26 ECOLOGICAL COMMUNITIES OF FLORIDA

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Florida Chapter

Soil and Water Conservation Society

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-- ACKNOWLEDGEMENT --

In 1985, the Soil Conservation Service of the U. S. Department of Agriculture printed "26 Ecological Communities of Florida." The booklet was developed primarily as a supplement to SCS Technical Guides for Florida, but additional copies were made available to the public. This supply was soon depleted. Since SCS Technical Guides are working documents that are changed as needed to incorporate better information, some revisions had been made by spring of 1987. However, due to budget constraints, there were no plans to print the updated version for public distribution.

Recognizing the demand and the need for making this type of information readily available, the Florida Chapter of the Soil and Water Conservation Society printed the revised version and made it available to the public in March of 1987. The second printing has also been depleted, so this is the third printing, and the SCS has made only two major changes in this edition: one is that several new soil series have been added to the soils table and the other is to change the name of the Sand Pine Scrub community to simply Sand Scrub. This name seems to be more appropriate, since often the community may not have sand pine present. All pages that have any changes will have the present date.

One thing that should be pointed out is that the write up on Endangered and Threatened Plants and Animals in each community is not up-to-date and is badly in need of revision. No attempt was made to do this, since the lists are constantly changing and thus the write-ups would be out-of-date again as soon as the books were printed. Updated lists are maintained in the Soil Conservation Service offices and you are encouraged to check with your local SCS offices for the latest information on these threatened species.

We are proud to be able to make this excellent publication available and would like to thank the Soil Conservation Service for allowing us the opportunity to print it. Our hope for this publication is that it will prove to be an important tool that can be useful for education and land use planning decisions as our soil, water, and related resources come under increasing pressure from Florida's rapid growth.

Florida Chapter Soil
and Water Conservation
Society (SWCS) *

* formerly Soil Conservation Society of America

July 1, 1989

TABLE OF CONTENTS

	PAGE
Introduction	1
1 - North Florida Coastal Strand	2
2 - South Florida Coastal Strand	8
3 - Sand Scrub	14
4 - Longleaf Pine-Turkey Oak Hills	20
5 - Mixed Hardwood and Pine	26
6 - South Florida Flatwoods	32
7 - North Florida Flatwoods	38
8 - Cabbage Palm Flatwoods	44
9 - Everglades Flatwoods	50
10 - Cutthroat Seeps	56
11 - Upland Hardwood Hammocks	61
12 - Wetland Hardwood Hammocks	67
13 - Cabbage Palm Hammocks	73
14 - Tropical Hammocks	75
15 - Oak Hammocks	81
16 - Scrub Cypress	83
17 - Cypress Swamp	88
18 - Salt Marsh	95
19 - Mangrove Sawmp	101
20 - Bottomland Hardwoods	106
21 - Swamp Hardwoods	111
22 - Shrub Bogs - Bay Swamps	117
23 - Pitcher Plant Bogs	123

TABLE OF CONTENTS

PAGE

24 - Sawgrass Marsh 128

25 - Freshwater Marsh 133

26 - Slough 141

Climatic Zone Map 146

APPENDICES

Appendix A--Correlation of Soils Series with Ecological Community

Appendix B--Ecological Community Plant Tables

Appendix C--Ecological Community Animal Tables

List of Birds

References

INTRODUCTION

The ecological community concept as used in this booklet is based on the awareness that a soil type commonly supports a specific vegetative community, which in turn provides the habitat needed by specific wildlife species.

These vegetative communities form recognizable units in the landscape, most of which are apparent to the casual observer after only a little training. Even with no botanical training, an observer can soon distinguish between pine flatwoods and pine-turkey oak sandhills; between hardwood hammocks and cypress swamps; and between mangrove swamps and salt marsh. Once the community is recognized, information can be found concerning the general characteristics of the soil in which it occurs and the types of plants and animals that commonly occur there.

In the mid-1970's, Soil Conservation Service plant and soil scientists began to try to draw all this information together for the communities most often encountered by SCS personnel in their work. Field studies were made, in addition to consulting many reference works. Twenty-six different communities were identified, although this is by no means a complete listing of communities occurring in Florida. Strictly aquatic communities (such as lakes, rivers and bays) were not included, and the 26 picked could obviously be broken down more--or lumped together--depending on which characteristics are of most interest. These 26 were picked based on how knowledge about them would be useful in SCS field work, which constantly involves environmental evaluations.

The information was sent to SCS field office Technical Guides as a "working draft" in 1978. Since that time, field check and refinements have been made and this booklet presents the up-dated information. This booklet has been developed primarily as a supplement to SCS Technical Guides for Florida.

The communities described are essentially the climax types that occur in nature where man's influence has not greatly altered them. In other words, they have evolved through natural plant succession over long periods of time. Under this concept, even a cropfield would be expected to revert to a specific type of climax community if man's influence were removed. For instance, a Norfolk soil in northwest Florida that now supports a corn field was originally a Mixed Hardwood-Pine forest community and would return to that community within 50 to 75 years if the field were to be abandoned. By contrast, a Hontoon muck in south florida that has been drained and is being used to produce vegetables would revert to a freshwater marsh within only a few years if the drainage were stopped.

The more we recognize the characteristics and values of our natural ecological communities, the wiser the decisions we can make regarding the use and care of these resources. It is hoped that the information in this booklet will help to lead to these wise decisions.

1 - NORTH FLORIDA COASTAL STRAND

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960. Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-1
FEBRUARY 1968 BASE 4-L-25770

Typical coastal strand in west Florida

Coastal strands from Panama City to Alligator Point are normally low in height and narrow in width

Sea oats, Uniola paniculata, are dominant on the dune portion of coastal strands.

ECOLOGICAL COMMUNITY

NO. 1 - NORTH FLORIDA COASTAL STRAND

OCCURRENCE

The North Florida Coastal Strand ecological community occurs along the Atlantic Ocean north of Indian River County and along the Gulf of Mexico west of Alligator Point in Franklin County. Individual communities are generally large in size, being narrow and long, parallel to the coastal beaches. Small, isolated communities can also be found along some bays or sounds. This community generally encompasses the area affected by salt spray from the ocean, Gulf and salt water bays.

DESCRIPTION

This community occurs on nearly level to strongly sloping land. It is easily identified by its location adjacent to the Atlantic Ocean and Gulf of Mexico and by plants that are adapted to or influenced by the salty environment. Small areas of hammock may occur on the more inland parts of the community.

1. Soil

The soils are nearly level to strongly sloping, deep, mostly well to excessively drained with some being moderately well drained or somewhat poorly drained. They are coarse textured throughout. Representative soils include: Canaveral, Corolla, Fripp, Newhan and Palm Beach. In Escambia County, it is the areas mapped as coastal dune land and beach. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

The natural vegetation of this community is low growing grasses, vines, and herbaceous plants with few trees or large shrubs. These trees and shrubs often occur in stunted form due to the action of the wind. The natural forces of wind, salt, and blowing sand make plant establishment difficult on the foredunes. Plants which do establish here are well adapted to disturbance and are pioneer species. The backdunes will often have vegetation similar to the Sand Pine Scrub and the Wetland Hardwood Hammock ecological communities. Plants which characterize this community are:

TREES - Cabbage palm, Sabal palmetto; Sand live oak, Quercus virginiana var. maritima; Live oak, Quercus virginiana

SHRUBS - Marshelder, Iva imbricata; Sawpalmetto, Serenoa repens; Spanish bayonet, Yucca aloifolia; Yaupon holly, Ilex vomitoria; Red bay, Persea borbonia

HERBACEOUS PLANTS AND VINES - Blanket flower, Gaillardia pulchella; Fiddleleaf morning-glory, Ipomoea stolonifera; Largeleaf pennywort, Hydrocotyle bonariaensis; Sea purslane, Sesuvium portulacastrum; greenbriars, Smilax spp.; Wildgrape, Vitis spp.

GRASSES AND GRASSLIKE PLANTS - Bitter panicum, Panicum amarum; Gulf bluestem, Schizachyrium maritimus; Marshhay cordgrass, Spartina patens; Sandbur, Cenchrus spp.; Seaoats, Uniola paniculata; Seashore paspalum, Paspalum vaginatum; Seashore panicum, Panicum amarum; Low panicum, Panicum spp.; Seashore saltgrass, Distichlis spicata

Additional plants that are known to occur in this community are in Appendix B.

3. Animals

A variety of shorebirds, terns, and gulls can be found on or near the beach. This community provides a good food source as well as nesting sites. Crustaceans such as crabs are numerous near the shorelines. This area also serves as nesting grounds for sea turtles. Small mammals can also be found on the coastal dunes and larger mammals behind the foredunes. The most common species are:

MAMMALS - Bobcats, foxes, mice, raccoons, skunks, and similar mammals also inhabit the community.

BIRDS - American kestrel, gulls, pelicans, shorebirds, terns, and other predatory birds and a number of songbirds in the backdune areas.

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

The coastal strand is highly endangered. Areas privately owned but undeveloped are in demand for residences, hotels, and motels. This urban development can have serious effects on the community. Coastal strands are important in regulating wave action along the coast. This action tends to break away part of one beach and build up another. Unplanned structures and development which alter this process accelerates beach and coastal dune erosion. Clearing and leveling of dunes for development also cause erosion through removal of native vegetation which helps hold the dune together, and by removal of sand from the offshore transport system.

Recreational use and wildlife values on the coastal strand are important. Recreation is much in demand in these areas but can cause damage due to trampling and destroying vegetation. When these plants die, their extensive root systems are no longer available to hold the

soil together and build the dune. Occasional use may also degrade this fragile community. This community is not generally used for agriculture or woodland.

2. Rangeland

This community is not generally used for rangeland.

3. Wildlifeland

Well suited for a variety of shorebirds, gulls and terns. The native grasses and legumes provide good food sources and nesting sites. The area is important as a nesting ground for sea turtles. It is suited for mammals such as mice, raccoons, bobcats, foxes, and skunks. Many songbirds also inhabit the area.

4. Woodland

This community is not generally used for woodland.

5. Urbanland

The better drained areas inland from the ocean or gulf have few limitations for urban development. Areas adjacent to the water may be subject to coastal dune and beach erosion. This is especially true where construction alters the natural processes and destroys excessive amounts of native vegetation. The section on Environmental Value as a Natural System further explains these concerns. Vegetation is difficult to establish because of the infertile, coarse textured, well to excessively well drained and saline soils and the salt spray. Intensive vegetation establishment and maintenance methods are needed for best results. Without vegetation, water and wind erosion can become a problem during and after construction.

Plants native to the community should receive preference for beautification and landscaping. This is because they are more easily established and require less maintenance. Some of the trees are cabbage palm, chickasaw plum, live oak, redbay, redcedar, slash pine, magnolia, and sand pine. Some of the shrubs are beargrass, prickly pear cactus, coontie, coral bean, yaupon holly, lantana, marshelder, partridge pea, sawpalmetto, spanish bayonet, and waxmyrtle. Some of the grasses are sea oats, marshhay cordgrass, bitter panicum, seashore saltgrass, Gulf bluestem, seashore paspalum, seashore dropseed, common bermudagrass, and shoredune panicum. Some of the herbs and vines are beach morning-glory, fiddler-leaf morning-glory, blanket flower, largeleaf pennywort, sea purslane, greenbriars, and wild grape.

The most important urban wildlife are songbirds, shorebirds such as terns, and gulls, and crustaceans such as crabs and sea turtles. Undisturbed areas are also inhabited by other birds and various mammals. These areas also provide food and escape cover for many forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered or threatened plants may occur in this community:

Gulfcoast lupine, *Lupinus westinanus*; Godfrey's blazing-star, *Liatris provincialis*

The following endangered or threatened wildlife species may be found in or around this community:

MAMMALS - Choctawhatchee beach mouse (Okaloosa, Walton and Bay Counties), *Peromyscus polionotus allophyrs*; Goff's pocket gopher, *Geomys pinetis goffi*; Pallid beach mouse (Atlantic Coast), *Permoyscus polionotus decoloratus*; Perdido Bay beach mouse (Escambia County only), *Peromyscus polionotus trissyllepsis*

BIRDS - Southeastern snowy plover, *Charadrius alexandrinus tenuirostris*; Florida scrub jay, *Aphelocoma coerulescens coerulescens*; Least tern, *Sterna antillarum*; Southeastern kestrel, *Falco sparverius paulus*; Artic peregrine falcon, *Falco peregrinus tundrius*; Roseate tern, *Sterna dougallii*

REPTILES - Atlantic hawksbill turtle, *Eretmochelys imbricata imbricata*; Atlantic loggerhead turtle, *Caretta caretta caretta*; Atlantic green turtle, *Chelonia mydas mydas*; Atlantic ridley turtle, *Lepidocheyls kempi*; Leatherback turtle, *Dermochelys coriacea*

2 - SOUTH FLORIDA COASTAL STRAND

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS (MI)

FEBRUARY 1981 4-R-36720-
FEBRUARY 1968 BASE 4-L-25770

Coconut palm, Cocos nucifera, are common in South Florida coastal strands.

Coastal strands are important recreational areas in South Florida.

Australian pine (Casuarina spp.) and sea grape (Coccoloba uvifera) are two woody plants typically found on strands along Florida's southeast coast.

ECOLOGICAL COMMUNITY

NO. 2 - SOUTH FLORIDA COASTAL STRAND

OCCURRENCE

The South Florida Coastal Strand ecological community occurs along the Atlantic Ocean south of Brevard County and along the Gulf of Mexico south of Pasco County. Individual communities are generally large in size, being narrow and long, parallel to the coastal beaches. Small, isolated communities can also be found along some bays or sounds. This community generally encompasses the area affected by salt sprays from the ocean, Gulf and salt water bays.

DESCRIPTIONS

This community occurs on nearly level to strongly sloping land. It is easily identified by its location adjacent to the Atlantic Ocean and Gulf of Mexico and by plants that are adapted to or influenced by the salty environment. Small areas of hammock may occur on more inland parts of this community.

1. Soil

The soils are nearly level to strongly sloping, deep, mostly well to excessively drained with some moderately well drained or somewhat poorly drained. They are coarsely textured throughout. Representative soils include: Canaveral and Palm Beach. It also includes areas mapped as Coastal Beach and Coastal Beach Ridges. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

The natural vegetation of this community is low growing grasses, vines, and herbaceous plants with few trees or large shrubs. These trees and shrubs often occur in stunted form due to the action of the wind. The natural forces of wind, salt, and blowing sand make plant establishment difficult on the foredunes. Plants which do establish here are well adapted to disturbance and are pioneer species. The backdunes will often have vegetation similar to the sand pine scrub or the wetland hardwood hammock ecological communities. Plants which characterize this community are:

TREES - Australian pine, Casuarine equisetifolia; Cabbage palm, Sabal palmetto; Coconut palm, Cocos nucifera; Sand live oak, Quercus virginiana var. maritima

SHRUBS - Bay cedar, Suriana maritima; Coco plum, Chrysobalanus icaco; Inkberry, Scaevola plumieri; Marshelder, Iva imbricata; Sawpalmetto, Serenoa repens; Silverleaf croton, Croton punctatus; Spanish bayonet, Yucca aloifolia; Sea grape, Coccoloba uvifera

HERBACEOUS PLANTS AND VINES - Bay bean, Canavalia maritima; Beach morning-glory, Ipomoea pes-caprae; Cucumberleaf sunflower, Helianthus debilis; Sea purslane, Sesuvium portulacastrum; Greenbriars, Smilax spp.; Wild grape, Vitis spp.

GRASSES AND GRASSLIKE PLANTS - Bitter panicum, Panicum amarum; Marshhay cordgrass, Spartina patens; Sandbur, Cenchrus spp.; Seaoats, Uniola paniculata; Seashore paspalum, Paspalum vaginatum; Seashore saltgrass, Distichlis spicata; Low panicum, Panicum spp.

Additional plants that occur in this community are in Appendix B.

3. Animals

A variety of shorebirds, terns, and gulls can be found on or near the beach. This community provides good food sources as well as nesting sites. Small mammals can also be found on the coastal dunes. Larger mammals also occur behind the foredunes. Some species that occur are:

MAMMALS - Bobcat, fox, rabbits, skunks, raccoon, mice

BIRDS - American kestrel, pelicans, gulls, terns, shorebirds, songbirds

REPTILES - Alligator, frogs, lizards

This area also serves as nesting grounds for sea turtles. Crustaceans such as crab are numerous near the shorelines. Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

The coastal strand is highly endangered. Areas privately owned but undeveloped are in demand for residences, hotels and motels. This urban development can have serious effects on the community. Coastal strands are important in regulating wave action along the coast. This action tends to break away part of one beach and build up another. Unplanned structures and development which alter this process accelerates beach and coastal dune erosion. Clearing and leveling of dunes for development also cause erosion through removal of native vegetation, which helps hold the dune together, and by removal of sand from the offshore transport system.

Recreational use and wildlife values on the coastal strand are important. Recreation is much in demand in these areas but can cause damage due to trampling and destroying vegetation. When these plants die, their extensive root systems are no longer available to hold the soil together and build the dune. Occasional use may also degrade this fragile community. This community is not generally used for agriculture or woodland.

2. Rangeland

This community is not generally used for rangeland.

3. Wildlifeland

Well suited for a variety of shorebirds, gulls, and terns. The native grasses and legumes provide a good food sources and nesting sites. The area is important as a nesting ground for sea turtles. It is suited for mammals such as mice, raccoons, bobcats, foxes, and skunks. Many songbirds also inhabit the area.

4. Woodland

This community is not generally used for woodland.

5. Urbanland

The better drained areas inland from the ocean or gulf have few limitations for urban development. Areas adjacent to the water may be subject to coastal dune and beach erosion. This is especially true where construction alters the natural processes and destroys excessive amounts of native vegetation. The section on Environmental Value as a Natural System further explains these concerns. Vegetation is difficult to establish because of the infertile, coarse textured, well to excessively well drained and saline soils and the salt spray. Intensive vegetation establishment and maintenance methods are needed for best results. Without vegetation, water and wind erosion can become a problem during and after construction.

Plants native to the community should receive preference for beautification and landscaping. This is because they are more easily established and require less maintenance. Some of the trees are cabbage palm, coco plum, Florida thatch palm, Florida silver palm, Florida cherry palm, live oak, pidgeon plum, redbay, slash pine, magnolia, wild tamarind, tree hibiscus and sand pine. Some of the shrubs are beargrass, prickly pear cactus, sea grape, coontie, coral bean, yaupon holly,lantana, marshelder, partridge pea, sawpalmetto, spanish bayonet and waxmyrtle. Some of the grasses are sea oats, marshhay cordgrass, bitter panicum, seashore saltgrass, Gulf bluestem, seashore paspalum, seashore dropseed, common bermudagrass, and shoredune panicum. Some of the herbs and vines are beach morning-glory, fiddle-leaf morning-glory, blanket flower, largeleaf pennywort, sea purslane, greenbriars, and wild grape.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered or threatened plants may occur in this community:

HERBACEOUS PLANTS AND VINES - Beach star, *Remirea maritima*;
Small-flowered lily-thorn, *Catesbaea parviflora* (Keys);
Burrowing Four-O'clock, *Okenia hypogaea*

The following endangered or threatened wildlife species may be found in or around this community:

MAMMALS - Pallid beach mouse, Peromyscus polionotus decoloratus, Goff's pocket gopher, Geomys pinetis goffi

BIRDS - Arctic Peregrine falcon, Falco peregrinus tundrius; Southeastern snowy plover, Charadrius alexandrinus tenuirostris; Florida scrub jay, Aphelocoma coerulescens coerulescens; Least tern, Sterna antillarum;

REPTILES - Atlantic green turtle, Chelonia mydas mydas (Atlantic coast only); Atlantic hawksbill turtle, Eretmochelys imbricata imbricata; Atlantic loggerhead turtle, Caretta caretta caretta; Atlantic ridley turtle, Lepidochelys kempi; Leatherback turtle, Dermochelys coriacea

3 - SAND PINE SCRUB

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

FEBRUARY 1981 4-R-36720-1
FEBRUARY 1968 BASE 4-L-2577

USDA-SCS-FORT WORTH, TEXAS (981

Typical, even-aged stand of sand pine, Pinus clausa

Sand pine scrub in South Florida often have fewer sand pine, Pinus clausa, and more shrubs than those farther north.

Dense understory of scrub oaks, saw palmetto and other shrubs.

ECOLOGICAL COMMUNITY

NO. 3 - SAND PINE SCRUB

OCCURRENCE

The Sand Pine Scrub ecological community occurs throughout Florida. It is most commonly found inland from the coast and in the central portion of the state in and around Marion County. Individual communities are generally small in size, i.e., several hundred acres. A large community, several thousands of acres in size, occurs just east of Ocala in the Ocala National Forest. It typically has a few smaller communities of wetland types interspersed throughout.

DESCRIPTION

This community occurs on nearly level to strongly sloping land. Water movement is rapid through the soil. It is easily identified by the even-aged stands of sand pine or by the thick scrubby oak growth.

1. Soil

The soils are nearly level to strongly sloping, deep, acid, somewhat poorly to excessively drained and coarse textured throughout. Representative soils include: Archbold, Daytona, Duette, Hobe, Paola, Pomello, Resota, St. Lucie, Satellite and Welaka. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

The natural vegetation of this community may be typically even-aged sand pine trees with a dense understory of oaks, sawpalmetto, and other shrubs. Ground cover under the trees and shrubs is scattered and large areas of light colored sand are often noticeable. In other cases, the sand pine are scattered or absent, with oaks being the dominant vegetation. Satellite soils, which have a high water table for part of the year, support a scrubby growth also, but the myrtle oak, Chapman oak, and sand pine become infrequent and gallberry becomes prominent. Plants which characterize this community are:

TREES - Bluejack oak, Quercus incana; Chapman oak, Quercus chapmannii; Myrtle oak, Quercus myrtifolia; Sand live oak, Quercus virginiana var. geminata; Sand pine, Pinus clausa

SHRUBS - Dwarf huckleberry, Gaylussacia dumosa; Gopher apple, Chrysobalanus oblongifolius; Prickly pear, Opuntia spp.; Sawplametto, Serenoa repens

HERBACEOUS PLANTS AND VINES - Grassleaf goldenaster, Heterotheca graminifolia; Deermoss, Cladonia spp.; Cat greenbriar, Smilax glauca

GRASSES AND GRASSLIKE PLANTS - Yellow indiangrass, Sorghastrum nutans, Low panicum, Panicum spp.

Information about plants which occur in specific ecological communities is in Appendix B.

3. Animals

Animals found in this community are adapted to high temperatures and droughty conditions. The wildlife food production is low. Dense vegetation provides good escape cover for animals such as the white-tailed deer. The palmetto and various species of oaks provide good food when they are fruiting. Gopher apple is also a good wildlife food plant.

Typical animals of the sand scrub are:

MAMMALS - Deer

BIRDS - Towhee, great crested flycatcher, scrub jay, Bachman's sparrow

REPTILES - Black racer, gopher tortoise, scrub lizard, sand skink

AMPHIBIANS - Gopher frog

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

The sand pine is a fire-based community. Understory vegetation is dense and fuel supplies build up in the trees. The thick understory creates a pathway for fire to the crowns of the trees. Fire normally occurs every 20 to 40 years. Sand pines have a low resistance to fire and the high density, even-aged stands make fire devastating. Cones of the sand pine require heat of a fire to open and release seeds. This method of regeneration helps to form even-aged stands. Without occasional fire, this community would tend to become a type of upland hammock community.

The sand pine scrub is a valuable ecological community. The coarse textured, excessively well drained soils make the community important in aquifer recharge. It is a unique ecosystem which gives it an important scientific value. Heat and drought stress response by plants and animals are often studied on these sites. Uncontrolled fire and damage to vegetation by excessive foot or vehicle travel have adverse effects on the community.

Sand scrubs are good producers of sand pine and some areas are utilized for commercial wood production. Intensive management for wood production will not cause excessive damage to the community if good silvicultural practices are applied.

Adverse soils conditions make it infeasible to convert this community to cropland. It has been converted to some extent for citrus production in South Florida. This community has fair to good value for wildlife escape cover with proper management.

Areas of sand pine scrub communities, except in the Ocala National Forest, are rapidly declining. Favorable conditions for residential use and proximity to the coast make them prime sites for real estate development.

2. Rangeland

This community supports a fairly dense stand of trees and shrubs and therefore has a limited potential for producing native forage. Livestock do not use this site if other ecological communities are available. For sites in excellent condition the average annual production of air dry plant material varies from 1,500 to 3,500 pounds per acre. The variation depends on plant growth conditions. From 15 to 40+ acres are usually needed per animal unit depending upon amount and type of forage available. The relative percentage of annual vegetative production by weight is 40 percent grasses, 40 percent trees and shrubs and 20 percent herbaceous plants and vines.

3. Wildlifeland

This community is suited for deer and turkey, especially for use as escape cover. Many birds inhabit this area including warblers, rufous-sided towhees, great crested flycatchers, scrub jays, and quail. Several varieties of native legumes furnish food (seeds) for bird life. The palmetto, gopher apple and various species of oak provide good food when they are fruiting. Timber harvest and other disturbances increase wildlife food value by increasing the amount and types of herbaceous plants and by sprout production.

4. Woodland

This community has a low potential for commercial wood production. There are severe equipment limitations and moderate seedling mortality problems due to loose, well to excessively well-drained and infertile soil conditions. Sand pine is a commercial species suitable for planting. It has a potential annual growth of approximately 0.5 cords per acre in north Florida. South of Hernando County in the west and Orange County in the east, the potential annual growth is 0.4 cords per acre.

5. Urbanland

The moderately well to excessively well drained areas have few limitations for urban development. The somewhat poorly drained Satellite soils, although very droughty in the surface layers, have a water table at 20 inches for part of the year and has more limitations. Vegetation is difficult to establish because of the infertile, coarse textured, and droughty surface soils. Water moves rapidly through the soil. Intensive vegetation establishment and maintenance methods, including irrigation are needed for best results. Without vegetation, wind erosion can be a problem during and after construction. Water erosion control and water retention facilities are usually not needed.

Plants native to the community should receive preference for beautification and landscaping. This is because they are more easily established and require less maintenance. Some of the trees are live oak, sand live oak, sand pine, turkey oak, and Eastern red cedar. Some of the shrubs are Adam's needle, coral bean, Carolina holly, gopher apple, pawpaw, prickly pear cactus, rosemary, sawpalmetto, and shining sumac. Some of the herbaceous plants are aster, beebalm, crotalaria, blanketflower, blazing star, goldenaster, goldenrod, lupine, morning glory, and sunflower.

The most important urban wildlife are birds such as warblers, towhee, great crested flycatcher, and scrub jay. Gopher tortoise, sand skink, scrub lizard, and snakes are some of the reptiles using this habitat. Undisturbed areas provide good escape cover for all forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered or threatened plants may occur in this community:

SHRUBS - Four-petal pawpaw, Asimina tetramera; Pigmy fringetree, Chionanthus pygmaea

HERBACEOUS PLANTS AND VINES - Curtis milkweed, Asclepias curtissii; Dancing-lady orchid, Oncidium variegatum; Florida bonamia, Bonamia grandiflora

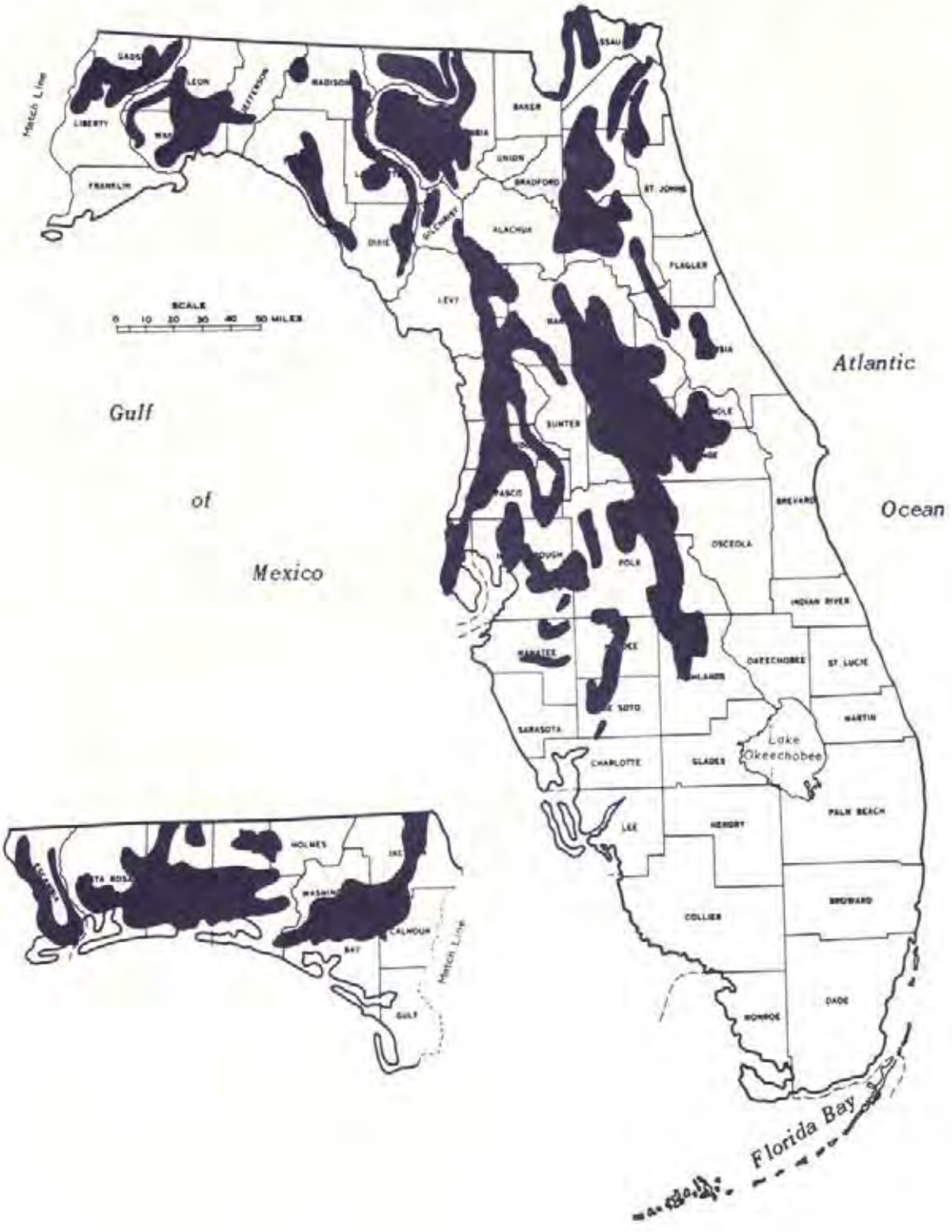
The following threatened wildlife species may be found in or around this community:

MAMMALS - Goff's pocket gopher, Geomys pinetis goffi

BIRDS - Florida scrub jay, Aphelocoma coerulescens coerulescens

REPTILES - Blue-tailed mole skink, Eumeces egregius lividus; Sand skink, Neoseps reynoldsi; Short-tailed snake, Stilosoma extenuatum

4 - LONGLEAF PINE - TURKEY OAK HILLS



Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-4
FEBRUARY 1968 BASE 4-L-25770

Typical Longleaf Pine-Turkey Oak Hills Ecological Community

The deciduous turkey oak, Quercus laevis, gives a bare appearance in the winter.

Ground cover under the trees and shrubs is usually very sparse.

ECOLOGICAL COMMUNITY

NO. 4 - LONGLEAF PINE-TURKEY OAK HILLS

OCCURRENCE

The Longleaf Pine-Turkey Oak Hills ecological community occurs throughout Florida. It is most commonly found in the central part of the state north of Lake Placid and in the Florida panhandle inland from the Gulf of Mexico. Individual communities vary widely in size and limited numbers of other communities may occur within it.

DESCRIPTION

This community occurs on rolling land with nearly level to strong slopes. Water movement is rapid through the soil. It is easily identified by the land form and dominant vegetation of longleaf pine and turkey oak.

1. Soil

The soils are nearly level to strongly sloping, deep, acid, moderately well to excessively drained, and mostly coarse textured throughout or mostly coarsely textured in the upper part and moderately fine textured or moderately coarse textured in the lower part. Representative soils are Alpin, Bonifay, Candler, Chiefland, Cocoa, Deland, Eustis, Hurricane, Kershaw, Lake, Lakeland, Orlando, and Troup. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

There are several variations of this community. Mature, natural stands of trees which have not been logged have scattered longleaf pine as an overstory. Areas on which pines have been removed are predominantly oaks. Ground cover under the trees and shrubs is scattered and numerous bare areas are noticeable. Plants which characterize this community are:

TREES - Longleaf pine, Pinus palustris; Turkey oak, Quercus laevis; Bluejack oak, Quercus incana

HERBACEOUS PLANTS AND VINES - Aster, Aster spp.; Blazing star, Liatris tenuifolia; Bracken fern, Pteridum aquilinum; Butterfly pea, Centrosema virginianum; Butterfly pea, Clitoria mariana; Elephant's foot, Elephantopus spp.; Grassleaf goldenaster, Heterotheca graminifolia, Partridge pea, Cassia spp.; Pineland beggarweed, Desmodium strictum; Sandhill milkweed, Asclepias humistrata; Showy crotalaria, Crotalaria spectabilis; Wild indigo, Baptista spp.

GRASSES AND GRASSLIKE PLANTS - Curtiss dropseed, Sporobolus curtissii; Hairy panicum, Panicum anceps; Yellow indiangrass, Sorghastrum nutans; Tow panicum, Panicum spp.; Pinewoods dropseed, Sporobolus junceus

Other plants that occur in this community are found in Appendix B.

3. Animals

Animals utilizing this community are adapted to stress conditions of high temperature and drought. Many of the animals are burrowers. This helps to prevent water loss and provides protection against high temperatures. The most common animals of this community are:

MAMMALS - Fox squirrel, pocket gopher, white-tailed deer

BIRDS - Bobwhite quail, ground dove, rufous-sided towhee

REPTILES - Gopher tortoise, fence lizard

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

The longleaf pine-turkey oak community is a fairly open forest community influenced by fire, heat and drought. The most important influence is fire which typically occurs frequently. The natural vegetation is adapted to withstand the effects of occasional fire. Grasses cover large areas and provide fuel for the fire and prevent competing hardwoods from regenerating. Longleaf pine cannot tolerate hardwood competition and, with fire, this species remains dominant. The community can be changed to an upland hammock type by elimination of fires. Water moves rapidly through most of the soil to the aquifer with little runoff and minimal evaporation. This is important for aquifer recharge.

Longleaf pine-turkey oak hills are used to some extent for timber production. In west Florida, sand pine is often planted because it is better adapted than slash pine on these sites. Recent technology advancement on nursery stock of longleaf pine has diminished the amount of time seedlings remain in the "grass stage."

This community has value for wildlife if proper management techniques are used. Bobwhite quail utilize this area for food and cover and this makes the hunting aspects especially important. In central and south Florida most of this community has been planted to citrus.

In north Florida it is used for improved pasture, pine plantations, and to a limited degree, for more intensive farming operation with use of irrigation. Soil conditions are very favorable for urban development.

The community is decreasing rapidly in size because of the demand for urban and agricultural uses.

2. Rangeland

The natural fertility of this community is low due to adverse soil conditions. Native forage production and quality are poor and cattle do not readily utilize this ecological community if other communities are available. For sites in excellent condition the average annual production of air dry plant material varies from 2,000 to 4,000 pounds per acre. The variation depends on plant growth conditions. From 10 to 35+ acres are usually needed per animal unit depending upon amount and type of forage available. There will be little or no grazing when the canopy cover exceeds 60 percent. The relative percentage of annual vegetative production by weight is 60 percent grasses, 20 percent trees and shrubs and 20 percent forbs.

3. Wildlifeland

This community is suited for deer and turkey, especially for use as escape cover. Many songbirds inhabit this area including warblers, towhees, crested flycatchers, and quail. Several varieties of native legumes furnish food (seeds) for bird life. Timber harvest and similar disturbances improve wildlife food values by increasing the amount and types of herbaceous plants and by sprout production.

4. Woodland

This community has a moderately high potential for commercial woodland production. There are moderate equipment limitations and seedling mortality due to loose, well drained and infertile soil conditions. Commercial species suitable for planting are sand pine, slash pine, loblolly pine, and longleaf pine. Potential annual growth is 1.2, 1.2, 1.0 and 0.6 cords per acre respectively. Potential productivity is 18 percent less for areas south of a line from Hernando County in the west to Orange County in the east.

5. Urbanland

These moderately well to excessively drained areas have few limitations for urban development. It is often difficult to establish vegetation because of the infertile, coarse textured and well drained soil conditions. Intensive vegetation establishment methods are needed and irrigation is required for best results during dry seasons. Maintenance becomes a problem without adequate fertilization and similar techniques. Without vegetation, wind erosion can become a problem during and after construction. Water erosion can also be a problem on the steeper slopes.

Plants native to the community should receive preference for beautification and landscaping unless intensive establishment and management practices are used. This is because they are more easily established and require less maintenance. Some of the trees are

American holly, chickasaw plum, longleaf and slash pine, live oak, Southern redcedar, sand pine, and turkey and bluejack oak. Some of the shrubs are Adam's needle, American beautyberry, Carolina holly, coontie, coral bean, Florida chinkapin, pawpaw, prickly pear cactus, sawpalmetto, shining sumac, and yaupon. Some of the herbaceous plants are aster, beebalm, crotalaria, blanketflower, blazing star, goldenaster, lupine, morning glory, goldenrod, and sunflower.

The most important urban wildlife are birds such as warblers, towhees, great crested flycatchers, dove and quail. Undisturbed areas provide good escape cover, and food for all forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered or threatened plants may occur in this community:

HERBACEOUS PLANTS AND VINES - Godfrey's blazing star, Liatris provincialis

The following threatened wildlife species may be found in or around this community:

MAMMALS - Florida panther, Felis concolor coryi

BIRDS - Southeastern kestrel (Sparrow hawk), Falco sparverius paulus; Red-cockaded woodpecker, Picoides borealis

REPTILES - Blue-tailed mole skink, Eumeces egregius lividus; Eastern indigo snake, Drymarchon corais couperi; Short-tailed snake, Stilosoma extenuatum

5 - MIXED HARDWOOD AND PINE

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-5
FEBRUARY 1968 BASE 4-L-25770

During winter, the occasional pine and evergreen hardwoods contrast sharply with the deciduous hardwoods.

Typical mixed hardwood and pine ecological community in Gadsden County.

Ground cover under the trees and shrubs is somewhat sparse.

ECOLOGICAL COMMUNITY

NO. 5 - MIXED HARDWOOD AND PINE

OCCURRENCE

The Mixed Hardwood and Pine ecological community is an extension of the middle coastal plains hardwoods forest. It occurs only in west and north Florida. Individual communities vary in size and are interspersed with other communities and natural drainageways.

DESCRIPTION

This community occurs on rolling uplands. Water movement is gradual to the natural drainageways. It can be easily identified by the mixed hardwood and pine vegetation occurring in a predominately well drained area.

1. Soil

The soils are nearly level to strongly sloping, deep to moderately deep, acid, moderately well to well drained, with loamy to sandy surfaces, and are underlain with fine textured materials. Representative soils include: Benndale, Binnsville, Blakley, Boswell, Bowie, Carnegie, Chipola, Clarendon, Compass, Cuthbert, Dothan, Esto, Faceville, Fuquay, Greenville, Gritney, Kalmia, Magnolia, Marlboro, Maxton, Norfolk, Oktibbeha, Orangeburg, Red Bay, Ruston, Shubuta, Sunsweet, Susquehanna, and Tifton. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

There is a variation in the type and amount of vegetation depending on the successional stage. In the early successional stages of this community, pine is present with shortleaf and loblolly predominating. As the system matures, hardwoods replace pines. The natural climax vegetation is thought to be a beech-magnolia-maple association. Plants which characterize this community are:

TREES - American beech, Fagus grandiflora; American holly, Ilex opaca; Eastern hophornbean, Ostrya virginiana; Flowering dogwood, Cornus florida; Hawthorns, Crataegus spp.; Loblolly pine, Pinus taeda; Mockernut hickory, Carya tomentosa; Pignut hickory, Carya glabra; Southern red oak, Quercus falcata; Southern magnolia, Magnolia grandiflora; White oak, Quercus alba; Water oak, Quercus nigra

SHRUBS - Shining sumac, Rhus copallina; Sparkleberry, Vaccinium arboreum

GRASSES - Broomsedge bluestem, Andropogon virginicus; Longleaf uniola, Chasmanthium sessiliflorium; Low panicum, Panicum spp.; Spike uniola, Chasmanthium laxium

HERBACEOUS PLANTS AND VINES - Aster, Aster spp.; Common ragweed Ambrosia artemisiifolia; Partridge berry, Mitchella repens; Partridge pea, Cassia spp.; Poison ivy, Toxicodendron radicans; Violet, Viola spp.; Virginia creeper, Parthenocissus quinquefolia; Wild grape, Vitis spp.

Information about plants which occur in specific ecological communities is in Appendix B.

3. Animals

Animals found in this community vary according to the stages of plant succession. Areas of young growth attract wildlife that are widely adapted and quick reproducing, such as cottontail rabbits and bobwhite quail. In more mature stands, woodpeckers, moles, woodcocks, and other narrowly adapted animals can be found.

Wildlife that occur in this community include:

MAMMALS - Cottontail rabbit, gray squirrel, gray fox, cotton mouse, white-tailed deer, raccoons

BIRDS - Barred owl, bobwhite quail, pileated woodpecker, red-bellied woodpecker, wild turkey, woodcock

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Unlike most communities, the mixed hardwood and pine do not have a dominant stress factor. There is some competition between plants for use of water, sunlight, and available nutrients. Once the mixed hardwoods and pine are established, they can withstand disturbance due to the complex and diverse vegetation and the excellent plant growth conditions. The community is fire resistant but fire may occur during drought conditions. Recovery of hardwoods after a fire is vigorous but damaged trees are often attacked by disease and subject to rot.

Prescribed burning will keep the system in a predominantly pine stage. However, in mature stands, fire is infrequent and plants that are not fire-tolerant can become dominant.

The finer textured soils of this community have a relatively low permeability. This results in a limited aquifer recharge and some surface runoff. Mixed hardwood and pine communities are important for flood control on watersheds. This community is a good producer of timber and areas are used for timber production. Intensive management may cause a low diversity of plants with an adverse change in some wildlife populations.

The community has a high value for wildlife. This is especially true where varying successional stages occur next to each other. The community contains good agricultural soils. The acreage available in a natural condition is not great--most is cultivated, used for residences, or held at the pine stage of succession.

2. Rangeland

The soil's moisture-holding capacity and natural fertility is relatively high and good quality forages are produced. This community is preferred for grazing by livestock in the earlier stages of succession. Tree canopy cover can become excessive and drastically reduce forage quality. For sites in excellent condition the average annual production of air dry plant material varies from 3,000 to 4,500 pounds per acre. The variation depends on plant growth conditions. From 8 to 23+ acres are usually needed per animal unit depending upon amount and type of forages available. There will be little or no grazing when the canopy cover exceeds 60 percent. The relative percentage of annual vegetative production by weight is 50 percent grasses, 30 percent trees and shrubs and 20 percent forbs.

3. Wildlifeland

Mixed hardwood and pine offer very good habitat for deer, turkey, squirrel, and many songbirds. Hardwood mast (acorns, nuts, fruits, buds, and berries) furnish a good source of wildlife food. Mature hardwoods and snags provide good nesting sites for birds. Habitat is good for raccoons, opossums, bobwhite quail and dove, fair for reptiles, and poor for most amphibians.

4. Woodland

This community has a high potential productivity for commercial wood production. There are no serious management problems. Commercial species suitable for planting are slash pine and loblolly pine. Potential annual growth is 1.5 and 1.2 cords per acre, respectively. The potential annual growth of longleaf pine is 0.8 cords per acre.

5. Urbanland

These moderately well to well drained areas have few limitations for urban development. This and the attractiveness of the hardwood and pine vegetation make them prized areas for residential development. Water erosion is often a problem on the steeper slopes. Special vegetative establishment and maintenance practices are needed in situations where water erosion is a concern.

Plants native to the community are easily established and require less maintenance than introduced ornamentals. Some of the trees are American holly, laurelcherry, chickasaw plum, dogwoods, fringetree, hickory, southern magnolia, oak, pine, persimmon, redbud, red maple, redcedar, and sweetgum. Some of the shrubs are American beautyberry,

coral bean, pawpaw, strawberry bush, shining sumac, viburnum, and waxmyrtle. Some of the herbaceous plants are aster, beebalm, blazing star, iris and sunflower.

The most important urban wildlife are songbirds and squirrels. Undisturbed areas provide good escape cover and travel routes for most forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered or threatened plants may occur in this community:

TREES - Florida torreya, Torreya taxifolia; Pagoda dogwood, Cornus alternifolia

SHRUBS - Ashe's magnolia, Magnolia ashei; Miccosukee gooseberry, Ribes echinellum; Orange azalea, Rhododendron austrinum

The following threatened or endangered wildlife species may be found in or around this community:

Florida panther, Felix concolor coryi

6 - SOUTH FLORIDA FLATWOODS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-6
FEBRUARY 1968 BASE 4-L-25770

Although numbers of trees vary greatly in different locations, South Florida flatwoods are typically savannas, a type of community intermediate between grassland and forest.

South Florida flatwoods are used extensively for range.

Areas north and west of Lake Okeechobee have few trees.

ECOLOGICAL COMMUNITY

NO. 6 - SOUTH FLORIDA FLATWOODS

OCCURRENCE

The South Florida Flatwoods ecological community occurs throughout south and central Florida. The northern limit of its occurrence is approximately on a line from Levy County on the west to St. Johns County on the east. This community covers more land area than any other in south Florida. Individual communities may comprise several thousand acres and are typically interspersed with smaller communities of other types, especially wetlands.

DESCRIPTIONS

This community occurs on nearly level land. Water movement is very gradual to the natural drainageways, swamps, marshes, and ponds associated with this community. During the rainy season, usually June through September, this community may have water on or near the soil surface. It is easily identified by the flat topography and pine and palmetto vegetation.

1. Soil

   The soils are nearly level, deep, acid, poorly to somewhat poorly drained, and coarse textured throughout or coarse textured in the upper part and moderately coarse textured or moderately fine textured in the lower part. Representative soils include: Braden, Eaton, Electra, Elred, Heights, Immokalee, Lawnwood, Myakka, Nettles, Palmetto, Pomona, Smyrna and Waveland. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

   The landscape position of this community affects plant-water relationships and causes slight differences in plant composition from wetter to drier areas. Although these differences are recognized, they are not significant enough to delineate as separate communities. The natural vegetation of this community is typically scattered pine trees with an understory of sawpalmetto and grasses. Some areas in south Florida have few, if any, trees. These areas are often called prairies or dry prairies. The largest of these areas occur north and west of Lake Okeechobee. Plants which characterize this community are:

   TREES - Live oak, Quercus virginiana; Slash pine, Pinus elliottii; South Florida slash pine, Pinus elliottii var. densa

   SHRUBS - Ground blueberry, Vacinnium myrsinites; Gallberry, Ilex glabra; Sawpalmetto, Serenoa repens; Tarflower, Befaria racemosa; Shining sumac, Rhus copallina; Waxmyrtle, Myrica cerifera; Blackberry, Rubus spp.

GRASSES - Chalky bluestem, Andropogon capillipes; Creeping bluestem, Schizachyrium stoloniferum; Lopsided indiangrass, Sorghastrum secundum; South Florida bluestem, Schizachyrium rhizomatum; Low panicum, Panicum spp.; Pineland threeawn, Aristida stricta

Information about plants that occur in specific ecological communities is in Appendix B.

3. Animals

The South Florida Flatwoods is host to a diverse and numerous wildlife population. Many larger animals are found in areas where the flatwoods join other communities. These ecotones provide nesting sites, den sites, food and cover.

Typical animals of the flatwoods are:

MAMMALS - Armadillo, eastern cottontail rabbit, cotton rat, deer, skunks, raccoon, opossum

BIRDS - Bachman's sparrow, Bobwhite quail, brown-headed nuthatch, meadowlark, pileated woodpecker, pine warblers, red-bellied woodpecker, rufous-sided towhee, yellow-throated warblers

REPTILES - Eastern diamondback rattlesnake, pygmy rattlesnake, yellow ratsnake

AMPHIBIANS - Oak toad, chorus frog, pinewoods tree frog

Introduced feral hogs are common in much of the community. Information about animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Fire and water are the major stress conditions of this community. Fire controls hardwoods and promotes the natural regeneration of pine. Removal of fire will cause a successional move to a hardwood community.

Flatwood communities are good cellulose producers and the original areas of predominantly longleaf pine have been logged. Areas in the northern part of the community are extensively used for timber production. Intensive management for pulp production can cause major changes in the vegetation. Without proper consideration this results in a low diversity of plants and an adverse change in some wildlife populations.

Native forage production is good with proper management. Use for rangeland has only a light effect on the community if properly managed. Chopping and similar range practices result in more grasses and fewer shrubs. With sufficient cover left, the resulting increase in diversity usually leads to an increase in types and amount of wildlife.

This community has good wildlife values, especially with proper management. It is especially important as a wildlife buffer zone between urban areas occurring on better drained sites.

Water control practices and improved management techniques have facilitated the use of flatwoods for improved pasture, vegetables, citrus, and urban development. This is especially true in south Florida.

2. Rangeland

This ecological community has the potential for producing significant amounts of high quality native forage such as creeping bluestem, chalky bluestem, and indiangrass. It is Florida's most important community for the production of cattle on native range. For sites in excellent condition, the average annual production of air dry plant material varies from 3,000 to 6,000 pounds per acre. The variation depends on plant growth conditions. From 4 to 18+ acres are usually needed per animal unit depending upon amount and type of forage available. There will be little forage available if the canopy cover exceeds 60 percent. The relative percentages of annual vegetative production by weight is 75 percent grasses and grasslike plants, 15 percent trees and shrubs, and 10 percent herbaceous plants.

3. Wildlifeland

The South Florida Flatwoods community is well suited for deer, quail, and turkey. It is fair for squirrels and well suited for many songbirds, particularly warblers. It is also well suited for bobcat, skunks, opossums, and raccoons. It is poorly suited for dove.

4. Woodland

This community has a moderate potential productivity for commercial wood production. There are moderate equipment limitations and seedling mortality due to wet soil conditions. The commercial species suitable for planting is slash pine. Potential annual growth is 0.9 cords per acre. The potential annual growth for longleaf pine is 0.5 cords per acre. Potential productivity is 18 percent less for soils south of a line from Hernando County in the west to Orange County in the east.

5. Urbanland

This community is subject to high water tables during the rainy seasons and has limitations for urban development. Water management systems are required for urban uses. It is often difficult to establish

vegetation on steep channel side slopes and infertile spoil and special techniques may be required. Without vegetation, erosion and sedimentation is often a problem in some water management systems. Wind erosion is a problem in unvegetated areas. This is especially severe in the spring.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are American holly, cabbage palm, common persimmon, live oak, longleaf pine, and slash pine. Some of the shrubs are American beautyberry, coontie, coral bean, partridge pea, pawpaw, sawpalmetto, shining sumac, tarflower, and southern waxmyrtle. Some of the herbaceous plants are blazing star, Catesby's lily, grassleaf goldenaster, hibiscus, iris, meadowbeauty, sunflower, and zephyrlily.

The most important urban wildlife are songbirds like warblers. Undisturbed areas also provide good escape cover for all forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered or threatened wildlife species may be found in or around this community:

MAMMALS - Florida panther, Felis concolor coryi; Mangrove fox squirrel, Sciurus niger avicennia

BIRDS - Crested Caracara, Polyborus plancus; Florida grasshopper sparrow, Ammodramus savannarum floridanus; Southeastern kestrel (Sparrow hawk), Falco sparverius paulus; Red-cockaded woodpecker, Picoides borealis; Bald eagle, Haliaeetus leucocephalus; Florida sandhill crane, Grus canadensis pratensis

REPTILES - Eastern indigo snake, Drymarchon corais couperi

The following endangered or threatened plant species may be found in this community:

Beautiful pawpaw, Deeringothamnus pulchellus

7 - NORTH FLORIDA FLATWOODS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

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FEBRUARY 1968 BASE 4-L-25770

Typical North Florida flatwoods are open woodland, dominated by pine trees.

Woodland is a common land use.

Saw palmetto, Serenoa repens, is a common shrub.

ECOLOGICAL COMMUNITY

NO. 7 - NORTH FLORIDA FLATWOODS

OCCURRENCE

The North Florida Flatwoods ecological community occurs north of a line from Levy County on the west to St. Johns County on the east, and in the northwest portion of the state. It is quite extensive, occurring most frequently in the northeastern region of the state and the southern portion of the northwest region. Individual communities may comprise several thousand acres and are typically interspersed with smaller communities of other types, especially wetlands.

DESCRIPTIONS

This community occurs on nearly level land. Water movement is very gradual to the natural drainageways, swamps, ponds, and marshes associated with this community. Wet conditions prevail during the rainy season with the water table on or near the surface. It is easily identified by the flat topography, slash pine and sawpalmetto vegetation.

1. Soil

Numerous soil types occur within this community. The soils are nearly level, deep, acid, poorly to somewhat poorly drained, and coarse textured or coarse textured in the upper part and moderately coarse textured or moderately fine textured in the lower part. Representative soils include: Chaires, Garcon, Leon, Lumber, Lutterluh, Lynn Haven, Mascotte, Olustee, Pelham, Pottsburg, Ridgeland, Sapelo, Scranton, and Talquin. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

Slight differences in plant composition occur in this community depending upon location but these differences are of minor consequence. As this community is observed, a moderate to dense stand of pine trees is usually noted. An understory of sawpalmetto and grasses are also evident. Compared to the South Florida Flatwoods community, several differences are apparent. A shorter growing season and colder temperature have helped cause significant vegetative differences. More frequent interspersion of hardwood and cypress strands coupled with higher pine tree density reduces the open appearance.

Close study reveals the following characteristic plants:

TREES - Live oak, Quercus virginiana; Slash pine, Pinus elliottii

SHRUBS - Ground blueberry, Vaccinium myrsinites; Gallberry, Ilex glabra; Sawpalmetto, Serenoa repens; Shining sumac, Rhus lanceoluta; Tarflower, Befaria racemosa; Waxmyrtle, Myrica cerifera

HERBACEOUS PLANTS AND VINES - Blackberry, Rubus spp.; Bracken fern, Pteridum aquilinum; Creeping beggarweed, Desmodium incanum; Deer tongue, Trilisa odoratissima; Dog fennel, Eupatorium capillifolium; Gayfeather, Liatris gracilis; Greenbriar, Smilax auriculata; Milkwort, Polygala spp.

GRASSES AND GRASSLIKE PLANTS - Chalky bluestem, Andropogon capillipes; Broomsedge bluestem, Andropogon virginicus; Yellow indiangrass, Sorghastrum nutans; Lopsided indiangrass, Sorghastrum secundum; Low panicum, Panicum spp.; Pineland threeawn, Aristida stricta; Sedges, Cyperus spp.

Other plants that are known to occur in this community are found in Appendix B.

3. Animals

The North Florida Flatwoods are host to a diverse and numerous wildlife population. Many larger animals are found in areas where the flatwoods join other communities. These ecotones provide nesting sites, den sites, food and cover. Typical animals of the flatwoods are:

MAMMALS - Bobcat, deer, cottontail rabbit, cotton rat, fox squirrel, gray fox, raccoon, opossum, skunk

BIRDS - Bachman's sparrow, Bobwhite quail, pine warbler, red-bellied woodpecker, red-shouldered hawk, rufous-sided towhee

REPTILES - Eastern diamondback rattlesnake, pygmy rattlesnake

AMPHIBIANS - Chorus frog, cricket frog, grass frog, flatwoods salamander

Introduced feral hogs are common in much of the flatwoods community. Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Fire and water are the major stress conditions of this community. Modification of either condition will change the plant and animal composition. Removal of fire will cause a successional move to a hardwood community.

Flatwoods communities are good cellulose producers because of their high net productivity. The original areas of predominantly longleaf pine have been logged. Extensive areas have been replanted to slash pine. Intensive management for pulp production can cause major changes in the vegetation. The result is a low diversity of plants and often adverse changes in types and amounts of some wildlife.

Native forage production is good with proper woodland grazing practices. Proper rangeland use has only a slight effect on the community and results in more grasses and few shrubs. This often increases wildlife diversity and carrying capacity.

Water control practices and improved management techniques have facilitated the use of flatwoods for improved pasture, vegetable production, and urban development. This effect is minimal in north Florida. This community has good wildlife values with proper management. It is also important as a buffer zone between urban areas.

2. Rangeland

This ecological community has the potential for producing significant amounts of high quality forage such as chalky bluestem, indiangrass, and several of the panicum species. More pines occur in this community than in South Florida Flatwoods. Vegetative production differs from the South Florida Flatwoods community due to a shorter growing season and lower winter temperatures. For sites in excellent condition the average annual production of air dry plant material varies from 3,000 to 5,500 pounds per acre. This variation depends on plant growth conditions. From 5 to 17+ acres are usually needed per animal unit depending upon amount and type of forage available. For each 15 percent canopy cover, the stocking rate is reduced 15 percent. There will be little forage available if the canopy cover exceeds 60 percent. The relative percentages of annual vegetative production by weight is 65 percent grasses and grasslike plants, 25 percent trees and shrubs, and 10 percent herbaceous plants.

3. Wildlifeland

The North Florida Flatwoods community is well suited for deer, quail and turkey. It is fair for squirrels and well suited for many songbirds, particularly warblers. It is also well suited for bobcat, skunks, opossums, and raccoons. It is poorly suited for dove.

4. Woodland

This community has a moderate potential productivity for commercial wood production. There are moderate equipment limitations and seedling mortality due to wet soil conditions. The commercial species suitable for planting is slash pine. Potential annual growth is 0.9 cords per acre. The potential annual growth for longleaf pine is 0.5 cords per acre.

5. Urbanland

This community is subject to high water tables during the rainy seasons and has limitations for urban development. Water management systems are required for urban uses. It is often difficult to establish vegetation on steep channel side slopes and infertile spoil. Special techniques may be required. Without vegetation, erosion and

sedimentation is often a problem in some water management systems. Wind erosion is a problem in unvegetated areas. This is especially severe in the spring.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are American holly, cabbage palm, common persimmon, live oak, longleaf pine, and slash pine. Some of the shrubs are American beautyberry, coontie, coral bean, partridge pea, pawpaw, sawpalmetto, shining sumac, tarflower, and southern waxmyrtle. Some of the herbaceous plants are blazing star, Catesby's lily, grassleaf goldenaster, hibiscus, iris, meadowbeauty, sunflower, and zephyrlily.

The most important urban wildlife are songbirds. Undisturbed areas also provide good escape cover for all forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered or threatened plants are not common in this community, but may occur in some instances:

SHRUBS - Chapman's rhododendron, Rhododendron chapmanii

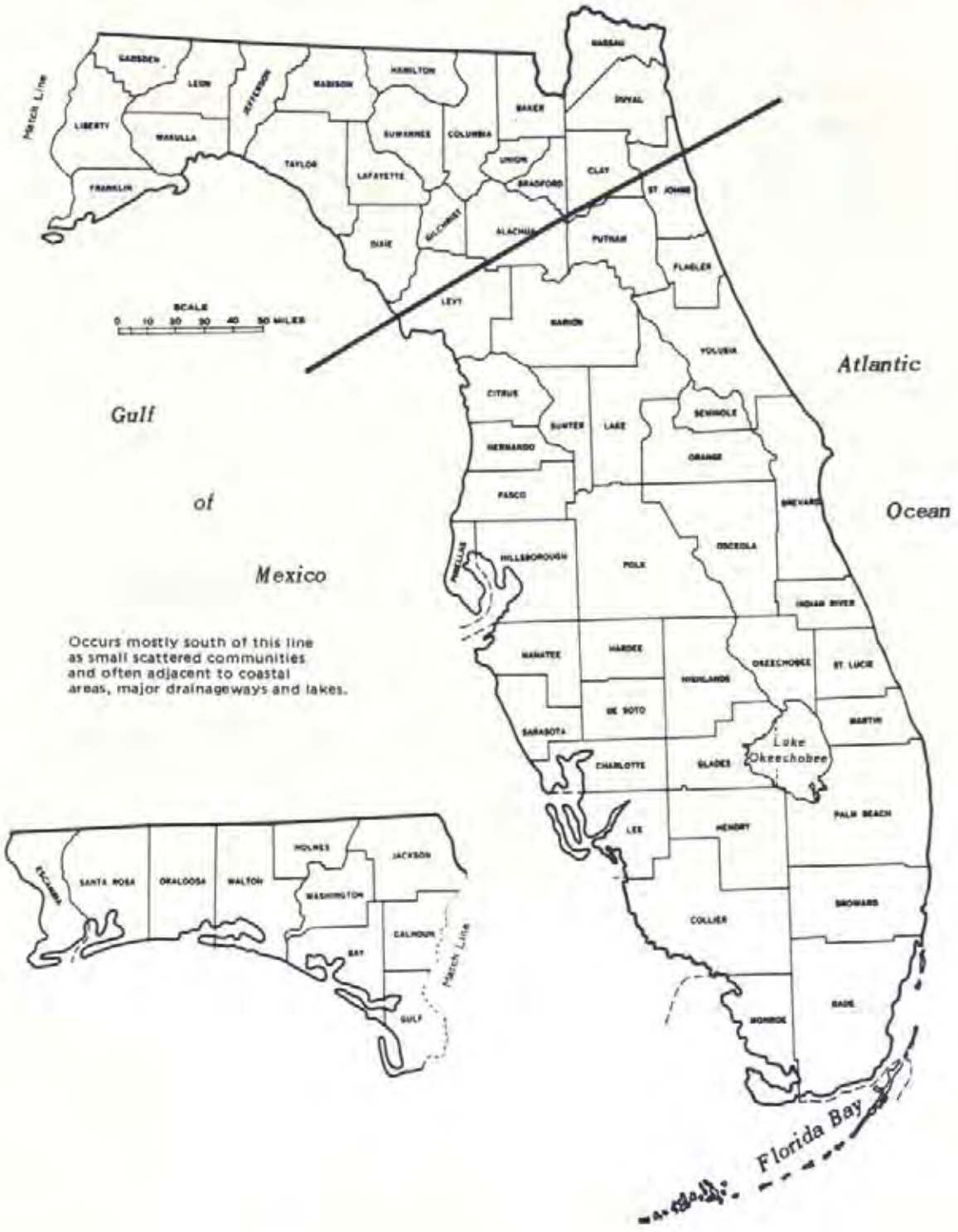
The following threatened or endangered wildlife species may be found in or around the community:

MAMMALS - Florida black bear, Ursus americanus floridanus, Florida panther, Felis concolor coryi

BIRDS - Southeastern kestrel (Sparrow hawk), Falco sparverius paulus; Red-cockaded woodpecker, Picoides borealis; Florida sandhill crane, Grus canadensis pratensis; Bald eagle, Haliaeetus leucocephalus

REPTILES - Eastern indigo snake, Drymarchon corais couperi

8 - CABBAGE PALM FLATWOODS



Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960. Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-8
FEBRUARY 1968 BASE 4-L-25770

Typical cabbage palm flatwood in Collier County.

Plant composition depends partly on soil drainage and better drained sites have more cabbage palm, Sabal palmetto.

Cabbage palm, Sabal palmetto, charaterizes this community.

ECOLOGICAL COMMUNITY

NO. 8 - CABBAGE PALM FLATWOODS

OCCURRENCE

The Cabbage Palm Flatwoods ecological community occurs throughout south Florida and, to a limited extent, in central Florida. The northern limit of its occurrence is approximately on a line from Levy County on the west to St. Johns County on the east. Small, isolated areas are found north of this line. Locally, it most often occurs adjacent to coastal areas, major drainageways, and lakes. Individual communities are typically interspersed with smaller communities of wetland types.

DESCRIPTION

This community occurs on nearly level land. Water movement is very gradual to and through the natural drainageways, swamps, ponds, and marshes associated with the community. During the rainy season, usually June through September, the water table is on or near the soil surface.

1. Soil

   Numerous soil types occur within this community. The soils are most often nearly level, poorly to somewhat poorly drained, shallow to deep, and coarse textured to fine textured in the subsoil. Some parts of the subsoil are calcareous or it is neutral to moderately alkaline. The surface and subsurface layers are coarse textured. Representative soils include Broward, Ft. Drum, Matmon, and Pinellas. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

   Slight differences in plant composition occur depending upon water relationships. The slightly wetter sites contain a higher percentage of grasses and herbaceous plants. Although these differences are recognized, they are not significant enough to delineate as separate communities.

   The natural vegetation of this community is typically scattered pine and cabbage palm with an understory of palmetto and grasses. There is considerable uniformity and openness. It is similar to the South Florida Flatwoods community except for a higher percentage of herbaceous plants and the presence of cabbage palms. The plants which characterize this community are:

   TREES - Cabbage palm, Sabal palmetto; Slash pine, Pinus elliottii

   SHRUBS - Sawpalmetto, Serenoa repens; Tarflower, Befaria racemosa; Waxmyrtle, Myrica cerifera

HERBACEOUS PLANTS AND VINES - Caesar weed, Urena lobata; Creeping beggarweed, Desmodium incanum; Deer tongue, Trilisa odoratissima; Gay feather, Liatris gracillis; Greenbriar, Smilax auriculata

GRASSES AND GRASSLIKE PLANTS - Creeping bluestem, Schizachyrium stoloniferum; Lopsided indiangrass, Sorghastrum secundum; Saltmarsh windmillgrass, Eustachys glauca; Stiffleaf windmillgrass, Eustachys petraea; Pineland threeawn, Aristida stricta

Additional plants that are known to occur in this community are in Appendix B.

3. Animals

The Cabbage Palm Flatwoods are habitat for a diverse and numerous wildlife population. Larger animals are found where the flatwoods join other communities, especially the wetlands. Typical animals are:

MAMMALS - Cotton mice, cotton rat, cottontail rabbit, bobcat, deer, opossum, raccoon, striped skunks

BIRDS - Bachman's sparrow, bobwhite quail, red-shouldered hawk, rufous-sided towhee

REPTILES - Diamondback rattlesnake, pygmy rattlesnake, black racer, yellow rat snake

AMPHIBIANS - Chorus frog, cricket frog, oak toad

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Fire and water are the major stresses of this community. Fire is important in control of hardwoods. Removal of fire will cause a successional move to hardwoods. The kind of hardwoods will depend on soil conditions such as drainage. Flatwoods are good cellulose producers and nearly all of the original areas of pine have been harvested. Intensive management for pulp production normally causes major changes in vegetation. The result is a low diversity of plants and a reduction in number and kinds of wildlife.

Native forage production is excellent with good management. Proper rangeland use has only a slight effect on this community. Application of range practices will increase the grasses and reduce the shrubs. This brings about an increase in types and amount of wildlife.

The community has very good wildlife values that can be enhanced with proper management. It is especially important as a buffer zone for wildlife between urban areas occurring on better drained sites and the natural drainageways. Water control practices and improved management techniques have facilitated the use of Cabbage Palm Flatwoods for extensive agricultural and urban land uses. This is especially true in south Florida near the coast.

2. Rangeland

This ecological community has the potential for producing significant amounts of high quality forage. For sites in excellent condition, the average annual production of air dry plant material varies from 4,500 to 9,000 pounds per acre. The variation depends on plant growth conditions. From 3 to 15+ acres are usually needed per animal unit depending upon amount and type of forages available. There will be little forage available if the canopy cover exceeds 60 percent. The relative percentages of annual vegetative production by weight is 70 percent grasses and grasslike plants, 15 percent trees and shrubs, and 15 percent herbaceous plants.

3. Wildlifeland

Cabbage palm flatwoods offer good food and cover to many species of wildlife. Food value comes from palm and palmetto fruit, pine mast, and acorns from associated oaks. Legumes and grasses furnish good food sources to quail and other small birds. Habitat is well suited for deer and turkey and offers refuges to migrating birds during winter months.

4. Woodland

This community has a moderately high potential productivity for commercial wood production. There are moderate equipment limitations and seedling mortality due to wet soil conditions and plant competition. The commercial species suitable for planting are slash pine and loblolly pine. Potential annual growth respectively is 1.2 and 1.0 cords per acre. Potential productivity is 18 percent less for soils south of a line from Hernando County to Orange County.

5. Urbanland

This community is subject to high water tables during the rainy season and has limitations for urban development. Water management systems are required for urban uses. It is often difficult to establish vegetation on steep channel side slopes and infertile soil. Special techniques may be required. Without vegetation, erosion and sedimentation is often a problem in some water management systems. Wind erosion is a problem in unvegetated areas. This is especially severe in the spring.

Native plants can be used for beautification and require minimum effort for establishment and maintenance. Some of the trees are American holly, cabbage palm, common persimmon, live oak, longleaf pine, and slash pine. Some of the shrubs are American beautyberry, coontie, coral bean, partridge pea, pawpaw, sawpalmetto, shining sumac, tarflower, and southern waxmyrtle. Some of the herbaceous plants are blazing star, Catesby's lily, grassleaf goldenaster, hibiscus, iris, meadowbeauty, sunflower, and zephyrlily.

The most common urban wildlife is songbirds. Undisturbed areas provide escape cover and travel routes for most forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following threatened wildlife species may be found in or around this community:

MAMMALS - Florida panther, Felis concolor coryi; Mangrove fox squirrel, Sciurus niger avicennia

BIRDS - Southeastern kestrel, Falco sparverius paulus; bald eagle, Haliaeetus leucocephalus; Sandhill crane, Grus canadensis pratensis

REPTILES - Eastern indigo snake, Drymarchon corais couperi

9 - EVERGLADES FLATWOODS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-9
FEBRUARY 1968 BASE 4-L-25770

Typical Everglades flatwood west of Homestead

Porous, pinnacle limestone rock often occurs on the surface.

Grassy areas are interspersed throughout some Everglades Flatwoods.

ECOLOGICAL COMMUNITY

NO. 9 - EVERGLADES FLATWOODS

OCCURRENCE

The Everglades Flatwoods ecological community occurs only in the Everglades region of south Florida. The largest area is west of Homestead in and round the Everglades National Park. The tropical hammock ecological community is generally interspersed throughout this community.

DESCRIPTION

This community occurs on nearly level land. It is underlain at shallow depths by a porous pinnacle limestone rock. Many areas have little or no soil and the pinnacle rock occurs on the surface. Water movement is rapid through the porous limestone. Consequently, the sites are wet for only short periods following heavy rains.

1. Soil

The soils are nearly level, shallow and coarse textured over porous limestone rock. Representative soils are Dade, Hallandale and ~~Rockdale.~~ Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

The natural vegetation that occurs on this community is dominated by an overstory of south Florida slash pine. The understory is mostly sawpalmetto and grasses. There is considerable uniformity and openness. The specific plants which characterize this community are:

TREES - South Florida slash pine, Pinus elliottii var. densa; Tamarind, Lysiloma latisiliqua

SHRUBS - Marlberry, Ardisia escallonioides; Sawpalmetto, Serenoa repens; Waxmyrtle, Myrica cerifera; Varnish leaf, Dodonaea viscosa

HERBACEOUS PLANTS AND VINES - Florida peperomia, Peperomia obtusifolia Wild grape, Vitis sp.; Greenbriar, Smilax sp.

GRASSES - Bluejoint panicum, Panicum tenerum; Cabanis bluestem, Andropogon cabanissi; Chalky bluestem, Andropogon capillipes; Creeping bluestem, Schizachyrium stoloniferum; Gulf muhly, Muhlenbergia capillaris var. filipes; Low panicums, Panicum spp.; Saltmarsh windmillgrass, Eustachys glauca; South Florida bluestem, Schizachyrium rhizomatum

Additional plants that are known to occur in this community are in Appendix B.

3. Animals

The Everglades Flatwoods are habitat for a variety of wildlife. Typical animals are:

MAMMALS - Bobcat, cotton mouse, five-lined skink, marsh rabbit, opossum, raccoon, white-tailed deer

BIRDS - Pine warbler, red-shoulder hawk

REPTILES - Pygmy rattlesnake

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Values as a Natural System

Fire is the major stress condition of the community. It is important in control of hardwoods and removal of fire will cause a successional move to a hardwood community. With road and canal building, natural firebreaks are produced which endanger the pineland.

Decaying plant material is important in that it produces a weak acid which dissolves the rock and in time produces soil for seed germination.

Everglades Flatwoods are good cellulose producers but distance from woodland markets generally limit commercial production. Native forage production is good with proper management. Use for rangeland has only a slight effect on the community. This community has good wildlife values, especially with proper management. It affords a drier habitat for wildlife species utilizing the wetlan nearer Lake Ockeechobee and the sawgrass marsh in the Everglades. A special importance is that it serves as a buffer for wildlife between the wetlands adjacent to Lake Okeechobee and urban development near the coast. Water control practices and improved management techniques have facilitated the use of this community for vegetables, fruit crops, and urban development. This is especially true near the coast.

2. Rangeland

This ecological community has the potential for producing significant amounts of high quality forage such as south Florida bluestem, chalky bluestem, and bluejoint panicum. For sites in excellent condition, the average annual production of air dry plant material varies from 1,500 to 3,000 pounds per acre. The variation depends on plant growth conditions. From 12 to 33+ acres are usually needed per animal unit depending upon amount and type of forage available. There will be little forage available if the canopy cover exceeds 60 percent. The

relative percentages of annual vegetative production by weight is 75 percent grasses and grasslike plants, 15 percent trees and shrubs, and 10 percent herbaceous plants.

3. Wildlifeland

Due to its geographic position, this community is valuable to migrating bird life headed to South America for wintering. It serves the same purpose on the return trip, acting primarily as resting cover. It is well suited for deer, bobcat, owls, and small rodents. Many reptiles find suitable habitat in this community.

4. Woodland

This community has a moderate potential productivity for commercial wood production. There are moderate equipment limitations and severe seedling mortality due to the rocky soil conditions. The commercial species for planting is slash pine. Potential annual growth is 0.9 cords per acre for South Florida slash pine and 0.7 cords per acre for slash pine.

5. Urbanland

This community is subject to some unique limitations for urban development. The hard limestone rock is on or near the surface and special equipment is needed for excavations evacuation. The most serious limitations for urban development are those imposed by the above factor and a high water table during the rainy season.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are cabbage palm, live oak, myrsine, silver palm, and slash pine. Some of the shrubs are coco plum, dahoon holly, Florida fiddlewood, Florida privet, marlberry, sawpalmetto, varnish leaf, and southern waxmyrtle. Some of the herbaceous plants are aster, bunchflower, cone flowers, crotalaria, ferns, iris, meadow beauty, partridge pea, rose-mallow, and sunflower.

The most important urban wildlife is songbirds and rabbit. Undisturbed areas do provide good escape cover for many other forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

Endangered or threatened plants that may occur in this community include:

SHRUBS - Big pine partridge pea, Cassia keyensis; Pride-of-big-pine, Strumpfia maritima

HERBACEOUS PLANTS AND VINES - Night scent orchid, Epidendrum nocturnum; Pineland clustervine, Jacquemontia curtissii, Tiny milkwort, Polygala smallii

The following threatened wildlife species may be found in or around this community:

MAMMALS - Florida panther, Felis concolor coryi, Mangrove fox squirrel, Sciurus niger avicennia

BIRDS - Red-cockaded woodpecker, Picoides borealis

REPTILES - Eastern indigo snake, Drymarchon coraris couperi; Miami black-headed snake, Tantilla oolitica

10 - CUTTHROAT SEEPS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-10
FEBRUARY 1968 BASE 4-L-25770

Dense cutthroat grass is the most prominent feature of this community at this Polk County site.

Scattered slash pine trees over a dense ground cover of cutthroat grass typifies the appearance of this community.

ECOLOGICAL COMMUNITY

NO. 10 - CUTTHROAT SEEPS

OCCURRENCE

The Cutthroat Seeps ecological community is found mostly in Polk and Highlands Counties. It occurs to a limited extent in adjoining counties. Individual size of the community is normally less than 100 acres. Much of the original community has been destroyed and developed to intensive uses.

DESCRIPTIONS

This community occurs on nearly level to gently sloping or depressed areas where water seeps from the adjacent Sand Pine Scrub and Longleaf Pine-Turkey Oak Hills communities. The soil profile is wet most of the time.

1. Soils

The soils are nearly level to gently sloping, poorly drained, deep and coarse textured throughout. The Basinger, Ona, and St. Johns soil series are representative of this community. Appendix A contains information on correlation of soils series with the appropriate ecological community.

2. Vegetation

The appearance of this community is distinctive. It has open scattered pine trees, isolated sawpalmetto and waxmyrtle and a dense cover of cutthroat grass that stays green the year round. Plants which characterize this community are:

TREES - Slash pine, Pinus elliottii

SHRUBS - Waxmyrtle, Myrica cerifera

GRASSES - Cutthroat grass, Panicum abscissium; Chalky bluestem, Andropogon capillipes; Creeping bluestem, Schizachyrium stoloniferum; Maidencane, Panicum hemitomon; Toothache grass, Ctenium aromaticum; Low panicums, Panicum spp.

Information about plants that occur in specific ecological communities is in Appendix B.

3. Animals

Typical animals include:

MAMMALS - Bobcat, cottontail rabbit, deer, raccoon, skunks, opossum

BIRDS - Woodpeckers, several songbirds

REPTILES - Pygmy rattlesnake, yellow ratsnake

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Seepage water from the higher elevated and better drained areas is the controlling factor of the Cutthroat Seep ecological community. Development in and around this site causes changes in water quality and quantity which usually result in wide changes of plant composition.

These areas are not generally used for woodlands due to wetness, plant composition and difficulty of harvest. They are sometimes used for woodland if part of a larger flatwoods area. Native forage production is very good with proper management. Rangeland use has only a slight effect on the community. Range practices will result in an increase of grasses and reduction of shrubs. Wildlife values are good, especially with improved wildlife management practices. Its different plant composition from surrounding communities offers good cover and food for wildlife.

Environmental values are especially important. Water from better drained areas "seeps" out to the ground surface at these communities. They then serve as natural drainageways and help to improve water quality by the filtering action and nutrient uptake of plants.

2. Rangeland

This ecological community has the potential for producing significant amounts of good quality forage. For sites in excellent condition, the average annual production of air dry plant materials varies from 6,000 to 9,000 pounds per acre. This variation depends on plant growth conditions. From 4 to 16+ acres are usually needed per animal unit depending upon amount and type of forages available. The relative percentage of annual vegetative production by weight is 80 percent grasses and grasslike plants, 10 percent trees and shrubs, and 10 percent herbaceous plants.

3. Wildlifeland

Cutthroat seeps are well suited for deer, turkey, and songbirds. They are fair for quail and good for many mammals, such as skunks, opossums, and raccoons. Reptiles such as ratsnakes and rattlesnakes find suitable habitat in the community. It is poorly suited for squirrel and dove.

4. Woodland

This community has a moderate potential productivity for commercial woodland production. There are severe equipment limitations and

seedling mortality due to wet soil conditions. There are no commercial species suitable for planting. Potential annual growth of existing slash and pond pine is at 0.4 cords per acre.

5. Urbanland

This community is subject to high water tables and has limitations for urban development. Intensive water management systems are required for urban uses. It is often difficult to establish vegetation on steep channel side slopes and infertile spoil. Special techniques are usually required in these situations. Without vegetation, erosion and sedimentation is usually a problem. Wind erosion is also a severe problem in the spring on unvegetated areas.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are cabbage palm, longleaf pine, pond pine, and slash pine. Some of the shrubs are sawpalmetto and waxmyrtle. Some of the herbaceous plants are aster, ferns, iris, meadow beauty, partridge pea, and sunflower.

The most adapted urban wildlife is birds. Undisturbed areas provide good escape cover for many forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered or threatened wildlife species may be found in or around this community:

MAMMALS - Florida panther, Felis concolor coryi

BIRDS - Southeastern kestrel, Falco sparverius; Red-cockaded woodpecker, Picoides borealis; Florida sandhill crane, Grus canadensis pratensis; Bald eagle, Haliaeetus leucocephalus

REPTILES - Eastern indigo snake, Drymarchon corais couperi

11 - UPLAND HARDWOOD HAMMOCKS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-11
FEBRUARY 1968 BASE 4-L-25770

Winter brings about a open appearance as the deciduous trees lose their leaves.

This community typically has a very sparse ground cover due to the shading effect of the larger trees and understory shrubs.

Oak hammock as seen from a distance as it typically occurs within south Florida flatwoods.

ECOLOGICAL COMMUNITY

NO. 11 - UPLAND HARDWOOD HAMMOCKS

OCCURRENCE

The Upland Hardwood Hammock ecological community occurs commonly in north central Florida and sparingly in north and west Florida. Individual communities vary in size from a few acres to several hundred. The largest communities occur near Brooksville, Gainesville, and Ocala. This community is generally considered to be a climax vegetation of ecological succession in the Southern Coastal Plains. A climax community is one that perpetuates its kind in equilibrium with the environment without influence of man.

DESCRIPTIONS

This community occurs on rolling terrain with nearly level to strong slopes. Moderately moist regimes without excessive water or drought conditions characterize this community. It can be readily identified by the occurrence of thick stands of shade tolerant hardwoods and few pines. There is usually more organic material and litter present than on drier sites.

1. Soils

The soils are nearly level to strongly sloping, deep, somewhat poorly to well drained and coarse-textured throughout or coarse-textured in the upper part with moderately coarse-textured to moderately fine-textured subsoils. Representative soils include: Blichton, Bonneau, Flemington, Fort Meade, Gainesville, Hernando, Mabel, Millhopper, Shubuta, Sparr and Zuber. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

This community is considered to be in a climax stage of vegetation when only a few pines occur with hardwoods dominating. Under climax conditions, understory vegetation may be quite sparse. Plants which characterize this community are:

TREES - American beech, Fagus grandifolia; American holly, Ilex opaca; Black cherry, Prunus serotina; Eastern hophornbeam, Ostrya virginiana; Flowering dogwood, Cornus florida; Hawthorns, Crataegus spp.; Laurel oak, Quercus laurifolia; Laurelcherry, Prunus caroliniana; Live oak, Quercus virginiana; Loblolly pine, Pinus taeda; Longleaf pine, P. palustris; Slash pine, P. elliottii; Pignut hickory, Carya glabra; Southern magnolia, Magnolia grandiflora; Sweetgum, Liquidambar styraciflua; Water oak, Quercus nigra

SHRUBS - American beautyberry, Callicarpa americana; Arrowwood, Viburnum dentatum; Sparkleberry, Vaccinium arboreum; Waxmyrtle, Myrica cerifera

HERBACEOUS PLANTS AND VINES - Aster, Aster spp.; Cat greenbriar, Smilax glauca; Common greenbriar, Smilax rotunidifolia; Crossvine, Bignonia capreolata; Partridge berry, Mitchella repens; Partridge pea, Cassia spp.; Poison ivy, Toxicodendron radicans; Ragweed, Ambrosia artemisiifolia; Spanish moss, Tillandsia usneoides; Virginia creeper, Parthenocissus quinquefolia; Wild grape, Vitis spp.; Yellow jessamine, Gelsemium sempervirens; Dotted horsemint, Monarda punctata; Blackberry, Rubus spp.

GRASSES AND GRASSLIKE PLANTS - Low panicum, Panicum spp.; Switchgrass, Panicum virgatum

Information about plants which occur in specific ecological communities is in Appendix B.

3. Animals

The more common wildlife species include:

MAMMALS - Raccoon, opossum, southern flying squirrel, gray squirrel, gray fox, bobcat, white-tailed deer, armadillo

BIRDS - Bluebird, bluejay, cardinal, cedar waxwing, chickadee, chuck-wills widow, great crested flycatcher, eastern phoebe, eastern mockingbird, loggerhead shrike, mourning dove, palm warbler, summer tanager, robin, rufous-sided towhee, turkey, tufted titmouse, woodpeckers, wrens

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Upland hardwood hammocks occur on some of the soils that are well suited for a variety of uses and may undergo considerable stress and change. From a purely aesthetic standpoint the interior of this community, if not recently disturbed, usually is inspiring. Large hardwoods exhibit an interesting diversity in growth forms. In the moist drainageways, true mosses, several species of ferns and violets represent the fragile side of nature. Many aspects related to environmental awareness such as the function of microorganisms in decay and nutrient-cycling may be viewed in this community.

Upland hardwood hammocks are valuable for watershed protection, and hardwood products and are prized areas for residential development.

2. Rangeland

The soil's moisture holding capacity and natural fertility is relatively high, and good quality forages can be produced. Forest

canopy closure is the limiting factor on native forage production. For sites in excellent condition the average annual production of air dry plant material varies from 3,000 to 4,500 pounds per acre. This variation depends on plant growth conditions. From 8 to 23+ acres are usually needed per animal unit depending upon amount and type of forages available. There will be little or no grazing values when the forest cnaopy cover exceeds 60 percent. The relative percentage of annual vegetative production by weight is 50 percent grasses, 30 percent trees and shrubs, and 20 percent forbs.

3. Wildlifeland

Hardwood mast (acorns, nuts, fruits, buds, and berries) makes upland hardwood hammocks good habitat for deer, turkey, squirrel, black bear, and many songbirds. Maturing hardwoods and snags provide good nesting sites for squirrels, owls, and most woodpeckers. Habitat is good for raccoons and opossums; poor for bobwhite quail and dove; fair for reptiles and poor for most amphibians.

4. Woodland

When managed for hardwood production, this community produces quality products. However, there has been a tendency to maintain these areas in predominantly pine through species management due to quicker returns on investment. The community has a high potential for commercial woodland production, and there are no significant management hazards and limitations. Slash pine and loblolly pine are the commercial coniferous species suitable for planting. Potential annual growth respectively is 1.5 and 1.2 cords per acre. Longleaf pine has a potential annual growth of 0.8 cords per acre.

5. Urbanland

The moderately well to well drained areas have few limitations for urban development. This and the attractiveness of the hardwood vegetation make upland hardwood hammocks prized areas for residential development. Water erosion can be a problem on the steeper slopes. Special vegetative establishment and maintenance practices are needed in situations where water erosion is a concern. Plants native to the community should receive preference for beautification and landscaping. This is because they are easier established and require less maintenance. Some of the trees are American holly, cabbage palm, laurelcherry, chickasaw plum, common persimmon, dogwood, fringetree, live oak, loblolly pine, longleaf pine, redbud, red maple, slash pine, magnolia, redcedar, swamp chestnut oak, sweetgum, and water oak. Some of the shrubs are American beautyberry, beargrass, coral bean, elderberry, lantana, strawberry bush, shining sumac, and waxmyrtle.

The most important urban wildlife is songbirds and squirrel. Undisturbed areas provide good escape cover and travel routes for deer, turkey, raccoon and similar forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

Threatened or endangered plants include:

HERBACEOUS PLANTS AND VINES - Auricled spleenwort, *Asplenium auritum*; Dwarf spleenwort, *Asplenium pumilum*; Sinkhole fern, *Blechnum occidentale*

Threatened or endangered animals include:

MAMMALS - Florida panther, *Felis concolor coryi*; Florida black bear, *Ursus americanus floridanus*

REPTILES - Eastern indigo snake, *Drymarchon corais couperi*

12 - WETLAND HARDWOOD HAMMOCKS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-12
FEBRUARY 1968 BASE 4-L-25770

Distant view of a typical wetland hardwood hammock in Taylor County.

Interior of a wetland hardwood hammock.

In some areas, cabbage palms are predominant, such as in this area near the coast.

ECOLOGICAL COMMUNITY

NO. 12 - WETLAND HARDWOOD HAMMOCKS

OCCURRENCE

The Wetland Hardwood Hammock ecological community is scattered east and west of the Central Florida Ridge, extending northwesterly into the panhandle. It predominates in the region from Hillsborough County to Wakulla County. One of the largest areas is along the Gulf Coast north of the Withlacoochee River.

DESCRIPTION

This community is a wetland forest on poorly drained soils, soils subject to constant seepage, or soils with high water tables. It has an evergreen appearance since it is dominated by the laurel, live, and water oaks, and cabbage palm. In many areas redcedar is also one of the dominants. The deciduous sweetgum is one of the trees. Red maple, various bays, and cypress also occur but these species are not dominant in this community. Topography is low and nearly level. These hammocks are not flooded for as long a period of time as are associated swamp hardwoods. The swamp hardwoods community is often found within depressional areas of the wetland hardwood hammock. Wetland hardwood hammocks may be distinguished from bottomland hardwoods by the dominant plant species and the type of flooding. If the inundating water derives chiefly from river overflow, it is a bottomland hardwood; if inundated by local rainfall, it is wetland hardwood hammock.

1. Soils

Soils associated with this community are nearly level, somewhat poorly and poorly drained and have loamy subsoils and sandy surfaces. Many of these soils have very thick sandy surface and subsurface layers. Representative soils include Aripeka, Coxville, Herod, Matmon, Megget, Nutall, Oleno, Portsmouth, and Plummer. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

This community supports a luxurious growth of vegetation with a diversity of species. Although supporting plants that are found in both drier and wetter sites, this community has definite flora characteristics. Plants which characterize this community are:

TREES - Cabbage palm, *Sabal palmetto*; Hawthorns, *Craetaegus* spp.; Laurel oak, *Quercus laurifolia*; Live oak, *Quercus virginiana*; Red bay, *Persea borbonia*; Red maple, *Acer rubrum*; Sweetbay, *Magnolia virginiana*; Sweetgum, *Liquidambar styraciflua*; Water oak, *Quercus nigra*; Magnolia, *Magnolia grandiflora*

SHRUBS - Waxmyrtle, Myrica cerifera; Witchhazel, Hamamelis virginiana; Sawpalmetto, Serenoa repens

HERBACEOUS PLANTS AND VINES - Cinnamon fern, Osmunda cinnamomea; Crossvine, Bignonia capreolata; Poison ivy, Toxicodendron radicans; Royal fern, Osmunda regalis; Spanish moss, Tillandsia usneoides; Virginia creeper, Parthenocissus quinquefolia; Wild grape, Vitis spp.; Yellow jessamine, Gelsemium sempervirens

GRASSES AND GRASSLIKE PLANTS - Beaked panicum, Panicum spp.; Chalky bluestem, Andropogon capillipes; Eastern gamagrass, Tripsacum dactyloides; Longleaf uniola, Chasmanthium sessiliflorium; Maidencane, Panicum hemitomon

A list of plants that may occur in this community are in Appendix B.

3. Animals

Wildlife species include:

MAMMALS - Bobcat, deer, skunk, mink, opossum, otter, raccoon, wild hog, gray squirrel

BIRDS - Mississippi kite, owls, turkey, red-shouldered hawk, woodpeckers and numerous songbirds

REPTILES - Green anole

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Wetland hardwood hammocks have high recreational values for hunting, hiking, and nature study. They also have important aesthetic benefits. Water quality and quantity control is one of the most important benefits provided, particulary in the coastal areas.

2. Rangeland

This community has a low potential for producing forage due to the dense forest canopy of hardwoods and associated cabbage palms. These sites provide protection from cold weather and shade during hot summer periods for livestock. For sites in excellent condition, the average annual production of air dry plant material varies from 1,500 to 3,500 pounds per acre. The variation depends on plant growth conditions. From 12 to 35 acres are usually needed per animal unit depending upon amount and type of forage available. There will be little forage available when the canopy cover exceeds 60 percent. The relative

percentage of annual vegetation production by weight is 40 percent grasses and grasslike plants, 40 percent trees and shrubs, and 20 percent herbaceous plants.

3. Wildlifeland

Wetland hardwood hammocks are one of the most productive and diverse wildlife habitats. This community is good habitat for wild hogs, deer, turkey, black bear, gray squirrel, woodpeckers, owls, and furbearers. It is poor for quail and dove and fair for many songbirds. It is good for reptiles and amphibians, being moist most of the year.

4. Woodland

There has been considerable acreage of wet hardwood hammocks converted to pine production. Drainage is needed for optimum growth of pines. The drainage and conversion destroys this community as a viable unit. With the value of hardwoods increasing, much of the remaining acreage may stay in hardwood production. However, new markets are needed for hardwood production, such as furniture stock, to keep these areas in hardwood production.

This community has a moderately high potential productivity for commercial wood production. There are moderate equipment limitations and seedling mortality due to wet soil conditions and plant competition. The commercial species for planting are slash pine and loblolly pine. Potential annual growth is 1.2 and 1.0 cords per acres respectively. Potential productivity is 18 percent less for soils south of a line from Hernando to Orange Counties.

5. Urbanland

This community is subject to high water tables during the rainy seasons and has limitations for urban development. Water management systems are required for urban uses. It is usually difficult to establish vegetation on steep channel side slopes and infertile spoil. Special planting and management techniques may be required. Without vegetation, erosion and sedimentation is often a problem in water management systems. Wind erosion can also become a problem in unvegetated areas. This is especially severe in the spring.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are American holly, cabbage palm, dahoon holly, fringetree, hawthorns, live oak, loblolly bay, loblolly pine, longleaf pine, red maple, slash pine, southern magnolia, redcedar, sugarberry, swamp chestnut oak, sweetgum, and water oak. Some of the shrubs are American beautyberry, shining sumac, yaupon holly, sawpalmetto, and waxmyrtle. Some of the herbaceous plants are aster, blackeyed Susan, coneflowers, dayflower, rose-mallow, meadowbeauty, and sunflower.

The most important urban wildlife is songbirds and squirrel. Undisturbed areas provide good escape cover and travel routes for deer, turkey, raccoon, and similar forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

Threatened or endangered plants include:

HERBACEOUS PLANTS - Adder's tongue fern, *Ophioglossum palmatum*; Auricled spleenwort, *Asplenium auritum*; Climbing dayflower, *Commelina gigas*; Cuplet fern, *Dennstaedtia bipinnata*

Threatened or endangered animals may include:

MAMMALS - Florida black bear, *Ursus americanus floridanus*; Florida panther, *Felis concolor coryi*

13 - CABBAGE PALM HAMMOCKS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

FEBRUARY 1981 4-R-36720-13
FEBRUARY 1968 BASE 4-L-25770

USDA-SCS-FORT WORTH, TEXAS 1981

ECOLOGICAL COMMUNITY

NO. 13 - CABBAGE PALM HAMMOCKS

The Cabbage Palm Hammock was originally perceived as a separate and viable ecological community. However, during the years since this guide was first developed, field work has shown that areas designated as Cabbage Palm Hammocks could be more properly designated as either Wetland hardwood Hammock or as Upland Hardwood Hammock, depending on the wetness of the site. Close inspection showed that rather than being a climax community that would perpetuate itself for years, the areas called Cabbage Palm Hammocks would quickly become either a Wetland Hardwood Hammock or Upland Hardwood Hammock once man's influence was removed.

For this revision of this guide, a decision was made to correct this misconception. Whenever a reference is made to Oak Hammock in the tables in the Appendices, the reader should consider the drainage characteristics of the soil and the topographical position within the landscape. This information along with the descriptions given for Wetland Hardwood Hammock and Upland Hardwood Hammock communities should be used to determine which of these two communities is most accurately described. In most cases, the areas previously designated as Cabbage Palm would fit into Wetland Hardwood communities occurring on poorly drained soils.

14 - TROPICAL HAMMOCKS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-14
FEBRUARY 1968 BASE 4-L-25770

Dense jungle-like appearance of a typical tropical hammock with Gumbo limbo trees

Interior View of a Tropical Hammock with Royal Palms

Interior View of a Tropical Hammock Showing a strangler fig, Ficus aurea

ECOLOGICAL COMMUNITY

NO. 14 - TROPICAL HAMMOCKS

OCCURRENCE

The Tropical Hammock ecological community is confined to south Florida. It occurs on elevated areas in the Everglades and along the limestone ridges of the Florida Keys. Individual communities range in size from less than an acre to several acres.

DESCRIPTION

Tropical hammocks generally appear as thick clumps of strands or small to medium-sized trees. On the sites where disturbance has not occurred for several years, a more "jungle-like" appearance is observed. A heavy canopy closure, causing deep interior shade, is prevalent. This condition serves to moderate temperatures and conserve moisture. Characteristically, trees of the tropical hammocks have dense, heavy, strong wood and shallow spreading root systems which adapt them to a harsh environment of wind, periodic droughts and salt spray.

1. Soils

Soils are shallow to rock with only a few inches of organic material overlying porous limestone and marl. Characteristic soils were mapped in an older reconnaissance type soil survey and have not been classified into the current soil classification system. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

Tropical hammocks typically have a very high plant diversity. Most of the vegetation is probably of West Indies origin. The following species are characteristic:

TREES - Bahama lysiloma (Tamarind), Lysiloma latisiliqua; Jamaica dogwood, Piscidia piscipula; Mastic, Sideroxylon foetidissimum; Poisontree, Metopium toxiferum; Strangler fig, Ficus aurea; Laurel oak, Quercus laurifolia; Live oak, Quercus virginiana; Cabbage palm, Sabal palmetto; Water oak, Quercus niger

SHRUBS - Marlberry, Ardisia escalloniodes; Snowberry, Chiococca alba; Wild coffee, Psychotria nervosa

HERBACEOUS PLANTS - Golden serpent fern, Phlebodium aureum; Resurrection fern, Polypodium polypodioides; Stiff-leaved wild pine, Tillandsia fasciculata

GRASSES - Low paniucm, Panicum spp.; Sour paspalum, Paspalum conjugatum

Information on other plants that may occur in this community are found in Appendix B.

3. Animals

Tropical hammocks serve as habitat for a variety of wildlife species, many of which are not found elsewhere. Some species that occur are:

MAMMALS - Everglades mink, Mustela vison; Gray squirrel, Sciurus carolinensis; Key deer, Odocoileus virginanus; Key Largo cotton mouse, Peromyscus gossypinus; Key Largo woodrat, Neotoma floridana; Marsh rabbit, Sylvilagus palustris

Information on animals know to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Values as a Natural System

Tropical hammock communities are probably the most endangered ecological type in Florida. Such endangerment lies in the fact that the communities are not widespread in occurrence and have received considerable pressures for other land uses. Special consideration should be given to incorporating all existing tropical hammock into an overall land use plan. Such a plan would insure the continued use of these communities as hurricane protection, landscape and greenbelt areas, parks, and wildlife habitat in an areas under tremendous population growth pressures.

2. Rangeland

Not recommended as a land use.

3. Wildlifeland

There are very specific requirements for the wildlife that occur in tropical hammocks, particularly those resident species. Able to fulfill the requirements of both local and migratory wildlife, tropical hammocks naturally become good habitat for these species. A special function is that of cover for many mammals during periods of high water and resting and feeding areas for migratory birdlife.

4. Woodland

Not recommended for commercial production.

5. Urban land

This community is subject to high water tables during the rainy season and has limitations for urban development. Water management systems are required for urban uses. It is usually difficult to establish vegetation on steep channel side slopes and infertile spoil. Special planting and management techniques may be required. Without vegetation, erosion and sedimentation is often a problem in water management systems. Wind erosion can also become a problem in unvegetated areas. This is especially severe in the spring.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are American holly, cabbage palm, dahoon holly, live oak, loblolly bay, red maple, slash pine, and water oak. Some of the shrubs are American beautyberry, shining sumac, sawpalmetto, and waxmyrtle. Some of the herbaceous plants are aster, blackeyed Susan, coneflowers, dayflower, rosemallow, meadowbeauty, and sunflower.

The most common urban wildlife is songbirds and squirrel. Undisturbed areas provide good escape cover and travel routes for deer, turkey, raccoon and similar forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

Threatened or endangered plants of the tropical hammocks are:

TREES - Buccaneer palm, Pseudophoenix sargentii; Cupania, Cupania glabra; Krug's holly, Ilex krugiana; Lignum-vitae, Guaiacum sanctum; Manchineel, Hippomane mancinella; Tree cactus, Cereus robinii

SHRUBS - Pride-of-big-pine, Strumpfia maritima

HERBACEOUS PLANTS - Auricled spleenwort, Asplenium auritum; Bird's nest spleenwort, Asplenium serratum; Cowhorn orchid, Cyrtopodium punctatum; Dollar orchid, Encyclia boothiana; Everglades peperomia, Peperomia floridana; Fragrant maidenhair fern, Adiantum melanoleucum; Fuch's bromeliad, Guzmania monostachia; Adder's tongue fern, Ophioglossum palmatum; Hattie Bauer halberd fern, Tectaria coriandrifolia; Night-scent orchid, Epidendrum nocturnum; Narrow strap fern, Campyloneurum angustifolium; Powdery catopsis, Catopsis beteroniana; Slender spleenwort, Asplenium dentatum; Star-scale fern, Pleopeltis revoluta; Twisted air plant, Tillandsia flexuosa; Worm-vine orchid, Vanilla barbellata; Young-palm orchid, Tropidia polystachya

Threatened or endangered animals of the tropical hammocks are:

MAMMALS - Florida panther, Felis concolor coryi; Key deer, Odocoileus virginianus clavium; Key Largo cotton mouse; Peromyscus gossypinus allapaticola; Key Largo woodrat, Neotoma floridana smalli; Key Vaca raccoon, Procyon lotor auspicatus; Mangrove fox squirrel, Sciurus niger avicennia

BIRDS - Bald eagle, Haliaeetis leucocephalus; White-crowned pigeon, Columba leucocephala; Wood stork, Mycteria americana

15 - OAK HAMMOCKS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-15
FEBRUARY 1968 BASE 4-L-25770

ECOLOGICAL COMMUNITY

NO. 15 - OAK HAMMOCKS

The Oak Hammock was originally perceived as a separate and viable ecological community. However, during the years since this guide was first developed, field work has shown that areas designated as Oak Hammocks could be more properly designated as either Wetland hardwood Hammock or as Upland Hardwood Hammock, depending on the wetness of the site. Close inspection showed that rather than being a climax community that would perpetuate itself for years, the areas called Oak Hammocks would quickly become either a Wetland Hardwood Hammock or Upland Hardwood Hammock once man's influence was removed.

For this revision of this guide, a decision was made to correct this misconception. Whenever a reference is made to Oak Hammock in the tables in the Appendices, the reader should consider the drainage characteristics of the soil and the topographical position within the landscape. This information along with the descriptions given for Wetland Hardwood Hammock and Upland Hardwood Hammock communities should be used to determine which of these two communities is most accurately described. In most cases, the areas previously designated as Oak Hammocks would fit into Upland Hardwood Hammock communities occuring on somewhat poorly drained soils.

16 - SCRUB CYPRESS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-16
FEBRUARY 1968 BASE 4-L-25770

A sparse stand of stunted cypress trees are a typical feature of the Scrub Cypress Community.

Air plants, like the one in extreme left center of picture are often found in the cypress trees.

Scrub cypress as seen from a distance.

ECOLOGICAL COMMUNITY

NO. 16 - SCRUB CYPRESS

OCCURRENCE

The Scrub Cypress ecological community occurs in south Florida on marl and rock that is frequently flooded. Eastern Collier County and northern Monroe County have the largest areas of this community. This region is called "Big Cypress."

DESCRIPTION

This community appears as a broad area of marshes with dwarf cypress (less than 20 feet tall) scattered throughout. It is stressed by the extreme seasonal change in water levels, and low level of plant nutrients. These factors cause poor growing conditions with a lack of plant diversity and small wildlife populations in comparison to the cypress swamp community.

1. Soils

Soils associated with this community are nearly level, poorly to very poorly drained, with coarse to medium textured surfaces underlain by finer textured material or fractured limestone. A representative soil is Margate. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

The vegetation is much like that of the freshwater marsh community. Occasional air plants and orchids can be found in the scattered cypress trees. Plants which characterize this community are:

TREES - Bald cypress, Taxodium distichum; Pond cypress, Taxodium distichum var. nutans

SHRUBS - Waxmyrtle, Myrica cerifera

HERBACEOUS PLANTS - Stiff-leafed wild pine, Tillandsia fasiculata; Yellow-eyed grass, Xyris spp.

GRASSES - Blue maidencane, Amphicarpum muhlenbergianum; Bluejoint panicum, Panicum tenerum; Chalky bluestem, Andropogon capillipes; cutgrass, Leersia hexandra; Gulfdune paspalum, Paspalum monostachyum; Maidencane, Panicum hemitomon

Information about plants which occur in specific ecological communities is in Appendix B.

3. Animals

The poor soil and lack of plant nutrients that are responsible for the relatively sparse plant life also account for a fairly scattered wildlife population.

Wildlife species include:

MAMMALS - Bobcat, deer, mink, panther, raccoon

BIRDS - Roseate spoonbill, wood stork, herons

REPTILES - Alligator, frogs, turtles, snakes

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

The scrub cypress community occurs primarily in southwest Florida. Developments in and around the community cause changes in water quality and quantity which results in wide changes in portions of the plant community. The scrub cypress community is highly endangered.

Scrub cypress swamps provide water storage areas by holding excess water and slowly releasing it into the water table. Water quality is enhanced by the community, which functions like a waste treatment plant by absorbing nutrients from the water.

2. Rangeland

This ecological community has the potential for producting significant amounts of high quality forage such as south Florida bluestem, gulfdune paspalum, chalky bluestem, and bluejoint panicum. For sites in excellent condition, the average annual production of air dry plant material varies from 1,500 to 4,500 pounds per acre. The variation depends on plant growth conditions. From 9 to 22+ acres are usually needed per animal unit depending upon amount and type of forage available. The relative percentages of annual vegetative production by weight is 75 percent grasses and grass-like plants, 15 percent trees and shrubs, and 10 percent herbaceous plants.

3. Wildlifeland

Due to the sparseness of vegetative growth, this community is one of the least productive of wildlife. Deer will range through these areas, but the habitat is poor. The primary value is seasonal to frogs, turtles, snakes, and salamanders which can adjust to the short hydroperiod and to predators on these animals such as raccoons, mink, and the wading birds.

4. Woodland

These areas are not generally used for commercial woodland production. However, this community does have a moderate potential productivity for commercial woodland production on areas with adequate surface drainage. There are severe equipment limitations due to the poorly drained soil conditions. Slash pine is the species suitable for planting on areas with adequate surface drainage. Potential annual growth is 0.7 cords per acre.

5. Urbanland

This community is subject to periodic flooding and has severe limitations for urban development. Elaborate water management systems are required for urban uses.

It is difficult to establish vegetation on steep channel side slopes and infertile spoil. Special techniques such as mulching, selected plants and and unusual seeding and plant management techniques may be required.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are bald cypress, cabbage palm, pond cypress and slash pine. Some of the shrubs are buttonbush, dahoon holly, and waxmyrtle. Some of the herbs are aster and sunflower.

The most important urban wildlife are songbirds and water-adapted reptiles and mammals. Undisturbed areas provide good escape cover and travel routes for all forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following threatened or endangered plants may occur in this community:

HERBACEOUS PLANTS - Acuna's epidendrum, Epidendrum acunae; Auricled spleenwort, Asplenium auritum; Bird's nest spleenwort, Asplenium serratum; Cow-horn orchid, Cyrtopodium punctatum; Dwarf epidendrum, Encyclia pygmaea; Hidden orchid, Maxillaria crassifolia; leafless orchid, Campylocentrum pachyrrhizum; Night-scent orchid, Epidendrum nocturnum; Nodding catopsis, Catopsis nutans

The following threatened or endangered wildlife species may be found in or around this community:

MAMMALS - Florida panther, Felis concolor coryi

BIRDS - Wood stork, Mycteria americana

REPTILES - American alligator, Alligator mississippiensis

17 - CYPRESS SWAMP

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960. Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-17
FEBRUARY 1968 BASE 4-L-25770

A cypress "head" in south central Florida.

Cypress often occur along lake edges.

Interior of a cypress swamp. Air plants are common on the cypress trees in south Florida.

Cypress swamps often occur adjacent to rivers and streams.

Interior of a cypress swamp in North Florida.

Typical cypress swamp in Jefferson County appears in the background.

ECOLOGICAL COMMUNITY

NO. 17 - CYPRESS SWAMP

OCCURRENCE

The Cypress Swamp ecological community occurs along rivers, lake margins, slough and strands, or interspersed throughout other communities such as flatwoods and slough. It occurs throughout Florida, but is the predominant swamp type in the area from Flagler County south through Polk County and in southwest Florida. The "Big Cypress" area of Monroe and Collier Counties is included in Ecological Community No. 16 - Scrub Cypress.

DESCRIPTION

This community is poorly drained and water is at or above ground level a good portion of the year. Bald cypress is the dominant tree and is often the only plant which occurs in significant numbers. Cypress swamps growing on sand, rock and shallow mucky pond areas are not as productive as those found on alluvial flood plain soils. As the soil depth in muck ponds increases, so does the growth rate of cypress. The submerged or saturated condition of the soil and general absence of fire help reduce competition and keep the community from a successional change to a swamp hardwood (Bayhead) community.

1. Soils

Soils commonly associated with this community are nearly level or depressional, poorly drained and have loamy subsoils and sandy surfaces. Representative soils include: Martel, Monteocha, and Surrency. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

Bald cypress, along lakes and stream margins, is dominant and often is the only plant found in large numbers. Pond cypress occurs in cypress heads or domes which are usually found in flatwoods and prairies. The diversity of trees is low in the cypress heads but increases in the strands and stream margins. Plants which characterize this community are:

TREES - Bald cypress, Taxodium distichum; Blackgum, Nyssa sylvatica; Coastal Plain willow, Salix caroliniana; Pond cypress, Taxodium distichum var. nutans; Red maple, Acer rubrum

SHRUBS - Common buttonbush, Cephalanthus occidentalis, Southern waxmyrtle, Myrica cerifera

HERBACEOUS PLANTS AND VINES - Cinnamon fern, Osmunda cinnamomea; Fall-flowering ixia, Nemastylis floridana; Laurel greenbriar,

Smilax laurifolia; Pickerel weed, Pontederia cordata; Royal fern, Osmunda regalis; Spanish moss, Tillandsia usneoides; Stiff-leafed wild pine, Tillandsia utriculata; Sphagnum moss, Sphagnum spp.

GRASSES AND GRASSLIKE PLANTS - Maidencane, Panicum hemitomon; Narrowleaf sawgrass, Cladium mariscoides

Other plants that occur in the community are found in Appendix B.

3. Animals

The most common wildlife species include:

MAMMALS - Deer, mink, raccoon, otter

BIRDS - Anhinga, barred owl, egrets, herons, limpkin, pileated woodpecker, purple gallinule, prothonotary warbler, wood duck, wood stork

REPTILES - Alligator, frogs, turtles, salamanders, variety of water snakes

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Cypress swamps are an extremely valuable resource. They can be used for environmental educational study, scientific research, and recreation. They have a high value for use as wildlife habitat. This community has a relatively low diversity of plant species due to the fluctuating water levels and low nutrient availability. Both drastic changes in the water level and a stabilized water level may change the plant community. Often this will occur due to the effects of dams, dikes, or drainage channels. The cypress swamp is not a prime area for residential development. When ditched and drained, these areas may be used for pine production although they are not as productive as the surrounding pine lands.

Fire is a stress factor, primarily on the drier portions, but water is important in all areas. Water enters the swamp directly from rainfall or runoff. The water level is highest in summer and peak productivity occurs in early spring. Stagnant water will result in slow tree growth especially if it occurs during the growing season.

Natural regeneration of cypress requires fluctuation of the water. Flooding during the dry season will prevent the cypress trees from reproducing. Water must be available to germinate the seeds because it

provides natural stratification. However, when the seedling starts to grow its top must be maintained above water.

Cypress swamps provide water storage areas by holding excess water and slowly releasing it into the water table. Water quality is enhanced by the community, which functions like a waste treatment plant by absorbing nutrients from the water.

2. Rangeland

This community has little or no value as rangeland.

3. Wildlifeland

This community is very important for wildlife refuge areas and as a turkey roosting area. It is well suited for waterfowl and wading birds. Aquatic animals may be found in large numbers. The permanent residents of cypress heads are relatively few, but much of the wildlife of the flatwoods is dependent on these ponds for breeding purposes.

4. Woodland

Extensive drainage would be required, thereby destroying this community.

5. Urbanland

This community is subject to periodic flooding and has severe limitations for urban development. Elaborate water management systems are required for urban uses. It is often difficult to establish vegetation on steep channel side slopes and infertile spoil. Special techniques such as mulching, special plants and unusual seeding and management techniques may be required. Without vegetation, erosion and sedimentation are a problem in some water management systems. Intensive management measures may also be necessary to maintain design capacity.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are bald cypress, button mangrove, loblolly bay, pond cypress, red maple, slash pine, and sweetgum. Some of the shrubs are buttonbush, coco-plum, dahoon holly, and waxmyrtle. Some of the herbs are aster, golden canna, cardinal flower, pine lily, celestial lily, ferns, coneflower, cattail, rosemallow, iris, and meadowbeauty.

The most important urban wildlife are songbirds, water fowl, and water adapted reptiles and mammals. Undisturbed areas provide good escape cover and travel routes for all forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following plants of this community are considered threatened or endangered:

HERBACEOUS PLANTS - Bird's nest spleenwort, Asplenium serratum; Climbing dayflower, Commelina gigas; Fuzzy-wuzzy air plant, Tillandsia pruinosa; Giant water dropwort, Oxypolis greenmanii; Hidden orchid, Maxillaria crassifolia; Nodding catopsis, Catopsis nutans; Grass- of-parnassus, Parnassia grandiflora

The following threatened wildlife species may be found in or around this community:

BIRDS - Ivory-billed woodpecker, Campephilus principalis; Bald eagle, Haliaeetus leucocephalus; Wood stork, Mycteria americana

MAMMALS - Florida black bear, Ursus americanus floridanus

18 - SALT MARSH

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965,
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

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FEBRUARY 1968 BASE 4-L-25770

USDA-SCS-FORT WORTH, TEXAS 1981

Large expanses of salt-marsh such as this are more typical along the northeastern coast.

Black needlerush marsh often occurs along tidal rivers.

Black needlerush marsh with cabbage palm and hardwood hammock in background. Typical of coastal areas in Hernando, Citrus, Levy, Dixie, and Taylor Counties.

ECOLOGICAL COMMUNITY

NO. 18 - SALT MARSH

OCCURRENCE

The Salt Marsh ecological community occurs along the Atlantic and Gulf Coasts and inland along tidal rivers. An extensive area occurs along the Gulf of Mexico north of Tarpon Springs to St. Marks.

DESCRIPTION

This community appears as an open expanse of grasses, sedges, and rushes. Usually there is a matrix of interconnected shallow natural channels that aid tidal influx.

1. Soils

Soils commonly associated with this community are level, very poorly drained, muck or sandy clay loams underlain by loamy sand or organic soils underlain by clay or sand or clayey throughout. Many of the soils have a high sulfur content. Some of the soils are soft and will not support the weight of a man or large animal. Tidal action causes saturation of the soil with salt water and inundation to a depth of a few inches. Representative soils are: Bohicket, Homosassa, Lacoochee, Tisonia, Turnbull, and Weekiwachee. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

Vegetation often occurs in distinct zones within the salt marsh complex as a result of water levels from tidal action and salinity concentrations in water and soils. Some species have a wide tolerance range and may be found throughout the grass marsh. Plants in this group are black needlerush and seashore saltgrass. Smooth cordgrass is more indicative of low, regularly flooded marsh, while the high marsh supports salt myrtle, marshhay cordgrass, marshelder, saltwort and sea oxeye. Along the Gulf Coast most marshes are dominanted by black needlerush. Along the North Atlantic Coast, smooth cordgrass is usually dominant. Plants that characterize the salt marsh community are:

HERBACEOUS PLANTS AND VINES - Sea blite, Suaeda linearis; Sea purslane, Sesuvium portulacastrum

GRASSES AND GRASSLIKE PLANTS - Big cordgrass, Spartina cynosuroides; Black needlerush, Juncus roemeiranus; Gulf cordgrass, Spartina spartinae; Marshhay cordgrass, Spartina patens; Olney bulrush, Scripus americanus; Seashore dropseed,

Sporobolus virginicus; Seashore paspalum, Paspalum vaginatum; Seashore saltgrass, Distichlis spicata; Shoregrass, Monanthochole littoralis; Smooth cordgrass, Spartina alterniflora

Information about other plants that occur in this community are in Appendix B.

3. Animals

The salt marshes support a variety of wildlife. Some species that occur are:

MAMMALS - Deer, otter, raccoon

BIRDS - Brown pelicans, coots, egrets, gulls, terns, seaside sparrow, many forms of waterfowl

REPTILES - Alligator, diamondback terrapin, saltmarsh snake

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

The functions of salt marshes are probably the most important and least understood and recognized of all ecological communities. On low energy coastlines and estuaries, the marsh functions as a transition zone from terrestrial to oceanic life. Salt marshes also perform an important function in the stabilization and protection of shorelines, especially during storm tides.

Nutrients, sediments and detritus from upland systems are redistributed by tidal action, making the marsh one of the most productive natural ecological systems. The area serves as a habitat for the early life stages of numerous ocean species as they feed on countless invertebrate organisms. Many wildlife forms overlap normal ranges at least seasonally to become harvesters and, in many cases, part of the natural food chain.

2. Rangeland

Salt marshes have a potential for producing significant amounts of cordgrass, saltgrass, and other grasses and forbs. For sites in excellent condition, the average annual production of air dry plant materials varies from 4,000 to 8,000 pounds per acre. The variation depends on plant growth conditions. From 3 to 15+ acres are usually needed per animal unit depending upon amount and type of forage

available. The relative percentage of annual vegetative production by weight is 90 percent grasses, 5 percent shrubs and trees, and 5 percent herbaceous plants and vines.

3. Wildlifeland

Salt marshes are good habitat for a variety of wildlife. The habitat type is usually maintained by natural forces and influences such as tidal action and periodic hurricanes.

Storms usually cause the creation of "open" water in salt and brackish marshes and also may change salinities. The resulting effect is that plant succession is set back and more favorable habitat may be created for waterfowl, furbearers, and some other forms of wildlife such as wading birds. Artificially created dikes to control salinity are used in managing marsh plants for wildlife. Prescribed burning is also a technique used in marsh management.

4. Woodland

These soils are unsuited to commercial wood production.

5. Urbanland

This community is subject to a high water table and periodic flooding. It therefore has very severe limitations for urban development. Very elaborate water management systems are required for urban uses. It is difficult to establish salt tolerant vegetation on steep channel side slopes and infertile spoil. Special techniques such as mulching and unusual seeding and management techniques will be required. Without vegetation, erosion and sedimentation become a problem. Intensive measures may also be required to maintain design capacity.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees and shrubs are black mangrove, button mangrove, necklace pod, sea oxeye, southern redcedar, and white mangrove. Some of the herbaceous plants are aster and goldenrod. Some of the grasses are cordgrasses, seashore dropseed, and seashore saltgrass.

The most important urban related wildlife are waterfowl and water-adapted reptiles and mammals. Undisturbed areas provide good escape cover and travel routes for many forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

MAMMALS - West Indian manatee, Trichechus manatus latirostris

BIRDS - Cape Sable seaside sparrow, Ammodranus maritimus mirabilis (Collier, Monroe, and Dade Counties); Dusky seaside sparrow (Brevard County), Ammodranus maritimus nigriscens; Least tern, Sterna antillarum; Arctic peregrine falcon, Falco

peregrinus tundrius; Roseate tern, Sterna dougallii; Bald eagle, Haliaeetus leucocephalus; Wood stork, Mycteria americana

REPTILES - American alligator, Alligator mississippiensis; Atlantic green turtle, Chelonia mydas mydas; Atlantic hawksbill turtle, Eretmochelys imbricata imbricata; Florida ribbon snake, (Lower Keys population), Thamnophis sauritus sackeni; Atlantic saltmarsh water snake, Nerodia fasciata taeniata

19 - MANGROVE SWAMP

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960. Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1961 4-R-36720-19
FEBRUARY 1968 BASE 4-L-25770

Red mangrove, Rhizophora mangle are characteristic of most mangrove swamps. They are easily identified by their prop-roots arising from trunks and branches.

A small red mangrove with its prop roots stands out among the pneumatophores of the surrounding black mangroves.

Interior of a mangrove swamp dominated by black mangrove (Avicennia germinans), characterized by the short vertical aerating branches (pneumatophores) arising from the roots.

ECOLOGICAL COMMUNITY

NO. 19 - MANGROVE SWAMP

OCCURRENCE

The Mangrove Swamp ecological community occurs primarily along saltwater shorelines in south Florida from Levy and Volusia Counties southward. Coastlines that host this community normally have mild wave action in the form of backbays and estuary fringes. The Ten Thousand Islands in southwest Florida is the most extensive area of mangrove swamps in Florida.

DESCRIPTION

Mangroves appear as a medium-height (10-20 feet) thicket of fleshy-leaved woody plants in coastal areas. In most areas of its range, the red mangrove, Rhizophora mangle, is the most seaward emergent plant. Prop roots are characteristic of this plant while the black and white species send up modified vertical roots to facilitate in respiration.

1. Soils

Soils commonly associated with this community are level, very poorly drained, peat or fine sand underlain by sand or clays. Tidal action causes saturation of the soil with saltwater and inundation to a depth of several inches. Representative soils include: Bessie, Hallandale Tidal, and Turnbull Variant. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

The most frequent species found in this community are the three mangroves: red, black, and white. However, depending on elevation and resulting tidal influx, considerable variation occurs in the composition of these three species as well as associated species. Plants which characterize this community are:

TREES - Black mangrove, Avicennia germinans; Button mangrove, Conocarpus erectus; Red mangrove, Rhizophora mangle; White mangrove, Laguncularia racemosa

HERBACEOUS PLANTS - Leather fern, Acrostichum aureum; Sea oxeye, Borrichia arborescens; Sea purslane, Sesuvium portulacastrum

Other plants that occur in this community are in Appendix B.

3. Animals

The mangrove swamps support a variety of wildlife. Animals inhabitating mangrove communities include:

MAMMALS - Everglades mink, raccoon

BIRDS - Boat-tailed grackle, blue heron, belted kingfisher, gulls, hawks, great white heron, brown pelican, little blue heron, vireos, prairie warbler, mangrove cuckoo, roseate spoonbill, osprey, wood stork, southern bald eagle, white ibis, little green heron, Louisiana heron

REPTILES - American alligator, crocodile, rat snake

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

The mangrove community is especially important for shoreline protection and stabilization. There is some evidence that mangroves serve a function in land-building by trapping sediments. Definitely, this community acts as a buffer of wind and waves during storm tides. Probably the most important functior of this ecosystem is that of changing a detrital base that accumulates underneath into estuarine production and higher marine life. The attraction of water to man has caused many mangrove swamps to be lost or altered by dredging and filling for development. Adjacent activities may also cause changes in water flow patterns and affect the plant composition of this community.

2. Rangeland

There is no potential for range use.

3. Wildlifeland

Wildlife is best served by assuring that the mangrove community is not destroyed. Mangrove plants themselves seem to be quite hardy appearing as specially adapted pioneer plants in a tenacious, but yet fragile ecosystem. The mangroves are especially valuable as nesting sites for many birds.

4. Woodland

No commercial use of mangrove wood is known, however, there is some potential for use of mangroves in landscaping coastal building developments.

5. Urbanland

This community is subject to a high water table and periodic flooding. It therefore has very severe limitations for urban development. Very elaborate water management systems and fills are required for urban uses.

It is difficult to establish salt tolerant vegetation on steep channel side slopes and infertile spoil. Special techniques such as mulching and unusual seeding and management techniques will be required. Without vegetation, erosion and sedimentation become a problem. Intensive measures may also be required to maintain design capacity.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees and shrubs are black mangrove, button mangrove, necklace pod, sea oxeye, southern redcedar and white mangrove. Some of the herbaceous plants are aster and goldenrod. Some of the grasses are cordgrasses, seashore dropseed, seashore saltgrass and shoregrass.

The most important urban related wildlife are waterfowl and water adapted reptiles and mammals. Undisturbed areas provide good escape cover and travel routes for many forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered or threatened animals may occur in this community:

BIRDS - Arctic Peregrine falcon, Falco peregrinus tundrius; Bald eagle, Haliaeetus leucocephalus; White-crowned pigeon, Columba leucocephala; Wood stork, Mycteria americana

REPTILES - American crocodile, Crocodylus acutus; American alligator, Alligator mississippiensis; Florida ribbon snake, Thamnophis sauritus sackeni; Key mud turtle, Kinosternon bauri bauri

The following endangered or threatened plants may occur in this community:

HERBACEOUS PLANTS - Powdery catopsis, Catopsis berteroniana; Prickly-apple, Cereus gracilis; Worm-vine orchid, Vanilla barbellata

20 - BOTTOMLAND HARDWOODS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-20
FEBRUARY 1968 BASE 4-L-25770

Bottomland hardwoods occur within the floodplains of river systems in west Florida.

Interior of a bottomland hardwood ecological community in the winter.

Vegetation is extremely diverse in bottomland hardwoods.

ECOLOGICAL COMMUNITY

NO. 20 - BOTTOMLAND HARDWOODS

OCCURRENCE

The Bottomland Hardwood ecological community occurs within the floodplain of the river systems of west Florida. Forests of the Apalachicola River are typical of this community. Rather rapid rise and fall in floodwater and little or no inundation during the growing season distinguishes this community from swamp hardwoods.

DESCRIPTION

The moisture regime is probably the most significant factor in maintaining the bottomland hardwood community. The key to its perpetuation is the seasonal flooding and receding of water while depressional areas within the alluvial flood plain retain some water and support the associated community of swamp forests. Luxurious growth during the summer months and a deciduous forest during the winter season characterize the appearance of this community.

1. Soils

   The level to nearly level soils are alluvial in nature. Representative soils are Bibb, Mantachee, and Wahee. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

   Vegetation is extremely diverse in bottomland hardwoods. Shrubs, vines, grasses, and herbaceous plants grow profusely where sunlight penetrates the canopy. As the forest matures and competition for sunlight increases during the growing season, this community takes on an open, park-like appearance. Plants which characterize this community are:

   TREES - American elm, Ulmus americana; American hornbean, Carpinus caroliniana; Black willow, Salix nigra; Green ash, Fraxinus pennsylvanica; Overcup oak, Quercus lyrata; River birch, Betula nigra; Swamp chestnut oak, Quercus michauxii; Shumard oak, Quercus shumardii; Sweetgum, Liquidambar styraciflua; American sycamore, Platanus americana; Water hickory, Carya aquatica; Water oak, Quercus nigra; Willow oak, Quercus phellos

   HERBACEOUS VINES - Crossvine, Bignonia capreolata; Greenbriars, Smilax spp.; Peppervine, Ampelopsis arborea; Poison ivy, Toxicodendron radicans; Trumpet creeper, Campsis radicans; Wild grape, Vitis spp.

3. Animals

The bottomland hardwood community is diverse in wildlife. Common species include:

MAMMALS - Bobcat, deer, flying squirrel, gray fox, gray squirrel, mink, opossum, otter, raccoon, swamp rabbit

BIRDS - Hawks, owls, songbirds, turkey, woodpeckers

REPTILES - Alligator, canebrake and diamondback rattlesnake, water moccasin

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Probably the most important role of this community as a natural system is that of receiving floodwaters, sediments, pollutants and nutrients and assimilating these into the system through redistribution. The associated riverine system is part of the dynamics of this community and acts as a transport mechanism of organic detritus to receiving estuaries. These communities are valuable recreation and scenic systems with high aesthetic quality.

2. Rangeland

The bottomland hardwood community is seldom used for grazing. Cattle use woody species occasionally, but very little forage is available. Overstocking by cattle can reduce reproduction of some woody plants.

3. Wildlifeland

This community hosts a large variety of wildlife. It is well suited for squirrel, deer, and birds such as chickadees and titmice, flycatchers, owls, towhee, turkey, vireos, warbler, cedar waxwing, woodpeckers and wren. The various species of hardwood vegetation provide good food and cover for these wildlife species.

4. Woodland

This community has a high potential productivity for commercial woodland production on areas with adequate surface drainage. There are severe equipment limitations and seedling mortality due to the poorly to very poorly drained soil conditions. Slash pine, loblolly pine, eastern cottonwood, sycamore, and sweetgum are species suitable for planting in areas with adequate surface drainage. Potential annual growth respectively for the first three is 1.5, 1.2 and 0.8 cords per acre.

5. Urbanland

This community is subject to periodic flooding and has severe limitations for urban development. Elaborate water management systems which include diking are required for urban uses. It is often difficult to establish vegetation on steep channel side slopes and infertile spoil. Special techniques such as mulching, special plants and unusual seeding and management techniques may be required. Without vegetation, erosion and sedimentation are a problem in some water management systems. Intensive measures may also be necessary to maintain design capacity.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are American holly, Atlantic white cedar, southern bald cypress, cabbage palm, dahoon holly, dogwood, elm, fringetree, hickory, loblolly bay, red bud, redcedar, red maple, sweetgum, oaks, and willow. Some of the shrubs are American beautyberry, buttonbush, elderberry, sawpalmetto, shining sumac, strawberry bush, swamp privet, and waxmyrtle.

The most important urban wildlife are waterfowl and water-adapted reptiles and mammals. Undisturbed areas provide good escape cover and travel routes for all forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered and threatened plants may occur in this community:

TREES - Florida torreya, Torreya taxifolia; Florida yew, Taxus floridana; Pagoda dogwood, Cornus alternifolia

SHRUBS - Orange azalea, Rhododendron austrinum

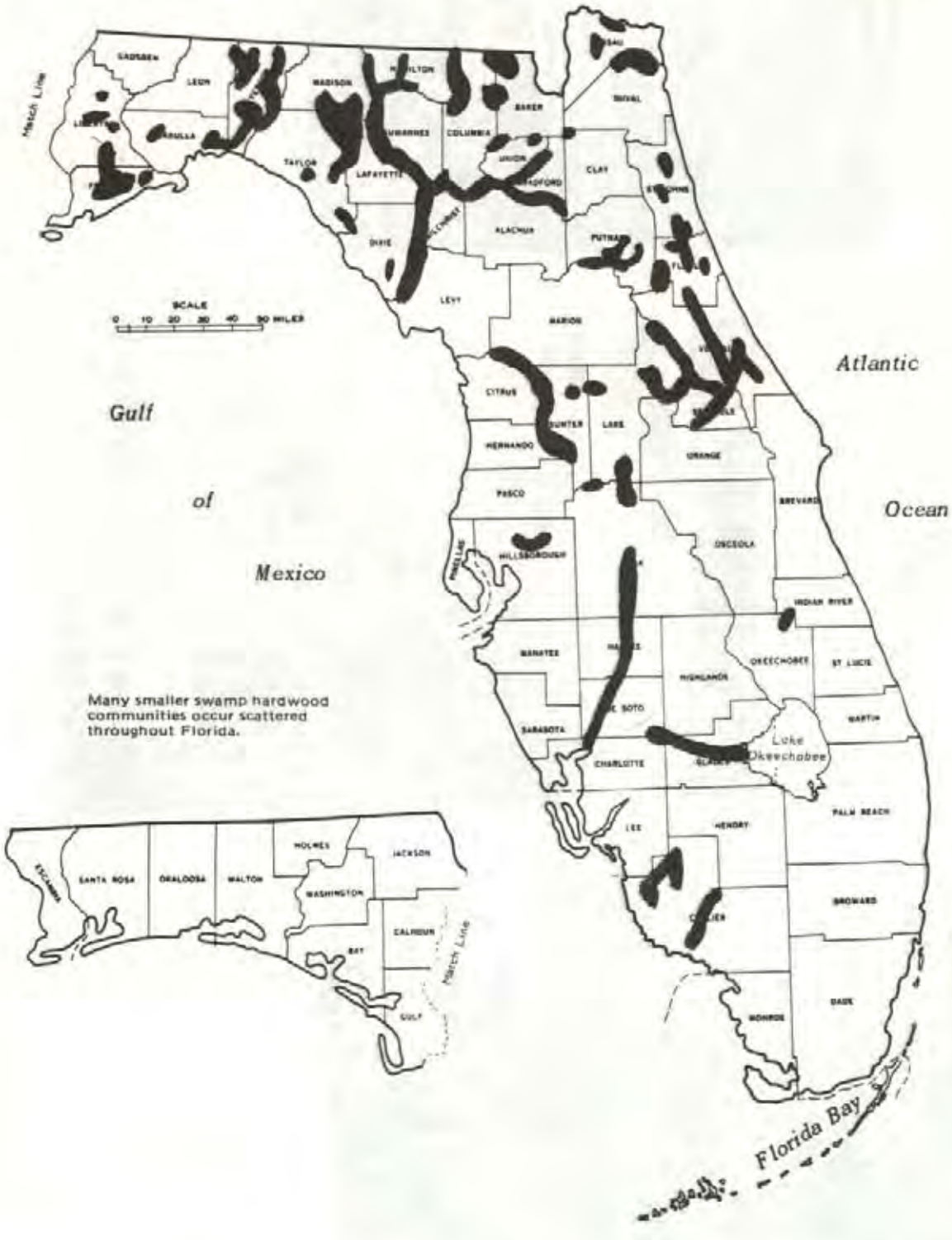
The following endangered and threatened wildlife species may be found in or around this community:

MAMMALS - Florida black bear, Ursus americanus floridanus; Florida panther, Felis concolor coryi; Gray bat, Myotis grisescens; Indiana bat, Myotis sodalis

BIRDS - Bachman's warbler, Vermivora bachmanii; Ivory-billed woodpecker, Campephilus principalis

REPTILES - American alligator, Alligator mississippiensis

21 - SWAMP HARDWOODS



Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-21
FEBRUARY 1968 BASE 4-L-25770

Typical swamp hardwoods. Buttressed trunks of cypress and tupelo are typical sights in swamp hardwoods.

Ferns and other shade-tolerant herbaceous plants are found within the interior of a swamp hardwoods ecological community.

Swamp hardwoods are found bordering many streams.

ECOLOGICAL COMMUNITY

NO. 21 - SWAMP HARDWOODS

OCCURRENCE

The Swamp Hardwood ecological community occurs throughout Florida except for the extreme southeast portion of the state. This community is found bordering rivers and in basins which are either submerged or saturated part of the year.

DESCRIPTION

The vegetation is primarily deciduous trees. Periodic flooding is characteristic of the community. This community does not include cypress swamps or bottomland hardwood areas. These are in separate ecological communities.

1. Soils

Soils associated with this community are nearly level, very poorly drained, dark colored and have coarse to medium textured surfaces underlain by finer textured material or are organic. Representative soils include: Bayboro, Bladen, Bluff, Dorovan, Grady, Mantachie, Myatt, Pantego, and Wesconnett. Appendix A contains information on correlation of soils series with the appropriate ecological community.

2. Vegetation

Swamp hardwood forests are characterized by hardwoods, a high percentage of which are deciduous. Common dominants are red maple, elm, black gum, water tupelo and cypress. Many areas may have originally been dominated by cypress, but when the large cypress were cut out, the hardwoods become predominant. The species composition is largely determined by the kind of soils that occur. Plants that characterize this community are:

TREES - Bald cypress, Taxodium distichum; Blackgum, Nyssa sylvatica; Red maple, Acer rubrum; Sweetbay, Magnolia virginiana; Water ash, Fraxinus carolinensis

SHRUBS - Buttonbush, Cephalanthus occidentalis; Dahoon holly, Ilex cassine;

HERBACEOUS PLANTS AND VINES - Cinnamon fern, Osmunda cinnamomea; Lizard's tail, Saururus cernuus; Royal fern, Osmunda regalis; Wild pine, Tillandsia fasiculata

Other plants that occur in the community are found in Appendix B.

3. Animals

Animals found in this community are adapted to wet conditions and must withstand the flooding that occurs periodically.

Dense vegetation provides good cover and food sources. Wildlife species include:

MAMMALS - Black bear, bobcat, deer, gray squirrel, mink, otter, raccoon

BIRDS - Barred owl, hawks, horned owl, pileated woodpecker, turkey, wood duck, various songbirds

REPTILES - Turtles, various snakes

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Periodic flooding is essential to maintain this ecosystem and is the dominant factor for providing needed nutrients. If the system is drained or flooded for an extended length of time, a new community will result.

Swamp hardwood areas are of great value for maintaining good water quality and quantity and for wildlife and wilderness values. Water plays an important part in this community. If the water cycle is maintained, the community will tolerate disturbance, but if the water table is lowered or periodic water is not available, the system will change. The community is highly endangered due to its sensitivity to changes in the water cycle. Practices such as improper channelization, drainage and impoundment are especially damaging. Swamp hardwood forests are natural storage areas for floodwater. They slow the flow of water, improve water quality and gradually feed water to the rivers. These areas also assimilate inorganic and organic waste and reduce pollution levels. Oxygen diffusion is great in the swamp forest because of the large air-to-water surface area. The slow movement of the rivers and obstructions also help with the diffusion. Downstream systems, including estuaries, receive energy through detritus from this system.

The swamp forest is not a prime area for intensive agricultural or residential development. Costly water management facilities are needed for any use that modifies the existing natural vegetation. Development would destroy the important wildlife and environmental values of this community. Wildlife often use swamp forests for food and cover and for travel lanes between developed areas.

2. Rangeland

This community has little or no use as rangeland.

3. Wildlifeland

This community hosts a large variety of wildlife. It is especially well suited for waterfowl, reptiles, amphibians, and mammals. Animals found in this community must withstand the flooding which occurs periodically. Gray squirrel, mink, raccoon, and river otter are the most commonly found mammals. Many birds inhabit this area including chickadees and titmice, yellow-billed cuckoo, wood duck, limpkin, Acadian flycatcher, owls, woodcock, hooded warbler, cedar waxwing, woodpecker, and wren. The various species of hardwood vegetation provide good food and cover for these wildlife species.

4. Woodland

These areas are not generally used for commercial woodland production except for limited harvest of hardwoods. However, this community does have a high potential for commercial woodland production on areas with adequate surface drainage. There are severe equipment limitations and seedling mortality problems due to the poorly to very poorly drained soil conditions. Slash pine, loblolly pine, eastern cottonwood, sycamore, and sweetgum are species suitable for planting on areas with adequate surface drainage. Potential annual growth respectively for the first three is 1.5, 1.2 and 0.8 cords per acre. Potential production is 18 percent less for areas south of a line from Hernando County in the west to Orange County in the east.

5. Urbanland

This community is subject to periodic flooding and has severe limitations for urban development. Elaborate water management systems are required for urban uses. It is often difficult to establish vegetation on steep channel side slopes and infertile spoil. Special techniques such as mulching, special plants and unusual seeding and management techniques may be required. Without vegetation, erosion and sedimentation are a problem in some water management systems. Intensive measures may also be necessary to maintain design capacity.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are American holly, Atlantic white cedar, cabbage palm, loblolly bay, Eastern redcedar, red maple, sweetgum, sweetbay, water oak, and willow. Some of the shrubs are buttonbush, dahoon holly, elderberry, sawplametto, swamp azalea, swamp privet and waxmyrtle. Some of the herbaceous plants are aster, dayflower, iris, pine-lily, and rose-mallow.

The most important urban wildlife are waterfowl and water-adapted reptiles and mammals. Undisturbed areas provide good escape cover and travel routes for all forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following threatened or endangered plants may occur in this community:

HERBACEOUS PLANTS AND VINES - Dwarf spleenwort, *Asplenium pumilum*; Hanging club moss, *Lycopodium dichotomum*; Harper's beauty, *Harperocallis flava*

The following threatened or endangered wildlife species may be found in or around this community:

MAMMALS - Florida black bear, *Ursus americanus floridanus*; Florida panther, *Felis concolor coryi*

BIRDS - Bachman's warbler, *Vermivora bachmanii*; Ivory-billed woodpecker, *Campephilus principalis*; Bald eagle, *Haliaeetus leucocephalus*;

REPTILES - American alligator, *Alligator mississippiensis*

22 - SHRUB BOGS - BAY SWAMPS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

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FEBRUARY 1968 BASE 4-L-25770

USDA-SCS-FORT WORTH, TEXAS 1981

Bay swamp seen from a distance.

Bay swamp in Sumter, central Florida.

Shrub bog (foreground) with titi trees in west Florida. Titi (Cyrilla racemiflora) is typical of many shrub bogs in west Florida.

ECOLOGICAL COMMUNITY

NO. 22 - SHRUB BOG-BAY SWAMP

OCCURRENCE

The Shrub Bog-Bay Swamp ecological community occurs throughout Florida, although the dominant plants vary considerably in different areas. The ones dominated by black titi (Cliftonia monophylla) occur primarily in the panhandle area; the ones dominated by white titi (Cyrilla racemiflora) occur all across the northern part of the state; the ones dominated by large gallberry, staggerbush, and sweet pepperbush occur primarily in the northeastern part of the state; while bay swamps occur throughout the state, with loblolly bay dominating in the northeast, sweet bay in the panhandle, and mixtures of loblolly, red, and sweet bay in the peninsula. The shrub bogs-bay swamp range in size up to several thousand acres.

DESCRIPTION

This community may be found perched on hillsides, in depressions in pine flatwoods, filling ravines, or as linear strips along the edges of creek swamps. They are usually maintained by seepage from higher land.

The shrub bog-bay swamp ecological community is dominated by evergreen vegetation, occurring on soils with a muck layer. Shrub bogs are predominantly dense masses of evergreen shrubby vegetation seldom exceeding twenty-five feet in height, while bay swamps are forested wetlands dominated by one or two species of evergreen trees. The bay swamp is considered to be a climax community with mature trees, while shrub bogs are in the earlier stages of plant succession. Periodic fire helps to keep some of these areas in this shrub bog or sub-climax stage, especially the titi types. The shrubs have many stems and thick foliage and often appear impenetrable.

1. Soils

Soils commonly associated with this community are nearly level to gently sloping, acid, somewhat poorly to very poorly drained, sandy or loamy soils adjacent to drainageways that are fed by seepage water. Representative soils are Charlotte, Dorovan Thermic Variant, Pickney, Rutledge and Samsula. Appendix A contain information on correlation of soil series with the appropriate ecological community.

2. Vegetation

The natural vegetation of this community is dominated by evergreen shrubs or trees. Several types of each phase are recognized. One type of shrub bog is that dominated primarily by a single species, either black titi or bay.

Two other types burn at frequent intervals and form a nearly impenetrable thicket of various shrubs--in some areas these may be dominated by titi (Swamp cyrilla); while in others, mixtures of large

gallberry, staggerbush, and sweet pepperbush dominate. The bay swamp may be dominated by sweet bay, loblolly bay, or mixtures of sweet bay, loblolly bay, and red bay. Scattered slash and pond pine and an occasional cypress are often noticeable, forming a very open canopy over the shrub bogs. In extreme south Florida, small circular bays are common on marl prairies of the Everglades that are dominated by sweet bay, red bay, willow, coco-plum, Australian pine, and Brazilian pepper.

Plants characterizing this community (although occurrence may vary greatly depending on type and location within the state) are:

TREES - Atlantic white cedar, Chamaecyparis thyoides; Blackgum, Nyssa silvatica; Buckwheat trees (Black titi), Cliftonia monophylla; Loblolly bay, Gordonia lasianthus; Pond pine, Pinus serotina; Redbay, Persea borbonia; Slash pine, Pinus elliottii; Sweetbay, Magnolia virginiana

SHRUBS - Black titi (Buckwheat tree), Cliftonia monophylla; Dog-hobble, Leucothoe spp.; Fetterbush, Lyonia lucida; Large gallberry, Ilex coricea; Myrtle-leaved holly, Ilex myrtifolia; Summersweet clethra, Clethra alnifolia; Titi (Swamp cyrilla), Cyrilla racemiflora

HERBACEOUS PLANTS AND VINES - Greenbriars, Smilax spp.; Spaghnum moss, Spaghnum spp.

A list of other plants that occur in the community are in Appendix B.

3. Animals

Shrub bogs support a variety of wildlife. Most mammals, including bear, use shrub bogs for cover. Wading birds, such as egrets and herons often nest in the trees. Reptiles such as frogs, salamanders, and snakes are common. Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Shrub bogs are important as fire buffers. Seepage water keeps them almost constantly wet and they protect adjoining swamps from fire during dry periods. They act as small reservoirs by receiving seepage water and metering it out in a small but steady supply. Drainage of the bog or immediately upslope will strongly modify or destroy these environments. Shrub bogs are aesthetically pleasing.

2. Rangeland

This community has little or no use as rangeland. It does offer protection for cattle during wet, cold weather.

3. Wildlifeland

This community's primary value to game animals is the escape cover furnished to deer, turkey, and quail by the thick growth. This cover is also important to the black bear and Florida panther. Shrub bogs provide good habitat for a variety of frogs, salamanders, and crayfish and predatory snakes and raccoons. Wading birds, particularly in south Florida, find this community valuable as safe roosting or nesting habitat.

4. Woodland

These areas are not generally used for commercial wood production, except for limited harvest of hardwoods. However, this community does have a high to moderate potential for commercial wood production on areas with adequate surface drainage. There are severe equipment limitations and seedling mortality problems due to the poorly to very poorly drained soil conditions.

Slash pine, loblolly pine, eastern cottonwood, American sycamore, and sweetgum are species suitable for planting on areas with adequate surface drainage in north and central Florida. Potential annual growth respectively for the first three are 1.5, 1.2, and 0.8 cords per acre. Potential production is 18 percent less for areas south of a line from Hernando County in the west and Orange County in the east.

5. Urbanland

This community is subject to periodic flooding and has severe limitations for urban development. Elaborate water management systems are required for urban uses. It is often difficult to establish vegetation on steep channel side slopes and infertile spoil. Special techniques such as mulching, special plants and unusual seeding and management techniques may be required. Without vegetation, erosion and sedimentation are a problem in some water management systems. Intensive measures may also be necessary to maintain design capacity.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are Atlantic white cedar, dahoon, American holly, loblolly bay, slash pine, and sweetbay magnolia. Some of the shrubs are buttonbush, elderberry, holly, and southern waxmyrtle. Some of the herbaceous plans are aster and iris.

The most important urban wildlife are waterfowl and water-adapted reptiles and mammals. Undisturbed areas provide good escape cover and travel routes for most forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered and threatened plants may occur in this community:

SHRUBS - Chapman's rhododendron, Rhododendron chapmanii

HERBS - Harper's beauty, Harperocallis flava

The following threatened or endangered wildlife species may be found in or around this community:

MAMMALS - Everglades mink, Mustela vison evergladensis; Florida black bear, Ursus americanus floridanus; Florida panther, Felis concolor coryi

23 - PITCHER PLANT BOGS

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-23
FEBRUARY 1968 BASE 4-L-25770

Scattered pine and pitcher plants in a grassland area are typical of pitcher plant bogs.

Pitcher plants characterize this ecological community.

ECOLOGICAL COMMUNITY

NO. 23 - PITCHER PLANT BOGS

OCCURRENCE

The Pitcher Plant Bogs ecological community occurs primarily in north Florida. They are most common in northwest Florida just inland from the coast. Individual communities vary in size but are usually no more than 100 acres.

DESCRIPTION

This community appears as an open expanse of grasses, sedges, and pitcher plants with scattered, stunted pine and cypress. At times, the bogs are flamboyant with wild flowers. There is a predominance of insect-eating plants, dominated by pitcher plants. The erect "trumpets" of these spectacular plants protrude up through the grasses and sedges. The community occupies generally flat areas or seepage hillsides. Water frequently stands on the surface.

1. Soils

Soils commonly associated with the community are nearly level to sloping, deep, acid, poorly or very poorly drained, and developed from sandy or sandy and loamy materials. Representative soils are Mulat and Rutledge. Appendix A contains information on correlation of soil series with the appropriate cological community.

2. Vegetation

The natural vegetation of this community is low-growing grasses and herbaceous plants with scattered trees or shrubs. There is a predominance of pitcher plants. Plants which characterize this community are:

TREES - Slash pine, Pinus elliottii

SHRUBS - Waxmyrtle, Myrica cerifera; Myrtle-leaved holly, Ilex cassine var. myrtifolia

HERBACEOUS PLANTS - Hat pin sedge, Eriocaulon spp.; Pitcher-plant, Sarracenia spp.; Rush featherling, Pleea tenuifolia; Sundews, Drosera spp.

GRASSES - Blue maidencane, Amphicarpum muhlenbergianum; Florida threeawn, Aristida rhizomophora; Pineland threeawn, Aristida stricta; Toothachegrass, Ctenium aromaticum; Warty panicum, Panicum verrucosum

A list of other plants that occur in the community is in Appendix P.

3. Animals

This community is characterized by a low diversity of wildlife. The fauna is not well known but is largely burrowing, such as crayfish, earthworms, and salamanders. Herb bogs are excellent areas for obtaining earthworms. Some other species that occur are:

MAMMALS - Armadillo, deer, raccoon

BIRDS - Meadowlark, little kestrel, marsh hawk, bobwhite quail

REPTILES - Coral snake, Florida brown snake, garter snake, ringneck snake

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Pitcher Plant bogs are maintained by very high water tables and frequent fire. Fire is necessary to prevent invasion by shrubs and succession to shrubs bogs. Elimination of fire will destroy this rare ecosystem. This wetland is unique in the predominance of insect-eating plants. It is a valuable water storage area. In addition, this wetland has high aesthetic, educational, and scientific values. They are rapidly being destroyed by drainage and for the planting of pine or improved pasture.

2. Rangeland

This ecological community has the potential for producing significant amounts of high quality forage. For sites in excellent condition, the average annual production of air dry plant materials varies from 5,000 to 10,000 pounds per acre. This variation depends on plant growth conditions. From 3 to 13+ acres are usually needed per animal unit depending upon amount and type of forages available. The relative percentage of annual vegetative production by weight is 80 percent grasses and grasslike plants, 5 percent trees and shrubs, and 15 percent herbs.

3. Wildlifeland

This community is one of the least productive for wildlife, probably due to the low diversity of plant species and growth forms, which limits food and cover. It provides fair habitat for white-tailed deer and bobwhite quail. It is also suited for raccoons, armadillos, and open grass-country birds.

4. Woodland

This community is not generally recommended for woodland.

5. Urbanland

This community is subject to high water tables and has severe limitations for urban development. Intensive and complex water management systems are required for urban uses. It is often difficult to establish vegetation on steep channel side slopes and infertile spoils. Special techniques are usually required in these situations. Without vegetation, erosion and sedimentation is often a problem. Wind erosion can also be a severe problem, especially in the spring, on unvegetated areas.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are bald cypress, pond pine, slash pine, and sweetbay magnolia. Some of the shrubs are myrtle- leaved holly, and waxmyrtle. Some of the herbs are aster, coneflowers, iris, pitcher plants, marsh pink, meadowbeauty, and sunflower.

The most important urban wildlife is birds. Undisturbed areas provide good escape cover and travel routes for most forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

The following endangered and threatened plants may occur in this community;

HERBACEOUS PLANTS - Harper's beauty, Harperocallis flava; Hooded pitcher plant, Sarracenia minor; Red-flowered pitcher plant, S. rubra; Parrot pitcher plant, S. psittacina; White-top pitcherplant, S. leucophylla

The following endangered or threatened animals may be found in or around this community:

BIRDS - Southeastern kestrel, Falco sparverius paulus

24 - SAWGRASS MARSH

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-24
FEBRUARY 1968 BASE 4-L-25770

Sawgrass marsh in Everglades National Park.

This community appears as an open expanse of sawgrass in marshy area.

Sawgrass, Cladium jamaicense characterizes this community.

ECOLOGICAL COMMUNITY

NO. 24 - SAWGRASS MARSH

OCCURRENCE

The Sawgrass Marsh ecological community occurs south of Lake Okeechobee in the area known as the Everglades. Individual communities vary widely in size. The large communities are many thousands of acres in size. Smaller sawgrass marsh areas outside the Everglades are included in Ecological Community No. 25 - Freshwater Marsh and Ponds.

DESCRIPTION

This community appears as an open expanse of sawgrass in an area where the soil is saturated or covered with surface water during part of the year.

1. Soils

Soils commonly associated with this community are nearly level and very poorly drained with marly or organic surfaces underlain by limestone. Representative soils are Hialeah, Loxahatchee, Ochopee, Pahokee and Plantation. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

The natural vegetation of this community is dominated by sawgrass. Muhly grass increases and become obvious when the sawgrass is repeatedly exposed to fire and the hydroperiod is shortened. With natural conditions, the vigorous sawgrass is 6 to 10 feet tall and of such density that few other plants can survive. Other marsh plants invade the sawgrass where marginal conditions occur for sawgrass growth. These conditions include shallow organic soils and areas where the period of water submergence is short. Trees are not characteristic of this community, but a few may occur on the banks of gator holes.

Plants that characterize this community are:

GRASSES AND GRASSLIKE PLANTS - Gulf muhly, Muhlenbergia capillaris var. filipes; Jamaica sawgrass, Cladium jamaicense; Plume grass, Erianthus spp.

HERBACEOUS PLANTS - Pickerelweed, Pontederia cordata and Pontederia lanceolata

Information about plants which occur in specific ecological communities is in Appendix B.

Animals

Numerous birds use this community for wintering or year round. Frogs, snails, and crayfish are common and serve as food for larger animals. Animals that commonly occur in this community include:

MAMMALS - Deer

BIRDS - Red-winged blackbirds, egrets, herons, ibis, bitterns, kites

REPTILES - Water snakes, alligator

Information on animals know to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

The sawgrass marshes serve as filter systems for water. They protect natural bodies of water from eutrophication. Marshes will retain water during drought and also help slow down water at flood times. Their principal environmental values are related to water quality and quantity.

Tall, dense sawgrass occurs in deep organic soils and requires water coverage of the rhizomes for most of the year. It also forms extensive, but shorter and less dense stands on marl soils in south Florida. Drainage, organic soils subsidence, and fires have reduced the amount of sawgrass and promoted the growth of other plants in many areas.

The sawgrass community is one of the most resistant communities to change under natural conditions. Fires and water quantity reduction can completely alter the community's characteristics within 10 to 20 years.

2. Rangeland

This site provides little to no native forage values.

3. Wildlifeland

This community provides excellent habitat for many birds, especially wading birds and water fowl. It is also well suited for alligators and snakes.

4. Woodland

This community is not generally recommended for woodland.

5. Urbanland

This community is subject to very high water tables and has severe limitations for urban development. Intensive and complex water management systems are required for urban uses. It is often difficult to establish vegetation on steep channel side slopes and infertile spoil. Special techniques are usually required in these situations. Without vegetation, erosion and sedimentation can become a problem. Much of the sawgrass marsh is now included in the Everglades National park and is not available for urban uses.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

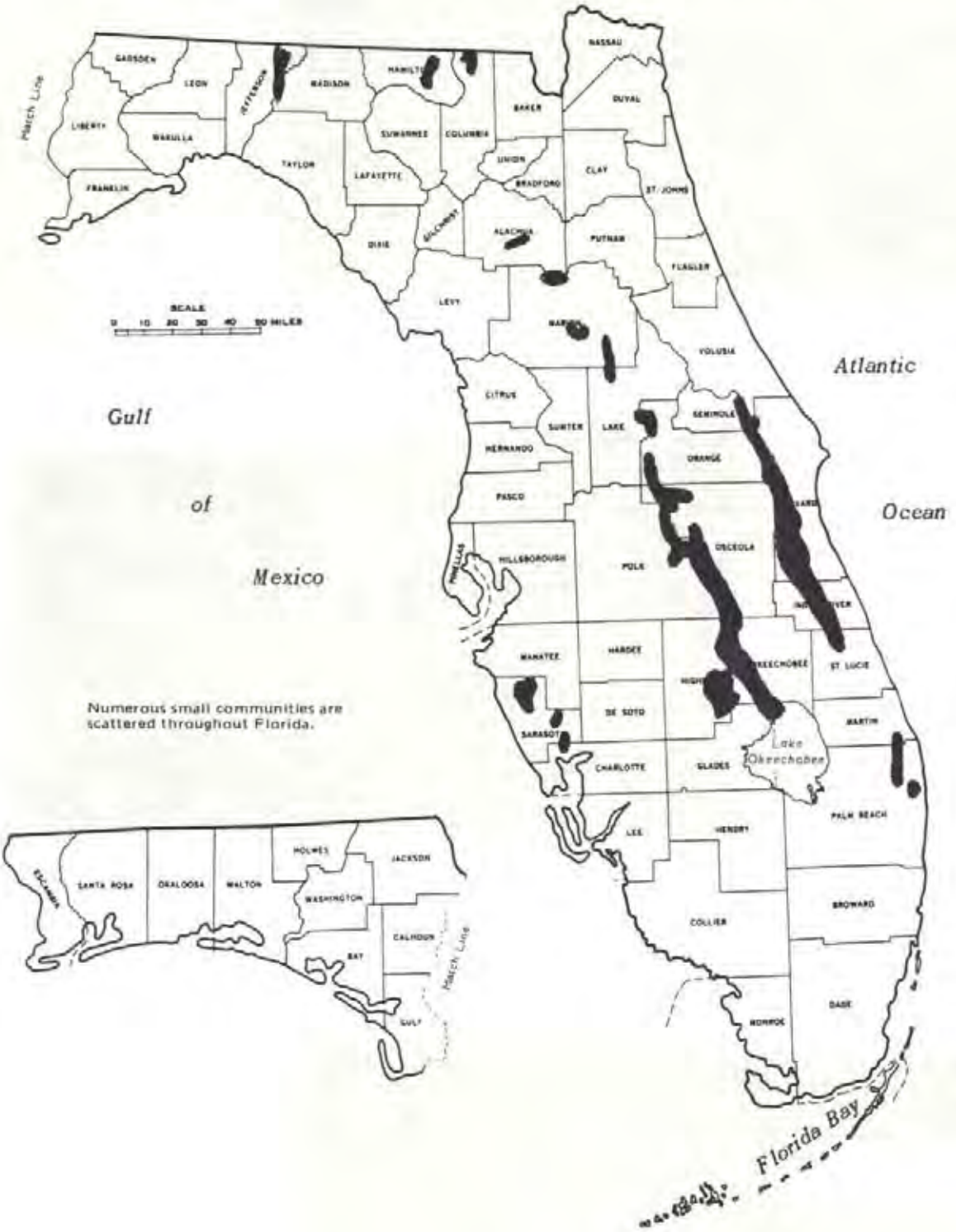
Threatened or endangered animals that may occur in sawgrass marsh communities include:

MAMMALS - Everglades mink, Mustela vison evergladensis; Florida panther, Felis concolor coryi

BIRDS - Snail kite, Rostrhamus sociabilis; Wood stork, Mycteria americana

REPTILES - American alligator, Alligator mississippiensis

25 - FRESHWATER MARSH



Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-25
FEBRUARY 1968 BASE 4-L-25770

Freshwater marsh of sawgrass, Cladium jamaicense (background) and other herbaceous plants.

Freshwater marshes are covered with water most of the time.

Distant view of a freshwater marsh in Polk County.

Maidencane is one of the most common grasses where it has not been overgrazed.

The upright pickerelweed (Pontederia lanceolata), which has interspersed floating spatterdocks (Nuphar luteum), forms another characteristic type of marsh.

Rushes (Juncus spp.) are common around marsh edges.

Cattails, Typha spp., a common herbaceous plant in some freshwater marshes.

Freshwater marsh with a mixture of marsh vegetation, including maidencane (Panicum hemitomon, water lily (Nymphaea odorata) and pickerelweed.

This freshwater marsh in Lake County is dominated by the emergent maidencane grass (Panicum hemitomon) and floating spatterdocks (Nuphar luteum).

ECOLOGICAL COMMUNITY

NO. 25 - FRESHWATER MARSH AND PONDS

OCCURRENCE

The Freshwater Marsh and Ponds ecological community occurs throughout Florida. Individual communities vary widely in size. The largest communities, several thousand acres in size, generally occur in southeast Florida.

DESCRIPTION

This community appears as an open expanse of grasses, sedges, and rushes, and other herbaceous plants in an areas where the soil is usually saturated or covered with surface water for two or more months during the year. The extensive sawgrass marsh that occurs in the Everglades is not included within this community, but smaller sawgrass areas are.

1. Soils

Soils commonly associated with this community are nearly level and very poorly drained with coarse textured or organic surfaces underlain by clay or sand. Representative soils are Basinger depressional, Brighton, Charlotte ponded, Dania, Everglades, Felda depressional, Iberia, Kaliga, Lauderhill, Monteverde, Micco, Ocoee, Okeechobee, Sanibel, Tequesta, and Torry. Appendix A contains information on correlation of soil series with the ecological community.

2. Vegetation

Within Florida, eight major different types of freshwater marshes have been described. Any one marsh may be composed of sections of different major types. There is also intergrading of these types. The types are:

Flag marshes dominated by pickerelweed, Sawgrass marshes, Arrowhead marshes, Fire flag and other non-grass herbs marsh, Cattail marsh, Spike-rush marsh, Bulrush marsh, and Maidencane marsh

Plants that characterize this community (depending on type or marsh) include:

GRASSES AND GRASSLIKE PLANTS - Beak rushes, Rhynchospora spp.; Blue maidencane, Amphicarpum muhlenbergianum; Bottlebrush threeawn, Aristida spiciformis; Bulrushes, Scirpus spp.; Caric sedges, Carex spp.; Clubhead cutgrass, Leersia hexandra; Common reed, Phragmites spp.; Flat sedge, Cyperus spp.; Maidencane, Panicum hemitomon; Rush, Juncus spp.; Sawgrass, Cladium jamaicense; Spike rushes, Eleocharis spp.; Umbrella grass, Fuirena spp.; Wild millet, Echinocloa spp.

HERBACEOUS PLANTS - Arrowhead, Saggitaris spp.; Blue flag, Iris hexagona savannarum; Cattail, Typha spp.; Fire flag, Thalia geniculata; Pickerelweed, Pontederia cordata and Pontederia lanceolata; Smartweed, Polygonum spp.; Pennywort, Hydrocotle spp.

SHRUBS - St. Johns wort, Hypericum spp.; Primrose willow, Ludwigia spp.; Elderberry, Sambucus canadensis

Information about plants which occur in specific ecological communities is in Appendix B.

3. Animals

The freshwater marshes and ponds provide excellent habitats for many wildlife species. Numerous birds and waterfowl use this community for wintering or year-round. Animals that commonly occur in this community are:

MAMMALS - Otter, mink, raccoon, marsh rabbit, white-tailed deer, Florida water rat.

BIRDS - Herons, egrets, bitterns, ibis, sandhill crane, rails, limpkin, gallinules, snipe, killdeer, Florida duck, red-winged blackbirds, caracara, marsh hawk, red-shouldered hawk, swallow-tailed kite

REPTILES - Amphiuma, dwarf salamander, sirens, frogs (cricket frogs, bullfrog, leopard frog), turtles (mud turtle, red-bellied turtle, chicken turtle), snakes, (horn, water, swamp, brown, cottonmouth, ribbon), alligator

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

The freshwater marshes and ponds serve as a filter system for rivers and lakes. This protects the rivers and lakes from eutrophication and provides the marsh with nutrients that are used in the vegetative growth. Marshes will retain water during drought and large marshes also help slow down water flows at flood times.

Fire and water level fluctuation are the major factors affecting these wetland areas. Variations in the water patterns on the marsh will change the plant diversity and productivity. Marsh-prairie systems will eventually move to a woody community with exclusion of fire or with permanent and lower water level changes.

The freshwater marsh community is highly endangered. Many have been destroyed or at least degraded. Some examples of areas where drainage has occurred for reclamation of land and for agricultural interests are: The Everglades, Kissimmee River marshes, Lake Isotokpoga marsh, and the upper St. Johns River marsh. Recreational uses of this community may cause much disturbance. In fact, recreational vehicles, when used a great deal, will change the plant community found in the area.

2. Rangeland

This ecological community has the potential for producing significant amounts of high quality forage. For sites in excellent condition, the average annual production of air dry plant materials varies from 5,000 to 10,000 pound per acre. This variation depends on plant growth conditions. From 3 to 13+ acres are usually needed per animal unit depending upon amount and type of forages available. The relative percentage of annual vegetative production by weight is 80 percent grasses and grasslike plants, 5 percent trees and shrubs, and 15 percent herbs.

3. Wildlifeland

This community provides excellent habitat for many wetland wildlife species. It includes several endangered species. Many birds use this community year-round and/or for wintering.

4. Woodland

This community is not recommended for commercial woodland unless drainage has been provided.

5. Urbanland

This community is subject to periodic flooding and has severe limitations for urban development. Elaborate water management systems are required for urban areas. It is often difficult to establish vegetation on steep channel side slopes and infertile spoil. Special techniques such as mulching, special plants and unusual seeding and management techniques are often required. Without vegetation, erosion and sedimentation may become a problem. Intensive measures may also be necessary to maintain design capacity.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the trees are buttonbush, coastal plain willow, and persimmon. Some of the shrubs are elderberry and waxmyrtle. Some of the herbs are golden canna, cardinal flower, coneflower, rose-mallow, iris, marsh pink, and meadowbeauty.

The most important urban wildlife are wading birds, waterfowl, fish, and water-adapted reptiles and mammals. Undisturbed areas provide excellent cover and travel routes for all forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

Threatened or endangered animals include:

MAMMALS - Everglades mink, Mustela vison evergladensis; Key Vaca raccoon, Procyon lotor auspicatus (middle Florida Keys only); Silver rice rat, Oryzomys argentatus

BIRDS - Cape Sable seaside sparrow, Ammodramus maritimus mirabilis; Crested caracara, Polyborus plancus audubonii; Florida sandhill crane, Grus canadensis pratensis; Snail kite, Rostrhamus sociabilis; Wood stork, Mycteria americana

REPTILES - American alligator, Alligator mississippiensis; Florida ribbon snake, Thamnophis sauritis sackeni (Keys population only); Key mud turtle, Kinosternon bauri bauri (Keys population only)

26 - SLOUGH

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

USDA-SCS-FORT WORTH, TEXAS 1981

FEBRUARY 1981 4-R-36720-26
FEBRUARY 1968 BASE 4-L-25770

A typical slough of south Florida presents an open vista, dominated by grasses and sedges.

Sloughs typically occur as relatively narrow drainageways interspersed through south Florida flatwood communities.

Sand cordgrass, Spartina bakeri, is common on overgrazed slough areas.

ECOLOGICAL COMMUNITY

NO. 26 - SLOUGH

OCCURRENCE

The Slough ecological community occurs throughout central and south Florida, but especially in the latter. Individual communities vary widely in size. Most serve as drainageways for water during periods of heavy and prolonged rainfall. This community occurs mostly within the south Florida flatwoods ecological community.

DESCRIPTION

This community appears as an open expanse of grasses, sedges, and rushes in an areas where the soil is saturated during the rainy season. Most sloughs are relatively long and narrow and slightly lower in elevation than the surrounding flatwoods or hammocks.

1. Soils

Soils commonly associated with this community are nearly level and poorly drained with coarse textured surfaces underlain by clay or sand. Representative soils are: Anclote, Basinger, Charlotte, Placid, and Pople. Appendix A contains information on correlation of soil series with the appropriate ecological community.

2. Vegetation

Grasses are the most common plants found in sloughs. Sedges and rushes also occur, with scattered shrubs in some locations. Plants that characterize this community are:

SHRUBS - St. Peters wort, Ascyrum stans

HERBACEOUS PLANTS - Pickerel weed, Pontederia cordata; Sundew, Drosera spp.; Marsh pink, Sabatia spp.; Meadowbeauty, Rhexia spp.; Milkwort, Polygala spp.; Yellow-eyed grass, Xyris spp.

GRASSES AND GRASSLIKE PLANTS - Beak rushes, Rhynchospora spp; Blue maidencane, Amphicarpum muhlenbergianum; Bluejoint panicum, Panicum tenerum; Bottlebrush threeawn, Aristida spiciformis; Panicum, Dichanthelium dichotomum; Low panicum, Panicum spp.; Sand cordgrass, Spartina bakeri; Sloughgrass, Scleria spp.; Soft rush, Juncus effusus

Information about plants which occur in specific ecological communities is in Appendix B.

3. Animals

Sloughs are host to a diverse wildlife population. Many larger animals occur where sloughs join flatwoods and hammocks. Typical animals of the sloughs are:

MAMMALS - Bobcat, deer, gray fox, marsh rabbit, opossum, cotton rat, raccoon

BIRDS - Bobwhite quail, cranes, egrets, herons, ibis, meadowlark, red-shouldered hawks, snipe

REPTILES - Cottonmouth moccasin, eastern diamondback rattlesnake, pigmy rattlesnake, ringneck snake, yellow rat snake

AMPHIBIANS - Frogs (chorus, cricket, grass, pig), salamanders

Information on animals known to occur in specific ecological communities is in Appendix C.

LAND USE INTERPRETATIONS

1. Environmental Value as a Natural System

Sloughs serve as natural drainageways during high water periods. As such, they have great value in improving water quality by natural processes. They also retain water, help slow down water flows, and thereby increase water quantity and improve water quality.

Fire and artificial water level fluctuations are the major factors affecting these areas. Variations in the natural sequences of either event will change the slough's diversity and productivity. With the exclusion of fire or permanent water level reduction, the plant succession will be to a wooded community.

Native forage production is good with proper management. Use for rangeland has only a slight effect on the community if properly managed. The community has good wildlife values, especially with proper management. The installation of water control practices have facilitated the use of some sloughs for improved pasture, vegetables, and citrus.

2. Rangeland

This ecological community has the potential for producing significant amounts of high quality forage such as blue maidencane, chalky bluestem and bluejoint panicum. For sites in excellent condition, the average annual production of air dry plant material varies from 4,000 to 8,000 pounds per acre. This variation depends on plant growth conditions. From 3 to 16+ acres are usually needed per animal unit depending upon amount and type of forage available. The relative percentages of annual vegetative production by weight is 90 percent grasses and grasslikes plants, 10 percent herbaceous plants.

3. Wildlifeland

This community is productive in regards to food for bobwhite quail, deer, and wading birds. Its low growing vegetative growth provides poor cover for most wildlife species, but this is often offset by the "edge effect" of this community when it is located with flatwoods.

4. Woodland

This community is not recommended for commercial woodland unless water control measures are provided.

5. Urbanland

This community is subject to high water tables, especially during the rainy seasons. This causes limitations for urban development and water management systems are required. It is often difficult to establish vegetation on steep channel side slopes and infertile soils. Special planting and management techniques may be required. Without adequate vegetation, erosion and sedimentation is usually a problem. Severe wind erosion can also occur, especially in the spring.

Native plants can be used for beautification and require minimum establishment and maintenance. Some of the shrubs are sawplametto and waxmyrtle. Some of the herbaceous plants are aster, coneflower, iris, marsh pink, and meadowbeauty.

The most important urban wildlife are songbirds and wading birds. Undisturbed areas are important as refuge areas for many forms of wildlife.

ENDANGERED AND THREATENED PLANTS AND ANIMALS

Threatened or endangered animals include:

MAMMALS - Florida panther, Felis concolor coryi

BIRDS - Dusky seaside sparrow (Brevard County only), Ammodramus maritimus nigriscens; Florida sandhill crane, Grus canadensis pratensis

ECOLOGICAL COMMUNITIES—CLIMATIC ZONES

FLORIDA

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