

APPENDIX G

Georgia Coastal Assessment: Jekyll Island, Georgia

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I. National Vegetation Classification (NVC) and Local Descriptions of Plant Communities

A. Forest communities:

1. Red-Cedar - Live Oak - Cabbage Palmetto Marsh Hammock - These hammocks occur in salt marsh along the western side of Jekyll Island. Often dominated by *Quercus virginiana* and *Juniperus virginiana* with a moderately open to very open canopy. *Serenoa repens* is usually present and dense in the shrub layer. *Sabal palmetto*, *Ilex vomitoria*, *Sideroxylon tenax*, and *Distichlis spicata* were found. Salt marsh species may occur along the edge of the hammock.

Global Status: G3 - Vulnerable

Association: Coastal Red-cedar - (Live Oak, Cabbage Palmetto) Forest (CEGL007813); *Juniperus virginiana* var. *silicicola* - (*Quercus virginiana*, *Sabal palmetto*) Forest

Alliance: *Quercus virginiana* - (*Sabal palmetto*) Forest Alliance

Ecological System: Southern Atlantic Coastal Plain Salt and Brackish Tidal Marsh

2. Loblolly-bay Forest - *Pinus elliottii*, *Gordonia lasianthus*, along with lesser amounts of *Persea palustris* and *Nyssa biflora* dominate the canopy of this forest community. The shrub layer is sparse with *Morella cerifera* covering only 10% of the tall shrub layer, while *Sabal palmetto* and *Lyonia lucida* make up a short shrub layer. Herbs are few, with scattered *Andropogon sp.* and *Chasmanthium laxum*. This seepage-fed community is located between an upland oak maritime community and a lowland Red maple-dominated forested wetland.

Global Status: G4 – Apparently Secure

Association: Loblolly-bay - Sweetbay - Swampbay / Peatmoss species Forest (CEGL007044); *Gordonia lasianthus*-*Magnolia virginiana*-*Persea palustris*/*Sphagnum spp.* Forest

Alliance: *Magnolia virginiana* - *Persea palustris* Saturated Forest Alliance

Ecological System: Atlantic Coastal Plain Streamhead Seepage Swamp, Pocosin, and Baygall

3. Maritime Live Oak Hammock – The dominant forest community on Jekyll Island, it is characterized by the canopy-dominance of *Quercus virginiana*,

Quercus hemisphaerica, and sometimes *Pinus elliottii*. Several tree species may be found in the diverse subcanopy including *Persea palustris*, *Sabal palmetto*, *Morella cerifera*, *Ilex vomitoria*, *Juniperus virginiana*. Other species found in the tall shrub/subcanopy layers include *Celtis laevigata*, *Prunus serotina*, *Sideroxylon tenax*, *Ilex opaca*, *Lyonia ferruginea*, and *Camphora cinnamomum*. The shrub layer can be floristically diverse and relatively open compared to other maritime communities found on Jekyll Island and include *Persea palustris*, *Sabal palmetto*, *Serenoa repens*, *Callicarpa americana*, *Vaccinium arboreum*, *Morella cerifera*, and *Ilex vomitoria*. The herb layer is generally dense with vines, *Quercus* seedlings, and graminoids. Characteristic species include *Rubus trivialis*, *Smilax bona-nox*, *Oplismenus hirtellus*. *Mitchella repens* and *Houstonia procumbens*. *Scleria triglomerata*, *Chasmanthium laxum*, and *Setaria sp.* are dominant graminoids.

In some examples, *Quercus hemisphaerica* is the dominant/co-dominant canopy tree species, making for a more open canopy. Slash pine (*P. elliottii*) and Live oak (*Q. virginiana*) may be co-dominant. Slash pine is often the tallest tree, sticking out above the oak canopy. *Persea palustris* is the dominant subcanopy tree. *Lyonia ferruginea*, *Vaccinium arboreum*, *Ilex opaca*, and *Morella cerifera* are often dominant tall and short shrubs. The short shrub layer may be open and park-like to somewhat dense with *Serenoa repens* and *Lyonia ferruginea*. In these examples, the herb layer is sparse with *Scleria triglomerata*, *Chasmanthium laxum*, and *Smilax pumila*. *Ilex vomitoria* may also be present. In some examples, Live oak (*Q. virginiana*) is the only canopy dominant and the shrub layer is dense with Saw palmetto (*S. repens*). *Persea palustris*, *Liquidambar styraciflua* and *Sabal palmetto* were noted in the canopy and subcanopy. Where *Serenoa repens* is less dense in the shrub layer, heaths such as *Vaccinium (arboreum and stamineum)* and *Lyonia ferruginea* were found along with *Morella cerifera*, *Ilex opaca*, and *Ilex vomitoria*. Herb layer species are few or lacking due to the often-dense cover of *Serenoa repens*, although *Scleria triglomerata* has been noted.

Global Status: G2 - Imperiled

Association: Live Oak - (Slash Pine, Cabbage Palmetto) / Redbay - Beautyberry Forest (CEGL007032); *Quercus virginiana* – (*Pinus elliottii* var. *elliottii*, *Sabal palmetto*)/*Persea borbonia* – *Callicarpa americana* Forest

Alliance: *Quercus virginiana* – (*Sabal palmetto*) Forest Alliance

Ecological System: Southern Atlantic Coastal Plain Maritime Forest

4. Mid- to Late-Successional Loblolly Pine – Sweetgum Forest – In this successional community, *Pinus taeda* dominates the canopy densely with 60-70% cover. Camphor tree (*Camphora cinnamomum*) forms a sparse subcanopy. *Morella cerifera* and *Ilex vomitoria* are dominant in the tall shrub layer. Few *Persea* seedlings and *Morella cerifera* individuals can be found in the open shrub layer. The vines, *Rubus trivialis*, *Smilax (pumila and bona-nox)*, and *Vitis rotundifolia*, form patchy mats in the herb layer. *Sabal palmetto* seedlings were also found.

Global Status: GNA

Association: Loblolly Pine - Sweetgum Semi-natural Forest (CEGL008462);
Pinus taeda - *Liquidambar styraciflua* Semi-natural Forest

Alliance: *Pinus taeda* Forest Alliance

Ecological System: NA

5. Outer Coastal Plain Sweetbay Swamp Forest - Large *Nyssa biflora* dominate the canopy, while *Persea palustris* forms a distinct understory layer. *Persea palustris* and *Lyonia ferruginea* make up a tall shrub layer. *Ilex cassine* and *opaca*) may also be scattered in the tall shrub layer. *Morella cerifera* and *Persea palustris* dominate the short shrub layer. In some areas, the shrub layer becomes dense with *Serenoa repens* and *Lyonia lucida*. Few or no herbs are present, although *Woodwardia areolata* and *Woodwardia virginica* were noted where shrubs were less dense.

Global Status: G3 - Vulnerable

Association: Sweetbay - Swampbay / Shining Fetterbush Forest (CEGL007049);
Magnolia virginiana - *Persea palustris* / *Lyonia lucida* Forest

Alliance: *Magnolia virginiana* - *Persea palustris* Saturated Forest Alliance

Ecological System: Atlantic Coastal Plain Streamhead Seepage Swamp, Pocosin, and Baygall

6. Red Maple - Tupelo Maritime Swamp Forest - *Acer rubrum* is the dominant species in this seasonally flooded community. Co-dominant or less dominant species vary. Hollies (*Ilex cassine*, *I. opaca*, and *I. vomitoria*) are usually present in the subcanopy layer. *Nyssa biflora* or *Gordonia lasianthus* may also be present. *Morella cerifera* and *Ilex vomitoria* are typically scattered in the shrub layers. Very few species exist in the herb layer, although *Chasmantheum spp.*, *Sabal palmetto*, *Dichantheium spp.*, *Hydrocotyle bonariensis*, *Rubus spp.*, and *Woodwardia virginica* were found. In a south Jekyll Island example, *Persea palustris*, *Juniperus virginiana*, *Osmunda regalis*, and *Smilax laurifolia* were present.

Global Status: G2 - Imperiled

Association: Red Maple - Swamp Tupelo - (Sweetgum, Ash species) Maritime Swamp Forest (CEGL004082); *Acer rubrum* - *Nyssa biflora* - (*Liquidambar styraciflua*, *Fraxinus* sp.) Maritime Swamp Forest

Alliance: *Liquidambar styraciflua* - (*Acer rubrum*) Seasonally Flooded Forest Alliance

Ecological System: Southern Atlantic Coastal Plain Maritime Forest

7. Southeastern Florida Maritime Hammock - In this forest community, the dominant tree, *Quercus geminata*, is scrubby and short in stature (10-15m) forming a dense thicket with Saw palmetto (*S. repens*). Large emergent *Pinus elliotii* (20-35m) may be scattered throughout, sticking out of the oak canopy. *Lyonia ferruginea* although not dense, forms a distinct tall shrub layer (5-10m).

Serenoa repens creates a dense short shrub layer along with scattered *Lyonia lucida*.

Global Status: G2 - Imperiled

Association: Sand Live Oak - (Live Oak) / Saw Palmetto - Rusty Fetterbush Forest (CEGL007020); *Quercus geminata* – (*Quercus virginiana*)/*Serenoa repens* – *Lyonia fruticosa* Forest

Alliance: *Quercus geminata* Forest Alliance

Ecological System: Southern Atlantic Coastal Plain Maritime Forest

B. Woodland Communities

8. Maritime Slash Pine – Longleaf Pine Upland Flatwoods - Several examples found on Jekyll Island. Canopy is often completely dominated by *Pinus elliottii* (sometimes with *P. taeda*) and ranges from closed to relatively open. *Persea palustris* is a subcanopy dominant often along with *Magnolia grandiflora*, *Quercus virginiana*, and in some examples, the invasive *Camphora cinnamomum*. The tall shrub layer can range from sparse to dense with *Morella cerifera*, *Ilex vomitoria*, *Sabal palmetto*, and *Persea palustris*. *Serenoa repens* is often the patchy to dense dominant in the short shrub layer. Herb layer poorly developed with some tree seedlings and vines (*Rubus spp*, *Smilax bona-nox*) present. Some wetter areas may contain fern species (*Woodwardia spp*). Sandy-loam soil is moderately to well-drained. This vegetation type is sometimes found on pine-dominated hammocks on north and northwest parts of the island. One example contained *Quercus nigra*, *Rhus copallinum*, and *Vitis rotundifolia*.

In some examples, *Pinus taeda* may be present. *Serenoa repens* is dominant and dense in the short shrub (1-2m) layer w/ scattered *Lyonia lucida* and some *Lyonia ferruginea*. Vines such as *Smilax (glauca and auriculata)* were found in one example. The forest floor contains thick layers of pine needle litter and very few species are found in the herb layer.

***Note- Examples questionable and some may fit be better placed in Mid- to Late-Successional Slash Pine Managed Forest (CEGL007171).

Global Status: G2 - Imperiled

Association: Slash Pine - (Longleaf Pine) / Yaupon - Saw Palmetto - Wax-myrtle Woodland (CEGL004658); *Pinus elliottii* var. *elliottii* – (*Pinus palustris*)/*Ilex vomitoria* – *Serenoa repens* – *Morella cerifera* Woodland

Alliance: *Pinus palustris* Woodland Alliance

Ecological System: Southern Atlantic Coastal Plain Maritime Forest

9. South Atlantic Coastal Shell Midden Woodland – An example of this calciphilic community occurs on a southwestern marsh hammock on Jekyll Island. The canopy consists mainly of *Juniperus virginiana* var. *silicicola* although *Sabal palmetto* and *Zanthoxylum clava-herculis* were present as well. Shrubs are prominent and included *Ilex vomitoria*, *Forestiera segregata*, *Baccharis halimifolia*, and others. Rouge plant (*Rivina humilis*) was found in

abundance in the herb layer of this community. Another example was located on a marsh hammock near the Jekyll Island causeway and included Georgia special concern plants *Sapindus marginatus* (subcanopy dominant), *Forestiera segregata*, and *Sageretia minutiflora* (shrub dominant).

Global Status: G2 - Imperiled

Association: Coastal Red-cedar - Toothache-tree - Live Oak - (Cabbage Palmetto) / Small-flower Mock Buckthorn - (Tough Bumelia) Woodland (CEGL003525); *Juniperus virginiana* var. *silicicola* - *Zanthoxylum clava-herculis* - *Quercus virginiana* - (*Sabal palmetto*) / *Sageretia minutiflora* - (*Sideroxylon tenax*) Woodland

Alliance: *Quercus virginiana* - *Juniperus virginiana* - (*Sabal palmetto*) Woodland Alliance

Ecological System: Southern Atlantic Coastal Plain Maritime Forest

10. Southern Atlantic Coastal Plain Carolina Willow Dune Swale -

These seasonally flooded wetlands are found imbedded in live oak-dominated maritime forests in swales between coastal dunes in coastal Georgia and northern Florida. They are characterized by a short (5-10 m) *Salix caroliniana*-dominated overstory with *Hibiscus grandiflorus* in the shrub layer. *Morella cerifera* may also be found scattered in the shrub layer. The herbaceous cover depends on season and water levels in the stand. *Polygonum punctatum*, *Boehmeria cylindrica*, and *Teucrium canadense* are dominant herbs; *Ptilimnium capillaceum*, *Saururus cernuus*, *Hydrocotyle bonariensis*, and others may also be present in the herb layer. *Ampelopsis arborea* and *Mikania scandens* are common vines. *Quercus virginiana* and *Sabal palmetto* may be overhanging but are not typically rooted in the community.

Global Status: G3 - Vulnerable

Association: Carolina Willow / Swamp Rosemallow / Dotted Smartweed Woodland (CEGL004272); *Salix caroliniana* / *Hibiscus grandiflorus* / *Polygonum punctatum* Woodland

Alliance: *Salix caroliniana* Seasonally Flooded Woodland Alliance

Ecological System: Southern Atlantic Coastal Plain Dune and Maritime Grassland

C. Shrubland Communities

11. Atlantic Coast Interdune Swale - This vegetation is dominated by *Morella cerifera*, sometimes intermixed with *Juniperus virginiana* var. *silicicola*. On Jekyll Island, this community sometimes forms dense bands. Shrubs range from 2-8m tall. Other shrub species include *Baccharis halimifolia* and *Ilex vomitoria*. The herbaceous layer is characterized by *Spartina patens*. Other ground flora associates include *Andropogon virginicus*, *Smilax spp.*, *Vitis spp.* Small openings may have wetland graminoids, such as *Juncus roemerianus*, *Spartina patens*, *Eleocharis sp.*, *Fimbristylis castanea*, *Andropogon glomeratus* var. *pumilus*, and forbs, such as *Hydrocotyle bonariensis*, *Polygonum hydropiperoides*, and others.

In many cases, few herbs are present, because of the dense, thicket-like shrub layer.

Global Status: G3 - Vulnerable

Association: Wax-myrtle / Saltmeadow Cordgrass Shrubland (CEGL003839); *Morella cerifera* / *Spartina patens* Shrubland

Alliance: *Morella cerifera* Saturated Shrubland Alliance

Ecological System: Southern Atlantic Coastal Plain Dune and Maritime Grassland

12. Coastal Salt Shrub Thicket - This shrubland type, dominated by the nominal species, occurs in slightly elevated areas in salt marshes as well as along salt marsh edges. The most common species are typically *Baccharis halimifolia*, *Morella cerifera*, *Iva frutescens* ssp. *frutescens*, *Juniperus virginiana* var. *silicicola*, and *Ilex vomitoria*. Other species found included *Borrchia frutescens*, *Fimbristylis castanea*, *Persea palustris* and invasive *Tamarix* along edges.

Global Status: G4 – Apparently Secure

Association: Groundsel-tree - Maritime Marsh-elder - Wax-myrtle - (Yaupon) Shrubland (CEGL003920); *Baccharis halimifolia* - *Iva frutescens* - *Morella cerifera* - (*Ilex vomitoria*) Shrubland

Alliance: *Baccharis halimifolia* - *Iva frutescens* Tidal Shrubland Alliance

Ecological System: Southern Atlantic Coastal Plain Fresh and Oligohaline Tidal Marsh

13. Live oak – Yaupon holly - (Wax Myrtle) Shrubland Alliance - A more stable shrub community than the Atlantic Coast Interdune Swale, this community occurs on upland maritime dunes on the southern part of the island. Vegetation of this alliance is characteristically 0.5-3 m tall, typically with a single, extremely dense stratum, with *Quercus virginiana* dominant or codominant, and often also with species such as *Ilex vomitoria*, *Morella cerifera*, *Serenoa repens*, *Smilax auriculata*, *Prunus caroliniana*, *Juniperus virginiana* var. *silicicola*, *Smilax bonanox*, *Persea borbonia*, and *Zanthoxylum clava-herculis*. It may also contain *Baccharis halimifolia*. It occupies linear strands on frontal dune ridges and on the leeward sides and tops of rear dunes, where it is protected from salt-water flooding and extreme salt spray. It also occurs on low dunes and rises on the backsides of barrier islands, as upland rises associated with *Juncus roemerianus* marshes.

Alliance: *Quercus virginiana* - *Ilex vomitoria* - (*Morella cerifera*) Shrubland Alliance which includes three associations: *Ilex vomitoria* - *Quercus (geminata, virginiana)* - *Morella cerifera* - *Serenoa repens* Shrubland (CEGL003813, G2), *Quercus virginiana* - (*Ilex vomitoria*) Shrubland (CEGL003833, G3), *Morella cerifera* - *Prunus caroliniana* - *Zanthoxylum clava-herculis* Shrubland (CEGL004784, G2).

Ecological System: Southern Atlantic Coastal Plain Maritime Forest

14. Blackberry - Greenbrier Successional Shrubland Thicket - This community includes successional vegetation which develops following disturbance and is dominated by *Rubus argutus* and/or *Rubus trivialis*. *Smilax spp.* may also occur. Found in areas on Jekyll Island that may have been influenced anthropogenically. Many are wetlands that may have been drained or have altered hydrology.

Global Status: GNA

Association: (Southern Blackberry, Southern Dewberry) - (Whiteleaf Greenbrier, Common Greenbrier) Shrubland (CEGL004732); *Rubus (argutus, trivialis)* - *Smilax (glauca, rotundifolia)* Shrubland

Alliance: (*Rubus argutus*, *Rubus trivialis*) Shrubland Alliance

Ecological System: NA

D. Herbaceous Communities

15. Sand Cordgrass – Seashore Mallow Herbaceous Vegetation - In this tidally influenced herbaceous community, *Spartina bakeri* dominates. Shrubs such as *Morella cerifera* may also be present, but scattered.

Global Status: G3 - Vulnerable

Association: Sand Cordgrass - Seashore Mallow Herbaceous Vegetation (CEGL004194); *Spartina bakeri* - *Kosteletzkya virginica* Herbaceous Vegetation

Alliance: *Spartina bakeri* - (*Spartina patens*) Tidal Herbaceous Alliance

Ecological System: Southern Atlantic Coastal Plain Fresh and Oligohaline Tidal Marsh

16. Sawgrass Head - Dominated by dense sawgrass (*Cladium mariscus* ssp. *jamaicense*) and scattered shrubs (*Salix caroliniana*, *Cephalanthus occidentalis*, *Morella cerifera*, *Sabal palmetto*). *Salix caroliniana* is the tallest (5-10m) and most dominant woody species (20% cover). *Cephalanthus occidentalis* and *Morella cerifera* make up a sparse tall shrub layer. Graminoids dominant in the herb layer include *Cladium mariscus* ssp. *jamaicense* and *Juncus effusus*, with some *Andropogon virginicus*. Other herbs include *Polygonum punctatum*, *Hydrocotyle umbellata*, and *Saururus cernuus*. Although this is an herbaceous vegetation association, it allows for a greater shrub cover.

Global Status: G2 - Imperiled

Association: Sawgrass – Virginia Chainfern Herbaceous Vegetation (CEGL004949); *Cladium mariscus* ssp. *jamaicense* - *Woodwardia virginica* Herbaceous Vegetation

Alliance: *Cladium mariscus* ssp. *jamaicense* Seasonally Flooded Temperate Herbaceous Alliance

Ecological System: Southeastern Coastal Plain Interdunal Wetland

17. Sea-oats Temperate Herbaceous Alliance - This community varies in woody and herbaceous vegetation dominance on the foredunes of south Jekyll Island. In grassy areas, the dominant species is *Uniola paniculata*. *Spartina patens* may also be present. Other characteristic species include *Heterotheca subaxillaris*, *Hydrocotyle bonariensis*, *Ipomea imperati*, *Iva imbricata*, *Yucca* spp., and *Croton punctatus*.

This community forms a matrix of woody and grassy dominated vegetation and fit into two NVC associations: a) *Uniola paniculata* - *Hydrocotyle bonariensis* Herbaceous Vegetation (CEGL004040, G3) and b) *Smilax auriculata* / *Heterotheca subaxillaris* - *Strophostyles helvula* - (*Uniola paniculata*) Herbaceous Vegetation (CEGL004234, G2).

Alliance: *Uniola paniculata* Temperate Herbaceous Alliance

Ecological System: Southern Atlantic Coastal Plain Dune and Maritime Grassland

18. South Atlantic Coastal Pond - Seasonally flooded herbaceous wetlands dominated by *Spartina bakeri*, or at least with substantial cover of it.

Global Status: G3 - Vulnerable

Association: Sand Cordgrass - Virginia Chainfern - Giant Plumegrass Herbaceous Vegetation (CEGL007713); *Spartina bakeri* - *Woodwardia virginica* - *Saccharum giganteum* Herbaceous Vegetation

Alliance: *Spartina bakeri* Seasonally Flooded Herbaceous Alliance

Ecological System: Southeastern Coastal Plain Interdunal Wetland

19. Southern Hairgrass – Saltmeadow Cordgrass – Dune Fingergrass Herbaceous Vegetation - This association is characterized by dense cover of *Muhlenbergia filipes* and is found mostly behind primary and secondary dunes, generally on coarse, well-drained sandy soils. Some examples are notably wetter than others. Other species may include *Spartina patens*, *Eustachys petrea*, *Euthamia tenuifolia*, *Andropogon* spp., *Oxalis* sp., and *Houstonia procumbens*.

Global Status: G2 - Imperiled

Association: Southern Hairgrass - Saltmeadow Cordgrass - Dune Fingergrass Herbaceous Vegetation (CEGL004150); *Muhlenbergia filipes* - *Spartina patens* - *Eustachys petraea* Herbaceous Vegetation

Alliance: *Muhlenbergia filipes* Herbaceous Alliance

Ecological System: Southern Atlantic Coastal Plain Dune and Maritime Grassland

20. South Atlantic Upper Ocean Beach – Non-vegetated to sparsely vegetated tidal beaches.

Global Status: G3 - Vulnerable

Association: Southern Sea-rocket Sparse Vegetation (CEGL004401); *Cakile edentula* ssp. *harperi* Sparse Vegetation

Alliance: *Cakile edentula* Sparsely Vegetated Alliance

Ecological System: Southern Atlantic Coastal Plain Sea Island Beach

21. Successional Broom-sedge Vegetation - This community includes vegetation dominated by *Andropogon virginicus* var. *virginicus* that occurs on old fields and pastures. This is not a natural vegetation type.

Global Status: GNA

Association: Broomsedge Bluestem Herbaceous Vegetation (CEGL004044);

Andropogon virginicus var. *virginicus* Herbaceous Vegetation

Alliance: *Andropogon virginicus* var. *virginicus* Herbaceous Alliance

Ecological System: NA

22. Southern Atlantic Coastal Plain Salt and Brackish Tidal Marsh (Ecological System) – NatureServe Explorer description: This ecological system encompasses the brackish to salt intertidal marshes of the Atlantic Coast, ranging from south of the Embayed Region of North Carolina to northern Florida (south to the vicinity of Daytona Beach). It is dominated by medium to extensive expanses of *Spartina alterniflora*, flooded twice daily by lunar tides. *Juncus roemerianus* and other brackish marshes occur upstream in tidal creeks, and a variety of small-patch associations occur near the inland edges. Examples of this system may also support inclusions of shrublands dominated by either *Baccharis halimifolia* and/or *Borrchia frutescens*, as well as forests or woodlands with *Juniperus virginiana* var. *silicicola* in the overstory.

E. Classification of Human-altered Environments

24. Developed – Anthropogenically-influenced areas where no known natural vegetation occurs.

26. Golf courses

25. Parks and Recreation

27. Pond/Open water

23. Quarry/Stripmine – Includes ponded areas. Open water.

24. Transportation – Includes roads, railroads, etc.