Taxonomic Proposal to add a new Subgroup to Sulfisaprists

Proposal by
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Background

Soils formerly classified as Lithic Haplosaprists now have been discovered to contain sulfidic soil materials within 100 cm of the soil surface. These soils occur primarily within the state of Florida and are the soil series Islamorada, Matecumbe, and Tavernier. These former Haplosaprists now fall into the Great Group of Sulfisaprists and are underlain with varying depths to limestone bedrock. Histosols with more thickness of sapric soil materials (Saprists) have control sections that extend to a depth of 130 centimeters but can be shallower if a densic, lithic, or paralithic contact is encountered above this depth.

Issue

There are currently only two choices in this “Key to Subgroups” (page 171) and they are Terric and Typic respectively. As these former soils (listed above) classified as Lithic Haplosaprists it would be wise to add a new subgroup to account for their lithic contact to oolitic limestone bedrock. This proposal aims to add a new Lithic subgroup to Sulfisaprists and would key out before Terric and Typic Sulfisaprists, respectively. The new subgroup proposed would apply to those soils where a lithic contact is encountered at or above the lower boundary of the control section (130 centimeters).

Impacted Soil Series

Currently there are 10 soils that classify in the Saprists suborder (Table 1). Of these 10 soil series 6 of them are “very deep” soils. The proposed Lithic Sulfisaprists would only impact 4 soils all of which occur within the state of Florida. The 4 series are Islamorada, Matecumbe, Tavernier, and Weekiwachee.

Table 1. Distribution of US soil series classified in the great group of Sulfisaprists.

<table>
<thead>
<tr>
<th>Great Group</th>
<th># of Series</th>
<th>Series Name</th>
<th>States Using</th>
<th>Soil Depth / Lithic Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfisaprists</td>
<td>10</td>
<td>Dirego</td>
<td>FL</td>
<td>Very Deep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Durbin</td>
<td>FL</td>
<td>Very Deep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fort Knox</td>
<td>FL</td>
<td>Very Deep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Islamorada</td>
<td>FL</td>
<td>Moderately Deep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Matecumbe</td>
<td>FL</td>
<td>Very Shallow</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pocaty</td>
<td>VA</td>
<td>Very Deep</td>
</tr>
</tbody>
</table>
The classification and reclassification of these four soil series would change with this proposal in table 2 listed below:

<table>
<thead>
<tr>
<th>Soil Series &amp; Depth to Lithic</th>
<th>Current Classification</th>
<th>Proposed / Revised Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Islamorada – Mod. Deep</td>
<td>Typic Sulfisaprist</td>
<td>Lithic Sulfisaprist</td>
</tr>
<tr>
<td>Matecumbe – Very Shallow</td>
<td>Typic Sulfisaprist</td>
<td>Lithic Sulfisaprist</td>
</tr>
<tr>
<td>Tavernier - Shallow</td>
<td>Typic Sulfisaprist</td>
<td>Lithic Sulfisaprist</td>
</tr>
<tr>
<td>Weekiwiachee – Mod. Deep</td>
<td>Terric Sulfisaprist</td>
<td>Lithic Sulfisaprist</td>
</tr>
</tbody>
</table>

**Keys to Soil Taxonomy Proposed Revision**

The proposed addition and revision (red text) to page 171 of the Keys to Soil Taxonomy would read as below:

**Sulfisaprists**

**Key to Subgroups**

BDBA. Sulfisaprists that have a lithic contact at the lower boundary of the control section.

Lithic Sulfisaprist

BDBB. Sulfisaprists that have a layer of mineral soil material 30 cm or more thick that has its upper boundary within the control section, below the surface tier.

Terric Sulfisaprist

BDBC. Other Sulfisaprists.

Typic Sulfisaprist
Impacted Official Soil Series Descriptions (OSD’s)

The four referenced and impacted Official Soil Series Descriptions occur below in alphabetical order:

**ISLAMORADA SERIES**

MLRA(s): 156A
Soil Survey Regional Office (SSRO) Responsible: Auburn, Alabama
Depth Class: Moderately deep
Drainage Class: Very poorly drained
Saturated Hydraulic Conductivity: High to very high in the organic material and negligible in the rock material
Index Surface Runoff: High to very high
Parent Material: Organic materials over oolitic limestone bedrock
Slope: 0 to 1 percent
Elevation: -1.0 to 3 feet above mean sea level.
Mean Annual Air Temperature: 26 degrees C. (78 degrees F.)
Mean Annual Precipitation: 1143 millimeters (45 inches)

**TAXONOMIC CLASS:** Euic, isohyperthermic Typic Sulfisaprists

**TYPICAL PEDON:** Islamorada muck in a tidal swamp dominated by red mangroves. (Colors are for moist soil unless otherwise stated.)

**Oase1**--0 to 13 centimeters (0 to 5 inches); black (5YR 2.5/1) muck, dark gray (5YR 4/1), dry; 20 percent unrubbed fiber content, 5 percent rubbed fiber; moderate sulfurous odor; 40 percent fine and medium live roots; neutral (pH 6.8); clear smooth boundary.

**Oase2**--13 to 89 centimeters (5 to 35 inches); very dark gray (5YR 3/1) muck; 35 percent unrubbed fiber content, 10 percent rubbed fiber; moderate sulfurous odor; 30 percent by volume of fine and medium live roots; neutral (pH 6.6); abrupt smooth boundary. [Combined thickness of the Oa horizon is 50 to 100 centimeters (20 to 39 inches thick)]
2R--89 centimeters (35 inches); weakly to strongly cemented oolitic limestone bedrock; solution holes up to 102 centimeters (40 inches) or more deep can be filled with sandy and/or loamy material.

**TYPE LOCATION:** Monroe County, Florida; Lower Matecumbe Key; about 1.0 mile southwest of Ligum Vitae Channel Bridge to an intersection with US Hwy. 1 and a gravel entrance; about 500 feet northwest of US Hwy. 1 and gravel intersection at about 145 degrees; about 4,710 feet at about 47 degrees northeast of the southwest corner of Sec. 15, T. 64 S., R. 36 E.; latitude 24 degrees 52 minutes 27.65 seconds N longitude, 80 degrees 42 minutes 12.54 seconds W; WSG84; USGS Upper Matecumbe Key, FL quadrangle.

**RANGE IN CHARACTERISTICS:**
Solum thickness: 50 to 100 centimeters (20 to 39 inches)
Depth to seasonally high water table: 0 to 15 centimeters (0 to 6 inches)
Soil Reaction: Slightly acid to slightly alkaline throughout
Sulfurous odor: Slight to strong throughout
Depth of the organic material: 50 to 100 centimeters (20 to 39 inches)
Depth to limestone bedrock: 50 to 100 centimeters (20 to 39 inches)
Fiber content: Unrubbed 5 to 50 percent; rubbed less than 17 percent

Particle-size control section, mineral (weighted averages):
Mineral content: 0 to 12 percent

Range of Individual Horizons:
Oase horizon:
Color: hue of 5YR to 10YR or Neutral, value of 2 or 3, and chroma of 3 or less
Texture: muck
EC (mmhos/cm): 16 to 32 or more
Exchangeable Sodium: 30 to 60 percent or more
Sodium Absorption Ratio: 30 to 60 percent or more

2R horizon: weakly to strongly cemented oolitic limestone bedrock; solution holes up to 102 centimeters (40 inches) or more deep can be filled with sandy and/or loamy material.
COMPETING SERIES: This is the Keylargo series.
Keylargo soils have bedrock at depths greater than 150 centimeters (59 inches) and occur on similar landforms.

GEOGRAPHIC SETTING:
Landscape: Lower Coastal Plain
Landform(s): marine marshes, swamps, or low broad tidal flats on the Key West Islands and/or along the southern coast of the Florida Peninsula
Parent Material: Organic materials over oolitic limestone bedrock
Mean annual temperature: 25 to 27 degrees C (77 to 81 degrees F)
Mean annual precipitation: 1067 to 1778 millimeters (42 to 55 inches)
Frost-free period: 365 days

GEOGRAPHICALLY ASSOCIATED SOILS:
Cudjoe soils - have a marly silt loam particle size control section and have water tables greater than 15 cm (6 inches) on slightly higher landform position
Keywest soils - have stratification of marl and muck materials over oolitic limestone, have bedrock at depths of more than 100 centimeters (39 inches), and occur in similar landform positions.
Lignumvitae soils have a marly silt loam particle-size control section and have water tables greater than 15 cm (6 inches) on slightly higher landforms
Matecumbe soils have bedrock at depths less than 25 centimeters (10 inches) and occur on slightly higher similar landform positions.
Saddlebunch soils have a marly silt loam particle-size control section, have bedrock at depths less than 50 centimeters (20 inches) and occur on slightly higher landform positions.
Tavernier soils have bedrock at depths less than 50 centimeters (20 inches) and occur on similar landform positions.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:
Drainage class: Very poorly drained
Saturated hydraulic conductivity (KSAT): High to very high
Runoff: High to very high
Depth to seasonal high-water table: 0 to 15 centimeters (0 to 6 inches)
Flooding frequency and duration: very frequent and very brief from tides, also subject to flooding by storm surges and hurricanes
USE AND VEGETATION:
Major uses: wildlife habitat and water quality.
Dominant vegetation: black and red mangroves.

DISTRIBUTION AND EXTENT: MLRA 156A Florida Everglades and Associated Areas.
Extent: limited

SOIL SURVEY REGIONAL OFFICE (SSRO) RESPONSIBLE: Auburn, Alabama


REMARKS:
These soils were formerly classified as Lithic Haplosaprists and are revised here to the twelfth edition of the keys (2014).
Diagnostic horizons and features recognized in this Pedon:

1. Histic epipedon - 0 to 89 centimeters (0 to 35 inches) (Oase1, Oase2 horizons)
2. Peraquic feature - the zone from 0 to 203 centimeters (0 to 80 inches)
3. Lithic contact - 89 centimeters (35 inches) (2R horizon)
4. Aquic conditions - Endosaturation ranges from 0 to 203 centimeters (0 to 80 inches)
5. Sulfdic feature - the zone from 0 to 89 centimeters (0 to 35 inches) contains sulfidic materials.

ADDITIONAL DATA:
Laboratory data is available on the National Soil Survey website at:
http://ncsslabdatamart.sc.egov.usda.gov/querypage.aspx

OSD User Site ID: S1988FL087007

OSD User Pedon ID: S1988FL087007
MATECUMBE SERIES

MLRA(s): 156A
Soil Survey Regional Office (SSRO) Responsible: Auburn, Alabama
Depth Class: Very shallow
Drainage Class: Very poorly drained
Saturated Hydraulic Conductivity: High to very high in the organic
material and negligible in the rock material
Index Surface Runoff: Medium
Parent Material: Organic materials over oolitic limestone bedrock
Slope: 0 to 1 percent
Elevation: -1.0 to 3 feet above mean sea level.
Mean Annual Air Temperature: 26 degrees C. (78 degrees F.)
Mean Annual Precipitation: 1270 centimeters (50 inches)

TAXONOMIC CLASS: Euic, isohyperthermic, micro Typic Sulfisaprist

TYPICAL PEDON: Matecumbe muck in a marine mangrove swamp. (Colors are
for moist soil unless otherwise stated.)

Oase--0 to 15 centimeters (0 to 6 inches); black (10YR 2/1) muck,
dark gray (10YR 4/1), dry; 15 percent unrubbed fiber, 5 percent rubbed
fiber; 5 percent by weight of sandy and loamy material; slight
sulfurous odor; many fine and medium live roots; 10 percent limestone
gravel; neutral (pH 7.0); abrupt wavy boundary. [5 to 18 centimeters
(2 to 7 inches) thick]

2R--15 centimeters (6 inches); weakly to strongly cemented oolitic
limestone bedrock; solution holes up to 102 centimeters (40 inches) or
more deep can be filled with sandy and/or marly material.

TYPE LOCATION: Monroe County, Florida; Key Largo; about 164 feet
northeast of the intersection of Highways 905 and 905A at about 54
degrees; about 916 feet west and 801 feet north of the southeast
corner of Sec. 23, T. 59 S., R. 40 E.; latitude 25 degrees 17 minutes
10.71 seconds N longitude 80 degrees 18 minutes 13.58 seconds W;
WSG84; USGS Card Sound, FL quadrangle.

RANGE IN CHARACTERISTICS:

Solum thickness: 5 to 18 centimeters (2 to 7 inches)
Depth to seasonally high water table: 0 to 15 centimeters (0 to 6 inches)
Soil Reaction: Slightly acid to slightly alkaline throughout
Sulfurous odor: Slight to strong throughout
Depth of the organic material: 5 to 18 centimeters (2 to 7 inches)

Depth to limestone bedrock: 5 to 18 centimeters (2 to 7 inches)
Fiber content: Un-Rubbed: 5 to 50 percent; rubbed less than 17 percent
Particle-size control section, mineral (weighted averages):

Clay content: 0 to 8 percent

Fine sand content: 0 to 20 percent

Range of Individual Horizons:

Oase horizon:

Color: hue: 5YR to 10YR or Neutral, value of 3 or less, and chroma of 1 or 2

Texture: muck, mucky peat, or gravelly muck with less than 20 percent mineral content

Rock fragments: 5 to 34 percent

EC (mmhos/cm): 4 to 32 or more

Exchangeable Sodium: 5 to 40 percent or more

Sodium Absorption Ratio: 5 to 40 percent or more

2R horizon: weakly to strongly cemented oolitic limestone bedrock, with solution holes filled with sandy and/or marly materials. Solution holes can be up to 102 centimeters (40 inches) or more deep.

COMPETING SERIES: There are no competing series.

GEOGRAPHIC SETTING:

Landscape: Lower Coastal Plain

Landform(s): marine marshes, swamps, or low broad flats on the Key West Islands and/or along the southern coast of the Florida Peninsula

Parent material: Well decomposed organic materials over oolitic limestone bedrock

Mean annual temperature: 25 to 27 degrees C (77 to 81 degrees F)

Mean annual precipitation: 1067 to 1778 millimeters (42 to 70 inches)

Frost-free period: 365 days

GEOGRAPHICALLY ASSOCIATED SOILS:

Cudjoe soils have marly silt loam particle-sized control section, have bedrock at depths greater than 24 centimeters (9 inches), and occur on slightly higher landform positions.
Islamorada soils have bedrock at depths of 50 to 100 centimeters and occur on similar landform positions.

Keylargo soils have bedrock at depths greater than 150 centimeters and occur on similar landform positions.

Keyvaca soils have bedrock at depths of less than 24 centimeters, have a loamy-skeletal particle-sized control section, and occur on slightly higher landform positions.

Keywest soils have stratification of marl and muck materials over oolitic limestone bedrock at 100 to 150 centimeters and occur on similar landform positions.

Lignumvitae soils have marly silt loam particle-sized control section, have bedrock at 50 to 100 centimeters and occur on similar landform positions.

Saddlebunch soils have marly silt loam particle-sized control section, have bedrock at depths greater than 24 centimeters and occur on slightly higher landform positions.

Tavernier soils have bedrock at depths of 18 to 50 centimeters and occur on similar landform positions.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:

Drainage class: Very poorly drained

Saturated hydraulic conductivity (KSAT): High to very high

Runoff: Medium

Depth to seasonal high-water table: 0 to 46 centimeters (0 to 18 inches)

Flooding frequency and duration: very frequent and brief duration from tides, subject to flooding by storm surge and hurricanes

USE AND VEGETATION:

Major uses: wildlife habitat, recreational and urban development.

Dominant vegetation: wild tamarind, mahogany, poison wood, wild coffee, crabwood, strangler fig, thatch palm, and paradise tree.

DISTRIBUTION AND EXTENT: MLRA 156A Florida Everglades and Associated Areas.

Extent: limited
REMARKS:

These soils were formerly classified as Lithic Udifolists and are revised here to the twelfth edition of the keys (2014).

Diagnostic horizons and features recognized in this Pedon:

1. Lithic (micro) contact - 15 centimeters (6 inches) (2R horizon)
2. Peraquic feature - the zone from 0 to 203 centimeters (0 to 80 inches).
3. Aquic conditions - endosaturation ranges from 0 to 203 centimeters (0 to 80 inches).
4. Sulfidic feature - the zone from 0 to 15 centimeters (0 to 6 inches) contains sulfidic soil materials.

These soils maybe be mapped in out of place landform positions and need to be investigated in future updates (formerly recognized as a moderately well drained soil).

ADDITIONAL DATA:

Laboratory data is available on the National Soil Survey website at: http://ncsslabdatamart.sc.egov.usda.gov/querypage.aspx

OSD User Site ID: S1988FL087002

National Cooperative Soil Survey

U.S.A.
TAVERNIER SERIES

MLRA(s): 156A
Soil Survey Regional Office (SSRO) Responsible: Auburn, Alabama
Depth Class: Shallow
Drainage Class: Very poorly drained
Saturated Hydraulic Conductivity: High to very high in the organic material and negligible in the rock material
Index Surface Runoff: Medium
Parent Material: Organic materials over oolitic limestone bedrock
Slope: 0 to 1 percent
Elevation: -1.0 to 3 feet above mean sea level.
Mean Annual Air Temperature: 26 degrees C. (78 degrees F.)
Mean Annual Precipitation: 1270 centimeters (50 inches)

TAXONOMIC CLASS: Euic, isohyperthermic, shallow Typic Sulfisaprists

TYPICAL PEDON: Tavernier muck in a tidal mangrove swamp. (Colors are for moist soil unless otherwise stated).

Oase--0 to 20 centimeters (0 to 8 inches); very dark grayish brown (10YR 3/2) muck, dark grayish brown (10YR 4/2), dry; 20 percent unrubbed fiber, 5 percent rubbered fiber; moderate sulfurous odor; many fine and common medium roots throughout; 10 percent limestone gravel; slightly alkaline (pH 7.4); abrupt smooth boundary. [18 to 50 centimeters (7 to 20 inches) thick]

2R--20 centimeters (8 inches); weakly to strongly cemented oolitic limestone bedrock; solution holes up to 102 centimeters (40 inches) or more deep can be filled with sandy and/or loamy material.

TYPE LOCATION: Monroe County, Florida; Key Largo; about 1,457 feet east of the intersection of State Road 905 and 905A; about 400 feet east and 760 feet north of the southwest corner of Sec. 24, T. 59 S., R. 40 E.; latitude 25 degrees 17 minutes 10.53 seconds N longitude 80 degrees 17 minutes 59.11 seconds W; WSG84; USGS Card Sound, FL quadrangle.

RANGE IN CHARACTERISTICS:

Solum thickness: 18 to 50 centimeters (7 to 20 inches)
Depth to seasonally high water table: 0 to 15 centimeters (0 to 6 inches)
Soil Reaction: Slightly acid to slightly alkaline throughout
Depth of the organic material: 18 to 50 centimeters (7 to 20 inches)

Depth to limestone bedrock: 18 to 50 centimeters (7 to 20 inches)

Fiber content: Un-Rubbed: 15 to 50 percent; rubbed less than 17 percent
Particle-size control section, mineral (weighted averages):
Mineral content: 0 to 10 percent

Oase horizon:

Color: Hue 5YR to 10YR or Neutral, value 1 to 3, chroma: 1 to 3

Texture: muck or gravelly muck

Rock fragments: 0 to 20 percent limestone gravel

EC (mmhos/cm): 16 to 32 or more

Exchangeable Sodium: 30 to 60 percent or more

Sodium Absorption Ratio: 30 to 60 percent or more

2R horizon: weakly to strongly cemented oolitic limestone bedrock; solution holes up to 102 centimeters (40 inches) or more deep can be filled with sandy and/or loamy material.

COMPETING SERIES: There are no known competing series in this family. Similar soils in related families include Islamorada, Keylargo, and Matecumbe.

Islamorada - are moderately deep to bedrock on similar landform positions.

Keylargo - are very deep soils to limestone bedrock on similar landforms.

Matecumbe - are very shallow soils to limestone bedrock on similar landforms.

GEOGRAPHIC SETTING:

Landscape: Lower Coastal Plain

Landform(s): marine marshes, swamps, and low broad tidal flats on the Key West Islands and/or along the southern coast of the Florida Peninsula

Parent material: Well decomposed organic materials over oolitic limestone bedrock

Mean annual temperature: 25 to 27 degrees C (77 to 81 degrees F)

Mean annual precipitation: 1067 to 1778 millimeters (42 to 70 inches)

Frost-free period: 365 days
GEOGRAPHICALLY ASSOCIATED SOILS:

Cudjoe - have marly silt loam particle-sized control section, have water tables greater than 15 centimeters (6 inches), and occur on slightly higher positions in the tidal zone.

Keyvaca - have a loamy-skeletal particle-sized control section, have water tables greater than 91 centimeters and occur on higher landform positions.

Keywest - have stratification of marl and muck materials over oolitic limestone that is greater than 100 centimeters deep on similar landform positions.

Lignumvitae - have marly silt loam particle-sized control section, have bedrock at depths greater than 50 centimeters on similar landform positions.

Saddlebunch - have marly silt loam particle-sized control section and are on slightly higher landform positions.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:

Drainage class: Very poorly drained

Saturated hydraulic conductivity (Ksat): High to very high

Runoff: Medium

Depth to seasonal high-water table: 0 to 15 centimeters (0 to 6 inches)

Flooding frequency and duration: very frequently and brief duration from tides, subject to flooding from storm surges and hurricanes

USE AND VEGETATION:

Major uses: wildlife habitat and water quality.

Dominant vegetation: Red and black mangroves, and saltwort.

DISTRIBUTION AND EXTENT: MLRA 156A Florida Everglades and Associated Areas.

Extent: limited

SOIL SURVEY REGIONAL OFFICE (SSRO) RESPONSIBLE: Auburn, Alabama

REMARKS:

These soils were formerly classified as shallow, Lithic Haplosaprists and are revised here to the twelfth edition of the keys (2014).

Diagnostic horizons and features recognized in this typical pedon:

1. Histic epipedon - 0 to 20 centimeters (0 to 8 inches) (Oase horizon)
2. Lithic (shallow) contact - 20 centimeters (8 inches) (2R horizon)
3. Peraquic feature - the zone from 0 to 203 centimeters (0 to 80 inches).
4. Aquic conditions - endosaturation ranges from 0 to 203 centimeters (0 to 80 inches).
5. Sulfidic feature - the zone from 0 to 20 centimeters (0 to 8 inches) contains sulfidic soil materials.

ADDITIONAL DATA:

Laboratory data is available on the National Soil Survey website at: http://ncsslabdatamart.sc.egov.usda.gov/querypage.aspx

National Cooperative Soil Survey U.S.A.
WEEKIWACHEE SERIES

The Weekiwachee series consists of moderately deep, very poorly drained, soils that formed in well decomposed sapric material overlying sand and soft and hard limestone. These soils are on broad nearly level Coastal Plain tidal marsh areas. They are flooded daily during normal high tides. Slopes are less than 1 percent.

TAXONOMIC CLASS: Sandy or sandy-skeletal, siliceous, euic, hyperthermic Terric Sulfisaprists

TYPICAL PEDON: Weekiwachee muck in tidal marsh. (Colors are for wet soil.)

**Oa1**--0 to 8 inches; black (N 2/0) broken faced and rubbed, muck; about 6 percent fiber, less than 5 percent rubbed; weak fine granular structure; very friable; many fine and medium roots; sodium pyrophosphate extract color is dark yellowish brown (10YR 4/4); about 46 percent mineral material; 0.98 percent sulfur; 29.7 mmho/cm conductivity; neutral in water at field moisture (air dry pH 6.6 in .01M calcium chloride); gradual wavy boundary.

**Oa2**--8 to 14 inches; black (N 2/0) broken faced and rubbed, muck; about 6 percent fiber, less than 5 percent rubbed; weak fine granular structure; very friable; many fine roots; sodium pyrophosphate extract color is dark yellowish brown (10YR 4/4); about 26 percent mineral material; 2.30 percent sulfur; 42.0 mmho/cm conductivity; neutral in water at field moisture (air dry pH 5.1 in .01M calcium chloride); gradual wavy boundary.

**Oa3**--14 to 19 inches; black (N 2/0) broken faced and rubbed, muck; about 6 percent fiber, less than 5 percent rubbed; weak medium granular structure; friable; common fine roots; sodium pyrophosphate extract color is dark yellowish brown (10YR 4/4); about 33 percent mineral material; 4.41 percent sulfur; 44.2 mmho/cm conductivity; neutral in water a field moisture (air dry pH 4.5 in .01M calcium chloride); gradual wavy boundary.

**Oa4**--19 to 26 inches; black (10YR 2/1) broken faced and rubbed, muck; about 18 percent fiber, less than 5 percent rubbed; weak medium granular structure; very friable; sodium pyrophosphate extract color is dark yellowish brown (10YR 4/4); about 48 percent mineral material; 2.96 percent sulfur; 41.8 mmho/cm conductivity; few 2.5 inch wood chunks; neutral in water at field moisture (air dry pH 4.9 in .01M calcium chloride); clear wavy boundary.
Oa5--26 to 32 inches; very dark brown (10YR 2/2) broken faced and rubbed, muck; about 20 percent fiber, less than 5 percent rubbed; weak medium granular structure; very friable; sodium pyrophosphate extract color is dark yellowish brown (10YR 4/4); about 71 percent mineral material; common 2 to 4 inch wood chunks; 1.40 percent sulfur; 36.4 mmho/cm conductivity; neutral in water at field moisture (air dry pH 5.0 in .01M calcium chloride); gradual wavy boundary. (Combined thickness of the Oa horizon is 16 to 38 inches thick.)

C--32 to 36 inches; very dark gray (10YR 3/1) fine sand; common distinct coarse dark gray (10YR 4/1) mottles; massive; very friable; few fine roots; common uncoated sand grains in dark gray mottles; common dark brown (10YR 4/3) decayed wood chunks; mildly alkaline; abrupt irregular boundary. (3 to 7 inches thick)

Cr--36 to 45 inches; white (10YR 8/1) soft limestone; massive; firm, about 36 percent hard limestone fragments; most roots do not penetrate this layer but are turned at the upper boundary; moderately alkaline; calcareous; abrupt irregular boundary. (14 to 26 inches thick)

R--45 inches; hard white limestone that can be chipped but not dug with a spade.

TYPE LOCATION: Hernando County, Florida; about .025 mile east on Pine Island and 1 mile north of Bayport Restaurant in the NE1/4SE1/4 Sec. 18, T. 22 S., R. 17 E.

RANGE IN CHARACTERISTICS: Sulfur content ranges from 0.75 to 4.0 percent or more above the Cr horizon. The organic layers in all tiers are dominantly sapric material, but in some pedons wood chunks occur. Combined thickness of the Oa and C horizons over the Cr horizon is highly variable but is dominantly 30 to 40 inches. Depth to the R horizon is commonly 40 to 51 inches but frequently ranges to 60 inches or more. Conductivity of the saturation extract above the Cr horizon ranges from about 16 to 45 mmho/cm. Reaction in water in the natural state ranges from slightly acid to moderately alkaline in the Oa and C horizons; after air drying the pH in 0.01M calcium chloride ranges from 4.5 to 5.5 except the Oa1 horizon which ranges to 7.3.

The Oa horizon has hue of 10YR to 5YR, value of 3 or less, and chroma of 3 or less. Unrubbed fiber content ranges from about 6 to 30 percent and is less than 5 percent rubbed. Mineral content ranges from about 26 percent to 80 percent but is dominantly less than 65 percent.

The C horizon has hue of 10YR, value of 4 or less, and chroma of 2 or less with or without mottles or streaks of gray or brown. Texture is mucky sand, mucky fine sand, sand, or fine sand. Organic matter content ranges from about 2 to 20 percent.
The Cr horizon has hue of 10YR, value of 7 or 8, and chroma of 1 or 2. Hard limestone fragments occur randomly throughout the horizon and range from about 20 to 35 percent by volume. Solution holes in this layer range from none to about three in each pedon and, where present, are filled with sandy mineral material and hard limestone fragments.

**COMPETING SERIES:** This is the Wulfert series. Wulfert soils do not have limestone bedrock within a depth of 40 inches.

**GEOGRAPHIC SETTING:** Weekiwachee soils are in nearly level, broad tidal marshes. They formed in moderately thick deposits of hydrophytic plant remains and sandy marine sediments overlying soft and hard limestone. Near the type location, rainfall averages about 50 to 60 inches annually with mean annual air temperature of 70 to 74 degrees F.

**GEOGRAPHICALLY ASSOCIATED SOILS:** These are the Homosassa and Lachoochee series and to a lesser extent with the Aripeka series. All these soils are of mineral origin.

**DRAINAGE AND PERMEABILITY:** Weekiwachee soils are very poorly drained. Moderately rapid permeability. Under natural conditions the soil is flooded daily during normal high tides. Available water capacity for adapted vegetation is very high in the Oa horizons and medium to high in the C horizons.

**USE AND VEGETATION:** Areas of this soil remain in native vegetation consisting dominantly of needlegrass rush, seashore saltgrass, marshhay cordgrass, big cordgrass, and smooth cordgrass.

**DISTRIBUTION AND EXTENT:** Coastal tidal areas of Peninsular Florida. The series is of small extent.

**MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE:** Auburn, Alabama

**SERIES ESTABLISHED:** Hernando County, Florida; 1976.

**REMARKS:** The revision changed the series classification to recognize the 1992 amendments to Soil Taxonomy that introduced changes in classification of Histosols.

Diagnostic horizons and features recognized in this pedon are: Organic materials - The zone extending from the surface to a depth of 32 inches. (Oa1, Oa2, Oa3, Oa4, Oa5 horizon).