# Field Key to Ecological Systems of Map Zone 56, Floridian Coastal Plain, United States

**NatureServe**
**Terrestrial Ecology Department**
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Cape Canaveral National Seashore, Florida 2005. photo by Milo Pyne

**Contacts:**
Pat Comer, Chief Terrestrial Ecologist, 703.797.4802, pat_comer@natureserve.org
Milo Pyne, SE US Regional Vegetation Ecologist, 919.484.7857, ext. 136, milo_pyne@natureserve.org

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## Introduction

The following keys to NatureServe ecological systems cover the areas found in NLCD map zone 56 (Floridian Coastal Plain). The systems included in these keys are intended to represent the legend that LANDFIRE will be striving to map for existing vegetation (Figure 1). Some types are in the keys that characteristically occur at small spatial scales (generally <2 ha in size) and hence may not be mappable by the LANDFIRE project. However, we have chosen to be inclusive in the keys, so that the user will have information on these system types for comparison purposes. In some cases they may be important for modeling fire condition class and, given their relative distinctiveness on the landscape, they may indeed be mappable.

Plant names are almost always in Latin and follow the nomenclature of Kartesz (1999). In limited cases, we have included synonyms and/or common names for some taxa.

The keys are "dichotomous", which means the user follows the order of the 'couplets' and makes a choice between the 2 options represented in the couplet. The ordering of the couplets in each key does matter, and the user should choose the option in each couplet that best fits the data or field situation. The users should carefully read both couplets before making the best choice of the two available leads. A choice leads the user to the next couplet to be utilized in the keying process, via a number at the far right, or else leads to a final result (an ecological system type or an alliance).

If the choice the user makes leads to a "result", then either an Ecological System or a Vegetation Alliance is named. Alliances are recognizable because "alliance" is in the name, and they all start with one or more Latin names (e.g. *Abies concolor* Forest Alliance).

Systems do not include Latin species names in them, and always start with a Biogeographic region (e.g. Southern Coastal Plain or Florida Peninsula), and may include plant species or genus common names (e.g. Pine, Oak). Numbers in parentheses placed after the System Name are the EVT (Existing Vegetation Type) codes assigned by Landfire to the Systems.

Some keys or portions of keys may follow a different logic from one another, depending on what ecological or biogeographic variable is best suited to the types included in the key. A group of higher-order couplets or choices guides the user to one of several individual keys for a more specific group of systems. Some systems include a variety of manifestations on the landscape, and these may appear more than once in the key or keys. These examples will be noted by reference to the other examples.

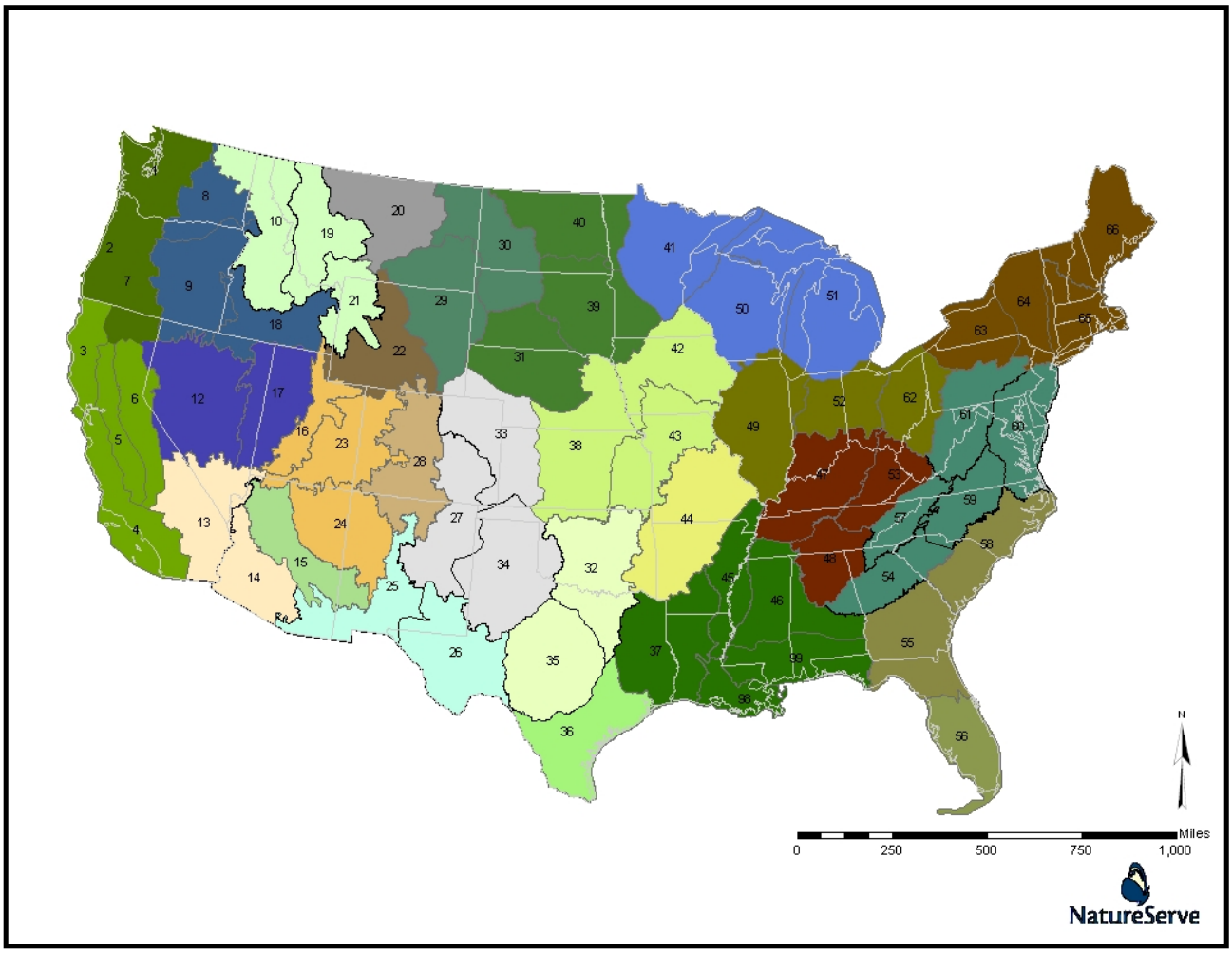


**Figure 1. LANDFIRE map zone clusters with keys to ecological systems and selected alliances.**

The keys to ecological systems use a variety of different variables, which are applied in various sequences, depending on the relative significance of the variable. Variables that are less ambiguous in their application will ideally be used earlier or "higher" in the key. The principal (and more-or-less "universal") variables that help provide the upper structure for the key include broad physiognomy (e.g. forested vs. non-forested), broad biogeography (where a map zone is heterogeneous in this respect), and general hydrology (e.g. upland and wetland). Common terms instead of overly jargonistic or technical language is preferred in the key where possible, but some terms may require definition. In our sense of meaning, "wetland" vegetation is that which "whose composition is affected by flooding or saturated soil conditions." The term is not used in the sense of a "jurisdictional wetland" which is a more limited as well as a legal meaning of this term.

Systems may occur in the key in several places, if their range of variability would require this. In more detailed (or "lower") places in the key, dominance within vegetation strata may play a role. Tree cover is generally considered first, then that of shrubs, then the herbaceous component. Codominant species within a given strata are important as well, in some cases a system type or alliances will have 2 or more codominant species, which may or may not be present in all stands.

Some terminology is commonly employed throughout the keys that distinguish general spatial characteristics of the vegetation or environmental setting. For example 'matrix' types of vegetation

are dominant across the majority of a given landscape, while 'large patch' types tend to occur as distinctive patches, which represent specific environments within the larger 'matrix.' In the southeastern coastal plains, elevation is not of much use in distinguishing systems, but soil composition or latitude may be of some importance. These variables and others are used to provide the framework for the key.

Ideally, the user of the key will be able to locate themselves in relation to the EPA Level IV Ecoregions, as in some cases this may be the determining factor between two otherwise similar systems. These ecoregional limits are in a sense a general guide, and different systems of classifying ecoregions vary in terms of precisely where these boundaries occur. In many cases, the ecoregional line correlates well with an observable variable in vegetation, topography, soil type, etc., but this may not always be the case and ecotonal areas may occur in some cases near a boundary.

Information about regional, state, and multi-state EPA Ecoregion products (.pdf maps at various sizes, as well as shapefiles) can be obtained at http://www.epa.gov/wed/pages/ecoregions/level_iv.htm (accessed April 4, 2007).

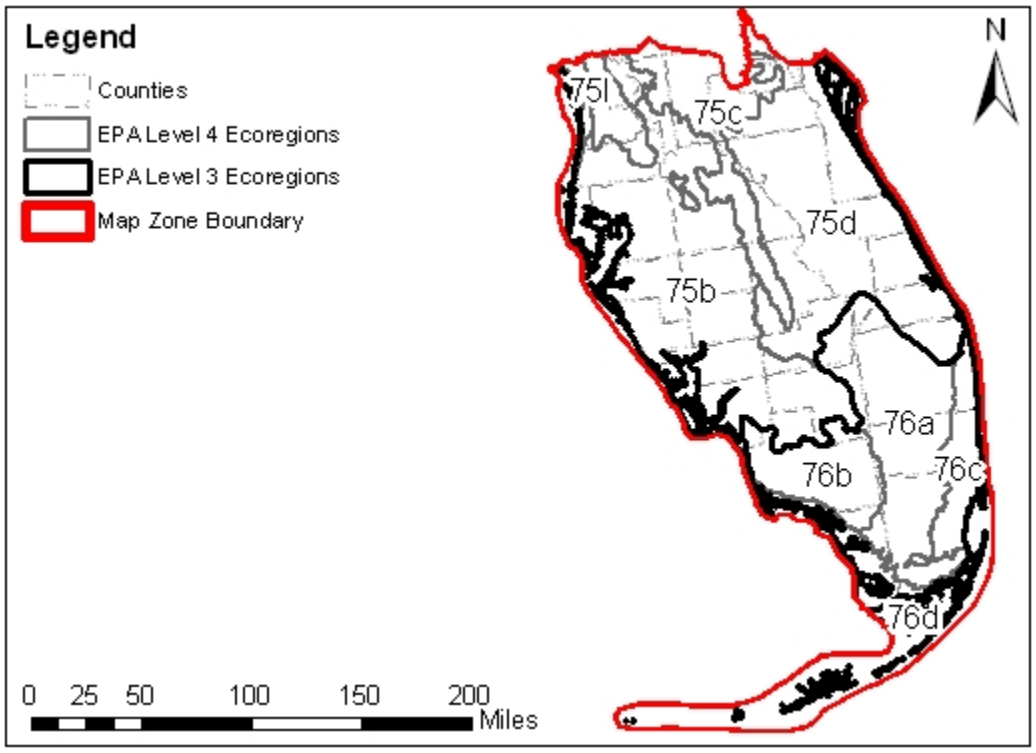


**Figure 2 – EPA Level III and Level IV Ecoregions for Map Zone 56**

In the section of the document immediately following, we have provided a table showing the LANDFIRE legend units that represent non-natural vegetation and a short description for each of them. They are not formally incorporated into the keys, since they are typically recognizable without the use of a key, or else their floristic composition is so variable as to be not useful in a field key. Our primary purpose was to provide keys for the natural and near-natural vegetation of these zones.

# Land Use, Unvegetated, Semi-natural and Altered Vegetation

| LAND USE OR UNVEGETATED SURFACES | |
|---|---|
| **Open Water** | Open water |
| **Developed** | Generally developed lands. |
| Developed, Open Space | Vegetation (primarily grasses) planted in developed settings for recreation, erosion control, or aesthetic purposes. Impervious surfaces account for less than 20% of total cover. Examples include parks, lawns, golf courses, airport grasses, and industrial site grasses. |
| Developed, Low Intensity | Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-50% of total cover. These areas most commonly include single-family housing units. |
| Developed, Medium Intensity | Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-80% of the total cover. These areas most commonly include single-family housing units |
| Developed, High Intensity | Includes highly developed areas where people reside in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to100% of the total cover. |
| **Agriculture** | Generally developed for agricultural uses. |
| Pasture/Hay | These agriculture lands typically have perennial herbaceous cover (e.g. regularly-shaped plantings) used for livestock grazing or the production of hay. There are obvious signs of management such as irrigation and haying that distinguish it from natural grasslands. Identified CRP lands are included in this land cover type. |
| Cultivated Crops and Irrigated Agriculture | These areas used for the production of crops, such as corn, soybeans, small grains, sunflowers, vegetables, and cotton, typically on an annual cycle. Agricultural plant cover is variable depending on season and type of farming. Other areas include more stable land cover of orchards and vineyards. |
| **SEMI-NATURAL / ALTERED VEGETATION** | |
| **Ruderal Vegetation** | Vegetation resulting from succession following significant anthropogenic disturbance of an area. It is generally characterized by unnatural combinations of species (primarily native species, though they often contain slight or substantial numbers and amounts of species alien to the region as well) |
| Ruderal Upland - Old Field | |
| Ruderal Upland – Abandoned Tree Plantation | |
| Ruderal Wetland | |
| **Introduced Vegetation** | Vegetation dominated by introduced species. These are spontaneous, self-perpetuating, and not (immediately) the result of planting, cultivation, or human maintenance. Land occupied by introduced vegetation is generally permanently altered (converted) unless restoration efforts are undertaken. |
| Introduced Upland Vegetation – Treed | Land cover is significantly altered/disturbed by introduced tree species. |
| Introduced Upland Vegetation - Shrub | Land cover is significantly altered/disturbed by introduced woody and/or herbaceous vegetation (including . |
| Introduced Upland Vegetation – Annual and Biennial Forbland | Land cover is significantly altered/disturbed by introduced annual and biennial forbs. Natural vegetation types are no longer recognizable. |
| Introduced Upland Vegetation - Perennial Grassland and Forbland | Land cover is significantly altered/disturbed by introduced, non-native perennial grasses and forbs. Natural vegetation types are no longer recognizable. |
| Introduced Riparian Vegetation | Land cover is altered/disturbed and dominated by introduced woody vegetation (woodlands and shrublands). Typical riparian trees and shrubs include *Elaeagnus angustifolia, Triadica sebifera,* etc. |
| Introduced Wetland Vegetation | Land cover is altered/disturbed and dominated by introduced wetland vegetation. Species may include *Lythrum salicaria, Phalaris arundinacea, Phragmites australis*, etc. |

| | |
|---|---|
| **Modified/Managed Vegetation** | Vegetation resulting from management or modification of natural/near natural; vegetation, but producing a structural and floristic combination not clearly known to have a natural analogue. Modified vegetation may be easily restorable by either management, restoration of ecological processes, and/or succession. |
| Modified/Managed Upland Vegetation | Land cover is apparently managed/modified and dominated by trees and/or shrubs. Vegetation is a mixture of herbaceous, shrub, and tree species. |
| Recently Burned Forest and Woodland | Land cover is apparently modified by recent fires which have burned forest and woodland vegetation. Vegetation is a mixture of herbaceous, shrub, and tree species. |
| Recently Burned Shrubland | Land cover is apparently modified by recent fires which have shrubland vegetation. Vegetation is a mixture of herbaceous and shrub species. |
| Recently Burned Grassland | Land cover is apparently modified by recent fires which have burned grassland vegetation. Vegetation is a mixture of herbaceous and shrub species. |
| Managed Tree Plantation | Land cover is apparently modified and appears as a managed tree plantation. |
| Recently Logged Timberland | Land cover is apparently modified and appears as logged timberland. |
| Modified/Managed Wetland Vegetation | These areas include created and obviously managed wetlands of varying size resulting from water diversion. Artificial Wetlands will be mapped where obvious built structures may be distinguished from imagery. |

# Key to Map Zone 56 Ecological Systems

This key is intended for identifying Ecological Systems and selected alliances that are found in Floridian Coastal Plain (NLCD Map Zone 56), which covers areas south of about 29° N latitude. The northern edge of this map zone includes the counties of Citrus, Lake, Sumter, and southern Volusia, and it extends from there to the southern limit of the state.

**Please note the following symbols:**
***** indicates NS ecological system that has been grouped into broader LANDFIRE Map Unit. Included to help clarify key, but crews need to record broader LANDFIRE Map Unit(**)
****** indicates broader LANDFIRE Map Unit.
******* small patch ecological system, NOT being mapped by LANDFIRE and included for completeness of the key.

## Forested Ecological Systems

1a. Forested Ecological System, stands typically dominated by trees (at greater than 10% cover) ..... 2
1b. Non-forested Ecological System, stands with trees typically absent or at low cover (below 10%) ..... 24
2a. Ecological System generally found south of Lake Okeechobee and restricted to Southern Tropical Florida [EPA Ecoregion 76]; Forest and woodland stands either dominated by pines (*Pinus spp*.) or containing tropical broad-leaved evergreen trees (these present to dominant in the canopy) ..... 3
2b. Ecological System not restricted to Southern Tropical Florida (i.e. typically found north of Lake Okeechobee); Forest stands dominated by one or a combination of the following: needle-leaved evergreen trees (e.g. *Pinus*), needle-leaved deciduous trees (e.g. Cypress, *Taxodium spp.*), broad-leaved deciduous trees, and/or sometimes temperate broad-leaved evergreen trees; tropical broad-leaved evergreen trees absent or of minor importance .... 11
3a. Upland forests and woodlands (stands whose composition is not affected by flooding or saturated soil conditions) 4
3b. Wetland forests (stands whose composition is affected by flooding or saturated soil conditions; including floodplains and bottomlands as well as seepage forests) ..... 6
4a. Stands dominated by deciduous and/or evergreen broad-leaved trees, forests with canopies typically greater than 60% cover - **South Florida Hardwood Hammock (2333)**
4b. Stands dominated by needle-leaved evergreen trees (e.g. Slash Pine, *Pinus elliottii*); typically woodlands, with canopies generally 60% cover or less ..... 5
5a. Stands located on dry limestone outcrops over limestone or on shallow soils, mainly in southeastern Florida and the Florida Keys - **South Florida Pine Rockland (2360)**
5b. Stands located on deeper soils, not on rock outcrops, mainly on the northern part of Big Cypress National Preserve – drier phases of **Florida Pine Flatwoods (2446)**
6a. Stands dominated by needle-leaved trees; typically woodlands with canopy coverage less than 60% ..... 7
6b. Stands dominated by evergreen and/or deciduous broad-leaved trees; typically forests with canopy coverage greater than 60% ..... 8
7a. Stands dominated by needle-leaved evergreen trees (e.g. *Pinus*); saturated Slash Pine-dominated flatwoods, ground water at or near the surface during most years – wetter phases of **South Florida Pine Flatwoods (2446)**
7b. Stands dominated by needle-leaved deciduous trees (e.g. *Taxodium*) ..... 9
8a. Stands whose composition is affected or determined by a diurnal tidal flooding regime of saline ocean water (includes Mangrove Forests) - **Caribbean Coastal Wetland Systems (2470)****
8b. Stands whose composition is affected and determined by riverine fresh water flooding or fresh ground water inputs ..... 10
9a. Vegetation occupying isolated ponds or depressions (or drainages adjacent to them); circular or linear features contrasting with the predominant matrix vegetation – **South Florida Cypress Dome (2447)**
9b. Vegetation occupying broad flats, with extensive saturated areas, more or less uniformly dominated by dwarf forms of *Taxodium* - South Florida Dwarf Cypress Savanna (2445)
10a. Riverine swamps of South Florida - **Caribbean Swamp Systems (2478)****
10b. Groundwater fed wetlands in solution holes or associated sloughs - Willow-dominated examples of **South Florida Slough, Gator Hole, and Willow Head (2448)*****
11a. Stands typically dominated by needle-leaved trees (evergreen or deciduous) ..... 12
11b. Stands typically dominated by broad-leaved trees (temperate evergreen and/or deciduous) ..... 16

12a. Wetland stands dominated by needle-leaved deciduous trees (e.g. Cypress, *Taxodium* spp.) - **Southern Coastal Plain Nonriverine Cypress Dome (2460)**

12b. Stands (upland or wetland) dominated by needle-leaved evergreen trees (e.g. *Pinus*)..... 13

13a. Wetland stands (understory and herb composition is affected by saturated soil conditions), e.g. flatwoods, dominated by either Longleaf Pine (*Pinus palustris*) or Slash Pine (*Pinus elliottii*), possibly by Pond Pine (*Pinus serotina*) – wet, saturated phase of **Central Florida Pine Flatwoods (2453)**

13b. Upland stands (understory and herb composition is not affected by saturated soil conditions)..... 14

14a. Stands containing Sand Pine (*Pinus clausa*), from low to high densities (some stands with canopy closure greater than 60%), shrub understory dominated by Oaks – Sand Pine-dominated examples of **Florida Peninsula Inland Scrub (2387)**

14b. Stands containing or dominated by Longleaf Pine (*Pinus palustris*); typically woodlands with canopy closure less than 60%..... 15

15a. Longleaf Pine (*Pinus palustris*) stands found on extensive Sandhills, particularly in the Lake Wales or Central Florida Ridge (EPA Ecoregion 75c) - **Florida Longleaf Pine Sandhill (2356)**

15b. Dry to mesic Pine flatwoods, dominated by either Longleaf Pine (*Pinus palustris*) or Slash Pine (*Pinus elliottii*), in flat landscapes, not on deep sands of Sandhills – upland phase of **Central Florida Pine Flatwoods (2453)**, including “Scrubby Flatwoods”, possibly with Sand Pine (*Pinus clausa*)

16a. Wetlands (stands whose composition is affected by flooding or saturated soil conditions; including floodplains and bottomlands as well as seepage forests) ..... 17

16b. Uplands (stands whose composition is not affected by flooding or saturated soil conditions) ..... 21

17a. Stands (e.g. streamheads and streamsides as well as nonriverine basins) on saturated soils with organic matter; typically dominated or co-dominated by temperate broad-leaved evergreen trees and shrubs (e.g. *Magnolia virginiana, Cliftonia monophylla, Lyonia lucida*, etc., with some deciduous trees (e.g. *Acer rubrum, Nyssa biflora*, etc.) or more rarely Pines (*Pinus* spp.)..... 18

17b. Stands along streams, creeks and rivers and in their floodplains (on poorly drained mineral soils) whose structure and composition is affected by temporary, seasonal, or tidal flooding; typically dominated or co-dominated by temperate broad-leaved deciduous trees and shrubs (e.g. wetland *Quercus spp., Liquidambar styraciflua, Nyssa spp., Fraxinus pennsylvanica*, etc.)..... 19

18a. Stands located in streamheads or on streamsides, associated with linear features, which may receive overbank flooding in addition to groundwater inputs - **Southern Coastal Plain Seepage Swamp and Baygall (2461)**

18b. Nonriverine basins, not receiving overbank flooding (extending into central Florida especially along the Atlantic Coast in Volusia and Brevard counties); generally forested, with *Taxodium distichum, Nyssa biflora*, evergreen "bay" shrubs (*Cliftonia monophylla, Cyrilla racemiflora, Lyonia lucida*) and *Smilax laurifolia*. Emergent Pinus elliottii may also be present. e.g. **Southern Coastal Plain Nonriverine Basin Swamp*** [a Non-tidal example of **Gulf and Atlantic Coastal Plain Swamp Systems (2480)****]

19a. Stands along tidal rivers and creeks, subject to regular daily lunar tidal flooding – Tidal examples of **Gulf and Atlantic Coastal Plain Swamp Systems (2480)**** [includes Tidal Swamps; of limited extent in Map Zone 56]

19b. Stands along inland rivers and creeks, subject to temporary or seasonal flooding..... 20

20a. Forested vegetation (rarely non-forested shrub and herbaceous patches) found along rivers, with substantial development of floodplain morphological features (point bars, backswamps, terraces) **Gulf and Atlantic Coastal Plain Floodplain Systems (2473)****; may be difficult to distinguish from 2474 below in the field and require interpretation from aerial photos of field maps

20b. Forested vegetation (rarely non-forested shrub and herbaceous patches) found along streams, without substantial development of floodplain morphological features (point bars, backswamps, terraces) **Gulf and Atlantic Coastal Plain Small Stream Riparian Systems (2474)**** ); may be difficult to distinguish from 2473 above in the field and require interpretation from aerial photos of field maps

21a. Stand found in a near-coastal environments, typically with some influence from wind and salt spray; typically dominated by or at least containing Live Oak (*Quercus virginiana*), Sand Live Oak (*Quercus geminata*) possibly with pine in earlier-successional examples..... 22

21b. Stand found inland, Ecological System present throughout the map zone in appropriate environments..... 23

22a. Forested examples of **Southeast Florida Coastal Strand and Maritime Hammock (2337)**

22b. Forested examples of **Southwest Florida Coastal Strand and Maritime Hammock (2336)**

23a. Stands dominated by Oaks and Hickories and/or pines; system of somewhat limited extent, typically found on upper slopes or other somewhat fire-sheltered habitats - **Southern Coastal Plain Dry Upland Hardwood Forest (2330)**

23b. Stands dominated by or at least containing Live Oak (*Quercus virginiana*), Sand Live Oak (*Quercus geminata*) and/or other evergreen or semi-evergreen oaks; small patch system embedded in a matrix of fire-prone Pine system - **Southern Coastal Plain Oak Dome and Hammock (CES203.494)***** [not part of Landfire legend]

## Non-Forested Ecological Systems

24a. Uplands (e.g. dune grasslands and shrublands, dry prairies, some examples of scrub)..... 25
24b. Wetlands (including pond margins, marshes, sloughs, and wet depressions) ..... 32
25a. Ecological System consists of sparsely vegetated beach, a narrow strip found between the dunes and daily high tide line (e.g. the outermost zone of coastal vegetation extending seaward from foredunes on barrier islands and also limited overwash flats behind breached foredunes)..... 26
25b. Ecological System variously vegetated, not sparsely vegetated beach ..... 27
26a. System found generally south of Lake Okeechobee; restricted to Southern Florida Coastal Plain (EPA Ecoregion 76);**Caribbean Coastal Beach Systems (2496)****
26b. System found generally north of Lake Okeechobee; found in coastal parts of Southern Coastal Plain (EPA Ecoregion 75);**Gulf and Atlantic Coastal Plain Sparsely Vegetated Systems (2498)****
27a. Ecological System restricted to areas adjacent to seacoast, its vegetation composition and structure affected by coastal processes (e.g. dune migration, storm disruption of substrate, salt spray and wind effects) ..... 28
27b. Ecological System found inland, not restricted to areas adjacent to seacoast, its vegetation composition and structure not affected by coastal processes..... 31
28a. Stands typically dominated by shrubs and/or stunted, wind-sculpted trees..... 29
28b. Stands typically dominated by dune grasses (*Uniola paniculata*) or other grasses and/or graminoids (*Spartina, Fuirena*, etc.); shrubs may occur in patches but do not dominate ..... 30
29a. System found on western coast of Florida; Shrub-dominated examples of **Southwest Florida Coastal Strand and Maritime Hammock (2336)**
29b. System found on eastern coast of Florida; Shrub-dominated examples of **Southeast Florida Coastal Strand and Maritime Hammock (2337)**
30a. System found on western coast of Florida; **Southwest Florida Dune and Coastal Grassland (2431)**
30b. System found on eastern coast of Florida; **Southern Atlantic Coastal Plain Dune and Maritime Grassland (2426)**
31a. System restricted to Central Florida Ridge (or Lake Wales Ridge (EPA Level IV region 75c), dominated by shrubs including scrub Oaks (e.g. *Quercus geminata, Quercus myrtifolia, Quercus chapmanii*) and *Ceratiola ericoides* - Shrub-dominated examples of **Florida Peninsula Inland Scrub (2387)**
31b. System found both north and west of Lake Okeechobee (in EPA Level IV regions 75b and 75d), typically dominated by *Serenoa repens* and low shrubs (*Quercus minima, Lyonia lucida, Lyonia fruticosa, Vaccinium darrowii, Vaccinium myrsinites, Ilex glabra*, and *Befaria racemosa*), as well as a variety of grasses (*Aristida beyrichiana, Schizachyrium scoparium var. stoloniferum, Sorghastrum secundum, Andropogon ternarius, Aristida spiciformis, Dichanthelium dichotomum var. ensifolium, Dichanthelium strigosum, Paspalum setaceum*); some stands may be heavily dominated by *Serenoa repens* to the exclusion of other taxa - **Florida Dry Prairie (2425)**
32a. Ecological System found generally south of Lake Okeechobee; restricted to Southern Florida Coastal Plain (EPA Ecoregion 76) ..... 33
32b. Ecological System found generally north of Lake Okeechobee; not restricted to Southern Florida Coastal Plain (EPA Ecoregion 76)..... 34
33a. System consists of vegetation on shallower soils with bedrock close to the surface, including a range of small-scale hydrological variation (from seasonally flooded soils, to elevated areas of oolitic rocks referred to as pinnacle rock, as well as embedded solution holes [depressions formed from limestone collapse]), typically dominated by mesic to wet grasses/graminoids, including *Sporobolus spp., Panicum spp., Muhlenbergia filipes, Andropogon glomeratus var. pumilus, Saccharum giganteum, Rhynchospora microcarpa* found in the southern Florida Everglades region (EPA 76a) and related areas of the Florida Keys (EPA 76d) - **South Florida Wet Marl Prairie (2484)**
33b. System consists of vegetation in areas of consistently longer hydroperiod (marshes), typically dominated by long-hydroperiod grasses/graminoids and/or various emergent plants..... 35
34a. Stands along tidal rivers and creeks, subject to diurnal tidal flooding – Herbaceous examples of **Gulf and Atlantic Coastal Plain Tidal Marsh Systems (2490)****
34b. Stands found in as former lake basins, shallow peat-filled valleys, and zones around existing natural lakes - **Floridian Highlands Freshwater Marsh (2489)**

35a. System manifests on the landscape as extensive areas of marsh (sometimes colloquially called “prairie” in the Everglades region (EPA 76a), dominated by *Cladium mariscus ssp. jamaicense, Eleocharis cellulosa, Rhynchospora tracyi, Panicum hemitomon*, with *Salix caroliniana* - **South Florida Everglades Sawgrass Marsh (2483)**

35b. System manifests on the landscape as linear areas of limited size, consisting of patches of coarse graminoids (Schoenoplectus, Typha, Zizaniopsis) with emergent and submersed aquatic plants (*Thalia geniculata, Pontederia, Sagittaria, Nuphar, Nymphaea, Pistia, Najas, Ceratophyllum, Utricularia*, with *Salix caroliniana*) - Herbaceous-dominated examples of **South Florida Slough, Gator Hole, and Willow Head (2448)*****