



Jonathan Dickinson State Park (Martin County) Photo by Gary Knight

Scrubby Flatwoods

Description: Scrubby flatwoods have an open canopy of widely spaced pine trees and a low, shrubby understory dominated by scrub oaks and saw palmetto, often interspersed with areas of barren white sand. Principal canopy species are longleaf pine (*Pinus palustris*) and slash pine (*P. elliottii*) in northern and central Florida, and South Florida slash pine (*P. elliottii* var. *densa*) south of Lake Okeechobee. The shrub layer consists of one or more of the four scrub oaks, sand live oak (*Quercus geminata*), myrtle oak (*Q. myrtifolia*), Chapman's oak (*Q. chapmanii*), and scrub oak (*Q. inopina*), and typical shrubs of mesic flatwoods including saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), rusty staggerbush (*Lyonia ferruginea*), fetterbush (*L. lucida*), coastalplain staggerbush (*L. fruticosa*), and deerberry (*Vaccinium stamineum*). The shrub layer of scrubby flatwoods is not solely comprised of oaks; grasses and dwarf shrubs make up a substantial portion of the cover. Grasses include wiregrass (*Aristida stricta* var.

beyrichiana), broomsedge bluestem (*Andropogon virginicus*), and little bluestem (*Schizachyrium scoparium*); dwarf shrubs include dwarf live oak (*Quercus minima*), runner oak (*Q. elliotii*), dwarf huckleberry (*Gaylussacia dumosa*), gopher apple (*Licania michauxii*), and shiny blueberry (*Vaccinium myrsinites*). A variety of forbs, many typical of drier types of mesic flatwoods, are present including coastalplain honeycomb-head (*Balduina angustifolia*), narrowleaf silkgrass (*Pityopsis graminifolia*), October flower (*Polygonella polygama*), and sweet goldenrod (*Solidago odora*). Bare sand openings are often present but are generally small.

Scrubby flatwoods occur on slight rises within mesic flatwoods and in transitional areas between scrub and mesic flatwoods. Soils of scrubby flatwoods are moderately well-drained sands with or without a spodic horizon. Examples of soil types include Pomello and Satellite sands.

Characteristic Set of Species: longleaf pine, slash pine, (or South Florida slash pine), sand live oak, myrtle oak (or scrub oak), Chapman's oak, saw palmetto, wiregrass

Rare Species: Three rare plants are found primarily in scrubby flatwoods. Florida goldenaster (*Chrysopsis floridana*) and large-plumed beaksedge (*Rhynchospora megaplumosa*) are endemic to west-central Florida, and pine pinweed (*Lechea divaricata*) is endemic to central and southern portions of peninsular Florida. Other rare plants that occur in scrubby flatwoods include Carter's warea (*Warea carteri*) and nodding pinweed (*Lechea cernua*) in the central peninsula, and large-leaved jointweed (*Polygonella macrophylla*) in coastal scrubby flatwoods of the Florida Panhandle.

Scrubby flatwoods are inhabited by many of the same rare animal species found in scrub. These include Florida mouse (*Podomys floridanus*), Florida scrub-jay (*Aphelocoma coerulescens*), gopher tortoise (*Gopherus polyphemus*), and associated tortoise commensal species such as the Florida gopher frog (*Rana capito*; USFWS 1999).

Range: Like scrub, scrubby flatwoods is largely confined to Florida. It occurs throughout the state except in extreme South Florida where limestone is close to the surface.

Natural Processes: Since it has a more continuous ground cover, scrubby flatwoods burns more readily than scrub (USFWS 1999) and somewhat less readily than mesic flatwoods and it would thus naturally have burned at frequencies intermediate between the two. Light ground fires in the surrounding mesic flatwoods tend to enter the scrubby flatwoods and extinguish, leading to a patchwork of recently burned and unburned portions, a situation which has been found to be favorable for scrub-jays (Breininger et al. 2002).

For oak scrub on the Lake Wales Ridge a natural return interval between 8 and 15 years has been suggested based on requirements of the Florida scrub-jay (Woolfenden and Fitzpatrick 1992). An interval of 1-5 years is suggested for mesic flatwoods in the same area (Main and Menges 1997). Since re-sprouting stems of scrub oak (*Quercus inopina*) in this region become reproductive at 3 years and reach peak reproduction at 5 years (Ostertag and Menges 1994), burning at intervals consistently less than 5 years could diminish acorn production and decrease food available for wildlife. Menges (2007)

observed a lower limit fire return interval in scrubby flatwoods of three years, based on fuel accumulation levels, but commented that frequent fires may exhaust carbohydrate reserves. Thus fire intervals greater than 5 years, but less than 15 years, likely would have been most common in scrubby flatwoods; the intervals were also likely highly variable, dependent upon yearly environmental conditions and fuel accumulation rates.

Community Variations: Scrubby flatwoods on the Lake Wales Ridge may contain scrub oak (*Quercus inopina*) in addition to the other three shrubby oaks commonly found in scrub. Tarflower (*Bejaria racemosa*), scrubland goldenaster (*Chrysopsis subulata*), fragrant eryngo (*Eryngium aromaticum*), and wild pennyroyal (*Piloblephis rigida*) are found only in peninsular Florida. False rosemary (*Conradina canescens*) and cottony goldenaster (*Chrysopsis gossypina*) are found only in the Panhandle.

Associated Communities: Scrubby flatwoods are associated with and often grade into mesic flatwoods, scrub, dry prairie, or sandhills. Scrubby flatwoods differs from mesic flatwoods and dry prairie in the presence of shrubby oaks characteristic of scrub (i.e., *Quercus myrtifolia*, *Q. geminata*, *Q. chapmanii*, and *Q. inopina*). It differs from scrub in the presence of longleaf or slash pine, wiregrass, a greater abundance of saw palmetto, and the presence of typical flatwoods shrubs such as gallberry and fetterbushes (*Lyonia* spp.). Structurally it differs from scrub in that its lack of a continuous cover of shrubby oaks. Scrubby flatwoods differ from sandhill by the absence or relatively low cover of deciduous oaks such as turkey oak (*Quercus laevis*) or bluejack oak (*Q. incana*).

Management Considerations: Scrubby flatwoods probably naturally had a high variability of fire return intervals intermediate between that for mesic flatwoods and scrub. In some areas understory re-growth may be so rapid as to may allow or require a temporary fire return interval as short as three years (Menges 2007). However, intervals of more than 5 years and less than 15 years would allow for maximal acorn production while preventing the oaks from attaining heights unfavorable to Florida scrub-jays. Within these upper and lower limits, variability in season and frequency of prescribed fires to produce a mosaic of burned and unburned patches would be most desirable for maintaining high biotic diversity in this community. Invasive exotic plants that can displace native species in disturbed scrubby flatwoods include Natal grass (*Rhynchelytrum repens*), cogon grass (*Imperata cylindrica*), and downy rose-myrtle (*Rhodomyrtus tomentosa*).

Reference Sites: Bald Point State Park (Franklin County), Wekiwa Springs State Park (Orange County), Three Lakes Wildlife Management Area (Osceola County), Jonathan Dickinson State Park (Martin County), St. Marks National Wildlife Refuge (Wakulla County), Lake Wales Ridge State Forest (Polk County), Split Oak Forest Mitigation Park Wildlife and Environmental Area (Orange County)

Global and State Rank: G3/S3

Crosswalk and Synonyms:

Kuchler	112/Southern Mixed Forest
Davis	2/Pine Flatwoods
SCS	6/South Florida Flatwoods
	7/North Florida Flatwoods

Myers and Ewel	Flatwoods - scrubby, xeric, or dry flatwoods
SAF	71/Longleaf Pine - Scrub Oak 72/Southern Scrub Oak 84/Slash Pine 111/South Florida Slash Pine
FLUCCS	411/Pine Flatwoods 419/Other Pines

Other synonyms: In contrast to this treatment, scrubby flatwoods on the Lake Wales Ridge (Abrahamson et al. 1984) and Welaka area (Laessle 1942) has been defined to include stands with a continuous cover of scrub oaks and little wiregrass in this treatment such vegetation would be included under scrub.

References:

Abrahamson, W.G., A.F. Johnson, J.N. Layne, and P.A. Peroni. 1984. Vegetation of the Archbold Biological Station, Florida: an example of the southern Lake Wales Ridge. *Florida Scientist* 47:209-250.

Breining, D.R., B.W. Duncan, and N.J. Dominy. 2002. Relationships between fire frequency and vegetation type in pine flatwoods of east-central Florida, USA. *Natural Areas Journal* 22:186-193.

Laessle, A.M. 1942. The plant communities of the Welaka area with special reference to correlations between soils and vegetational succession. *Biological Sciences Series* Vol. 4 No. 1. University of Florida Publication, Gainesville, Florida.

Main, K.N., and E.S. Menges. 1997. Archbold Biological Station fire management plan. 97-1 Land Management Publication. Archbold Biological Station, Lake Placid, Florida.

Menges, E.S. 2007. Integrating demography and fire management: an example from the Florida scrub. *Australian Journal of Botany* 55:261-272.

Ostertag, R., and E.S. Menges. 1994. Patterns of reproductive effort with time since last fire in Florida scrub plants. *Journal of Vegetation Science* 5:303-310.

United States Fish and Wildlife Service USFWS. 1999. Florida scrub (including scrubby flatwoods and scrubby high pine). South Florida multi-species recovery plan - Ecological communities. U.S. Fish and Wildlife Service. URL: <http://www.fws.gov/verobeach/images/pdflibrary/Florida%20scrub.pdf>

Woolfenden, G.E., and J.W. Fitzpatrick. 1992. Florida scrub jay (*Aphelocoma coerulescens*). Pages 1-28 in A.F. Poole and F.B. Gill, editors. *The Birds of North America* No. 228. The Academy of Natural Sciences of Philadelphia and the American Ornithologists' Union, Washington, D.C., Philadelphia.