of 3586
Status: 3 **Version:** 12-Feb-2014
Ecological Systems:

- Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland (CES203.254)
- Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281)

ELEMENT CONCEPT

Concept Summary: This Association covers the widespread longleaf pine communities of dry sands and occurs mostly in the Fall-line Sandhills, where plants characteristic of the coastal fringe are absent. Stands are dominated by *Pinus palustris* with a low-diversity scrub oak layer strongly dominated by *Quercus laevis* and a well developed herbaceous layer dominated by *Aristida stricta*. *Gaylussacia dumosa* is a common, abundant shrub component.

Classification Comments: Description changed based on 32 plots from the Carolina Vegetation Survey (http://vegbank.org\cite\VB.ds.199636.CEGL003586). Subassociation A is based on 22 fire-maintained plots (http://vegbank.org\cite\VB.ds.199677.CEGL003586A), while Subassociation B is based on 10 slightly fire-suppressed plots (http://vegbank.org\cite\VB.ds.199678.CEGL003586b). This Association is equivalent to CEGL003586 in the existing NVC hierarchy. Here we slightly narrow the geographic scope of CEGL003586, which is defined as a broad type that includes infertile sands in the Fall-line Sandhills region and the inner Coastal Plain. The new definition of CEGL003586 is narrower and is essentially limited to the Fall-line Sandhills. We modify the name of this type to put less emphasis on *Gaylussacia dumosa* and include *Baptisia cinerea* as indicative in the herbaceous layer.**Internal Comments:** MP 9-09: Carolina Vegetation Survey data indicate that most plots attributed to this type are found in the outer coastal plain of North Carolina, with one in the fall-line sandhills near the NC-SC state line (044-07-0614). CWN 1-04: present on Croatan NF, Mike Schafale (pers. comm. 2004). SCS: Is this Association still needed, or has it been accommodated under other defined associations? Palmquist and Peet 2013: this Association is still needed. This type is found mostly in the Fall-line Sandhills, in contrast to the comments above.
Related Concepts:

- < X**e**ric Sandhill Scrub (Schafale and Weakley 1990)
- = Xeric Sandhill Scrub, Typic Subtype (Schafale 2012)

ELEMENT DESCRIPTION

Environment: This Association covers the widespread longleaf pine communities of dry sands, found primarily in the Fall-line Sandhills, on dry sandy soils, often with some silt, including: Arenicpaledults, Arenic Kanhapludults, Typic Kanhapludults, Typic Udipsamments, Typic Quartzipsamments, Aquic Quartzipsamments, Entic Grossarenic Alorthods, and Lamellic Quartzipsamments.

Vegetation: Stands are dominated by *Pinus palustris* with a subcanopy/shrub layer dominated almost exclusively by *Quercus laevis*. *Quercus incana* is often present, but at much lower abundance than *Quercus laevis*. Characteristic low shrubs include *Gaylussacia dumosa (= var. dumosa) and Hypericum hypericoides*. *Aristida stricta* dominates the herbaceous layer and often has high abundance. Other characteristic herbaceous plants include: *Baptisia cinerea, Carphephorus bellidifolius, Cirsium repandum, Cnidoscolus stimulosus, Diospyros virginiana, Euphorbia ipecacuanhae, Pityopsis graminifolia, Physalis virginiana,* and *Rhynchospora grayi.* This Association can be distinguished from other community types by the presence of a scrub oak layer strongly dominated by *Quercus laevis* along with an herbaceous layer dominated by *Aristida stricta*.

We recognized two Subassociations within this type, Subassociation A, which is fire-maintained, and Subassociation B, which is relatively fire suppression. As is typical with fire suppression, the abundant and diversity of woody components in considerably higher in Subassociation B, while the abundance of grasses and forbs (particularly *Aristida stricta*) is considerably less.

Dynamics:

Similar Associations:

- *Pinus palustris / Quercus laevis - Quercus geminata / Vaccinium tenellum / Aristida stricta* Woodland (CEGL003589)
- *Pinus palustris / Quercus laevis / Aristida stricta / Cladonia* spp. Woodland (CEGL003584)
- *Pinus palustris / Quercus laevis / Aristida purpurascens - Stipulicida setacea - (Rhynchospora megalocarpa, Selaginella acanthonota)* Woodland (CEGL003590)

Similar Association Comments:
CEGL003589: This type is distinguished from CEGL003589 by the absence of characteristic coastal fringe flora, such as *Cladina evansii, Rhynchospora megalocarpa, Ilex vomitoria,* and *Quercus geminata* and its location in the Fall-line Sandhills.

CEGL003584 & CEGL003590: This Association is distinguished from these communities by having higher plant cover in the herb layer, especially *Aristida stricta* and by its location in the Fall-line Sandhills.

Adjacent Associations:
Adjacent Association Comments:
Other Comments:
Acknowledgements:

ELEMENT GLOBAL RANK & REASONS

GRank: G3? **GRank Review Date:** 22-Jan-1998
GReasons: This longleaf pine woodland association represents a type of sandhill scrub and is restricted to the Sandhills and Coastal Plain regions of the Mid-Atlantic Coastal Plain. Remaining examples are highly threatened by development, conversion, and alteration of fire regimes. Most of those occurrences which have not been destroyed are severely degraded, except for examples on military lands where incidental burning has maintained more or less natural fire regimes.
Ranking Author: Southeastern Ecology Group **Version:** 22-Jan-1998

ELEMENT DISTRIBUTION

Range: This Association is restricted to the Sandhills and Coastal Plain regions of the Mid-Atlantic Coastal Plain of North and South Carolina. It (or some related vegetation) may occur in the immediately adjacent Piedmont. It is currently known from the following counties in NC: Bladen, Cumberland, Hoke, Moore, Richmond, Scotland and SC: Chesterfield.

Nations: US

Table 2.1.8: Prevalent species in vegetation type 3586 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. SA and SB refer to Subassociation A and B, respectively. Homoteneity = 0.600.

Tree species	**Const.**	**Cover**	**SA Const.**	**SA Cover**	**SB Const.**	**SB Cover**
Quercus laevis	100%	7	100%	7	100%	7
Pinus palustris	100%	6	100%	6	100%	7
Diospyros virginiana	91%	3	86%	2	100%	3
Quercus incana	72%	3	86%	3	40%	2
Sassafras albidum	44%	2	32%	3	70%	2
Quercus margarettae	38%	3	41%	2	30%	4
Quercus marilandica	28%	3	27%	2	30%	4
Prunus serotina	28%	2	--	--	60%	2
Pinus taeda	22%	4	--	--	30%	5
Carya alba	--	--	--	--	30%	2
Quercus velutina	--	--	--	--	20%	2
Carya pallida	--	--	--	--	20%	2
Vine species	**Const.**	**Cover**	**SA Const.**	**SA Cover**	**SB Const.**	**SB Cover**
Smilax glauca	22%	2	--	--	30%	2
Vitis rotundifolia	--	--	--	--	30%	2
Shrub species	**Const.**	**Cover**	**SA Const.**	**SA Cover**	**SB Const.**	**SB Cover**
Gaylussacia dumosa	91%	5	95%	5	80%	5
Toxiodendron pubescens	59%	2	50%	2	80%	2
Hypericum hypericoides	50%	2	73%	2	--	--
Epigaea repens	41%	2	36%	2	50%	2
Rhus copallinum	22%	2	27%	2	--	--
Robinia nana	--	--	--	--	30%	2
Vaccinium tenellum	--	--	--	--	20%	2
Herb species	**Const.**	**Cover**	**SA Const.**	**SA Cover**	**SB Const.**	**SB Cover**
Aristida stricta	97%	6	100%	6	90%	3
Euphorbia ipecacuanhae	88%	2	100%	2	60%	1
Carphephorus bellidifolius	88%	2	91%	2	80%	2
Cnidoscolus stimulosus	84%	2	95%	2	60%	2
[*Andropogon + Schizachyrium*]	78%	2	82%	2	70%	2
Baptisia cinerea	75%	2	86%	2	50%	2
Pityopsis graminifolia	63%	2	91%	2	--	--
Cirsium repandum	63%	2	86%	2	--	--
Stylisma patens	59%	2	73%	2	30%	2
Stipulicida setacea	47%	2	64%	2	--	--
Tragia urens	44%	2	64%	2	--	--
Galactia sp.	47%	2	55%	2	20%	2

Silphium compositum	44%	2	55%	2	20%	2
Solidago odora var. odora	44%	2	55%	2	20%	2
Liatris [*pilosa + virgata*]	41%	2	59%	2	--	--
Rhynchospora grayi	41%	2	59%	2	--	--
Physalis virginiana	38%	2	55%	2	--	--
Minuartia caroliniana	34%	2	45%	2	--	--
Euphorbia curtisii	34%	2	41%	2	20%	2
Tephrosia virginiana	34%	2	41%	2	20%	2
Aureolaria pectinata	31%	2	45%	2	--	--
Ionactia linariifolia	28%	2	41%	2	--	--
Stylosanthes biflora	28%	2	41%	2	--	--
Iris verna	25%	2	32%	2	--	--
Sericocarpus tortifolius	25%	2	32%	2	--	--
Vernonia angustifolia	25%	2	32%	2	--	--
Euphorbia pubentissima	22%	2	--	--	40%	2
Chrysopsis [*gossypina+trichophylla*]	22%	2	32%	2	--	--
Schizachyrium scoparium	22%	2	23%	3	20%	1
Dichanthelium [*ovale+villosissimum*]	--	--	32%	2	--	--
Baptisia tinctoria	--	--	27%	2	--	--
Cuthbertia graminea	--	--	27%	2	--	--
Lechea sp.	--	--	27%	2	--	--
Sporobolus junceus	--	--	27%	2	--	--
Tephrosia florida	--	--	27%	2	--	--
Viola pedata	--	--	27%	2	--	--
Orbexilum lupinellum	--	--	23%	2	--	--
Rhynchosia reniformis	--	--	23%	2	--	--
Lupinus diffusus	--	--	23%	2	--	--
Asclepias humistrata	--	--	23%	2	--	--

OVERVIEW

Database Code: CEGL003589
Scientific Name: *Pinus palustris / Quercus laevis – Quercus geminata / Aristida stricta* Woodland
Common Name: Longleaf Pine / Turkey Oak – Sand Live Oak / Carolina Wiregrass Woodland
Colloquial Name: Atlantic Coastal Plain Longleaf Sandhill Scrub
Classif. Resp.: Southeast
Classif. Level: Association **Conf.:** 1 - Strong **Stakeholders:** Southeast
Status: Standard **Origin:** 1-May-1994 ID: 688575 **Maint. Resp.:** Southeast
Concept Auth.: M.P. Schafale
Concept Ref.:
Southeastern Ecology Working Group n.d. [Name in concept ref, if different:]
Description Author: K.A. Palmquist, R.K. Peet & S. Carr (2014), in part adapted from description of 3589
Status: **Version:** 12-Feb-2014
Ecological Systems:

- Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281)
- Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland (CES203.254)

ELEMENT CONCEPT

Concept Summary: These are xeric longleaf pine sandhills, occurring mostly in the outer Coastal Plain of North Carolina and South Carolina, but occasionally further inland (e.g. Bladen and Scotland Counties, NC). The canopy consists of an open (and sometimes very sparse) canopy of *Pinus palustris*. *Quercus laevis* is the predominant scrub oak, but *Quercus geminata*, *Quercus hemisphaerica*, and *Quercus incana* are often present and abundant. Although several characteristic coastal fringe species may be present, this type has substantially less of a broadleaf evergreen component than *Pinus palustris - Pinus taeda / Quercus geminata - Quercus hemisphaerica – Osmanthus americanus var. americanus / Aristida stricta* Woodland, and a sparse to dense layer of *Aristida stricta* depending upon tree cover.

Classification Comments: Description changed based on 14 plots from the Carolina Vegetation Survey (http://vegbank.org\cite\VB.ds.199637.CEGL003589). We identified two Subassociations within this type, Subassociation A (http://vegbank.org/cite/VB.ds.199878.CEGL003589A) and Subassociation B (http://vegbank.org\cite\VB.ds.199877.CEGL003589B). Subassociation B (3 plots) occurs exclusively in the inner Coastal Plain of NC and SC. This Association is more or less equivalent to CEGL003589 in the existing NVC hierarchy, but is slightly larger in concept because it encompasses plots located in both the outer and inner Coastal Plains of NC and northern SC. Although, Subassociation B may deserve its own designation as a separate type, data is generally lacking for the inner Coastal Plain and more data is needed to deteremine if Subassociation A and B are separate vegetation types. We simplify the name and remove *Vaccinium tenellum*.

Diagnostic Characteristics: This type can be distinguished by its location primarily in the outer Coastal Plain of NC and SC, and hence its signature of coastal fringe species (e.g. *Quercus geminata*, *Smilax auriculata*). It is closely related to *Pinus palustris - Pinus taeda / Quercus geminata - Quercus hemisphaerica – Osmanthus americanus var. americanus / Aristida stricta* Woodland (CEGL003577),

but the herbaceous layer is more diverse and developed in this type, with a higher abundance of *Aristida stricta.*

Concept History: CEGL003589.

Internal Comments:
Related Concepts:

- < Xeric Sandhill Scrub (Schafale and Weakley 1990)
- >< *Pinus palustris / Quercus geminata - Quercus laevis / Vaccinium tenellum / Aristida stricta* Woodland (Peet 1996) [I.Series 2.D]
- > *Pinus palustris* / *Quercus laevis – Quercus geminata* / *Vaccinium tenellum* / *Aristida stricta* Woodland (Peet 2006) [1.1.3]
- = Xeric Sandhill Scrub, Coastal Fringe Subtype (Schafale 2012)

ELEMENT DESCRIPTION

Environment: This Association occurs on dry sands associated with old beach ridges, relict dunes, well-drained sandy flats, and Carolina bay rims on soils mapped as Spodic Quartzipsamments and Typic Haplohumods (Schafale 1994, confirmed by Palmquist and Peet 2014).

Vegetation: This type has a sparse to moderate canopy of *Pinus palustris* with *Quercus laevis* dominating the sub-canopy/shrub layer. *Quercus incana* and *Quercus margarettae* are also common in the sub-canopy layer. We identified two Subassociations that slightly differ in their species composition due to geography. Subassociation A is located in the outer Coastal Plain and is characterized by some coastal fringe species, most notably *Quercus geminata* in the sub-canopy layer. Subassociation B is located in the inner Coastal Plain, thus coastal fringe species are lacking. The herbaceous layer is well developed compared to other xeric types and *Aristida stricta* may be sparse to dense depending upon tree cover. Other typical species include: *Smilax auriculata, Cnidoscolus stimulosus, Carphephorus bellidifolius, Vaccinium tenellum, Euphorbia ipecacuanhae, Eupatorium compositifolium, Pityopsis graminifolia,* and *Morella cerifera*.

Dynamics:

Similar Associations:

- *Pinus palustris - Pinus taeda / Quercus geminata - Quercus hemisphaerica – Osmanthus americanus var. americanus / Aristida stricta* Woodland (CEGL003577)

Similar Association Comments:
CEGL003577: This type is similar to CEGL003577, but contains fewer broadleaf evergreen species and has a more developed herbaceous layer, dominated by *Aristida stricta*.

Adjacent Associations:
Adjacent Association Comments:
Other Comments:
Acknowledgements:

ELEMENT GLOBAL RANK & REASONS

GRank: G2? **GRank Review Date:** 31-Dec-1997
GReasons: This xeric longleaf pine sandhill woodland association is found in a restricted range and specific set of habitat conditions. It occurs mostly in the outer and inner Coastal Plain of North and South Carolina, on Spodic Quartzipsamments and Typic Haplohumods soils. However, very few examples remain in the inner Coastal Plain. The longleaf pine canopy is open and sometimes very sparse. 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. Most of those occurrences which have not been destroyed are severely degraded, except for examples on military lands, where incidental burning has maintained more-or-less natural fire regimes.
Ranking Author: Southeastern Ecology Group **Version:** 31-Dec-1997

ELEMENT DISTRIBUTION

Range: This Association is found primarily on the outer Coastal Plain of North and South Carolina. The North Carolina range is primarily Brunswick and New Hanover counties, but extends as far north as Craven County and inland to Bladen County (Schafale 1994) and Scotland County (Palmquist and Peet 2014). Occurrences of this type have also been documented in Horry County, SC.

Nations: US

Table 2.1.9: Prevalent species in vegetation type 3589 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. SA and SB represent Subassociation A and Subassociation B, respectively. Homoteneity = 0.645.

Tree species	**Const.**	**Cover**	**SA Const.**	**SA Cover**	**SB Const.**	**SB Cover**
Pinus palustris	100%	6	100%	6	100%	6
Quercus laevis	100%	6	100%	6	100%	5
Quercus geminata	79%	6	100%	6	--	--
Diospyros virginiana	71%	2	73%	2	67%	4
Sassafras albidum	64%	2	64%	2	--	--
Quercus incana	57%	3	55%	3	67%	2
Quercus margarettae	43%	2	36%	2	67%	2
Pinus taeda	36%	4	36%	4	--	--
Quercus nigra	36%	2	--	--	100%	2
Quercus hemisphaerica	36%	2	45%	2	--	--
Liquidambar styraciflua	29%	2	27%	2	33%	2
Quercus falcata	21%	4	--	--	67%	5
Magnolia virginiana	21%	2	--	--	33%	2
Prunus serotina	21%	2	--	--	33%	2
Persea palustris	21%	2	27%	2	--	--
Quercus laurifolia	--	--	--	--	67%	2
Nyssa sylvatica	--	--	--	--	33%	3
Crataegus aprica	--	--	--	--	33%	2
Pinus serotina	--	--	--	--	33%	2
Vine species	**Const.**	**Cover**	**SA Const.**	**SA Cover**	**SB Const.**	**SB Cover**
Gelsemium sempervirens	57%	2	55%	2	67%	3
Smilax auriculata	43%	2	55%	2	--	--
Vitis rotundifolia	29%	2	27%	2	33%	2
Smilax glauca	--	--	--	--	33%	2
Smilax rotundifolia	--	--	--	--	33%	2
Shrub species	**Const.**	**Cover**	**SA Const.**	**SA Cover**	**SB Const.**	**SB Cover**
Vaccinium tenellum	79%	4	100%	4	--	--
Morella [*cerifera* + *pumila*]	79%	2	91%	2	--	--
Vaccinium stamineum	57%	2	73%	2	--	--
Gaylussacia dumosa	57%	3	55%	4	67%	3
Lyonia mariana	43%	2	45%	2	33%	2
Vaccinium crassifolium	43%	2	55%	2	--	--
Vaccinium arboreum	36%	4	45%	4	--	--
Gaylussacia frondosa	29%	2	36%	2	--	--
Hypericum hypericoides	29%	2	--	--	33%	2
Toxicodendron pubescens	29%	2	--	--	67%	2

Polygonella polygama	21%	2	27%	2	--	--
Robinia nana	--	--	--	--	67%	3
Opuntia humifusa	21%	2	--	--	67%	2
Ceanothus americanus	--	--	--	--	33%	2
Rhus glabra	--	--	--	--	33%	2
Rubus cuneifolius	--	--	--	--	33%	2
Herb species	**Const.**	**Cover**	**SA Const.**	**SA Cover**	**SB Const.**	**SB Cover**
Aristida stricta	100%	6	100%	6	100%	7
Cnidoscolus stimulosus	86%	2	82%	2	100%	2
Pityopsis graminifolia	86%	2	91%	2	66%	2
Carphephorus bellidifolius	79%	2	73%	2	100%	2
Euphorbia ipecacuanhae	79%	2	82%	2	67%	2
Sericocarpus tortifolius	57%	2	55%	2	67%	2
[*Andropogon + Schizachyrium*]	57%	2	36%	2	100%	4
Tragia urens	50%	2	45%	2	67%	2
Solidago odora var. odora	43%	2	36%	2	67%	2
Stylisma patens	43%	2	36%	2	67%	2
Galactia [*regularis + volubilis*]	43%	2	45%	2	33%	2
Liatris sp.	36%	2	55%	2	--	--
Rhynchospora megalocarpa	36%	2	45%	2	--	--
Eupatorium compositifolium	36%	2	--	--	100%	2
Amorpha herbacea	29%	3	36%	3	--	--
Andropogon ternarius	29%	3	36%	3	33%	2
Chrysopsis [*gossypina + trichophylla*]	29%	2	36%	2	--	--
Cuthbertia graminea	29%	2	--	--	67%	2
Euphorbia pubentissima	29%	2	27%	2	33%	2
Stipulicida setacea	29%	2	--	--	67%	2
Iris verna	29%	2	--	--	33%	2
Pterocaulon pycnostachyum	29%	2	36%	2	--	--
Schizachyrium scoparium	29%	2	27%	2	66%	2
Dichanthelium lancearium	21%	2	27%	2	--	--
Cirsium repandum	21%	2	--	--	33%	2
Symphyotrichum dumosum	21%	2	--	--	33%	2
Tephrosia florida	21%	2	--	--	--	--
Tillandsia usneoides	21%	2	27%	2	--	--
Dichanthelium ovale	21%	2	--	--	67%	2
Baptisia cinerea	--	--	--	--	67%	2
Andropogon virginicus	--	--	--	--	33%	5
Gentiana autumnalis	--	--	--	--	33%	2
Nuttallanthus canadensis	--	--	--	--	33%	2
Passiflora incarnata	--	--	--	--	33%	2
Lespedeza hirta	--	--	--	--	33%	2
Lespedeza repens	--	--	--	--	33%	2

Vernonia angustifolia	--	--	--	--	33%	2
Tephrosia virginiana	--	--	--	--	33%	2
Lespedeza virginica	--	--	--	--	33%	2
Eupatorium pilosum	--	--	--	--	33%	2
Dichanthelium commutatum	--	--	--	--	33%	2
Stillingia sylvatica	--	--	--	--	33%	2
Aristida purpurea	--	--	--	--	33%	2
Arnoglossum atriplicifolium	--	--	--	--	33%	2
Asclepias amplexicaulis	--	--	--	--	33%	2

OVERVIEW

Database Code: CEGL003591
Scientific Name: *Pinus palustris / Quercus laevis – Quercus incana / Gaylussacia dumosa / Aristida stricta* Woodland
Common Name: Longleaf Pine / Turkey Oak – Bluejak Oak / Dwarf Huckleberry / Carolina Wiregrass Woodland
Colloquial Name: Carolina Longleaf Pine / Mixed Scrub Oak Sandhill
Classif. Resp.: Southeast
Classif. Level: Association **Conf.:** 1 - Strong **Stakeholders:** Southeast
Status: Standard **Origin:** 1-Nov-1994 ID: 686413 **Maint. Resp.:** Southeast
Concept Auth.: M.P. Schafale and A.S. Weakley
Concept Ref.: Southeastern Ecology Working Group n.d. [Name in concept ref, if different:]
Description Author: K.A. Palmquist, R.K. Peet & S. Carr (2014), in part adapted from description of 3591
Status: 2 **Version:** 12-Feb-2014
Ecological Systems:

- Atlantic Coastal Plain Upland Longleaf Pine Woodland (CES203.281)

ELEMENT CONCEPT

Concept Summary: This Association is found on fine sandy to loamy soils in the outer Coastal Plain of NC. *Pinus palustris* dominates the open canopy and other characteristic species include *Quercus laevis* and *Quercus incana* in the subcanopy/shrub layer, *Gaylussacia dumosa* and *Vaccinium tenellum* in the shrub layer, and *Aristida stricta* in the herb layer.

Classification Comments: Description changed based on 18 plots from the Carolina Vegetation Survey (http://vegbank.org\cite\VB.ds.199639.CEGL003591). This type is equivalent to CEGL003591 in the existing NVC hierarchy. We re-define this type slightly to occur exclusively in the outer Coastal Plain, while the original description of 3591 was defined as broadly distributed throughout the outer and inner Coastal Plain. We simplify the name and put more emphasis on *Quercus incana* by deleting *Quercus margarettae.*

Diagnostic Characteristics: This type is distinguished from other subxeric and xeric types in NC by the strong dominance of *Quercus incana* in the subcanopy/shrub layer.

Concept History: CEGL003591.

Internal Comments: CWN 2004-01-14: Possibly present on Croatan NF, Mike Schafale (pers. comm. 2004). Palmquist and Peet 2013: this type is confirmed to occur on Croatan NF.

Related Concepts:

- < Xeric Sandhill Scrub (Schafale and Weakley 1990)
- = *Pinus palustris* / *Quercus laevis – Quercus* (*incana, margarettae*) / *Gaylussacia frondosa* / *Aristida stricta* Woodland (Peet 2006) [2.1.1]
- = Pine/Scrub Oak Sandhill, Mixed Oak Subtype (Schafale 2012)

ELEMENT DESCRIPTION

Environment: This Association is found on fine sandy to loamy soils in the outer Coastal Plain of NC. Soils lack a clay layer near the surface and include: Lamellic Quartzipsamments, Typic Quartzipsamments, Spodic Quartzipsamments, and Arenichapludults. This type has more silt than other xeric community types with a North Carolina and South Carolina distribution.

Vegetation: Stands of this type contain an open canopy of *Pinus palustris* and a subcanopy dominated by *Quercus incana,* although *Quercus laevis* is a frequent and abundant component as well. Several shrub species are nearly constant and characteristic of this type including *Gaylussacia dumosa (= var. dumosa), Gaylussacia frondosa, Morella cerifera, Vaccinium tenellum, Vaccinium stamineum,* and *Ilex glabra*. The herbaceous layer is dominated by *Aristida stricta* and other characteristic herbaceous species are *Andropogon ternarius, Carphephorus bellidifolius, Carphephorus odoratissimus, Cnidoscolus stimulosus, Pityopsis graminifolia var. latifolia, Euphorbia ipecacuanhae, Ionactis linariifolia, Liatris spp., Sericocarpus tortifolius, Solidago odora var. odora*, and *Tragia urens*.

Dynamics:

Similar Associations:

- *Pinus palustris / Quercus laevis – Quercus incana / Gaylussacia dumosa – Gaylussacia* (*baccata, frondosa*) Woodland (CEGL003592)

Similar Association Comments:
CEGL003592: 3592 has a much less developed and species poor herbaceous layer compared to CEGL003591 and is dominated primarily by *Quercus laevis* in the subcanopy layer.

Adjacent Associations:
Adjacent Association Comments:
Other Comments:
Acknowledgements:

ELEMENT GLOBAL RANK & REASONS

GRank: G3? **GRank Review Date:** 22-Jan-1998
GReasons: This longleaf pine woodland association represents a type of sandhill scrub and is restricted to the outer Coastal Plain of North Carolina, where it is only found on fine sandy to loamy soils without a clay layer near the surface. The herb layer is lower in diversity than that of other, more mesic, associated longleaf communities, but higher in diversity than other xeric communities. Remaining examples are highly threatened by development, conversion, and alteration of fire regimes. Most of those occurrences which have not been destroyed are severely degraded, except for examples on military lands where incidental burning has maintained more or less natural fire regimes.
Ranking Author: Southeastern Ecology Group **Version:** 22-Jan-1998

ELEMENT DISTRIBUTION

Range: This Association is found in the outer Coastal Plain of North Carolina and possibly South Carolina. It is known primarily from Onslow and Carteret Counties, NC.

Nations: US

Table 2.1.10: Prevalent species in vegetation type 3591 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 = 0.517.

Tree species	**Const.**	**Cover**
Pinus palustris	100%	6
Quercus incana	100%	5
Quercus laevis	89%	5
Diospyros virginiana	72%	2
Quercus hemisphaerica	56%	3
Sassafras albidum	78%	2
Quercus falcata	39%	3
Ilex opaca	28%	2
Magnolia virginiana	28%	2
Pinus serotina	22%	2
Quercus margarettae	22%	2
Quercus marilandica	22%	2
Vine species	**Const.**	**Cover**
Smilax bona-nox	28%	2
Smilax glauca	28%	2
Gelsemium sempervirens	22%	2
Shrub species	**Const.**	**Cover**
Gaylussacia dumosa	100%	6
Vaccinium tenellum	100%	4
Morella cerifera	100%	3
Gaylussacia frondosa	94%	6
Vaccinium stamineum	89%	3
Ilex glabra	89%	2
Vaccinium crassifolium	67%	2
Vaccinium fuscatum	61%	2
Toxicodendron pubescens	44%	3
Vaccinium arboreum	44%	3
Rhus copallinum	44%	2
Hypericum hypericoides	39%	2
Vaccinium formosum	28%	2
Herb species	**Const.**	**Cover**
Aristida stricta	100%	6
Cnidoscolus stimulosus	100%	2
Pityopsis graminifolia	94%	2
Sericocarpus tortifolius	89%	2
Carphephorus bellidifolius	89%	2
Euphorbia ipecacuanhae	83%	2

Ionactis linariifolia	83%	2
Tragia urens	83%	2
Liatris [pilosa + virgata]	83%	2
Andropogon ternarius	67%	2
Solidago odora var. odora	67%	2
Carphephorus odoratissimus	61%	2
Scleria [*nitida + triglomerata*]	61%	2
Galactia sp.	56%	2
Cirsium repandum	44%	2
Symphyotrichum walteri	44%	2
Andropogon virginicus	44%	2
Dichanthelium webberianum	39%	2
Iris verna	39%	2
Scleria [*ciliata + elliottii*]	33%	2
[*Andropogon + Schizachyrium*]	33%	2
Pteridium aquilinum	28%	2
Tephrosia florida	28%	2
Lespedeza hirta	22%	2
Chryopsis [*gossypina + trichophyllum*]	22%	2