

Plants of the Caloosa Experimental Range

by

J. B. Hilmon

Southeastern Forest Experiment Station

Asheville, North Carolina

Forest Service

U.S. Department of Agriculture

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The vegetation of southern Florida is poorly described in the literature, and the taxonomy and ecology of the pine-wiregrass type especially has been neglected by plant scientists. These deficiencies in plant knowledge were a serious obstacle when research commenced in 1956 on problems of grazing cutover pine flatwoods at the Caloosa Experimental Range.^{1/} Since then, plant collection and identification has been a high priority project. This paper presents a checklist of 189 vascular plants identified over the past 8 years, with a brief introduction to their habitat, abundance, and forage value.

ECOLOGICAL TYPES

As shown in figure 1, the pine flatwoods of southern Florida are split into an eastern region and a western region by the Sand Ridge Scrub-Istokpoga Prairie Basin on the north, Lake Okeechobee and the Everglades on the south.^{2/} The 1600-acre Caloosa Experimental Range in southcentral Charlotte County lies in the western flatwoods region. Three ecological types occur on the Range. In order of increasing flooding during the summer rainy season, these types are:

1. Slash pine-saw palmetto flatwoods forest (75 percent of the area). South Florida slash pine^{3/} occurs as scattered individuals or strands of trees. Numerous pine stumps indicate a well stocked stand of trees existed prior to the 1940's, when the area was heavily cutover. Natural regeneration has been sparse and has occurred primarily along wet prairies or ponds. Saw-palmettoes, mostly less than 3 feet tall, are the prevailing vegetation (fig. 2); and pineland threeawn, the common "wiregrass," is the predominant herb (fig. 3).

2. Wet prairie (10 percent of the area). This type is transition between the pine-palmetto and the fresh-water marsh, and herbaceous plants predominate here (figures 4 and 5). Pineland threeawn, bluejoint panicum, erect panicum, beakrushes, and razorsedges are common species.

^{1/} Maintained in Charlotte County, Florida, by the Southeastern Forest Experiment Station, Forest Service, USDA, in cooperation with Babcock Florida Company and Florida Board of Forestry.

^{2/} Davis, John H. The natural features of southern Florida. Fla. State Geol. Survey Bul. 25, 311 pp. 1943.

^{3/} Scientific names and authorities are presented in a checklist, pp. 11-24.

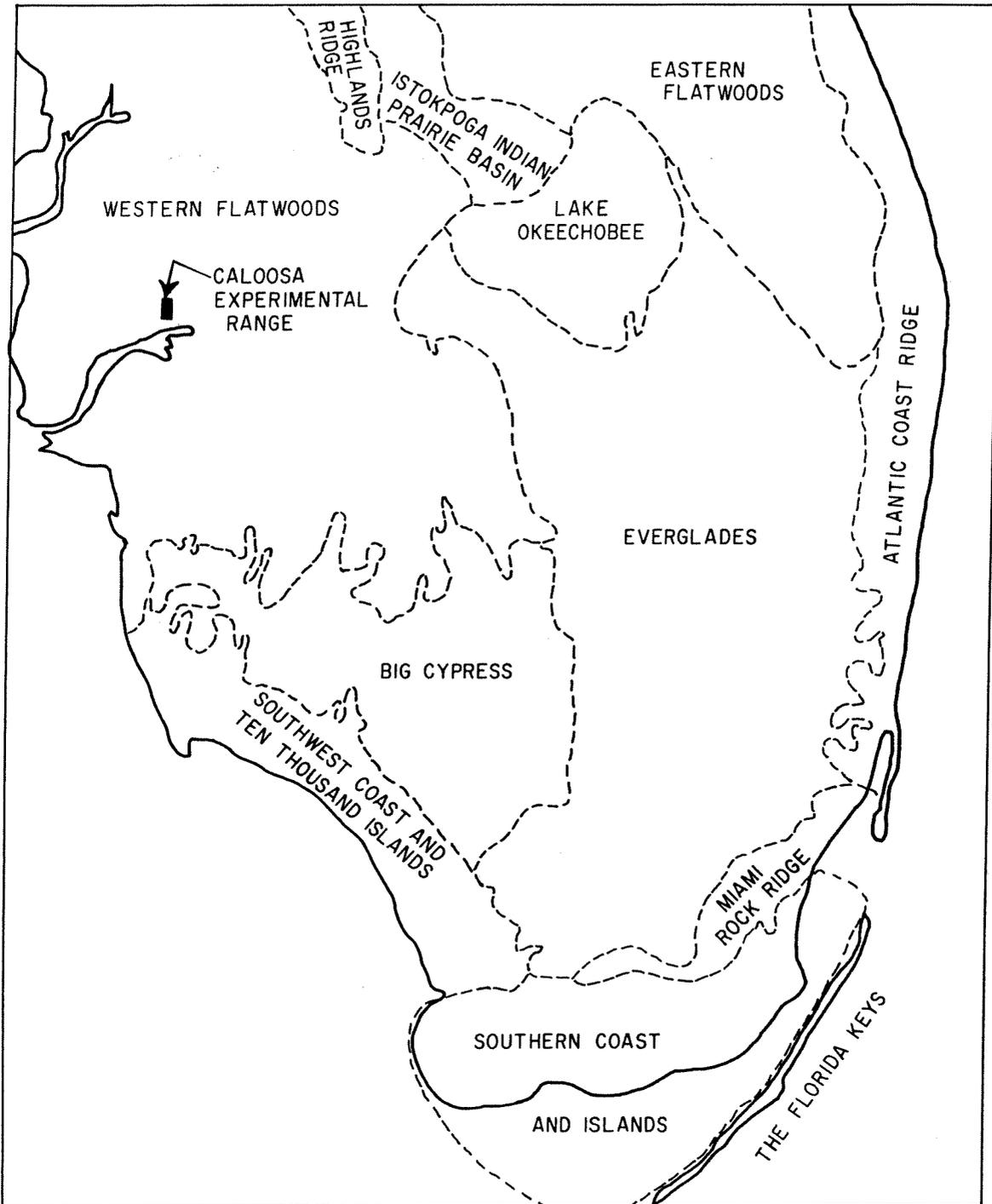


Figure 1.-- Physiographic regions and location of the Caloosa Experimental Range in southern Florida.

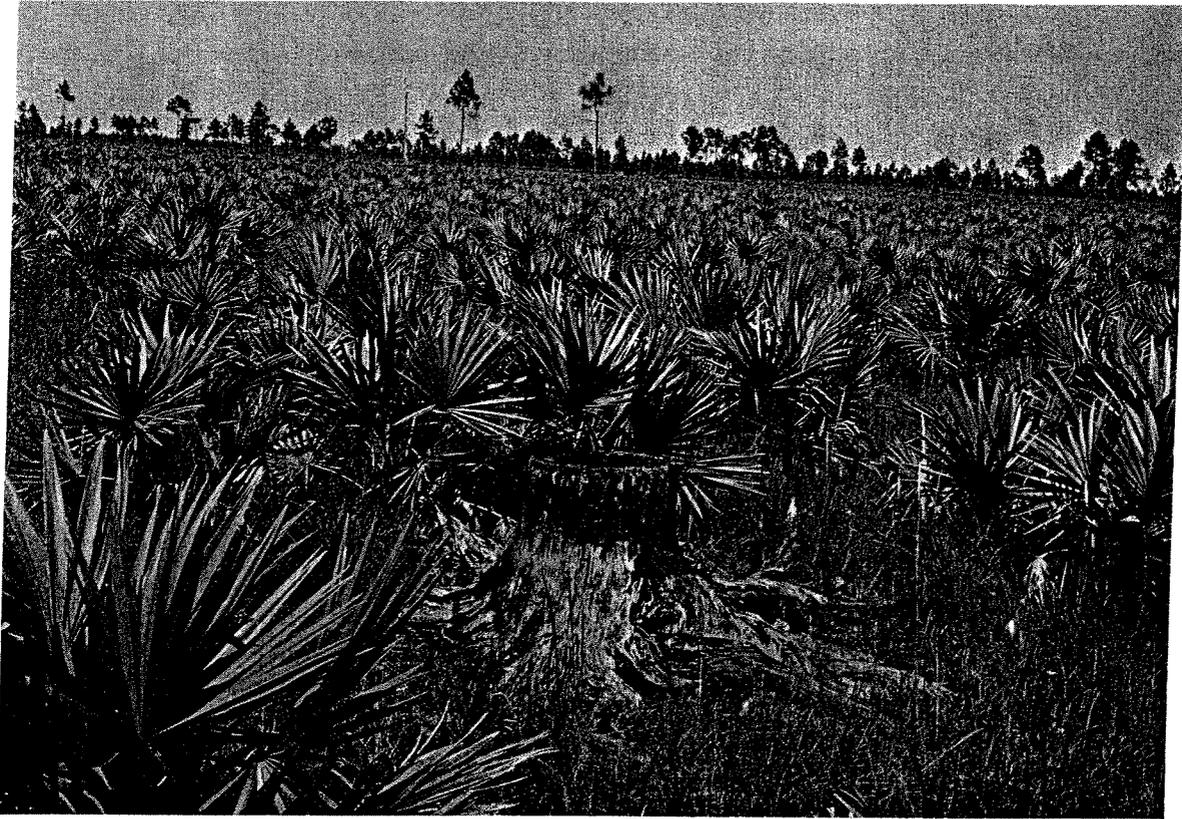


Figure 2.--Saw-palmetto is the prevailing vegetation in the cutover pine-palmetto type.

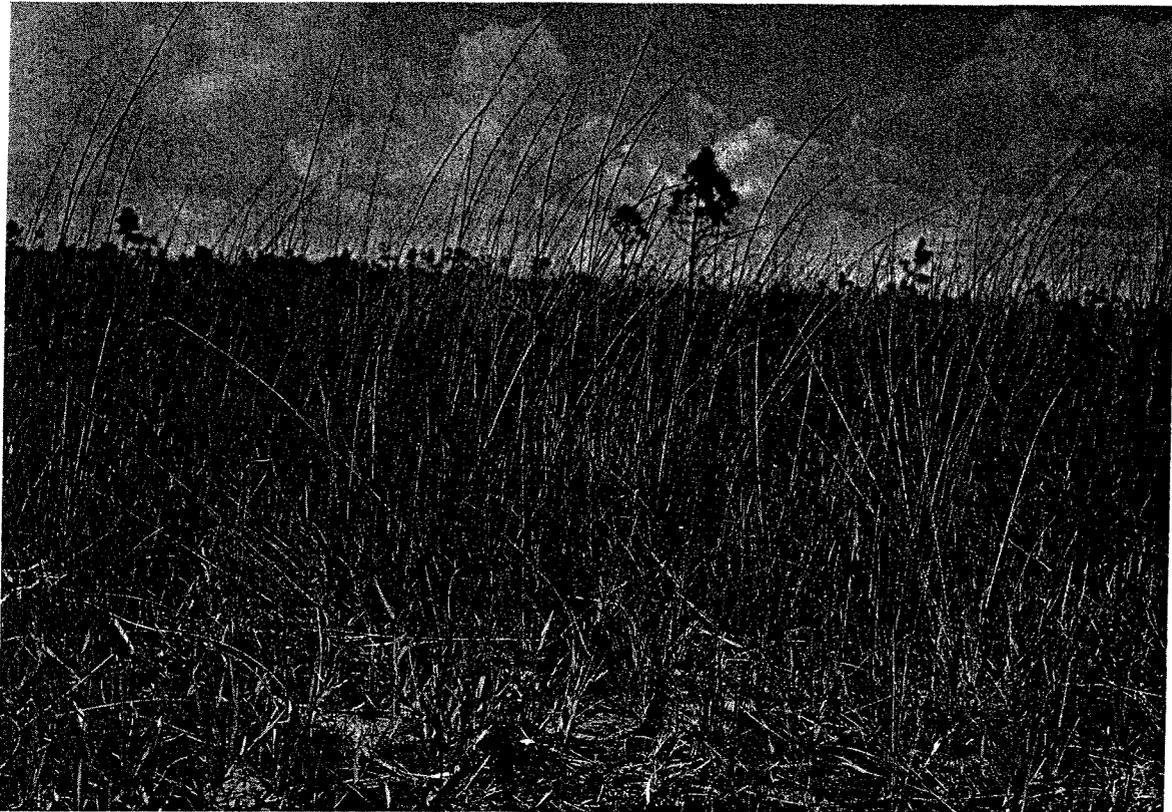


Figure 3.--Pineland threeawn (in head) is the predominant herb in the pine-palmetto type.
The primary associate on this site is goobergrass.



Figure 4.--Abrupt transition from pine-palmetto, left, to wet prairie, right.



Figure 5.-- Gradual transition from pine-palmetto (background) to wet prairie (foreground).

3. Fresh-water marsh, or pond (15 percent of the area). Ponds are dispersed along natural drainageways throughout the pine-palmetto type. Most are circular depressions with a center of pickerelweed (Pontederia lanceolata), common arrowhead (Sagittaria lancifolia), and some open water (fig. 6).

Rings of vegetation around these centers are dominated by herbs (bluejoint panicum, longleaf threeawn, striped beakrush) or the sandbush St. Johnswort. Colonies of maidencane, a nutritious forage plant, occur in some ponds. Cabbage palmetto grows on the drier borders of many ponds or in the edge of the pine-palmetto type (fig. 7).



Figure 6.--Open water of a fresh-water marsh occupied by scattered pickerelweed, a species of Xyris (foreground), and floating heart.



Figure 7.--Open water of fresh-water marsh occupied by maidencane (foreground) and longleaf threeawn. Shrubs in the next drier zone are southern waxmyrtle and sandbush St. Johnswort. Cabbage palmettos occupy the abrupt transition from marsh to pine-palmetto.

TOPOGRAPHY, SOILS, AND CLIMATE

Changes in sea level during the Ice Age (Pleistocene Epoch) caused most of the topographic features on the Caloosa. The marine sands left by the Talbot seas of the Sangamon interglacial stage were basic to formation of the sandy soils. Three main terraces are recognized in south Florida. Ranked by age, with the most recent first, they are: (1) the Pamlico, from sea level to 25 feet; (2) the Talbot, from 25 feet to 42 feet; and (3) the Penholoway, from 42 feet to 70 feet.^{4/} There is no sharp escarpment between the Pamlico and Talbot sands. Elevations on the Caloosa vary from 27 to 30 feet.

^{4/} See footnote 2.

Natural drainage is to the south and southeast into tributaries of the Caloosahatchee River. Streams have not cut sufficiently deep into the Talbot plain to provide thorough drainage. The ponds and wet prairies, underlain by calcareous materials which retard subsurface drainage, persist as distinct topographic features. Shallow canals, probably dug during the early 1940's, connect ponds by way of wet prairies and enhance surface drainage somewhat. However, water stands in the deeper ponds year-round, and considerable portions of the pine-palmetto type may be flooded during the rainy season. Records of surface water cover during early October 1956, near the culmination of the rainy season, indicated the following flooding conditions:

<u>Surface water depth</u> (Inches)	<u>Area</u> (Percent)
5.1 or more	15
1.1 to 5.0	18
0.1 to 1.0	13
None	54

Soils. --Soils are fine sands.^{5/} Three main groups include the four most extensive series (Adamsville, Leon, Keri, and Charlotte) and three minor series (Pompano, Immokalee, and Felda):

1. Imperfectly drained acid soils with organic-stained pan (Leon and Immokalee fine sands).
2. Imperfectly drained shallow soils over calcareous materials (Adamsville and Keri fine sands).
3. Poorly drained shallow soils over calcareous materials (Pompano, Felda, and Charlotte fine sands).

Leon and Adamsville fine sands are the predominant series on the Range; each of these composes about 25 percent of the surface area. Soils commonly associated with the ecological types defined earlier are:

<u>Ecological type</u>	<u>Soil series</u>
pine-palmetto	Leon, Adamsville, Keri, Immokalee
wet prairie	Charlotte
fresh-water marsh	Pompano (ponded), Felda (margins)

All the fine sands have low base exchange capacity; and most, even those underlain by calcareous materials, are acid near the surface. Soil pH in the surface 6 inches commonly ranges between 4.2 and 4.6.

^{5/} Soil surveys, courtesy Soil Conservation Service, USDA.

Climate. --Mean monthly temperatures vary from 64.5° F. in January to 82.7° F. in August, with an annual mean of 73.7° F. (U. S. Weather Bureau, Fort Myers, Fla.). On the Caloosa, maximum temperature rarely exceeds 95° F., and the minimum recorded in 7 years was 23° F. in December 1962.

Average annual precipitation at Fort Myers is 53.3 inches; 64 percent of this total falls in the June to September rainy season. Monthly precipitation from November through April averages only 1.8 inches, and a pronounced drought often develops in the late winter or spring. During the period 1957-1963, annual precipitation on the Caloosa averaged 61 inches. The rainy summer-droughty winter pattern persisted, but extreme variability characterized the monthly totals. During the 7-year period, total monthly precipitation ranged from 0.28 to 3.75 inches in December, and from 4.42 to 16.09 inches in July.

PLANT OCCURRENCE AND FORAGE VALUE

Production, utilization, and composition of herbage were inventoried at least five times each year on more than 400 circular plots, each 9.6 square feet, as a part of a study of range plant response to varying intensities of use by cattle. The estimates of plant occurrence and forage value in the checklist are from data taken on these plots.

Plant occurrence categories are defined as follows:

Abundant--species which occurred on 50 percent or more plots.

Common--species which occurred on 5 to 50 percent of the plots.

Infrequent--species which occurred on less than 5 percent of the plots.

Rare--species which occurred at only one or two locations on the Range, seldom if ever in herbage samples.

Only 10 species occurred on 50 percent or more of the plots, namely, pineland threeawn, bottlebrush threeawn, yellowsedge bluestem, goobergrass, little panicum, common beakrush, thread beakrush, little razorsedge, sundew, and saw-palmetto. Six of the nine abundant herbaceous species are typical "wiregrasses."

Pineland threeawn, which occurred on 99 percent of the sample plots in the pine-palmetto and wet prairie types, was the most frequent species. On a weight basis, pineland threeawn contributed 32 to 53 per-

cent of total herbage weight 3 months after a fire in 90-acre experimental units. On one single-acre tract, this wiregrass contributed 75 percent of total herbage weight. ^{6/} Sundew and little panicum are low in stature, and consequently contributed little to total herbage weight. Saw-palmetto, which occurred on slightly more than half of the plots, was the most frequent shrub.

Forage value to cattle is indicated by one of four categories:

Good--species preferred or selected by cattle, constituting a major proportion of cattle diet.

Fair--species consumed as a regular part of the diet of cattle, but not contributing a major part because of low palatability or infrequent occurrence.

Poor--species grazed infrequently or during periods when more palatable forage was lacking.

None--species not grazed, poisonous, or of such size that contribution to cattle diet was insignificant.

Only 12 grasses are rated as good forage: pineland threeawn, chalky bluestem, yellowsedge bluestem, creeping bluestem, fineleaf bluestem, goobergrass, common carpetgrass, Elliott lovegrass, coastal lovegrass, delicate panicum, maidencane, and lopsided indiagrass. Three species--pineland threeawn, yellowsedge bluestem, and goobergrass--are abundant and good forage.

Palatability and relative abundance of species are influenced by length of time since the range was burned. For example, pineland threeawn is eagerly sought by cattle for two or three months after the range is burned; thereafter, palatability declines. When the period of protection from fire extends to two or more years, pineland threeawn is not grazed, or grazed only lightly during periods of limited forage.

The 189 species listed in the checklist are grouped as follows:

grasses (Gramineae)	49 species
grasslikes (Cyperaceae and Juncaceae)	21 species
forbs	97 species
shrubs	20 species
trees	<u>2 species</u>
	189

^{6/} Hilmon, J. B., and Lewis, C. E. Effect of burning on south Florida range. U. S. Forest Serv. Southeast. Forest Expt. Sta. Paper 146, 12 pp. 1962.

The six genera with most species are: *Panicum* (13 species), *Andropogon* (7 species), *Rhynchospora* and *Polygala* (6 species each), *Aristida* and *Eragrostis* (5 species each).

Plants known to occur on the Range, but which have not been collected include:

1. *Aletris lutea*
2. *Ctenium aromaticum*
3. *Diodia hirsuta*
4. *Heliotropium* sp.
5. *Mariscus jamaicensis*
6. *Paspalum longepedunculatum*
7. *Pontederia lanceolata*
8. *Sagittaria graminea*
9. *Sagittaria lancifolia*
10. *Syngonanthus flavidulus*

CHECKLIST

PLANTS OF THE

CALOOSA EXPERIMENTAL RANGE

GRASSES

Botanical and common name	Plant community	Occurrence	Forage value
<u>Amphicarpum muhlenbergianum</u> (Schantz.) Hitchc. Perennial goobergrass Blue maidencane	Pine-palmetto Wet prairie	Abundant	Good
<u>Andropogon cabanisii</u> Hack. Cabanis bluestem	Pine-palmetto	Infrequent	Fair
<u>Andropogon capillipes</u> Nash Chalky bluestem	Pine-palmetto	Common	Good
<u>Andropogon eliottii</u> Chapm. Elliott bluestem	Pine-palmetto	Infrequent	Fair
<u>Andropogon longiberbis</u> Hack. Hairy bluestem	Pine-palmetto	Infrequent	Fair
<u>Andropogon stolonifer</u> (Nash) Hitchc. Creeping bluestem	Pine-palmetto	Common	Good
<u>Andropogon subtenuis</u> Nash Fineleaf bluestem	Pine-palmetto	Common	Good
<u>Andropogon virginicus</u> L. Yellowsedge bluestem Broomsedge bluestem	Pine-palmetto	Abundant	Good
<u>Aristida affinis</u> (Schult.) Kunth Longleaf threeawn	Fresh-water marsh	Common	Poor
<u>Aristida patula</u> Chapm. ex Nash Tall threeawn	Pine-palmetto	Infrequent	Poor
<u>Aristida purpurascens</u> Poir. Arrowfeather threeawn	Pine-palmetto	Common	Poor
<u>Aristida spiciformis</u> Ell. Bottlebrush threeawn	Pine-palmetto	Abundant	Poor
<u>Aristida stricta</u> Michx. Pineland threeawn	Pine-palmetto Wet prairie	Abundant	Good
<u>Axonopus affinis</u> Chase Common carpetgrass	Pine-palmetto	Common	Good
<u>Axonopus furcatus</u> (Flugge) Hitchc. Big carpetgrass	Pine-palmetto Wet prairie	Common	Fair
<u>Chrysopogon pauciflorus</u> (Chapm.) Benth. ex Vasey Florida rhapsis	Pine-palmetto	Infrequent	Poor



Yellowsedge bluestem

GRASSES

Botanical and common name	Plant community	Occurrence	Forage value
<u>Digitaria serotina</u> (Walt.) Michx. Blanket crabgrass	Fresh-water marsh	Rare	Fair
<u>Digitaria villosa</u> (Walt.) Pers. Shaggy fingergrass	Pine-palmetto	Rare	Fair
<u>Elyonurus tripsacoides</u> Humb. and Bonpl. ex Willd. PanAmerican balsamscale	Pine-palmetto	Rare	Fair
<u>Eragrostis acuta</u> Hitchc. Florida lovegrass	Pine-palmetto	Infrequent	Poor
<u>Eragrostis chariis</u> (Schult.) Hitchc. Thalia lovegrass	Pine-palmetto Fresh-water marsh	Rare	Poor
<u>Eragrostis elliottii</u> S. Wats. Elliott lovegrass	Pine-palmetto	Common	Good
<u>Eragrostis refracta</u> (Muhl.) Scribn. Coastal lovegrass	Pine-palmetto	Common	Good
<u>Eragrostis stenophylla</u> Hochst. Slimflower lovegrass	Pine-palmetto Fresh-water marsh	Infrequent	Poor
<u>Gymnopogon brevifolius</u> Trin. Slim skeletongrass	Pine-palmetto	Infrequent	Poor
<u>Leptochloa fascicularis</u> (Lam.) A. Gray Bearded sprangletop	Fresh-water marsh	Rare	Fair
<u>Manisuris rugosa</u> (Nutt.) Kuntze Wrinkled jointtail	Wet prairie	Infrequent	Poor
<u>Muhlenbergia capillaris</u> (Lam.) Trin. Hairawn muhly	Pine-palmetto Wet prairie	Common	Poor
<u>Panicum albomarginatum</u> Nash Whiteedge panicum	Pine-palmetto	Common	Fair
<u>Panicum arenicoloides</u> Ashe. Sand panicum	Pine-palmetto	Common	Fair
<u>Panicum chamaelonche</u> Trin. Delicate panicum	Pine-palmetto	Common	Good
<u>Panicum condensum</u> Nash	Pine-palmetto	Infrequent	Fair
<u>Panicum erectifolium</u> Nash Erect panicum	Wet prairie	Common	Fair



Bottlebrush threeawn

GRASSES

Botanical and common name	Plant community	Occurrence	Forage value
<u>Panicum hemitomom</u> Schult. Maidencane	Fresh-water marsh	Common	Good
<u>Panicum hians</u> Ell. Gaping panicum	Pine-palmetto	Infrequent	Fair
<u>Panicum lancearium</u> Trin. Lance panicum	Pine-palmetto	Common	Fair
<u>Panicum longiligulatum</u> Nash	Pine-palmetto	Infrequent	Fair
<u>Panicum neuranthum</u> Griseb.	Pine-palmetto	Infrequent	Fair
<u>Panicum pinetorum</u> Swallen Pine panicum	Pine-palmetto	Infrequent	Poor
<u>Panicum polycaulon</u> Nash Little panicum	Pine-palmetto	Abundant	Fair
<u>Panicum tenerum</u> Beyr. Bluejoint panicum	Pine-palmetto Wet prairie Fresh-water marsh	Common	Fair
<u>Paspalum distichum</u> L. Knotgrass	Fresh-water marsh	Infrequent	Poor
<u>Paspalum giganteum</u> Baldw. ex Vasey Giant paspalum	Pine-palmetto	Infrequent	Fair
<u>Paspalum lentiferum</u> Lam. Cypress paspalum	Pine-palmetto	Infrequent	Fair
<u>Paspalum monostachyum</u> Vasey Gulfdune paspalum	Pine-palmetto	Infrequent	Poor
<u>Sacciolepis striata</u> (L.) Nash American cupscale	Pine-palmetto	Rare	Poor
<u>Setaria geniculata</u> (Lam.) Beauv. Knotroot bristlegrass	Pine-palmetto	Infrequent	Poor
<u>Sorghastrum secundum</u> (Ell.) Nash Lopside indiagrass	Pine-palmetto	Common	Good
<u>Sporobolus junceus</u> (Michx.) Kunth Pineywoods dropseed Blue dropseed	Pine-palmetto	Infrequent	Fair

GRASSLIKES

Botanical and common name	Plant community	Occurrence	Forage value
<u>Cyperus polystachyos</u> Rottb. var. <u>texensis</u> (Torr.) Fern. Flatsedge	Pine-palmetto	Infrequent	None
<u>Dichromena colorata</u> (L.) Hitchc. Starrush whitetop-sedge	Wet prairie Fresh-water marsh	Common	Fair
<u>Eleocharis microcarpa</u> Torr. Annual spikesedge	Pine-palmetto	Infrequent	None
<u>Fimbristylis drummondii</u> Boeckl. Drummond fringesedge	Pine-palmetto	Common	Poor
<u>Fimbristylis puberula</u> (Michx.) Vahl Pond fringesedge	Fresh-water marsh	Infrequent	Poor
<u>Fuirena scirpoidea</u> Michx. Common umbrellagrass	Pine-palmetto Wet prairie Fresh-water marsh	Common	Fair
<u>Fuirena squarrosa</u> Michx. Salt-marsh umbrellagrass	Pine-palmetto Wet prairie	Infrequent	Poor
<u>Juncus marginatus</u> Rostk. Marginal rush	Pine-palmetto	Infrequent	Poor
<u>Juncus megacephalus</u> M. A. Curtis Largeheaded rush	Pine-palmetto	Infrequent	Poor
<u>Kyllinga brevifolia</u> L. Shortleafed sedge	Pine-palmetto	Infrequent	Poor
<u>Psilocarya nitens</u> (Vahl) Wood Shiny baldrush	Fresh-water marsh	Common	Poor
<u>Rhynchospora fascicularis</u> (Michx.) Vahl Common beakrush	Pine-palmetto	Abundant	Poor
<u>Rhynchospora filifolia</u> A. Gray Thread beakrush	Pine-palmetto	Abundant	Poor
<u>Rhynchospora globularis</u> Chapm. var. <u>recognita</u> Gale Gale's beakrush	Pine-palmetto	Infrequent	Poor
<u>Rhynchospora inundata</u> (Oakes) Fern. Pond beakrush	Fresh-water marsh	Infrequent	Poor
<u>Rhynchospora oligantha</u> A. Gray Few-flowered beakrush	Pine-palmetto	Common	Poor
<u>Rhynchospora tracyi</u> Britt. Striped beakrush	Wet prairie Fresh-water marsh	Common	Fair
<u>Scleria ciliata</u> Michx. Fringed razorsedge	Pine-palmetto	Infrequent	Poor
<u>Scleria georgiana</u> Core Little razorsedge	Pine-palmetto Wet prairie	Abundant	Poor
<u>Scleria muhlenbergii</u> Steud. Annual razorsedge	Pine-palmetto	Common	Fair
<u>Scleria verticillata</u> Muhl. Whorled razorsedge	Pine-palmetto	Infrequent	Fair

FORBS

Botanical and common name	Plant community	Occurrence	Forage value
<u>Asclepias connivens</u> Baldwin ex. Ell. Milkweed	Pine-palmetto	Infrequent	Poor
<u>Aster concolor</u> L. Uniform-leaf aster	Pine-palmetto	Infrequent	Poor
<u>Aster dumosus</u> L. Bushy aster	Pine-palmetto	Infrequent	Fair
<u>Bacopa caroliniana</u> (Walt.) Robins. Carolina waterhyssop	Fresh-water marsh	Common	Poor
<u>Bacopa monnieri</u> (L.) Pennell Coastal waterhyssop	Pine-palmetto	Infrequent	Poor
<u>Bartonia verna</u> (Michx.) Muhl. Bartonia	Pine-palmetto	Infrequent	Poor
<u>Bigelovia nudata</u> (Michx.) D. C. Yellowhead	Pine-palmetto Wet prairie	Common	Fair
<u>Buchnera floridana</u> Gandoger Florida blue-heart	Pine-palmetto	Common	Poor
<u>Calopogon barbatus</u> (Walt.) Ames Grasspink orchid	Pine-palmetto	Infrequent	Poor
<u>Carphephorus bellidifolius</u> (Michx.) T. & G. Common blazingstar	Pine-palmetto	Common	Poor
<u>Carphephorus corymbosus</u> (Nutt.) T. & G. Wooly blazingstar	Pine-palmetto	Infrequent	Poor
<u>Cassia aspera</u> Muhl. Senna Partridgepea	Pine-palmetto	Infrequent	Poor
<u>Chaptalia tomentosa</u> Vent. Sunbonnet	Pine-palmetto Wet prairie	Common	Poor
<u>Chrysopsis nervosa</u> (Willd.) Fern. Goldaster Silkgrass	Pine-palmetto	Common	Poor
<u>Clematis baldwinii</u> T. & G. Baldwin clematis	Pine-palmetto	Infrequent	Poor
<u>Cnidoscolus stimulosus</u> (Michx.) Engelm. & Gray Risky treadsoftly	Pine-palmetto	Infrequent	Poor

FORBS

Botanical and common name	Plant community	Occurrence	Forage value
<u>Commelina angustifolia</u> Michx. Narrowleaf dayflower	Pine-palmetto	Infrequent	Poor
<u>Coreopsis leavenworthii</u> T. & G. Coreopsis Tickweed	Pine-palmetto Wet prairie	Infrequent	Poor
<u>Crotalaria maritima</u> Chapm. Coastplain crotalaria	Pine-palmetto	Infrequent	Poor
<u>Cynoctonum sessilifolium</u> (Walt.) J. F. Gmel Miterwort	Pine-palmetto	Infrequent	Poor
<u>Diodia virginiana</u> L. Virginia buttonweed	Wet prairie	Rare	Poor
<u>Drosera capillaris</u> Poir. Pink sundew	Pine-palmetto	Abundant	None
<u>Dyschoriste oblongifolia</u> (Michx.) Kuntze Blue twinflower	Pine-palmetto	Infrequent	Poor
<u>Elephantopus tomentosus</u> L. Devil's-Grandmother Elephantfoot	Pine-palmetto	Common	Fair
<u>Erigeron vernus</u> (L.) T. & G. Early whitetop fleabane	Pine-palmetto	Common	Poor
<u>Eriocaulon lineare</u> Small Pipewort	Fresh-water marsh	Common	Poor
<u>Eupatorium recurvans</u> Small Curving eupatorium	Pine-palmetto	Common	Poor
<u>Euphorbia inundata</u> Torr. Longleaf spurge	Pine-palmetto	Infrequent	Poor
<u>Euphorbia polyphylla</u> Engelm. Pine spurge	Pine-palmetto	Common	Poor
<u>Gerardia filifolia</u> Nutt. Gerardia	Pine-palmetto	Infrequent	Poor
<u>Gnaphalium falcatum</u> Lem. Cudweed	Pine-palmetto	Infrequent	Poor
<u>Gratiola ramosa</u> Walt. Hedgehyssop	Fresh-water marsh	Common	Poor

FORBS

Botanical and common name	Plant community	Occurrence	Forage value
<u>Habenaria quinqueseta</u> (Michx.) A. Eaton Spider orchid	Pine-palmetto	Rare	None
<u>Helenium vernale</u> Walt. Sneezeweed	Pine-palmetto	Infrequent	Poor
<u>Hemianthus glomeratus</u> (Chapm.) Pennell Figwort	Pine-palmetto	Infrequent	Poor
<u>Hymenocallis palmeri</u> S. Wats. Alligator hymenocallis Spiderlily	Pine-palmetto Wet prairie	Infrequent	Fair
<u>Hypoxis juncea</u> J. E. Smith Goldstargrass	Pine-palmetto	Common	Poor
<u>Hyptis alata</u> (Raf.) Shinnery var. <u>stenophylla</u> Shinnery Bushmint	Pine-palmetto	Infrequent	Poor
<u>Lachnocaulon digynum</u> Koern. Hatpin	Pine-palmetto	Infrequent	Poor
<u>Lachnocaulon floridanum</u> Small Florida hairy pipewort Hatpin	Pine-palmetto	Common	Poor
<u>Lechea torreyi</u> Leggett var. <u>congesta</u> Hodgdon Pinweed	Pine-palmetto	Infrequent	None
<u>Liatris garberi</u> A. Gray Gayfeather	Pine-palmetto	Common	Fair
<u>Lindernia crustascea</u> (L.) F. von Mueller Crusted falsepimpernel	Pine-palmetto	Rare	Poor
<u>Lindernia grandiflora</u> Nutt. Creeping falsepimpernel	Fresh-water marsh	Rare	Poor
<u>Linum floridanum</u> (Planch.) Trel. Florida flax	Pine-palmetto	Infrequent	Poor
<u>Lobelia glandulosa</u> Walt. Glandular lobelia	Pine-palmetto	Infrequent	Poor
<u>Lobelia paludosa</u> Nutt. Marsh lobelia	Pine-palmetto	Infrequent	Fair

FORBS

Botanical and common name	Plant community	Occurrence	Forage value
<u>Ludwigia curtissii</u> Chapm. Curtis seedbox	Pine-palmetto Fresh-water marsh	Infrequent	Poor
<u>Ludwigia suffruticosa</u> Lam. Pond seedbox	Fresh-water marsh	Rare	Poor
<u>Lygodesmia aphylla</u> (Nutt.) D. C. Skeletonplant	Pine-palmetto	Infrequent	Poor
<u>Nymphoides aquatica</u> (Walt.) Ktze. Floatingheart	Fresh-water marsh	Common	Poor
<u>Oxypolis filiformis</u> (Walt.) Britt. Leafless cowbane	Fresh-water marsh	Infrequent	None
<u>Petalostemon carneum</u> Michx. Prairieclover	Pine-palmetto	Rare	Poor
<u>Physostegia denticulata</u> (Ait.) Britt. Lionsheart	Pine-palmetto	Infrequent	Poor
<u>Pinguicula caerulea</u> Walt. Violet butterwort	Pine-palmetto	Infrequent	Poor
<u>Pinguicula lutea</u> Walt. Yellow butterwort	Pine-palmetto	Infrequent	Poor
<u>Pinguicula pumila</u> Michx. Smallflower butterwort	Pine-palmetto	Infrequent	None
<u>Piriqueta glabrescens</u> Small Piriqueta	Pine-palmetto	Infrequent	Poor
<u>Pluchea foetida</u> (L.) D. C. Stinking fleabane	Pine-palmetto Wet prairie Fresh-water marsh	Common	None
<u>Podostigma pedicellata</u> (Walt.) Vail. Greenbells	Pine-palmetto	Infrequent	Poor
<u>Polygala baldwinii</u> Nutt. Baldwin's polygala White bachelor's button	Pine-palmetto	Infrequent	Poor
<u>Polygala grandiflora</u> Walt. Purple candyweed	Pine-palmetto	Infrequent	Poor
<u>Polygala incarnata</u> L. Procession flower	Pine-palmetto	Infrequent	Poor
<u>Polygala lutea</u> L. Orange candyweed	Pine-palmetto	Infrequent	Poor

FORBS

Botanical and common name	Plant community	Occurrence	Forage value
<u>Polygala ramosa</u> Ell. Yellow candyweed	Pine-palmetto Wet prairie	Infrequent	Poor
<u>Polygala setacea</u> Michx. Pale candyweed	Pine-palmetto	Infrequent	Poor
<u>Polypremum procumbens</u> L. Rustweed	Pine-palmetto	Infrequent	Poor
<u>Proserpinaca pectinata</u> Lam. Combleaf mermaidweed	Fresh-water marsh	Common	Poor
<u>Pterocaulon undulatum</u> (Walt.) C. Mohr. Blackroot	Pine-palmetto Wet prairie	Common	None
<u>Rhexia cubensis</u> Griseb. Florida meadowbeauty	Wet prairie	Infrequent	Poor
<u>Rhexia nuttallii</u> James Nuttall's meadowbeauty	Pine-palmetto	Infrequent	Poor
<u>Rotala ramosier</u> (L.) Koehne Rotala	Wet prairie	Rare	Poor
<u>Rudbeckia hirta</u> L. Blackeyesdusan	Pine-palmetto	Infrequent	Poor
<u>Ruellia heteromorpha</u> Fern. Variable ruellia	Pine-palmetto	Infrequent	Poor
<u>Ruellia humilis</u> Nutt. Low ruellia	Pine-palmetto	Infrequent	Poor
<u>Sabatia brevifolia</u> Raf. White rosegentian	Pine-palmetto	Common	Poor
<u>Sabatia grandiflora</u> (A. Gray) Small Grand rosegentian	Wet prairie	Common	Poor
<u>Samolus ebracteata</u> HBK. Water pimpernel	Wet prairie	Infrequent	Poor
<u>Schoenolirion albiflorum</u> (Raf.) Gates White sunnybell	Fresh-water marsh	Infrequent	Poor
<u>Scutellaria avenicola</u> Small Skullcap	Pine-palmetto	Infrequent	Poor
<u>Sisyrinchium graminoides</u> Bickn. Blue-eyedgrass	Pine-palmetto	Infrequent	Poor

FORBS

Botanical and common name	Plant community	Occurrence	Forage value
<u>Solidago chapmanii</u> T. & G. Chapman goldenrod	Pine-palmetto	Infrequent	Poor
<u>Sophranathe hispida</u> Benth. Upland hyssop	Pine-palmetto	Common	None
<u>Spiranthes longilabris</u> Lindl. Ladiestresses	Pine-palmetto	Infrequent	Poor
<u>Stenandrium floridanum</u> (A. Gray) Small Stenandrium	Pine-palmetto	Infrequent	Poor
<u>Tephrosia spicata</u> (Walt.) T. & G. Brownhair tephrosia Hoary-pea	Pine-palmetto	Infrequent	Poor
<u>Tradescantia rosea</u> Vent. var. <u>graminea</u> (Small) Anders. & Woodson Spiderwort	Pine-palmetto	Infrequent	Poor
<u>Trilisa carnosia</u> (Small) Robins. Trilisa	Pine-palmetto	Infrequent	Poor
<u>Utricularia cornuta</u> Michx. Horned bladderwort	Fresh-water marsh	Common	None
<u>Utricularia resupinata</u> B. D. Greene Turned bladderwort	Fresh-water marsh	Common	None
<u>Vernonia texana</u> (A. Gray) Small Texas ironweed	Pine-palmetto	Infrequent	Poor
<u>Viola lanceolata</u> L. ssp. <u>vittata</u> (Green) Russell Lanceleaf violet	Pine-palmetto	Infrequent	Poor
<u>Viola septemloba</u> LeConte Sevenlobe violet	Pine-palmetto	Infrequent	Poor
<u>Xyris brevifolia</u> Michx. Annual yelloweyedgrass	Pine-palmetto	Infrequent	None
<u>Xyris elliottii</u> Chapm. Common yelloweyedgrass	Pine-palmetto Wet prairie	Common	Poor
<u>Xyris flexuosa</u> var. <u>pallescens</u> Poir. Twisted yelloweyedgrass	Pine-palmetto	Infrequent	Fair
<u>Zephyranthes treatiae</u> S. Wats. Treats zephyrlily	Pine-palmetto	Infrequent	None

SHRUBS

Botanical and common name	Plant community	Occurrence	Forage value
<u>Ascyrum tetrapetalum</u> (Lam.) Vail. St. Andrewscross	Pine-palmetto	Common	None
<u>Asimina reticulata</u> Shuttlw. ex Chapm. Seminoletea pawpaw	Pine-palmetto	Common	Poor
<u>Befaria racemosa</u> Vent. Tarflower befaria	Pine-palmetto	Common	Poor
<u>Cephalanthus occidentalis</u> L. Common buttonbush	Fresh-water marsh	Rare	None
<u>Chrysobalanus oblongifolius</u> Michx. Gopherapple	Pine-palmetto	Common	None
<u>Hypericum brachyphyllum</u> (Spach) Steud. Pineland St. Johnswort	Pine-palmetto	Common	None
<u>Hypericum fasciculatum</u> Lam. Sandbush St. Johnswort	Fresh-water marsh	Common	None
<u>Hypericum myrtifolium</u> Lam. Polebark St. Johnswort	Fresh-water marsh	Infrequent	None
<u>Hypericum opacum</u> T. & G. Single-stem St. Johnswort	Pine-palmetto	Infrequent	None
<u>Ilex glabra</u> (L.) A. Gray Inkberry Gallberry	Pine-palmetto	Infrequent	None
<u>Lyonia fruticosa</u> (Michx.) G. S. Torr. Lyonia Fetterbush	Pine-palmetto	Common	None
<u>Myrica cerifera</u> L. Southern waxmyrtle	Pine-palmetto Wet prairie	Infrequent	Poor
<u>Myrica pusilla</u> Raf. Dwarf waxmyrtle	Pine-palmetto	Common	None
<u>Pycnothymus rigidus</u> (Bartr.) Small Pennyroyal	Pine-palmetto	Common	Fair
<u>Quercus minima</u> (Sarg.) Small Runner oak Dwarf live oak	Pine-palmetto	Common	None
<u>Quercus myrtifolia</u> Willd. Myrtle oak	Pine-palmetto	Rare	None
<u>Serenoa repens</u> (Bartr.) Small Saw-palmetto	Pine-palmetto	Abundant	Poor
<u>Stillingia aquatica</u> Chapm. Corkwood stillingia	Fresh-water marsh	Common	None
<u>Stillingia sylvatica</u> L. Queensdelight stillingia	Pine-palmetto	Infrequent	None
<u>Vaccinium myrsinites</u> Lam. Ground blueberry Huckleberry	Pine-palmetto	Common	None

TREES

Botanical and common name	Plant community	Occurrence	Forage value
<u>Pinus elliottii</u> Engelm. var. <u>densa</u> Little & Dorman South Florida slash pine	Pine-palmetto	Common	None
<u>Sabal palmetto</u> (Walt.) Lodd. Cabbage palmetto	Pine-palmetto	Infrequent	None



Pineland threeawn