13.3 Soil Unit Descriptions

Depth to Water Table

Month Range: January to December
Units of Measure: centimeters
Aggregation Method: Dominant Component
Tie-break Rule: Lower
Interpret Nulls as Zero: No

Osceola County, Florida
Survey Area Version and Date: 4 - 06/30/2009

Map symbol	Map unit name	Rating
1	Adamsville sand	84
4	Arents, 0 to 5 percent slopes	69
5	Basinger fine sand	15
6	Basinger fine sand, depressional	0
9	Cassia fine sand	77
10	Delray loamy fine sand, depressional	0
11	EauGallie fine sand	31
12	Floridana fine sand, depressional	0
14	Holopaw fine sand	15
16	Immokalee fine sand	31
17	Kaliga muck	0
18	Lokosee fine sand	31
19	Malabar fine sand	15
20	Malabar fine sand, depressional	0
22	Myakka fine sand	31
24	Narcoossee fine sand	84
25	Nittaw muck	0
26	Oldsmar fine sand	31
27	Ona fine sand	31
29	Parkwood loamy fine sand, occasionally flooded	31
30	Pineda fine sand	15
32	Placid fine sand, depressional	0
34	Pomello fine sand, 0 to 5 percent slopes	84
35	Pomona fine sand	31
37	Pompano fine sand, depressional	0
39	Riviera fine sand, depressional	0
40	Samsula muck	0
42	Smyrna fine sand	31
45	Wabasso fine sand	31
46	Wauchula fine sand	31
99	Water	

Depth to Water Table

Rating Options

Attribute Name: Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Month Range: January to December

Units of Measure: centimeters

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value to represent the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. The components in the map unit name represent the major soils within a map unit delineation. Minor components make up the balance of the map unit. Great differences in soil properties can occur between map unit components and within short distances. Minor components may be very different from the major components. Such differences could significantly affect use and management of the map unit. Minor components may or may not be documented in the database. The results of aggregation do not reflect the presence or absence of limitations of the components which are not listed in the database. An on-site investigation is required to identify the location of individual map unit components.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be generated. Aggregation must be done because, on any soil map, map units are delineated but components are not.The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie.

The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates that a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Map Unit Description

Osceola County, Florida

[Minor map unit components are excluded from this report]

Map unit: 1 - Adamsville sand

Component: Adamsville (90%)

The Adamsville component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 4 - Arents, 0 to 5 percent slopes

Component: Arents (100%)

The Arents component makes up 100 percent of the map unit. Slopes are 0 to 5 percent. This component is on fills, rises on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 27 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 4s. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 5 - Basinger fine sand

Component: Basinger (85%)

The Basinger component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains, flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 6 - Basinger fine sand, depressional

Component: Basinger, depressional (85%)

The Basinger, depressional component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 9 - Cassia fine sand

Component: Cassia (95%)

The Cassia component makes up 95 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is

Map Unit Description

Osceola County, Florida

Map unit: 9 - Cassia fine sand

Component: Cassia (95%)

about 1 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 10 - Delray loamy fine sand, depressional

Component: Delray (90%)

The Delray component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 11 - EauGallie fine sand

Component: EauGallie (90%)

The EauGallie component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 12 - Floridana fine sand, depressional

Component: Floridana (90%)

The Floridana component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 10 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 14 - Holopaw fine sand

Component: Holopaw (90%)

The Holopaw component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains, flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 16 - Immokalee fine sand

Component: Immokalee (90%)

Map Unit Description

Osceola County, Florida

Map unit: 16 - Immokalee fine sand

Component: Immokalee (90%)

The Immokalee component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 17 - Kaliga muck

Component: Kaliga (90%)

The Kaliga component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over stratified loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 64 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 18 - Lokosee fine sand

Component: Lokosee (85%)

The Lokosee component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 19 - Malabar fine sand

Component: Malabar (90%)

The Malabar component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 20 - Malabar fine sand, depressional

Component: Malabar, depressional (85%)

The Malabar, depressional component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map Unit Description

Osceola County, Florida

Map unit: 22 - Myakka fine sand

Component: Myakka (85%)

The Myakka component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 24 - Narcoossee fine sand

Component: Narcoossee (90%)

The Narcoossee component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on knolls on marine terraces on coastal plains, rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 25 - Nittaw muck

Component: Nittaw (90%)

The Nittaw component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of clayey marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is high. This soil is occasionally flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 55 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 26 - Oldsmar fine sand

Component: Oldsmar (85%)

The Oldsmar component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 27 - Ona fine sand

Component: Ona (85%)

The Ona component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map Unit Description

Osceola County, Florida

Map unit: 29 - Parkwood loamy fine sand, occasionally flooded

Component: Parkwood (90%)

The Parkwood component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 15 percent. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 30 - Pineda fine sand

Component: Pineda (90%)

The Pineda component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 32 - Placid fine sand, depressional

Component: Placid (85%)

The Placid component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 34 - Pomello fine sand, 0 to 5 percent slopes

Component: Pomello (85%)

The Pomello component makes up 85 percent of the map unit. Slopes are 0 to 5 percent. This component is on knolls on marine terraces on coastal plains, ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 35 - Pomona fine sand

Component: Pomona (88%)

The Pomona component makes up 88 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map Unit Description

Osceola County, Florida

Map unit: 37 - Pompano fine sand, depressional

Component: Pompano, depressional (92%)

The Pompano, depressional component makes up 92 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 39 - Riviera fine sand, depressional

Component: Riviera, depressional (90%)

The Riviera, depressional component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 40 - Samsula muck

Component: Samsula (90%)

The Samsula component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 65 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 42 - Smyrna fine sand

Component: Smyrna (85%)

The Smyrna component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 45 - Wabasso fine sand

Component: Wabasso (88%)

The Wabasso component makes up 88 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map Unit Description

Osceola County, Florida

Map unit: 46 - Wauchula fine sand

Component: Wauchula (90%)

The Wauchula component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: 99 - Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

13.4 Timber Assessment

TRIPLE N RANCH WILDLIFE MANAGEMENT AREA
Timber Management Assessment

Prepared by:
Michael M. Penn
Revised 2012 By
John T. Marshall
Senior Foresters
Florida Forest Service

I. General Information

Triple N Ranch Wildlife Management Area (WMA) is located in the northeast portion of Osceola County, Florida and consists of 16,295 surveyed acres. The Natural Community breakdown from the Florida Natural Areas Inventory reflects a total area of 16,403 acres according to GIS with community type acreage as follows:

FNAI_NC	Sum ACRES
baygall	206.1589
depression marsh	749.1362
dome swamp	2415.8228
dry prairie	479.0824
hydric hammock	677.2811
mesic flatwoods	7987.4982
mesic hammock	48.8227
pasture - improved	1175.7732
pasture - semi-improved	91.4711
ruderal	852.7146
scrub	42.5498
scrubby flatwoods	310.4699
wet flatwoods	324.5195
wet prairie	1036.9798
xeric hammock	5.0700

This property is situated between the Herky Huffman/Bull Creek WMA and the Three Lakes/Prairie Lakes WMA. Herky Huffman/Bull Creek WMA is located to the east of Triple N Ranch and shares a common boundary. Herky Huffman/Bull Creek WMA is managed jointly by the Florida Fish and Wildlife Conservation Commission (FFWCC) and the St. Johns River Water Management District (SJRWMD). Three

Lakes/ Prairie Lakes WMA is located to the southwest of Triple N Ranch and is managed by the FFWCC. Three Lakes WMA and Triple N Ranch WMA do not adjoin but are within 10 miles of each other. The land between these two WMA's is within the boundary of the Osceola Pine Savannas CARL Project.

The first 8,893 acre parcel of land making up Triple N Ranch was purchased by the State of Florida in 1994. It was made up of the Maury L. Carter Trust II and III and the Hilltop Trust. In 1996 the boundaries were adjusted with Herky Huffman/Bull Creek WMA for a decrease of approximately 1,279 acres. The Carter tract, which lies within the South Florida Water Management District (SFWMD), and contains 1,366 acres, was also purchased in 1996. In 1997 the 1,915 acre McNamara tract was purchased and in 2000, the 3,593 acre Equitable tract and the 903 acre Yates tract were purchased. This portion was acquired from a combination of Save Our Rivers funds allocated to the SJRWMD and Preservation 2000 funds allocated to the FFWCC. In 2006 the 904 acre Vanosdol tract was purchased with Florida Forever Funds. All of the land in the TNRWMA with the exception of the 1,366 acre Carter tract is within the SJRWMD.

II. Natural History

The land in and around Triple N Ranch has been utilized for generations for a variety of uses. The area was logged heavily during the 1920's and 1930's providing timber to a mill located in Holopaw, Florida.

Cattle ranching was and continues to be a prominent use occurring in and around the area. The previous owners of this land used the ranch primarily for cattle operations and hunting. The WMA continues cattle grazing through a permit system that monitors and regulates stocking levels of the cattle operations.

It is unknown how often the area was prescribed burned by previous owners but it can be assumed fire has been an integral part in this ecosystem. Wiregrass is prolific within the WMA indicating the area was burned on a regular basis. Most ranchers understand the benefits derived from burning and have used fire extensively as a management tool. Since the purchase of this WMA, the FFWCC has developed a burn plan and has been actively prescribe burning the area.

III. Current Ecological Conditions and Trends

Most of the Triple N Ranch WMA is lightly stocked with longleaf pine. The overall general appearance of the area is scattered mature longleaf pine with pockets of young regeneration. At the present time, the intermediate age classes seem to be, for the most part, missing. The majority of the regeneration is lightly stocked, although

there are areas where the seedling/sapling densities exceed 500 trees per acre. The scattered mature longleaf pine trees are remnants from past logging operations or catastrophic wildfires. If low intensity prescribed fire remains in the system it can be anticipated that much of the area will succeed into a typical uneven-aged mosaic.

IV. Current Management Goals and Objectives

The current Conceptual Management Plan (CMP) for the Triple N Ranch WMA lists the following five goals:

(1) Maintain the integrity of native ecosystems.
(2) Develop Triple N Ranch WMA as a quality-oriented special opportunity hunting area.
(3) Ensure long-term viability for listed species.
(4) Develop selected recreational uses on the area.
(5) Manage and protect cultural resources on the WMA.

Since Triple N Ranch WMA is a relatively new property for the State, most of the specific objectives falling under the above mentioned goals in the CMP concern assessing and developing management strategies for the various resources (e.g. compiling species lists, developing road systems, establishing recreational trails, etc…).

The Triple N Ranch was not purchased as part of the Osceola Pine Savannas CARL Project but does fall partially within its boundaries. The CMP adopts the following guidance concerning multiple use management from the CARL Annual Report:

"The project should be managed under the multiple-use concept: Management activities should be directed first toward preservation of resources and second toward integrating carefully controlled consumptive uses such as hunting and logging."

V. Current Timber Resources

The following description of the timber resource on the Triple N Ranch WMA has been generalized due to time and manpower constraints. The reader should be aware that all acreage figures are "best estimates" using aerial photos and GIS software. Density estimates are based on Objective Based Vegetation Management (OBVM). The emphasis of this assessment will be on the mesic flatwoods composed of natural longleaf and South Florida slash pines as well as portions of the dry prairie, where silvicultural techniques have the potential to improve ecological conditions. There are no known pine plantations located on this property.

Oak Scrub, Cypress, Bay and Hardwood Swamps

This timber assessment omits discussion concerning the management of the oak scrub, cypress, bay, and hardwood swamp ecosystems except to mention that any management activity in these types will be cursory in nature and limited to other activities that may encroach into these ecotypes. An example might be a prescribed fire burning into the fringes of a swamp. The oak scrub ecotype also will not be discussed in this document as prescribed fire will be the primary management tool in these areas.

Natural Pine Stands and Prairie

Approximately 8,467 acres of land currently classified as natural pinelands (mesic flatwoods) and prairie could benefit from the application of selected silvicultural techniques. This analysis includes only this portion of Triple N Ranch WMA and excludes all wetlands and scrub habitat. Estimates using aerial photos reveal 6,810 acres or 80% of the natural pinelands/prairie exhibit some level of pine stocking. It is unknown exactly how much of the area is forested and how much is prairie as the two blend together inconspicuously.

Longleaf pine occupies the vast majority of the natural stands. Basal Areas (BA) range from less than 10 sq. ft. per acre to 110 sq. ft per acre with the majority being less than 12 sq. ft. per acre. Stocking levels will increase as the mature trees naturally seed in openings and slowly invade non-stocked areas. The intermediate age classes appear to be absent from the overall mix. Generally, the younger seedling/sapling stands appear healthy but
there are areas where overcrowding is beginning to occur. The older trees average 40 to 50 years old and average only 45 feet in total height. They are generally widely spaced except in a few small pockets. It has been hypothesized that the relative shortness of the trees is caused by a combination of a shallow hardpan which occurs throughout the area and because most of these trees were open grown. Trees that are open grown tend to be shorter because they do not have to compete for sunlight and thus put their energy into producing branches instead of height growth.

There are several stands of natural South Florida slash pine growing in and around Triple N Ranch WMA. One of the larger stands (8 acres) has a basal area of 100 sq. ft. per acre and an average Diameter at Breast Height (DBH) of 9 inches. These stands can be found on the fringes of some of the wetlands and constitute a very small component of the WMA.

VI. Current Timber Management Options

Natural Longleaf Pine Stands

Approximately 8,467 acres or 52 percent of Triple N Ranch WMA is currently in a natural pine forest condition. This acreage appears to be expanding. It is possible to manage these stands in such a manner as to retain their natural appearance, meet objectives stated in the CMP, and produce future revenue through timber harvests. Timber production will most likely be a peripheral benefit to managing for other objectives.

Currently, there are very few areas exhibiting stocking levels high enough to make it feasible to conduct any kind of timber harvest. The areas that do have higher densities are very small in size (mostly less than 5 acres) and scattered, although there are one or two larger areas (approximately 40 acres) that may be large enough to log economically. As far as timber management is concerned, the managers of Triple N Ranch WMA have several options:

1) Do nothing at this time and let natural succession progress until tree densities become such that it is feasible to harvest timber by any one of a variety of methods. As time passes, and if properly managed fire is kept in the system, the potential for timber management will increase. There are areas where the natural regeneration exceeds 500 trees per acre. In 5 – 15 years these areas will need thinning and can be harvested for pulpwood. It may be possible to selectively thin some of the more heavily stocked mature stands in conjunction with the pulpwood thinnings. Options will increase as time passes.
2) Increase stocking levels by carefully choosing a few, strategic locations to plant seedlings. A well thought out reforestation plan would speed up succession and reduce the time necessary to achieve a true uneven-aged longleaf pine ecosystem (intermediate age classes are absent from the overall mix). Advantages to planting as opposed to relying on natural regeneration are: a) Longleaf pine is undependable as a natural seed source with good seed crops occurring only once every seven years on the average. b) Seedlings that come from genetically improved sources will probably produce more fiber than the trees currently stocking the property. The major disadvantage to planting is the cost. Depending on the site prep method, costs range anywhere from $200.00 to over $300.00 per acre to regenerate a stand of timber.
3) It may be possible to do some light thinning in select mature pine pockets. As stated earlier, there are very few areas where this may be practical. The type of thinning recommended would be a sanitation type cut. The trees to be marked for removal would be the suppressed, diseased or poorly formed trees

to help improve the overall genetics and health of the stand. Thinning will also reduce crown cover and allow more sunlight to reach the ground floor, thereby improving ground cover. If this option is considered, more on-the-ground reconnaissance will be required to determine the best areas to treat.

Natural South Florida Slash Pine Stands

South Florida Slash Pine constitutes a very small portion of the timber resource on Triple N Ranch WMA and occurs only in small pockets along the fringes of wetlands. At the present time, it would not be feasible to conduct any kind of timber harvesting activity in these stands due to their size and location. Current options are the same as for the longleaf pine as described above. A thought to keep in mind when considering the South Florida slash pine is, historically, it may have been more abundant than it is today in the area. Fire discriminates against slash pine regeneration and this area was most likely burned frequently as it was being managed heavily for cattle operations (possibly more frequently than the natural fire regime). An option to consider would be planting South Florida slash pine in some of the non-stocked wetter areas. If this option is implemented, then the burning interval must be interrupted until the seedlings are tall enough to resist fire.

VII. Future Timber Management Options

As time passes management options will increase for the timber component on the Triple N Ranch WMA. Some of the possible options available to the resource manager in the future will now be discussed.

Planted Stands

The following options will apply to future plantations if it is ever decided to plant seedlings on the Triple N Ranch WMA.

Timber Management Emphasis – This option will optimize revenue by managing the stand for primarily wood products. These stands will need to be thinned when the live crowns in the majority of the dominant and co-dominant trees have been reduced to approximately 1/3 of their total height. This will help ensure a healthy stand of trees. These stands should be thinned back to 60 – 80 sq. ft. BA each time they reach 100 sq. ft. BA or more. An added benefit of opening up the canopy is to allow sunlight to reach the forest floor increasing forage production for wildlife. Once the planted stand has reached maturity, it can be naturally regenerated. Group selection and uneven-aged management (See Restoration Emphasis) is one way to keep a continuous supply of both regeneration and timber.

Ecosystem Management (Wildlife) Emphasis – This option is similar to the Timber Management Emphasis above, however, this strategy thins the stand back even further to 40-50 sq. ft. BA per acre. This will allow even more sunlight to reach the forest floor increasing the forage production for wildlife.

Restoration Emphasis – Once a plantation is established and reaches a merchantable size it may be desirable to slowly begin moving the stand to an uneven-aged condition. It is recommended that uneven-aged management be attempted only with longleaf pine, as there is little research in the uneven-aged management of South Florida slash pine. This management method is good for combining timber production with sound wildlife management. The recommendation of this assessment is to gradually convert over time by employing a "group selection" type of cut. This process involves cutting small openings (usually two acres or less in size) in the stand. These areas can then be managed to catch the next good crop of pine seed. Pine seedlings are intolerant to shade and must have direct sunlight to regenerate and grow vigorously. In longleaf plantations, natural regeneration can be used. It must be recognized that natural regeneration is more uncertain as good seed crops occur irregularly. Timing seed crops with prescribed fire (fall burns) is essential for preparing the seedbed for regeneration. Again, there are variations of this method and the exact technique utilized should be determined prior to harvest and should take into account individual stand conditions, economics and management objectives. If these techniques are implemented, planted areas can eventually attain the appearance of natural stands.

Natural Longleaf Pine Stands

It is possible to manage these stands in such a manner as to retain the natural appearance, meet objectives stated in the CMP and produce revenue through timber harvests. The following options are possible strategies for future management of the natural longleaf pine stands.

Timber Management Emphasis – There are areas within the natural stand communities that could be managed for timber production. This option will be discussed very briefly as managing this vegetation type strictly for timber would compromise the objectives found in the Triple N Ranch WMA CMP. It is included here only to make the reader aware of the various alternatives available for managing the area. It is not expected or recommended that the natural pine communities be managed in this manner unless on a very small scale.

This option is very similar to the timber management option as described under "Planted Stands" above. The primary objective in this option would be management for wood fiber products. This would be accomplished through scheduled thinnings,

harvests and plantings. Natural regeneration can be used as well but is not as predictable.

Ecosystem Management (Wildlife) Emphasis – This method of management is intended to simulate natural occurrences through the removal of wood fiber products. With careful planning, it is possible to actually restore or improve habitat for various wildlife species while providing wood products to the public. The goal for the natural longleaf pine community would be to retain and increase the uneven-aged character of the stand. This could be accomplished by employing a "group selection" system of harvesting as described previously under Restoration Emphasis (Planted Stands). It must be noted that properly applied prescribed burning is an important tool for managing this ecosystem and to ensure successful regeneration. Prescribed burning will be discussed later in this document. This is the recommended course of action in natural longleaf pine stands.

Natural South Florida Slash Pine Stands

Although natural South Florida Slash pine stands constitute a minor portion of the Triple N Ranch WMA they add to the diversity of the area and can be managed by a variety of options. It must be decided what the long range goals for these stands are and managers must then proceed with management prescriptions accordingly. The current recommendation is to thin them periodically for wildlife management purposes and grow the residual trees to a larger size. Converting these stands to longleaf pine is not recommended as the soils where they occur are wetter, and it is not recommended that any species be planted off-site.

VIII. Access

Triple N Ranch WMA is accessible for a customary logging operation during dry periods of the year. The existing road system is in good shape and provides good overall access, with most roads being capped with shell.

IX. Prescribed Fire

As discussed previously, prescribed fire is an important tool for ecosystem management in Florida. Before European settlement, natural fires occurred at regular intervals on an average of two to five years. These fires reduced the fuel load, produced a seedbed for pine regeneration and released nutrients back into the soil. Prescribed fire is now used extensively as a method of restoring natural, fire dependant plant species. Prescribed fire, coupled with a well planned timber harvest, is often the most economical and responsible method for conducting ecosystem management. Managers at Triple N Ranch WMA have been actively prescribe burning the area since it was purchased by the State. Currently the goal is to burn every acre once every two to three years. Since there is already an active

burn program in place on Triple N Ranch WMA, this document will briefly discuss prescribed fire only as it relates to timber management.

A major objective when prescribed burning in timber is to not kill the trees. There will often be some mortality from burning but this should be kept to a minimum. Longleaf pine can be burned more aggressively than South Florida slash pine especially during the seedling/sapling stages, but can still suffer mortality if the burn is too hot. Longleaf pine is also susceptible to fire for a short time after it comes out of the grass stage. South Florida slash pine is much more intolerant to fire and burning intervals may need to be adjusted until the trees are big enough to resist a burn. It must be kept in mind that not all fire is good. A hot fire may not kill the trees but it does stress them and increase their susceptibility to insect and disease attack. This is especially true when combined with other stresses, such as drought or flood. Cool backing fires are a good choice when burning in timber.

X. Economics

It is difficult to predict with any certainty the amount of revenue that can be derived through timber harvests on the Triple N Ranch WMA. Market conditions, harvest prescriptions, product mix, logging conditions and distance to manufacturing facilities all play a factor in what a timber purchaser will pay for stumpage. It becomes even more difficult when trying to predict what future timber markets will be. Even though economics are hard to predict, they must be analyzed prior to making any management decision.

Transportation costs are a significant portion of the overall expense associated with logging and therefore play a major factor in stumpage rates. Triple N Ranch WMA is located in northeastern Osceola County and is a good distance from any of the major wood processing facilities in Florida, the closest being Georgia-Pacific in Palatka. There are, however, smaller manufacturers located closer to the Triple N Ranch area that may be interested in the WMA's timber and the future demand for wood fiber products is predicted to increase.

XI. Summary

The timber resource on the Triple N Ranch WMA is limited due to the overall tree density of the longleaf pine stands. The area consists of scattered older longleaf pine (both singularly and in small pockets) with younger regeneration occurring at varying stocking levels. There is no immediate need to perform any kind of thinning or harvesting operation but as time goes on, this need will develop. Managers have the option to let the area regenerate itself naturally or to speed up the process of succession by initiating a planting program. In both scenarios, more silvicultural options will become available as time passes.

The Triple N Ranch WMA has approximately 6,810 acres of natural pine timberland. This constitutes a significant amount of land having the potential to produce timber. Silvicultural treatments, prescribed burning or a combination of both are the most useful tools for implementing ecosystem management objectives such as habitat maintenance or restoration. These tools are also useful for maintaining and creating diversity and have the added benefit of generating revenue for the FFWCC while providing a renewable resource to the public.

13.5 Letter from FNAI Regarding Butterfly Species

FLORIDA
Natural Areas
INVENTORY

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

September 21, 2011

David Alden, Senior Conservation Planner
Conservation Acquisition and Planning
Florida Fish and Wildlife Conservation Commission
620 S. Meridian St.
Tallahassee, FL 32399-1600

Dear Mr. Alden:

I understand that you are in the process of updating management plans for Triple N Ranch Wildlife Management Areas (WMA) and Three Lakes WMA, and that a revised plan for the Herky Huffman/Bull Creek WMA has already been completed and submitted to FL FWC for approval. Although I have not yet seen any of these revised plans, I would like to provide comments from both state-wide and national perspectives on the importance these conservation lands for maintaining butterfly biodiversity.

All three WMAs contain populations of three rare butterfly species tracked by the Florida Natural Areas Inventory (FNAI): the Arogos Skipper (*Atrytone arogos*), the Florida Dusted Skipper (*Atrytonopsis hianna loammi*), and the Berry's Skipper (*Euphyes berryi*). These three species are either ranked S1 or S1S2, the two highest categories of state endangerment assigned by FNAI. The Arogos Skipper is classified by NatureServe as globally vulnerable, the Berry's Skipper as globally imperiled, and the Florida Dusted Skipper as critically imperiled. The Arogos Skipper has been considered for national listing by the U.S. Fish and Wildlife Service.

Under the 2007-2010 FL FWC state wildlife grant to FNAI, Project No. 07001, entitled "Statewide Assessment of the Current Status and Distribution of FNAI's Tracked Butterfly Species on Florida's Conservation Lands," project volunteers Linda and Buck Cooper conducted butterfly surveys on Triple N Ranch, Three Lakes and Bull Creek WMAs. Their findings on these three properties resulted in the project designating the geographic area encompassing the WMAs as a Critical Butterfly Biodiversity Area for Florida. I have attached the relevant pages from the final report for that project. There is no other place in Florida where one can reliably find all three of these species together, and the high numbers of individuals observed by the Coopers remain unprecedented.

Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

FLORIDA
Natural Areas
INVENTORY

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Suite 200-C
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850-224-8207
fax 850-681-9364
www.fnai.org

I believe that the existing land management plans with the accompanying level of usage and management have been very beneficial to these butterflies, some of the rarest in Florida and, indeed, the nation. I commend your land managers and their current land management practices. I urge you to carefully consider any proposed changes to the existing land management plans relative to potential impacts on the rare butterflies on all three WMAs.

I am currently working on a three-year FL FWC state wildlife grant to FNAI, Project No. 10064, entitled "From Data to Agency Action: Developing Land Management Guidelines for Florida's Imperiled and Declining Butterfly Species," which will result in specific land management guidelines for the Arogos Skipper and the Florida Dusted Skipper. Although the guidelines will probably not be developed until June 2012, I hope that you will be willing to consider adding them as an amendment to your revised land management plans for these three very significant conservation lands, if timing allows. I will send you these guidelines as soon as they are finalized.

If you have any questions, please feel free to contact me by e-mail at djue@fnai.org or call me at (850) 224-8207 x206.

Sincerely,

Dean K. Jue
Special Projects Director
Florida Natural Areas Inventory

Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

13.6 FNAI Data Usage Permission Letter

FLORIDA NATURAL AREAS INVENTORY

1018 Thomasville Road, Suite 200-C · Tallahassee, Florida 32303 · (904) 224-8207

RECEIVED
MAR 14 1997
BUREAU OF
WILDLIFE MANAGEMENT

March 3, 1997

Hugh Boyter
Bureau of Wildlife Management
Division of Wildlife, GFC
620 South Meridian
Tallahassee, Fl 32399-1600

Dear Hugh:

By virtue of this letter we are agreeing that it is unneccesary for your office to request FNAI element data for each management plan you prepare if the following condition is met.

> An update of the Florida Natural Areas Inventory's Biological Conservation Database will be performed on a quarterly basis.

Our database manager, Lance Peterson, will provide the appropriate FGFWFC staff with the updated Biological Conservation Database and your staff will assure that it is incorporated into all management plans. Hopefully, this new procedure will eliminate wasted time and effort at both organizations. Mr. Peterson told me he has provided FGFWFC personnel a database update within the last few weeks so this procedure can begin immediately.

Sincerely,

Gary Knight

Gary Knight, Director
Florida Natural Areas Inventory

cc: Lance Peterson, FNAI
MAF/FGFWFC/general/agreemnt.gfc

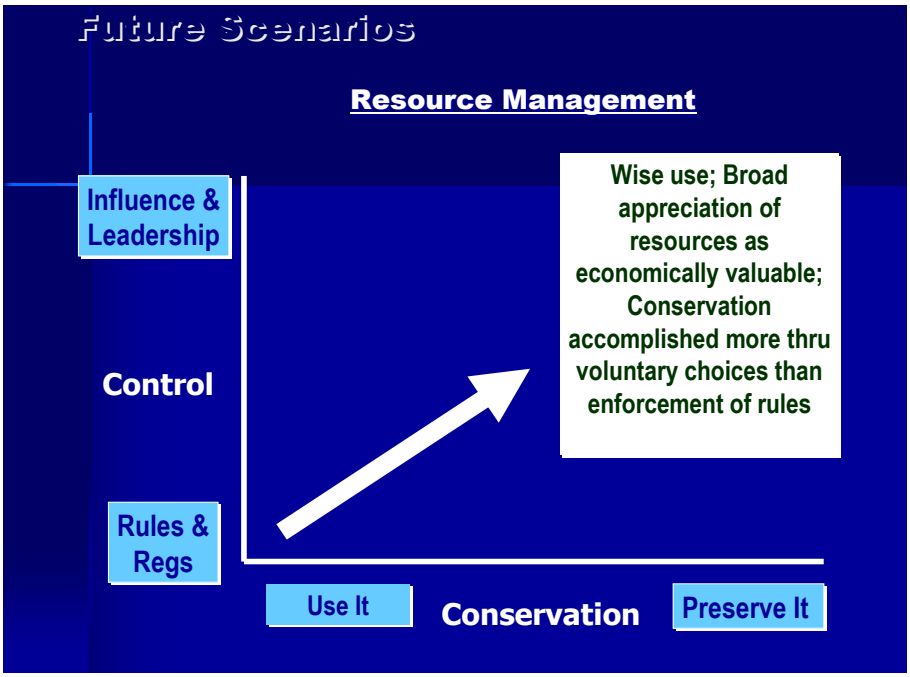
13.7 FWC Strategic Plan

This plan contains the key strategies that will guide the FWC over the long term and sets forth the behaviors that are essential to successfully achieving our mission. We have taken this long-term view to better ensure the conservation of Florida's fish and wildlife resources.

We are expanding the role of management to place greater emphasis on management through leadership, education and influence. Under this approach, people do what is best for fish and wildlife of their own volition, rather than by the threat of regulatory or enforcement actions.

Regarding the work itself, we want to move from reacting to situations to being more proactive. This entails identifying and working on emerging issues before they overtake us. We are intent on moving from single focus planning where one division or office works on an issue to planning that brings all relevant disciplines of the agency to bear in a coordinated way. We want to keep our eye on the bigger landscape.

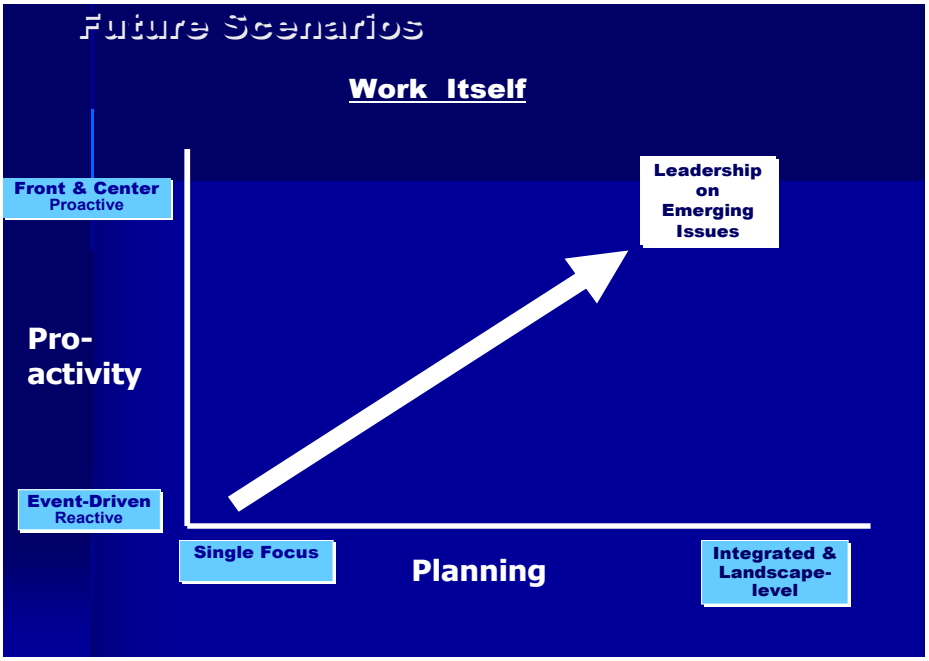
For More Information:



A shift in the direction we are going on two fronts is fundamental to this Plan – how we manage the resource, and how we do our work. Over the next 15-20 years we want to move away from management driven primarily by rules and regulations to where others help us conserve the resource because of our leadership and influence. This kind of influence is one where others do right by fish and wildlife of their own

volition rather than by the threat of regulatory or enforcement actions by us.

Regarding work itself, we want to move from reacting to situations to being more proactive. This entails identifying and working on "emerging" issues before they overtake us. We also want to move from a single focus planning approach where single divisions or offices work on an issue to bringing all relevant disciplines of the agency to bear in a coordinated way, and doing so with an eye on a bigger landscape-level view.



Our Vision

Powered by science-based leadership, we will create a sustainable and healthy future for Florida's fish, wildlife, water and habitat resources.

FWC envisions a future where the people who live in or visit Florida care for and contribute to the stability of our fish and wildlife resources and the quality of our environment. FWC will be the recognized leader in the science and management of Florida's fish and wildlife. Residents and visitors will fully support and fund efforts to maintain the resources that provide recreational opportunities for fishing, hunting, wildlife viewing and boating.

Our Mission

To manage fish and wildlife resources for their long-term well-being and the benefit of people.

Our mission is a concise statement of what we do to achieve this vision. This statement captures the concept that humans are an integral part of the equation and that balancing competing public interests, concerns, and uses of natural resources is at the heart of our mission.

Our Goal

To provide healthy resources for safe, satisfied customers.

This is the end result we hope to accomplish through our mission.

Agency Strategies

In this section we describe the strategies we will employ to accomplish our mission. Divisions and offices have plans that specifically address implementation of these strategies. These strategies are not in priority order.

1. Develop proactive, integrated research that anticipates emerging issues and ensures positive resource outcomes.

2. Develop leading-edge resource management programs.

3. Develop proactive, preventative enforcement programs that enable FWC to avoid potential and emerging problems.
4. Develop fish and wildlife recreation opportunities and programs that foster resource stewardship.

5. Improve our resource leadership position by clearly communicating where we are headed, why it is important, and how we plan to get there.

6. Increase stakeholder involvement and interaction on emerging issues to proactively reduce resource conflicts.

7. Initiate partnerships as a means of addressing the big resource issues facing Florida.

8. Integrate human dimensions insights into management planning and decision making.

For More Information:

Human dimensions is about recognizing humans as part of the fish and wildlife management equation and considering human issues in management planning and decision making. Insights come from understanding how people value fish and wildlife, how they want fish and wildlife to be managed and how they affect or are affected by fish and wildlife and fish and wildlife management decisions. Activities involving human dimensions include social science research, public participation, stakeholder involvement and policy analysis. This strategy is about learning more about the human part of the management equation and integrating those insights into our management planning and decision making, including setting objectives and designing management interventions.

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9. Integrate our activities to better achieve sustainable populations of species, protect critical habitat and high quality environmental resources.

10. Foster and develop the multi-disciplinary expertise of the FWC needed to ensure strategic, integrated solutions that address and solve resource problems.

11. Build a collaborative workforce built on professionalism, with the skills and resources needed to maximize effectiveness.

Agency Code of Conduct

As we implement this plan, we will do so in a manner consistent with the value we place on respect for the individual and recognition of what teamwork, genuinely employed, can accomplish.

Lead and Make Informed Decisions

FWC leadership is about: creating a vision, aligning agency resources to accomplish the vision, and empowering people to do the work. We will work with our employees, customers and stakeholders to set the vision for Florida's fish and wildlife future, align the resources and empower people to make this vision a reality.

These, in no order of priority, are our guides.

1. Balance the needs of citizens with the needs of the resource, putting the resource first in our decisions and actions.

For More Information:

The paramount objective of resource management decision-making is to maintain the long-term well-being of the fish and wildlife resources of our state for the benefit of our citizens. We seek to base decisions on the best information available, including biological, sociological, economic, cultural, historical and other information deemed relevant by the Commission. The biological basis for decision-making includes stock assessments, biological surveys, management plans and other science-based studies or information.

With respect to harvested populations, we seek to permit reasonable means and quantities of harvest, consistent with optimum sustainable populations. Optimum sustainable populations shall mean the highest degree of population productivity within available habitat to sustain fish and wildlife for the long term use or enjoyment of citizens.

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2. Make resource decisions based on the best available science with a balance of enforcement and management practicality.

For More Information:

Our goal is effective decision-making at all levels of the FWC. We believe that decisions should be guided by objective scientific information and that subject-matter experts are integral in framing decisions.

Decision-making can be broadly categorized as: (1) operational or programmatic, (2) public policy development, and (3) regulatory. It should be recognized that all FWC employees are expected to have a role in making operational or programmatic decisions. This perspective is reflected in our desire to push decision-making to the level closest to the issue. To do this, agency leadership must facilitate informed decision-making rather than making all of the decisions. The process is to: (1) delegate more decisions, (2) identify the appropriate level for making the decision, and (3) convey any constraints, terms and conditions that should be considered when making a decision. If successful, this will break the decision bottlenecks and improve the timeliness of decisions.

Decision-making related to public policy development and regulations is the prerogative of the Commissioners. In formulating these decisions, the Commission must assess and evaluate a broad array of data and information based on biological science, social science, and public preference. The role of FWC employees is to use the best available science to recommend baselines, thresholds, or a range of values that will serve as the constraints for decision-making. In doing so, it needs to be recognized that many decisions are made with incomplete or less than perfect science and that some decisions are time-sensitive. The desired outcome is to use science to provide the framework within which decisions are made

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3. Make consistent, thoughtful and timely decisions that keep pace with the needs of the resource.

4. Seek first to influence others rather than regulate them.
Develop collaborative approaches to address conservation needs.

5. Be proactive in our actions, anticipating emerging issues and getting out in front of them.

For More Information:

Being proactive means recognizing our responsibility to make things happen. It's taking the initiative and getting out in front of issues before they run us over. It means identifying potential issues and acting upon those most likely to need our attention soonest. By being proactive, we are better able to commit time and energy to our priorities and do less "fire-fighting".

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6. Adopt a landscape or big picture approach that uses interdisciplinary teams to address complex resource-management issues.

For More Information:

The Landscape or Big Picture perspective recognizes that we cannot examine or manage complex systems one component at a time. We must focus on how species, habitats, and human influences are inter-connected, in addition to understanding specific attributes of each. Our perspective cannot be restricted to a specific temporal or spatial scale and must take into account the actions of other agencies with missions that potentially overlap FWC's. There are institutional and ecological

components to this perspective. We cannot accomplish our mission without understanding how our decisions fit into and integrate with those of other natural resource agencies. Also, we must understand how our management actions impact the structure and function of natural systems as a whole with humans considered as part of those systems.

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7. Effectively involve citizens and staff who are closest to an issue in the decision-making process.

8. Use teamwork and collaboration to integrate our work effort.

For More Information:

Integration is the act of forming into a functioning or unified whole (Merriam-Webster Online dictionary). Prior to Restructuring in 2003, we had merged but not integrated. In the Restructure we achieved some integration by combining like functions together in divisions and offices. Examples: we had licensing & permitting in 3 divisions and an office. But this only gets us part way to full integration – teaming, i.e., working in cross-functional groups, gets us the rest of the way.

When you look at our Agency-level and DOI plans, a lot of our work is cross-functional, i.e., cuts across more than one DOI (remember each DOI has a different function, e.g., enforcement, research, habitat & species management, etc.). So we want staff available to work on whatever work is most needed and that they could contribute to, in effect, making them available to the entire organization. Teams are an important way to do this.

That said teamwork is more than just being on a formal team. Teamwork is also about all of us working together to plan and to implement because we can do a better job if we bring all FWC's expertise to bear. We want to use our multi-disciplinary strengths to create better decisions and better results.

As you make decisions, think "who else other than me is affected by these decisions and who among those affected needs to be aware of or involved in them?" Here's the checklist:

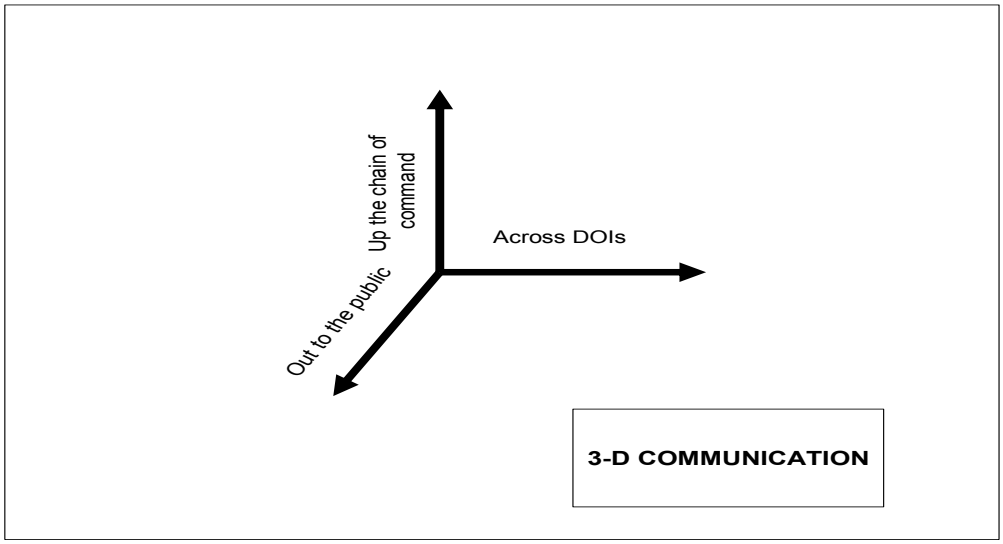
- *Do you need the assistance of others? Do others need your assistance?*
- *Does your work significantly affect the work of others?*
- *Do others depend on your output?*
- *Has everyone affected by your work been informed and involved in the planning process?*

Figure out who you need to integrate with and do it. Use DOI operational priorities as a guide.

9. Communicate well up and down the organization, across the organization, and externally with others.

For More Information:

Communication is about exchanging information – clearly, concisely and with no loss of content or meaning. We use the term "3-Dimensional communication" to refer to com-munication up and down your division, office, or institute chain of command, across divisions and offices, and from FWC to those outside FWC. FWC staff tells us we need to do a better job of listening to their issues and letting them know they have been heard. Communication is a two-way street: don't forget to listen. You have to take some initiative. Speak up when you have issues and come with ideas on possible solutions.



Provide Excellent Service

Providing the best possible service to the public and one another is essential to gathering the support we need to achieve our mission. These, in no order of priority, are our guides.

10. Provide consistent, high-quality service to citizens.

For More Information:

To achieve our mission we must have the support of our citizenry. An essential element of building this support is to provide excellent customer service.

To provide high quality customer service means that we will always listen, treat each other and the public with patience and respect and explain the reasons for agency actions, rules and regulations. It also means striving to make complying with agency requirements such as obtaining permits as convenient as possible. A commitment to customer service builds support and improved compliance even when customers disagree with agency actions.

Remember: customer contacts are moments when a person's opinion of us is formed. These contacts should be as positive an experience as possible, regardless of who initiates them or how the contacts occur.

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11. Be collaborative and respectful in interactions with fellow employees.

For More Information:

A spirit of collaboration is an essential ingredient of successful integration. This collaborative spirit is built by treating one another with courtesy, patience and respect and by exhibiting fairness, compassion, and honesty in all we do. We can each work to build this collaborative workplace by promoting cooperation and teamwork to meet goals, by mentoring employees and by acknowledging and taking pride in each other's successes. When problems occur, we must work to maintain open lines of communication and strive to solve them in a proactive, positive manner.

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12. Seek input from and listen to citizens; understand and try to meet their needs.

For More Information:

Understanding the knowledge, opinions, motivations, needs and expectations of stakeholders and customers is vital to successful conservation strategies. Asking, listening and involving citizens early and regularly is critical to developing and implementing successful projects and effectively addressing issues before they become intractable problems.

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13. Proactively engage stakeholders and management partners in planning and decision-making; strive to continuously inform affected parties of plans and actions.

14. Work with all parties on issues in a fair and balanced way; create forums for dialogue and seek the middle ground. Focus on conflict resolution and collaboration.

For More Information:

An important component of our future stakeholder relations is to stop taking stakeholder issues on as our own. A stakeholder issue may or may not rise to the level of being an agency issue. We will create an environment where stakeholders represent their interests to each other rather than FWC staff trying to represent them. Our role needs to be one where we bring the parties together and create an environment where the parties can work toward issue resolution. Each stakeholder is responsible for presenting and arguing for their own point of view.

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15. Partner with others.

For More Information:

We value the power of partnerships. We seek to build partnerships with other agencies and organizations to leverage limited resources, to achieve better resource outcomes and to provide better services to the public.

Stakeholders are a big part of how we can move to being more influential. Through stakeholders we can positively impact fish and wildlife conservation in ways that go well beyond our limited legal authority.

Partnerships result in more resources going towards our projects than we alone can provide. We're sharing other people's resources to get the job done. And, it's the same for the partner, i.e., they are getting more resources to get their job done, too. It's that we've agreed on the same job.

Given the realities of future state budgets, partnerships are where we should look for more human and dollar resources for projects. While it's nice to be able to do it all ourselves and to control it ourselves, that greatly limits what can get done and our Mission suffers.

Healthy partnerships lead to partners making decisions and doing agreed upon work with their staff and dollars.

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16. Communicate the reasons for our actions and state a consistent FWC point of view (speak with one voice).

For More Information:

We have to do a better job of communicating among ourselves and with the public so we all understand where we are going, why, and what we're doing to get there. And when we communicate we need to all "speak with one voice", i.e., all have the same message on a given issue so the recipients of the messages are not confused by different variations of the message. Communication is a 2-way street: don't forget to listen.

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17. Continually improve agency processes, operations and cost-effectiveness.

For More Information:

Given the limited resources we have to accomplish our Mission, we need to use them wisely and well. This involves: (1) being innovative in our problem solving, (2) evaluating priorities and adjusting them as needed, and (3) continually improving in what we do and how we do it. Improvements in processes can free-up resources to devote to other efforts.

Measurement

We will measure progress on implementing this plan using an agency-level scorecard. This scorecard is under development and includes specific and measurable objectives for judging how well we're doing on the end results of our actions.

For More Information:
The FWC is developing a Scorecard that will translate the Agency Strategic Plan (ASP) into performance measures and track, on an on-going basis, progress toward

accomplishing these measures.

Think of the Scorecard as the "gauges" in an airplane cockpit. For the complex task of navigating and flying an airplane, pilots need detailed information about many aspects of the flight: fuel, air speed, altitude, bearing, destination, and other indicators that summarize the current and predicted environment. Reliance on one gauge can be fatal. Similarly, the complexity of managing an organization requires that managers be able to view performance on several gauges that represent the key operational areas, simultaneously. The Scorecard improves management oversight by providing FWC the ability to know if we are on course, with the added ability to catch problems before they become critical.

There will be an agency-level Scorecard and one for each division and office. The gauges on the agency-level Scorecard are shown below. Example measures are shown in parenthesis.

- *Marine Fisheries: the status of marine fisheries (annual status & trends of key species, fishery closures, license sales, economic impacts, law enforcement effort)*

- *Freshwater Fisheries: the status of freshwater fisheries (status of species in selected lakes, law enforcement effort)*

- *Wildlife: the overall status of wildlife (annual status & trends of wildlife populations, law enforcement effort)*

- *Habitat & Water: the overall status of fish and wildlife habitats, both aquatic and terrestrial (GIS inventories and law enforcement effort).*

- *Public Health and Safety: human health, safety and welfare (boating injuries, deaths, and property damage; nuisance animal encounters such as alligator attacks; crimes against persons on lands we manage)*

- *Use Opportunities: number of users of all types and access to the resource (acres of lands open to the public, license sales)*

- *Leadership and Communication: overall performance on improving leadership and communication (employee assessment of internal communications)*

- *Teaming: overall performance in improving teaming and integration (number of teams successfully completing their tasks)*

- *Employment Quality: overall improvement in employee's workplace quality and satisfaction (employee satisfaction)*

- *Model & Plan Implementation: overall performance in implementing models and plans*

- *Senior Leadership Team Performance: overall performance of the SLT; includes its leadership and management responsibilities and its functioning as a team*

- *Regional Leadership Team Performance: overall performance of the 5 Regional Leadership Teams; includes their leadership and management responsibilities and their functioning as a team*

- *Division Performance: overall performance of the divisions; a roll up of all the divisions' performance as fed by their dashboards*

- *Office Performance: overall performance of the offices; a roll up of all the offices' performance as fed by their dashboards*

- *Financial Performance: overall performance in financial aspects of FWC (status of trust funds, performance as indicated by audits, ratio of state vs. grant funding)*

- *Internal Efficiency: efficiency of FWC's internal operations. Examples: productivity increases, improved efficiencies due to process improvements, energy use?*

- *Commissioner's Areas of Emphasis: overall performance on the annual Commissioner's Areas of Emphasis selected at the beginning of each calendar year.*

- *Process Improvement: overall performance in improving processes*

- *Customer Service: overall performance in improving internal and external customer service*

- *Stakeholders and Partnering: overall performance in meeting stakeholder needs*

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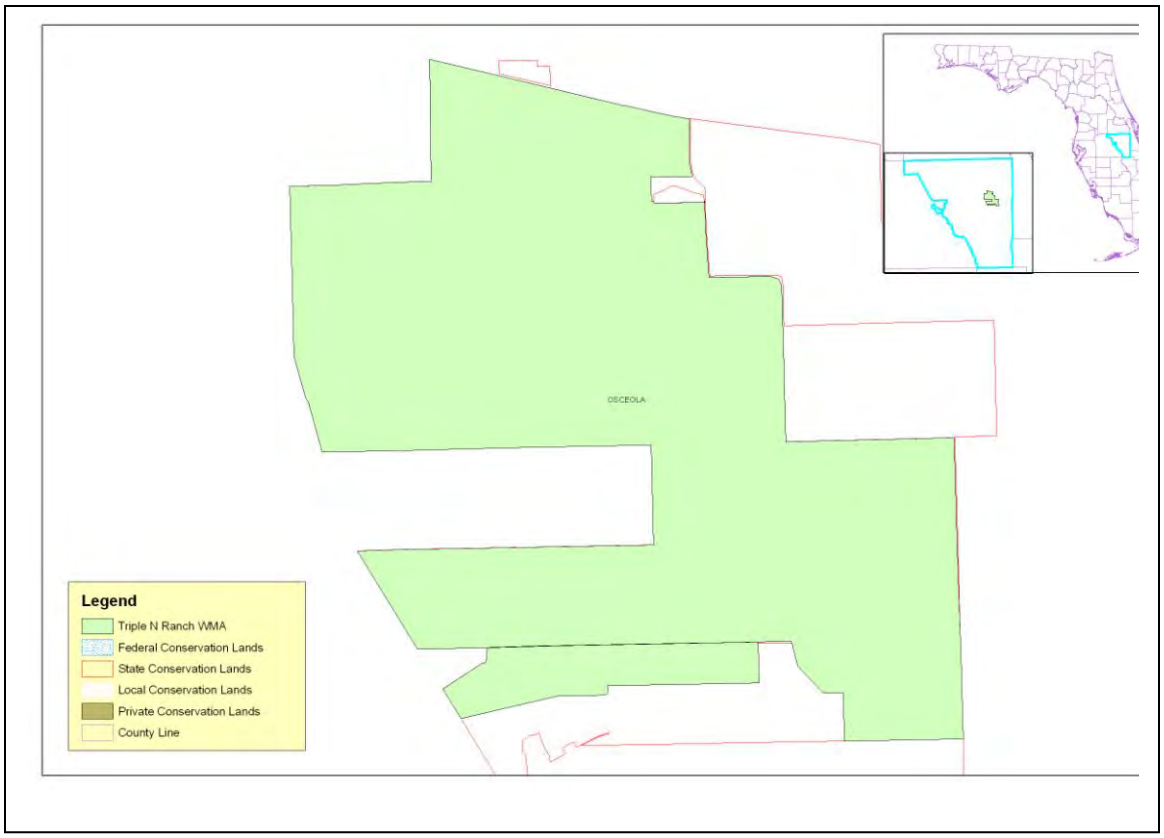
13.8 Land Management Review

Name of Site: Triple N Ranch WMA **County:** Osceola County

Managed by: Fish and Wildlife Conservation Commission **Acres:** 16,295.14 Acres

Review Date: 12/16/09



Review Team Determination

Managed in accordance with acquisition purpose? Yes = 7, No = 0

Management practices, including public access, in compliance with the management plan? Yes =7, No = 0

Categories	Management Plan Review	Field Review
Natural Communities	0.61	4.42
Listed Species	0.34	3.54
Natural Resource Survey	0.54	3.83
Cultural Resources	0.64	3.36
Prescribed Fire	0.71	4.90
Restoration	0.43	4.29
Exotic Species	0.40	3.51
Hydrology	0.45	3.66
Groundwater Monitoring	0.17	2.00
Resource Protection	0.75	4.82
Adjacent Property Concerns	0.86	4.08
Public Access & Education	0.55	3.82
Management Resources	N/A	4.71
Managed Area Uses	0.83	N/A
Buildings, Equipment, Staff & Funding	N/A	3.72

Consensus Commendations to the Managing Agency

The following commendations resulted from discussion and vote of the review team members

1. The team commends the FWC manager and staff for their outstanding, professional and focused commitment to the burn program. The frequency and quality of burns have resulted in exceptionally well-maintained high quality natural communities throughout the WMA. (VOTE: 7+, 0-)

2. The team commends the manager and staff for their initial low-cost restoration in the former citrus areas, and we support continuation of these cost-effective tactics. (VOTE: 7+, 0-)

3. The team commends the FWC on the red-cockaded woodpecker management and monitoring at the WMA. (VOTE: 7+, 0-)

4. The team commends the FWC on the successful special opportunity hunt program offered by the WMA. (VOTE: 7+, 0-)

5. The team commends the manager and staff on their invasive exotic plant controls. (VOTE: 7+, 0-)

Consensus Recommendations to the Managing Agency

The following recommendations resulted from a discussion and vote of review team members. The management plan must include responses to the recommendations identified below.

1. The team observed that the cattle grazing at this WMA is detrimental to its native groundcover quality, particularly with respect to the diversity of native grasses, forbs, and sensitive wetland ecotones. The team recommends that FWC consider eliminating cattle grazing on this property. (VOTE: 7+, 0-)

Managing Agency Response: FWC has completed a system-wide managed area evaluation of the effects of cattle grazing on native plant communities. The study determined there were no statistically significant measureable impacts on the native ground cover communities where grazing was used as a management tool. FWC will continue to evaluate and monitor effects of cattle grazing on native plant communities and make modifications in grazing practices where appropriate.

2. The team recommends that FWC assess the need for and initiate hydrologic restoration in the southern portion of the WMA. (VOTE: 7+, 0-)

Managing Agency Response: FWC has developed a Wetlands Reserve Program Restoration Plan for TNRWMA. Components of this restoration plan include: completing a hydrologic assessment of TNRWMA; monitoring of pre and post restoration hydrology; installation of necessary water control structures; and initiation of long-term hydrologic monitoring. FWC will continue to coordinate and cooperate with the SJRWMD in implementing this restoration plan. In addition, hydrological impacts caused by Donovan-Crews road will be evaluated, and low water crossings will be used where necessary to allow for a more natural flow of water. FWC will incorporate enhanced discussion of hydrologic function and restoration efforts in the TNRWMA management plan update.

3. The team recommends that FWC increase knowledge of floristic diversity of the WMA, especially rare flora. (VOTE: 7+, 0-)

Managing Agency Response: FWC has completed a rare plant survey and associated GIS mapping of TNRWMA. FWC will explore opportunities to work with native plant experts [e.g., Florida Native Plant Society, universities, Florida Natural Areas Inventory (FNAI)] to conduct botanical surveys to increase the knowledge of native flora when feasible and appropriate. Additionally, FWC will incorporate that information in the TNRWMA management plan update.

Checklist Findings

The following items received high scores on the review team checklist, which indicates that management actions exceeded expectations.

- Natural Communities, specifically mesic flatwoods, dome swamp, dry prairie, hydrick hammock/floodplain swamp, wet prairie, scrubby flatwoods, scrub, mesic hammock and wet flatwoods.
- Listed Species, specifically RCW.
- Natural Resource Survey, specifically listed species or habitat monitoring and invasive species survey/monitoring.
- Cultural Resources, specifically cultural resource survey and protection/preservation.
- Resource Management, specifically area being burned, frequency and quality.
- Non Native, Invasive & Problem Species, specifically control of plants and animals.
- Resource Protection, specifically boundary survey, gates/fencing, signage and law enforcement presence.
- Adjacent Property Concerns, specifically expanding development and inholdings/additions.
- Public Access and Education, specifically roads, parking, interpretive facilities and signs, and recreational opportunities.
- Managed Area Uses, specifically recreational trails, camping, hunting, biking, apiary and bird watching.

The following items received low scores on the review team checklist, which indicates that management actions noted during the Field Review (FR) were not considered sufficient (less than 2.5 score on average), or that the text noted in the Management Plan Review (PR) does not sufficiently address this issue (less than .5 score on average.). The management plan must include responses to the checklist items identified below:

1. Discussion in the management plan regarding Natural Communities, specifically Depression Marsh, Baygall, Xeric Hammock, Basin Swamp, and Blackwater Stream. (PR)
Managing Agency Response: FWC notes that the existing TNRWMA management plan describes the natural communities beginning on page 7. However, FWC recognizes those descriptions found in the current management plan should be expanded. FWC recently completed natural communities mapping and descriptions for TNRWMA. FWC will supplant those descriptions and mapping in the TNRWMA management plan update.

2. Discussion in the management plan regarding Listed Species, specifically Animal Inventory (PR) and Plant Inventory (PR, FR).
Managing Agency Response: FWC notes that the review team checklist indicated management actions exceeded expectations on listed species and natural resource surveys at TNRWMA. FWC further notes that beginning on page 14 and page 26 in the TNRWMA management plan lists known imperiled species. Since plan approval, FWC has completed a rare plant species survey of TNRWMA. Goal 3 objectives of the management plan include surveys for imperiled wildlife species. FWC will expand this information in the TNRWMA management plan update, and will utilize the results of these surveys in the development of FWC's Wildlife Conservation Prioritization and Recovery (WCPR) strategy for TNRWMA. FWC will continue to survey and monitor for rare, imperiled and common species, including red-cockaded woodpecker, American bald eagle (one on-site nest), gopher tortoise, Northern bobwhite, and white-tailed deer, as appropriate and feasible.

3. Discussion in the management plan regarding Natural Resource Survey, specifically Other Non-Game Species/Habitat Monitoring, Fire Effects Monitoring, and Other Habitat Management Effects Monitoring. (PR)
Managing Agency Response: FWC has completed natural community mappings and rare plant and animal surveys and will incorporate that information in the TNRWMA management plan update. FWC notes pages 26, 28, 29 32, and 83 of the TNRWMA management plan addresses some of the concerns; however, FWC will expand this discussion and associated Objective Based Vegetative Management (OBVM) desired future conditions in the management plan update. Further, FWC has established a WCPR program for developing strategies for management of focal and imperiled species. Upon completion, the WCPR strategy and OBVM desired future conditions will be incorporated into the management plan update for TNRWMA.

4. Discussion in the management plan regarding Restoration of Ruderal Areas, specifically Orange Groves to Nature Ground Cover. (PR)
Managing Agency Response: FWC has completed an environmental and economic analysis to determine if restoration was feasible. Since the analysis, the groves have been removed. Natural community restoration will be addressed in the TNRWMA management plan update.
5. Discussion in the management plan regarding Non-Native, Invasive & Problem Species, specifically Prevention of Plants, Animals and Pests/Pathogens and Control of Pests/Pathogens. (PR)

Managing Agency Response: FWC notes that on page 25, goal 1 objectives 4 and 6 of the TNRWMA management plan address invasive exotic plant and animal species. Invasive exotic species will further be addressed and expanded in the TNRWMA management plan update.

Use of the terminology "pests/pathogen" is not clear, and is not a required element of management plans. FWC will evaluate the need to discuss pests/pathogens in the management plan update.

6. Discussion in the management plan regarding Hydrological/Geologic Function, specifically Roads/Culverts, Ditches, Hydro-Period Alteration, Water Level Alteration, Dams, Reservoirs or Other Impoundments. (PR)

Managing Agency Response: FWC notes that pages 17, 25 (goal 1, objective 3), 29, and 31 of the TNRWMA management plan addresses some of these concerns. FWC has developed a Wetlands Reserve Program Restoration Plan for TNRWMA. Components of this restoration plan include: completing a hydrologic assessment of TNRWMA; monitoring of pre and post restoration hydrology; installation of necessary water control structures; and initiation of long-term hydrologic monitoring. FWC will continue to coordinate and cooperate with the SJRWMD in implementing this restoration plan. In addition, hydrological impacts caused by Donovan-Crews road will also be evaluated and low water crossings will be used where necessary to allow for a more natural flow of water. FWC will incorporate enhanced discussion of hydrologic function and restoration efforts in the TNRWMA management plan update.

7. Discussion in the management plan regarding Ground Water Monitoring, specifically Ground Water Quantity. (PR, FR)

Managing Agency Response: FWC will continue to cooperate and work with the SJRWMD and the Department of Environmental Protection as they establish recommended water monitoring for this area. FWC will expand the discussion in the TNRWMA management plan update.

8. Discussion in the management plan regarding Public Access & Education, specifically Wildlife, Invasive Species, Habitat Management Activities, and Management of Visitor Impacts. (PR)

Managing Agency Response: FWC notes that in the review teams' checklist findings indicate management actions exceeded expectations on public access and education specifically roads, parking, facilities, and signs at TNRWMA. FWC also notes that pages 26-27 and 32 address some of these concerns. However, FWC concurs that an expanded discussion of these plan elements is appropriate, and will be incorporated in the TNRWMA management plan update.

9. Discussion in the management plan regarding Managed Area Uses, specifically Horseback Riding and Grazing. (PR)

Managing Agency Response: FWC notes horseback riding and grazing uses are identified on pages 19, 22, 25, 28, 29, 32, and 102 respectively of the TNRWMA management plan. FWC will incorporate the results of ongoing cattle grazing monitoring studies and any monitoring of horseback riding in the management plan update. FWC develops Master Recreation Plans for most of our larger management areas. Upon completion of the Master Recreation Plan, the plan will be incorporated in the TNRWMA management plan update.

APPENDIX A:

PLAN REVIEW		1	2	3	4	5	6	7	AVERAGE
Natural Communities (I.A)									
Mesic Flatwoods	I.A.1	0	1	1	0	1	1	0	0.57
Dome Swamp	I.A.2	0	1	1	0	1	1	1	0.71
Depression Marsh	I.A.3	0	1	0	0	1	1	0	0.43
Dry Prairie	I.A.4	0	1	1	0	1	1	0	0.57
Hydric Hammock/Floodplain Swamp	I.A.5	0	1	1	0	1	1	0	0.57
Wet Prairie	I.A.6	0	1	1	0	1	1	1	0.71
Scrubby Flatwoods	I.A.7	0	1	1	0	1	1	1	0.71
Baygall	I.A.8	0	1	1	0	1	0	0	0.43
Scrub	I.A.9	0	1	1	0	1	1	1	0.71
Mesic Hammock	I.A.10	0	1	1	0	1	0	1	0.57
Wet Flatwoods	I.A.11	0	1	1	1	1	0	1	0.71
Xeric Hammock	I.A.12	0	1	1	0	1	0	0	0.43
Basin Swamp	I.A.13	0	1	1	0	1	0	0	0.43
Blackwater Stream	I.A.14	0	1	1	0	1	0	0	0.43
Listed species:Protection & Preservation (I.B)									
Animal Inventory	I.B.1	0	0	1	0	1	1	0	0.43
RCW	I.B.1.a	0	1	1	0		1		0.60
Plant Inventory	I.B.2	0	0	0	0		0	0	0.00
Natural Resources Survey/Management Resources (I.C)									
Listed species or habitat monitoring	I.C.2	0	1	1	0	1	1	0	0.57
Other non-game species or habitat monitoring	I.C.3	0	1	1	0	1	0	0	0.43

Fire effects monitoring	I.C.4	0		1	0	1	0	1	0.50
Other habitat management effects monitoring	I.C.5	0		1	0	1	1	0	0.50
Invasive species survey / monitoring	I.C.6	0	1	1	0	1	1	1	0.71
Cultural Resources (Archeological & Historic sites) (II.A,II.B)									
Cultural Res. Survey	II.A	0	1	1	0	1	1	1	0.71
Protection and preservation	II.B	0	1	1	0	1	0	1	0.57
Resource Management, Prescribed Fire (III.A)									
Area Being Burned (no. acres)	III.A.1	0	1	1	0	1	1	1	0.71
Frequency	III.A.2	0	1	1	0	1	1	1	0.71
Quality	III.A.3	0	1	1	0	1	1	1	0.71
Restoration of Ruderal Areas (III.B)									
Orange Groves to Nature Groundcover	III.B.1	0	0	1	0	1	1	0	0.43
Non-Native, Invasive & Problem Species (III.E)									
Prevention									
prevention - plants	III.E.1.a	0	0	1	0	1	0	0	0.29
prevention - animals	III.E.1.b	0	0	1	0	1	0	0	0.29
prevention - pests/pathogens	III.E.1.c	0	0	1	0	1	0	0	0.29
Control									
control - plants	III.E.2.a	0	1	1	0	1	1	0	0.57
control - animals	III.E.2.b	0	1	1	0	1	1	0	0.57
control - pest/pathogens	III.E.2.c	0	0	1	0	1	1	0	0.43
Hydrologic/Geologic function Hydro-Alteration (III.F.1)									
Roads/culverts	III.F.1.a	0	0	1	0	1	1	0	0.43
Ditches	III.F.1.b	0	0	1	0	1	1		0.50

Hydro-period Alteration	III.F.1.c	0	0	1	0	1	1	0	0.43
Water Level Alteration	III.F.1.d	0	0	1	0	1	1		0.50
Dams, Reservoirs or other impoundments	III.F.1.e	0	0		0	1	1		0.40
Ground Water Monitoring (III.F.2)									
Ground water quantity	III.F.2.b	0	0	0	1		0	0	0.17
Resource Protection (III.G)									
Boundary survey	III.G.1	1	1	1	0	1	1	1	0.86
Gates & fencing	III.G.2	0	1	1	0	1	1	1	0.71
Signage	III.G.3	0	1	1	0	1	1	1	0.71
Law enforcement presence	III.G.4	0	1	1	0	1	1	1	0.71
Adjacent Property Concerns (III.H)									
Land Use									
Expanding development	III.H.1.a	0	1	1	0	1	1	1	0.71
Inholdings/additions	III.H.2	1	1	1	1	1	1	1	1.00
Public Access & Education									
Public Access									
Roads	IV.1.a	1	1	1	0	1	1	1	0.86
Parking	IV.1.b	1	1	1	0	1	1	1	0.86
Environmental Education & Outreach									
Wildlife	IV.2.a	1	1	0	0	1	0	0	0.43
Invasive Species	IV.2.b	0	1	0	0	0	0	0	0.14
Habitat Management Activities	IV.2.c	0	1	0	0	1	0	0	0.29
Interpretive facilities and signs	IV.3	1	1	0	0	1	1	1	0.71
Recreational Opportunities	IV.4	1	1	0	1	1	1	0	0.71
Management of Visitor Impacts	IV.5	0	1	0	0	1	1	0	0.43
Managed Area Uses									

Existing Uses									
Recreational trails	VI.A.1	1	1	1	1	1	1		1.00
Camping	VI.A.2	1	1	1	1	1	1	1	1.00
Horseback Riding	VI.A.3	1	1	0	0	0	1		0.50
Hunting	VI.A.4	1	1	1	1	1	1	1	1.00
Grazing	VI.A.5	0	0	0	0	1	1	0	0.29
Biking	VI.A.6	1	1	1	1	1	1	1	1.00
Apiary	VI.A.7	0	1	1	1	1	1	1	0.86
Birdwatching	VI.A.8	1	1	1	1	1	1	1	1.00
FIELD REVIEW		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**AVERAGE**
Natural Communities (I.A)									
Mesic Flatwoods	I.A.1	5	5	5	4	5	5	4	4.71
Dome Swamp	I.A.2	4	5	5	5	5	5	5	4.86
Depression Marsh	I.A.3	3	3	4	4	5	4	4	3.86
Dry Prairie	I.A.4	5	4	5	4	5	4	4	4.43
Hydric Hammock/Floodplain Swamp	I.A.5	4	5	5	5	5	5	4	4.71
Wet Prairie	I.A.6	5	4	5	5	5	4	5	4.71
Scrubby Flatwoods	I.A.7	5	5	5	3	5	5	5	4.71
Baygall	I.A.8	4	4	5	4	X	4	X	4.20
Scrub	I.A.9	3	5	5	3	5	5	4	4.29
Mesic Hammock	I.A.10	4	5	5	3	4	3	5	4.14
Wet Flatwoods	I.A.11	3	3	5	3	5	4	5	4.00
Xeric Hammock	I.A.12	X	5	5	3	X	X	5	4.50
Basin Swamp	I.A.13	4	3	5	3	5	4	3	3.86
Blackwater Stream	I.A.14	5	5	5	4	5	4	5	4.71
Listed species:Protection & Preservation (I.B)									

Animal Inventory	I.B.1	3	3	5	3	4	5		3.83
RCW	I.B.1.a	5	4	5	4		5		4.60
Plant Inventory	I.B.2	3	3	1	2		2		2.20
Natural Resources Survey/Management Resources (I.C)									
Listed species or habitat monitoring	I.C.2	3	5	4	4	5	4	2	3.86
Other non-game species or habitat monitoring	I.C.3	3	5	4	4	5	X	3	4.00
Fire effects monitoring	I.C.4	3	4	4	3	5	5	2	3.71
Other habitat management effects monitoring	I.C.5	3	4	4	4	3	5	2	3.57
Invasive species survey / monitoring	I.C.6	4	4	4	3	5	4	4	4.00
Cultural Resources (Archeological & Historic sites) (II.A,II.B)									
Cultural Res. Survey	II.A	3	3	5	3	3	3	4	3.43
Protection and preservation	II.B	3	3	5	3	3	3	3	3.29
Resource Management, Prescribed Fire (III.A)									
Area Being Burned (no. acres)	III.A1	5	5	5	5	5	5	5	5.00
Frequency	III.A.2	5	5	5	4	5	5	5	4.86
Quality	III.A.3	5	5	5	4	5	5	5	4.86
Restoration of Ruderal Areas (III.B)									
Orange Groves to Nature Groundcover	III.B.1	4	4	4	4	5	5	4	4.29
Non-Native, Invasive & Problem Species (III.E)									
Prevention									
prevention - plants	III.E.1.a	3	3	4	3	4	3		3.33
prevention - animals	III.E.1.b	3	3	3	3	5	3		3.33
prevention - pests/pathogens	III.E.1.c	3	3		3	4	3		3.20

Control									
control - plants	III.E.2.a	4	4	4	4	5	5	3	4.14
control - animals	III.E.2.b	3	4	3	3	5	5	2	3.57
control - pest/pathogens	III.E.2.c	3	4		3	5	5	1	3.50
Hydrologic/Geologic function Hydro-Alteration (III.E.1)									
Roads/culverts	III.F.1.a	5	4	4	4	5	5	X	4.50
Ditches	III.F.1.b	3	3	4	3		4	4	3.50
Hydro-period Alteration	III.F.1.c	4	3	4	3		5	2	3.50
Water Level Alteration	III.F.1.d	4	3	4	3		5		3.80
Dams, Reservoirs or other impoundments	III.F.1.e	X	3		3		3		3.00
Ground Water Monitoring (III.F.2)									
Ground water quantity	III.F.2.b	1	2		3			X	2.00
Resource Protection (III.F)									
Boundary survey	III.G.1	5	5	5	4	5	5	5	4.86
Gates & fencing	III.G.2	5	5	5	4	5	5	5	4.86
Signage	III.G.3	3	5	5	4	5	5	5	4.57
Law enforcement presence	III.G.4	5	5	5	5	5	5	5	5.00
Adjacent Property Concerns (III.G)									
Land Use									
Expanding development	III.H.1.a	4	4	5	4		4	4	4.17
Inholdings/additions	III.H.2	4	4	5	4		4	3	4.00
Public Access & Education									
Public Access									
Roads	IV.1.a	5	5	5	4	5	5	5	4.86
Parking	IV.1.b	5	4	5	3	5	5	5	4.57
Environmental Education & Outreach									

Wildlife	IV.2.a	2	3	4	3	4	3	2	3.00
Invasive Species	IV.2.b	2	3	4	3	3	3	2	2.86
Habitat Management Activities	IV.2.c	2	4	4	3	5	3	3	3.43
Interpretive facilities and signs	IV.3	2	2	4	2	5	3	4	3.14
Recreational Opportunities	IV.4	3	4	4	3	5	4	5	4.00
Management of Visitor Impacts	IV.5	5	5	4	4	5	5	5	4.71
Management Resources									
Maintenance									
Waste disposal	V.1.a	4	5	5	4	5	5	5	4.71
Sanitary facilities	V.1.b	4	5	5	4	5	5	5	4.71
Infrastructure									
Buildings	V.2.a	5	5	5	4	5	4	4	4.57
Equipment	V.2.b	4	5	5	4	5	4	4	4.43
Staff	V.3	1	2	4	3	4	3	2	2.71
Funding	V.4	4	2		4	4	3	2	3.17

APPENDIX B:

I.A. Natural Communities

- Upland communities are managed very well and are in very good condition. Current fire regime is exceptional. Much damage around depression marshes and wet prairie resulting from cattle and hogs. Continue to burn into hydrick hammock to knock back sweet gum and other species expanding out.
- Several depression marshes showed evidence of damage from cattle grazing and trampling. Flatwoods were in excellent condition. The use of prescription fire is exceptional and the communities all show the results of a great burning regime. Dry prairie was in excellent condition in general but showed some significant evidence of over grazing by cattle. The cattle grazing on natural forage at this WMA is damaging the resource. FWC needs to examine the effects of cattle grazing on this WMA independently of other sites. The vegetation clearly showed indications of over grazing. Cattle should be removed or at least reduced in number on this site. The extensive use of low water crossings at the site is good. Any existing culverts should be replaced by LWC's as they fail or as funds become available. Some prairies also showed evidence of cattle overgrazing and trampling. Some basin swamps have altered hydrology and/or lygodium problems. Staff should continue to treat lygodium and pursue hydrological restorations.
- Rollerchopping- thought it had no negative affects visible is probably not needed. Palmettos can be burned down. Use resources elsewhere. Hogs and cattle digest and trample edges of depression marshes, etc. Cattle are staying in small areas, can't be rotated. They are probably overgrazing. Note picture contrasting enclosure from overgrazing. Although wiregrass does not decrease with overgrazing (it actually is an increaser) most other species that give diversity are decreased in numbers and can actually be eliminated from overgrazing. Where cattle are rotated frequently on native range and kept in sufficiently low numbers. We do not see negative effects. The opposite appears to be true here. We recommend removing cattle from the entire north end of the site since they cannot be rotated. Wet prairies are beautifully diverse. Cattle and hogs have caused trampling and digging damage in some areas. The more recently acquired areas naturally have more issues with exotics and probably require more burn management, but the handling of all the communities has been done with good knowledge of these systems and management. Rollerchopping is probably not needed on this site because of consistent barriers over the years and relatively low palmetto heights. This is not a positive recommendation but ask that the process be reconsidered on this site. Resources could possibly be better used elsewhere.
- Most of the mesic Flatwoods were gorgeous, with routine fire occurring every 2-3 years. Palmetto coverage generally looked good; a few areas appeared to need more aggressive spring burning and perhaps some mechanical treatments. Wiregrass and blue fern grass diversity was excellent; however in some areas the active grazing appears to have diminished density of blue ferns. Depression marshes and wet prairies were largely intact with only an occasional fire line or two trail disturbances. Margins were largely burned across during Flatwoods prescribed fires. A few eco-tone edges had a buildup of palmetto that may require mowing or rollerchopping to reduce size and improve the impact from fire. The scrubby Flatwoods appeared to be mostly in maintenance condition with recent fires reducing oaks and palmetto to a manageable height. Many margins of basin and dome swamps and wet prairie showed impact from cattle movement. The compaction and disturbance to these sensitive wetland eco-tones raise concern regarding the stocking of cattle on these sections of the property. Some strands of mesic Flatwoods lacked any longleaf pine canopy or pine recruitment. I suggest assessing all areas of Flatwoods and consider reintroducing pine through hand planting of longleaf pine tube-lings. Natural community mapping should include year round flowing streams and designate as blackwater creeks FNAI community type. Also take another look at enlarging the acreage typed as natural mesic flatwoods imbedded within the improved pasture ranchland in the southern part of the property. The small area of scrub just south of crab grass creek is structurally mature and is in need of either more intensive burning or mechanical treatments. The priority for restoration is not high, however as there are no scrub jays present, or nearby. Many of the north-south linear swamps seen to be better described as basin swamps rather than dome swamps given the general flow of surface water from north to south. In this regard its recommended consideration being given to reducing the impact that DonaVanCruise Road may have in interrupting this surface flow. Low water crossings or culverts may be appropriate to restore natural flow levels and hydro-periods to the south.

- Inside fence wire grass and blue ferns were present, saw palmetto outside the fence with no wire grass. Preferred forage, diversity reduced.
- Depression marshes are severely influenced by cattle and hog damage. Dry prairie wire grass growth is inhibited by cattle grazing.
- Hydrick hammock and basin swamp ecotones still adjusting to fire management.

I.B. Listed Species

- Excellent job of protecting the RCW population on the property and striving to expand the population to where it previously not detected.
- The plan would benefit from a thorough herp and plant survey and inventory.
- Recommend getting a more thorough flora survey to know what is on the site. Need to know species occurring and diversity or richness of the site. Two rare plants managed well by burn program.
- Good effort to monitor and manage for RCW population or eight colonies by the RCW biologist working also at Three Lakes WMA and Bull Creek. Manager needs to check into location of historical observation of hand fern in hydrick hammock.
- Minimal GT survey/monitoring. No detailed plant inventory. Recommend OBVM- protect and preserve.
- Needs a rare plant inventory of the parcel.
- Plant inventory needs expansion to increase the cursory list in order to know the resources.

I.C. Natural Resources Survey/Management Resources

- When time permits, initiate species inventories on the property but focus your limited staff primarily on land management activities.
- The WMA would benefit from additional rare plant monitoring, particularly of species susceptible to hog damage. Additional lygodium monitoring should be done to detect new infestations. OBVM work is good. I like the idea of a central database for all the resource management data.
- Staff is using their time well on most important management activities. More resources would be needed to do additional monitoring.
- Round tail muskrat. No herp survey. Photo monitoring 25 points. Fire effects monitoring being evaluated but not documented. Didn't hit swamp line. Track is very time consuming. Quantity not quality.
- Staff has done an excellent job prioritizing to best use their limited resources.
- Fire effects- photo points and notes are adequate. Look into remote sensing opportunities. Contact DWP data coordinator for more information.

II.A.B. Cultural Resources

- Additional staff should be trained and ARM certified. A more thorough archeological survey is needed.
- The management plan needs to describe sites currently listed on the DHR marker site file. The tract manager should attend the DHR archeological site monitor training. Sites are visited regularly however these observations or any changes in status would be documented.
- Planning to follow up on several noted sites to document. Steve Glass has had training to document (certified).

III.A. Prescribed Fire

- Excellent burn program. Continue to use burning as the primary land management tool. Reduce unnatural fire shadows where possible.
- Exceptional prescription fire program. This WMA along with Three Lakes WMA are setting the bar for other state lands to aim for.
- Great fire program. The natural fir shadows add diversity to the landscape.
- Outstanding burning program here as was mentioned earlier with fire treatments occurring and approximately a three year frequency. Some areas of mesic Flatwoods seemed to be increasing its palmetto

component and higher structure than during past visits which might be related to not being as aggressive with burning during the earlier spring months.
- Great job to sustain the diversity of the ecosystem.
- Superb fire management.

III.B. Restoration

- Great efforts to restore large tracts of citrus groves to native groundcover. Look for outside funding sources to continue restoration. Cattle grazing will impact abilities to collect sufficient wine grass seed post growing season burns for restoration sites due to consumption of seed.
- Glad to see citrus grove restoration in progress. Continue to work on restoration project and incorporate it into the plan.
- Orange grove restoration is slowly proceeding along good lines. Money for restoration is needed. Improved pasture. Yearly burning is keeping the shrubby species under control. Sometime down the road restoration can be considered after the more priority areas are restored.
- Outstanding efforts to remove orange grove trees and restore aossociated ditches in an economical fashion (less than $200 per acre). Other than continue of Austrailian Pines, very little has been accomplished with restoration of rangeland and pasture in the southeast section of the WMA.
- Field removed of cogon grass in citrus into native ground cover 80 and 600 AC projects. Lygodium is scattered. Yates property on hold (SE corner); just purchased 140 cows.
- Orange grove restoration in progress but making great strides.

III.E. Non-native, Invasive & Problem Species

- Requiring contractors to wash equipment being brought onto the property could reduce the spreading of exotics onto the property. Provide education to the public entering the area. Continue to actively spray and monitor exotics on the property. Design a plan to effectively survey the property for exotics in all the communities. Great work being done by staff to control and eliminate exotics off of the property.
- Invasive educational materials should be posted in campgrounds. Hunters could be a useful tool to notify staff of new lygodium and cogon infestations. Continue to aggressively treat lygodium and cogon and also remove hogs.
- Cogon grass and lygodium and tropical plants are being actively visually monitored and controlled. Need more money to do additional work and catch new areas. Hogs and cattle need more control. Post more information on exotic plants for visitors.
- Excellent efforts to treat and monitor invasive plants. Vigilance will be required however to stay on top of cogon grass, especially in the old orange grove site.
- More prevention than control.
- More active prevention process should be in place, more proactive and less reactive. Omitting recently acquired properties and those under active restoration.
- Plants largely in maintenance except for lygodium and cogon and queen palm, and Australian pine in disturbed areas in southern tracts.

III.F. Hydrologic/Geologic Function

- Effective use of water crossings through hydrick hammock and other natural wet areas that could impede public access. Assess ditches for restoration potential.
- WMA would benefit from a detailed hydrological assessment of conditions and restoration potential. Staff should pursue as much ditch restoration as possible, especially on the highly altered south portion of property. Widespread use of low water crossings was good to see. Groundwater quantity should be monitored associated with the data restoration projects.
- Need assessment of basin swamp on south end. Pursue ditch filling on southend since there is a cooperative adjacent land owner. Need green light. Much can be done in house. Low water crossings are good. Ground water monitoring not needed unless hydrology work begins.

- Nice work with instillation and maintenance of hard rock, low water crossings. Assessment is needed on benefits of installing low water crossings or culverts on DonaVanCruise Road. More work is needed to assess sections of ditches to fill in on ditch block.
- Need some assessment on the newly acquired land in the SE corner. WMD to assist in water flow. Possibly place ditch blocks in E&W ditch (north of road).
- For hydrological restoration a baseline needs to be established.
- At south end, hydro on road from N-S through basin swamps needs assessment. Good information on hydro alteration, need a plan of action and a decisive move forward. Need to be ready to assess ground water hydro-cycle if hydrologic restoration occurs on Yates or Vanosdol tracts. Blackwater streams; infra-red photos of basin swamps if hydrologic restoration is approved and moves forward. Monitor Holopaw water input nutrients.

III.G. Resource Protection

- Great that LE works with the Triple N staff to ensure the boundary is properly marked.
- Write/post warning letters- Environment Staff.

III.H. Adjacent Property Concerns

- Acquire any inholdings as they become available and as funding becomes available.
- Continue to pursue acquisition of adjacent lands and inholdings.
- Would like to acquire several additions to interconnect and connect to Three Lakes.
- Smoke management. Saw grass road- cut fence.
- Impacts from Holorin limit management of NW corner.

IV. Public Access and Education

- Roads are well maintained and provide easy access to much of the property. Additional non-hunting recreational opportunities, such as camping could allow people to further take advantage of the area.
- Roads were in excellent condition. Low water crossings are well placed in drainage areas. More public interpretation and education should be done as time allows.
- Education is sufficient for this area. Recreation highly oriented towards hunting. Best time for hiking is occupied by hunters.
- More effort is suggested to look at additional interpretive information, such information on identifying lygodium being disturbed to hunters to help staff locate populations.
- Very good roads and includes florida trails. Get a gate that closes park entrance at dark.

V. Infrastructure/ Management Resources

- Additional staff is needed to manage all land assigned to the area plus non- lead areas.
- Current facilities are sufficient. The limited staff does an exceptional job but the WMA would clearly benefit from additional staff. Restoration funds are needed.
- Need more people and funding to manage the property. Needs two more people, restoration funding and hydrology funding.
- Waste disposal and sanitary facilities are appropriate for the number of visitors.
- More staff is needed. Funding adequate but not for new tasks.
- Staff stretched too thin between NW and Bull Creek and Ft. Drum. Need one full time and one OPS to manage all 3 sites properly. Funding- basic; need more money to perform Hydro restoration and invasives surveys and restoration for native ground cover.

VI. Managed Area Uses

- Grazing is not appropriate on native forage for this WMA. It is clearly damaging the resources.

- Cattle use was described earlier with its negative effects. Horseback riding could introduce more exotics and recommend discouragement.
- Grazing currently not in areas where it benefits wildlife and biodiversity and not an original use.

Management Review Determination

- Land is being managed for the purpose of preserving the natural communities while also providing recreational opportunities for the public.
- The small staff at Triple N does an excellent job and the conditions of the land clearly reflects this.
- Except as noted aboves –esp. cattle grazing.
- Excellent management of the site with very good burning prioritization of essential needs, particularly burning and exotics control.
- Excellent program of management of a gorgeous landscape.
- Great prescribed fire program.
- Management plan was adequately developed to improve biodiversity and public use, especially the prescribed fire program.
- Except for rangeland grazing, land is managed consistent with acquisition purpose. Grazing, as it is practiced, does not follow the plan without site based data to support it.

13.9 Case Study of Objective-based Vegetation Management

Case Study of
Objective-based Vegetation Management:
Triple N Ranch Wildlife Management Area

Florida Fish and Wildlife
Conservation Commission

Case Study of Objective-based Vegetation Management:
Triple N Ranch Wildlife Management Area

Objective-based Vegetation Management

Objective-based Vegetation Management (OBVM) is a process to assist land managers in making decisions about management activities on managed areas. OBVM supports science-based land management decisions by setting clear, measurable objectives for habitat management and conducting regular monitoring.

This booklet provides an outline of the eight steps in implementing OBVM, using the Triple N Ranch Wildlife Management Area as a case study.

Eight steps in implementing OBVM on the Triple N Ranch Wildlife Management Area

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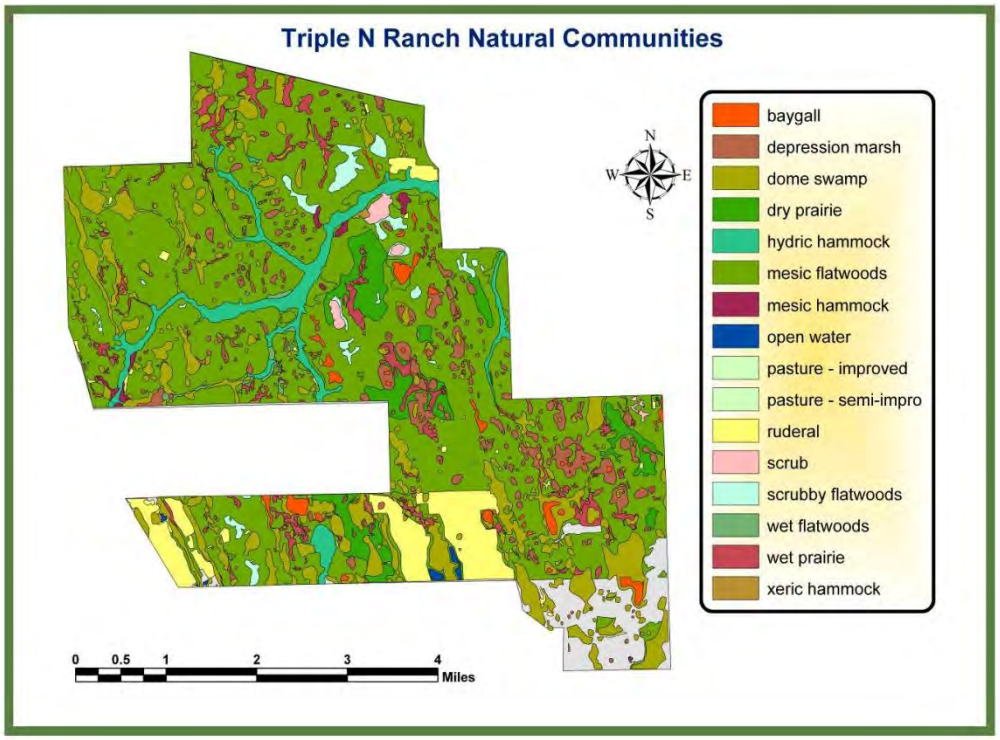
Case Study of Objective-based Vegetation Management:
Triple N Ranch Wildlife Management Area

Step 1. Plant Community Mapping by FNAI

FNAI conducted plant community inventories at the Triple N Ranch WMA (TNR) from July 2002 through June 2003. The plant community and historical vegetation maps produced will provide the foundation for implementing OBVM by developing a baseline of information on TNR.



Step 2. OBVM Planning Workshop to Set Vegetation Management Objectives

A meeting at Three Lakes WMA was held June 25-27, 2003, to determine the vegetation management objectives for TNR. In attendance were the regional biologist, district biologist, area biologist, PCMS biologists, FWC administration, and the director of FNAI.

The results of the mapping conducted by FNAI were provided to meeting participants, along with information from TNR managers. Information included:

- Natural community type maps
- Natural community sample points map
- Aerial map with roads
- Burn unit map
- Hunt map
- FNAI natural communities description
- Variables collected at data logger points
- A summary analysis by plant community
- A summary analysis across all plant communities

Discussion at the Triple N Workshop

Meeting Objectives

The meeting objectives were:

1. Evaluating current subdivision of TNR for vegetation management purposes. This included a review of existing prescribed burn units, plant community maps, and other infrastructure such as roads and trails. The evaluation of the existing subdivision was in respect to the following criteria:
   - Management objectives
   - Plant communities and ecotones
   - Soils
   - Management Objective Dynamics
   - Access
   - Fuel types and conditions
   - Rare or sensitive species or plant community types

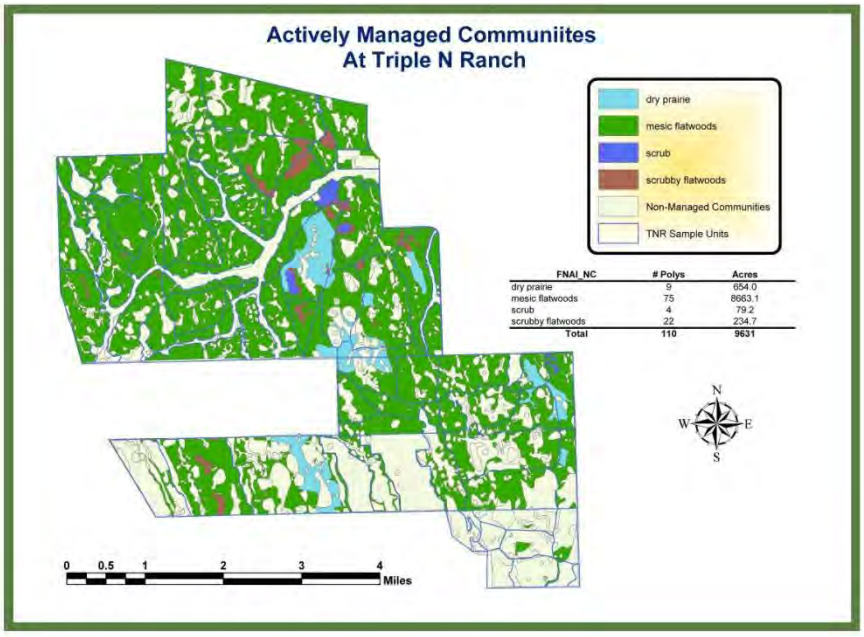
2. Establishing quantified vegetation management objectives at the management unit; focusing on the actively managed plant communities. The director of FNAI provided quantified plant community parameters based on data collected from TNR's "relatively pristine" plant communities.

Case Study of Objective-based Vegetation Management: Triple N Ranch Wildlife Management Area

Plant Community Objectives

Participants spent the 3-day workshop in the field and in discussion, evaluating current management units and setting objectives for the actively managed plant communities at TNR. The objectives were set for four plant communities:

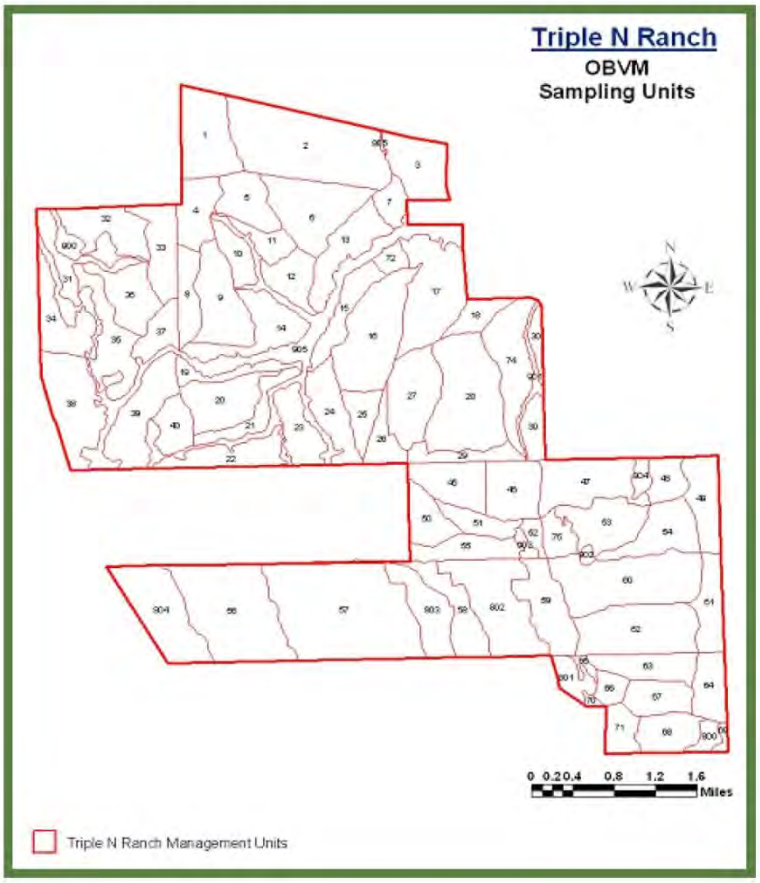
Mesic Flatwoods	**Dry Prairie**
Basal area: 10-70 sq. ft. per acre Average maximum shrub height: ≤ 5 feet Shrub cover: 25-50% Average max palmetto height: ≤ 3 feet Palmetto cover: 25-75% Herbaceous cover: 25-75% Wiry graminoid cover: 25-75% Weedy and exotic element cover: <1%	Tree stem density: 0 Average maximum shrub height: ≤ 4 feet Shrub cover: ≤35% Average max palmetto height: ≤ 2 feet Palmetto cover: 25-75% Herbaceous cover: 25-75% Wiry graminoid cover: 25-75% Weedy and exotic element cover: <1%
Scrubby Flatwoods	**Scrub**
Basal area: 10-70 sq. ft. per ac. Average maximum shrub height: ≤ 6 feet Shrub cover: 25-75% Average max palmetto height: ≤ 4 feet Palmetto cover: 25-75% Wiry graminoid cover: 10-50% Herbaceous cover: 5-50% Weedy and exotic element cover: <1%	Canopy cover: ≤ 20% Average maximum shrub height: 3-9 feet Bare ground cover: 10-30% Weedy and exotic element cover: <1%



Step 3. Re-delineating Management Units.

After the planning meeting, the TNR managers worked with the Plant Community Monitoring Section (PCMS) biologists to discuss potential changes to the management units. [Note that the PCMS section has been changed to the Upland Habitat Research and Monitoring sub-section, under the Ecosystem Assessment and Restoration (EAR) Section of the Fish and Wildlife Research Institute (FWRI).]

The managers then worked to re-delineate their management units and assign a primary plant community to each management unit. The PCMS biologists incorporated the changes into the new management unit shape file and used the new shape file to develop a map of the proposed management units that would be sampled in the spring of 2004.



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Step 4. Sampling

The OBVM sampling program has three main objectives: (1) provide decision-support data to managers at a management until level, (2) collect plant community level data to provide a WMA-wide view of the conditions of certain plant communities, and (3) to learn how management activities influence plant community structure and composition. Sampling is conducted at two levels, the management-unit level and the plant community level.

The initial sampling on TNR was conducted from March to May 2004. At the plant community level, 30 to 50 coordinate points were randomly assigned to polygons representing each habitat type within the TNR boundary. At the management unit level, 10 to 30 random points were generated for each management unit, only within the polygons representing the dominant plant community. A total of 160 sample stations (sample units) were conducted at the plant community level, and a total of 385 sample stations were conducted at the management unit level. A nested quadrat design was used for sampling vegetation at each sampling station. FNAI presented FWC with the sampling data in June 2004.

Vegetation Structure and Composition Objectives

For each selected plant community, meeting participants chose a set of attributes relating to vegetation structure and composition for measurement at the two sampling levels. For each attribute, a value range was determined to describe desired conditions for the respective plant community. Initially, these vegetation structure and composition objectives will be left as broad value ranges until more specific data allow for their refinement. The four actively managed plant communities determined at the workshop (Mesic Flatwoods, Scrubby Flatwoods, Dry Prairie, and Scrub) were sampled on TNR:

Sampling Plan

Plant Community Level Sampling

Plant community level sampling will describe conditions and variability for specific plant communities across TNR. It will also provide accountability that FWC is meeting the vegetation structure and composition objectives at the WMA level. For vegetation sampling at the plant community level, TNR will be stratified according to the actively managed plant communities present. The plant community level sampling will be conducted in year one of the sampling effort and then every five years thereafter.

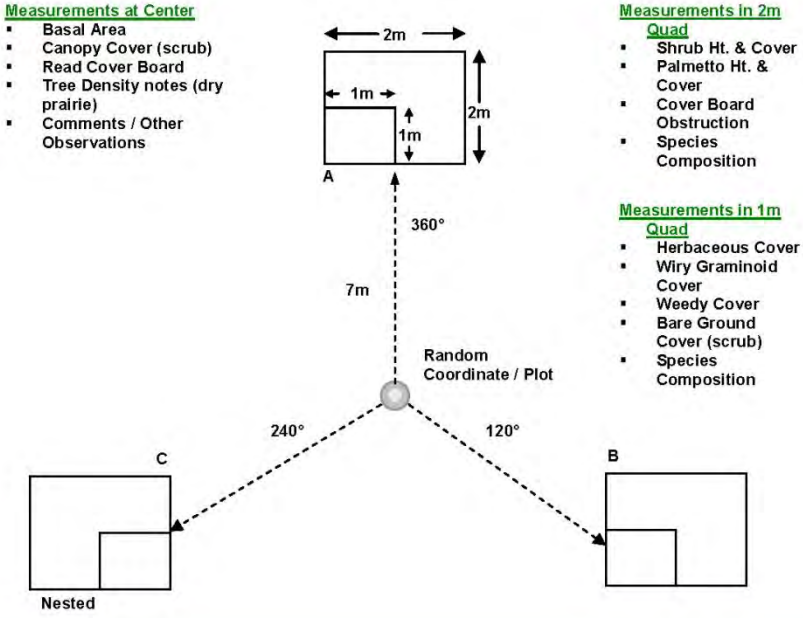
Case Study of Objective-based Vegetation Management:
Triple N Ranch Wildlife Management Area

Management Unit Sampling:

Sampling at TNR

TNR managers will use the results from the management unit level sampling to determine management actions needed. For individual management units, sampling will be initiated on a two-year post disturbance basis and then every year thereafter, until the next management treatment is applied. Therefore, in any particular year, only a portion of the management area will be sampled at the management unit level. The dominant actively managed plant community in each management unit will be sampled.

Sample Site Design



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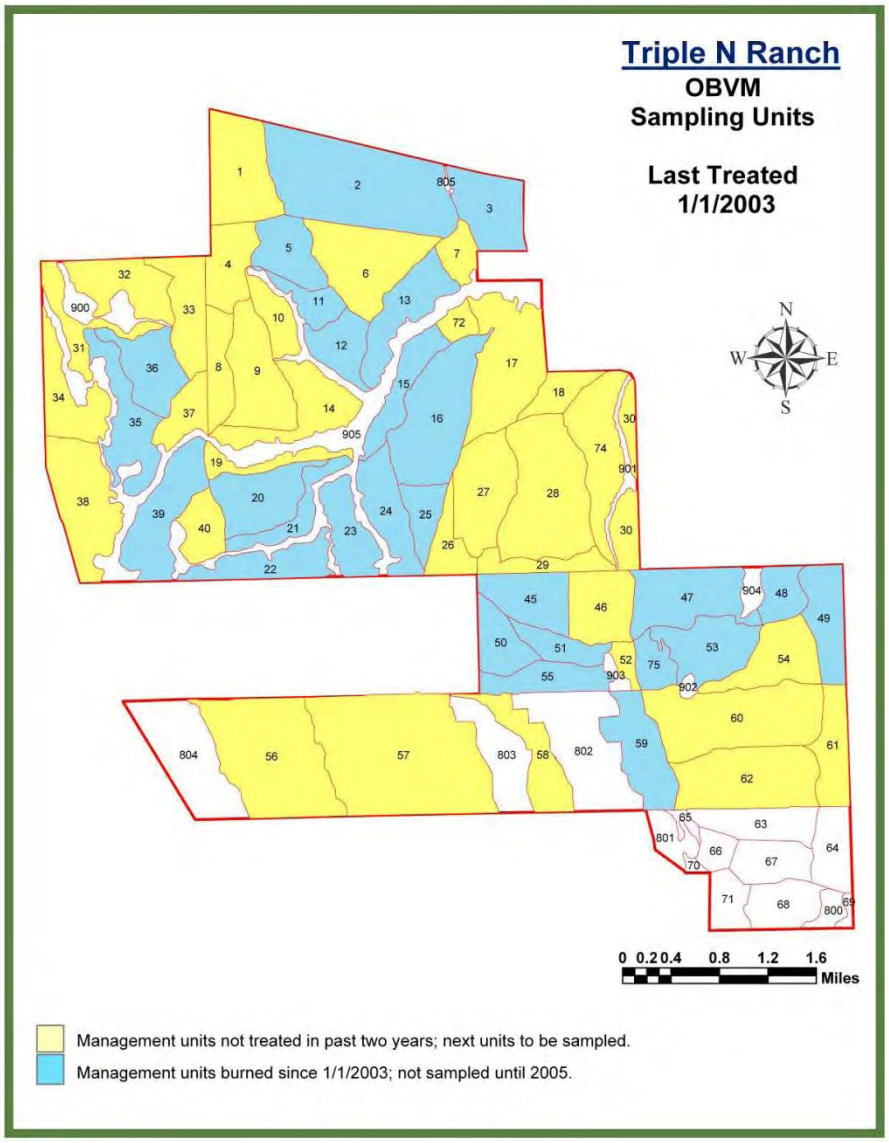
Case Study of Objective-based Vegetation Management:
Triple N Ranch Wildlife Management Area



Case Study of Objective-based Vegetation Management:
Triple N Ranch Wildlife Management Area

Step 5. Data Analyzed and Provided to Managers

PCMS biologists (FWRI biologists as of July 2004) will analyze the sampling data provided by FNAI. Data for each attribute collected will be analyzed by calculating the mean and confidence interval at the appropriate confidence level, and managers will be provided with a report that summarizes values that were estimated for each attribute. The report will allow managers to compare current attribute values for plant communities to desired conditions. Raw data will be made available to managers requesting such data.

Step 6. Management Decisions Made

The quantification of desired vegetation conditions on TNR, coupled with the sampling data, will enable the managers to make informed management decisions. Different management options will be considered by TNR managers, and implemented to achieve the desired condition of each management unit. The continued sampling will help to determine the effect of specific management treatments on vegetation and plant community structure.

Case Study of Objective-based Vegetation Management:
Triple N Ranch Wildlife Management Area

Step 7. Regular Monitoring and Adaptation

Outside contractors conduct regular plant community monitoring at the plant community and management-unit levels. PCMS (FWRI) biologists provide reports of monitoring results to TNR managers. The managers then modify management activities as needed, based on monitoring results.

Step 8. Continued Science-based Stewardship

The OBVM database provides habitat condition status across FWC lands statewide. Continued monitoring of plant communities and management activities ensures science-based stewardship of FWC lands.

Booklet designed by J. Morris, S. Jacobson, and S. Marynowski, University of Florida, partially funded the USGS State Partnership Program with FWC, 2004.

13.10 Prescribed Fire Plan

Triple N Ranch WMA
Prescribed Burning Plan

INTRODUCTION

Many ecosystems in Florida evolved with fire and rely on its frequent return in order to sustain their unique structure and species assemblages (Myers and Ewel 1990). The Florida landscape is barraged with lightning storms more frequently than most parts of the country (Abrahamson et al., 1984), and fires have frequently been spawned from these storms for thousands of years. Native Americans also started fire frequently for a variety of reasons (Van Lear and Harlow 2000); these fires released fire-tolerant plants from competitors that could not withstand burns, and some fire-tolerant plants actually "encourage" fires by possessing flammable oils (Mutch 1970). Removing fire from the landscape has far-reaching effects, and can cause successional change in fire-adapted ecosystems (Monk 1968), often culminating in a climax hardwood community. This shift results in degraded or unsuitable conditions for species that rely on fire (Gilliam and Platt 1999).

Lightning-sparked wildfires still occur annually in Florida, but are usually suppressed to protect public safety. In order to continue the important effects that fire has on the landscape, prescribed fires are conducted. These fires mimic "natural" fires, but are carefully planned and controlled.

Triple N Ranch Wildlife Management Area (TNRWMA) is located within the Eastern Flatwoods District of Florida, a physiographic area characterized by pine flatwoods, prairies, and cypress domes (Brooks 1982). These communities are all shaped by fire, and prescribed fire is used extensively on TNRWMA to maintain them. In addition, prescribed fire provides the following benefits on the area as well:

1) Reduction of fuel loads, which will help to prevent or mitigate effects of wildfires.
2) Enhancement of the areas aesthetics by controlling undesirable vegetation.
3) Control of exotic plant species.
4) Improved public access.
5) Increased success of longleaf pine regeneration.

BURN OBJECTIVES

Prescribed fire will be used on TNRWMA as a habitat management tool exclusively or in conjunction with other management techniques to accomplish a variety of objectives. The primary objective for using prescribed fire on TNRWMA is to maintain fire-dependent native habitat communities. This will result in preserving

native plant communities and improving wildlife habitat for species that require a fire maintained landscape. Secondary objectives for the use of prescribed fire include the maintenance of early successional habitats and control of exotic species. Early successional habitats are important for many species of wildlife found on TNRWMA.

DESCRIPTION OF AREA

The TNRWMA is located approximately 17 miles east of St. Cloud, FL. Nearby roads include US HWY 192 to the north, 441 to the west, and Crabgrass Road to the east. Adjacent lands are used for ranching, citrus production, and conservation. Adjacent landowners include several large ranches, conservation lands (Herky Huffman/Bull Creek WMA to the east), and many small privately owned parcels.

The TNRWMA contains 16,295 acres of land, comprised of the following natural communities: Baygall, Depression Marsh, Dome Swamp, Dry Prairie, Hydric Hammock, Mesic Flatwoods, Open Water, Improved Pasture, Semi-Improved Pasture, Ruderal, Scrub, Scubby Flatwoods, Wet Flatwoods, Wet Prairie, and Xeric Hammock. Full descriptions of these communities, including the importance and recommended frequency of fire, are found in Appendix A. The Florida Natural Area Inventory (FNAI) has prepared a community classification map for TNRWMA showing the extent of each of these communities (Figure 1).

PRESCRIBED BURNING PROGRAM

A. Firelines

Natural features (e.g. drains, creeks and rivers) and existing roads are used as firelines whenever possible. Lines disked to mineral soil will be used when necessary. Nearby vegetation may be mowed or chopped to reduce fire intensity along firelines.

B. Size and Arrangement of Compartments

Eighty eight burn units have been delineated on TNRWMA, averaging 172 acres in size (range: 12 - 803; Figure 2). Burns will be conducted at 2-3 year intervals for most units (Table 1). The size and arrangement of compartments is static since we have no plans to construct new firelines although some of the improved pasture units may be modified as needed. Burn units will be burned in a mosaic pattern when possible so species with small home ranges, such as bobwhite quail, have nearby escape cover. If burn days are limited due to weather constraints, several burn units may be burned on the same day.

C. Type of Burn

Most burns will begin with a backfire along the downwind side of the unit. The rest of the unit will be burned with spot, flank, or headfires depending on fuel loads and desired fire intensity. Due to good fuel continuity and access on TNRWMA, the majority of burns will be ignited using ground crews instead of aerial ignition.

D. Season and Time of Day

We will be conducting burns during both the growing and dormant seasons. The majority of native acreage will be burned in the growing season, with early growing season (late April-early June) burns being the most desired. The ruderal areas on TNRWMA are vegetated primarily by exotic grasses that will not burn well in the growing season. We will concentrate on these areas during the dormant season, and prefer the late dormant season (February – March) due to increased burn effects on encroaching wax myrtle and oaks. Most burning will be done during daylight hours. In general, fire conditions become most volatile in the mid-afternoon hours, so we will plan burns accordingly. If conditions allow we may conduct burns at night as well.

E. Optimal Weather Conditions

Natural communities within burn units will be evaluated beforehand to determine the desired wind direction. Areas we want to burn at a low intensity should be on the downwind side of the unit, and high intensity (scrub or encroaching hardwoods) on the upwind side whenever possible.

Areas surrounding the burn unit will also be used to determine the best wind direction. In general, we will favor winds that blow away from private property and areas where containment would be difficult should we have an escape.

Other parameters, such as time since last rain and desired relative humidity, will be prescribed based on fire objectives within the unit and containment concerns. We will not burn on days that are deemed too volatile or days in which we are not meeting our objectives.

F. Smoke Management

Direction, volume and dissipation of smoke from prescribed burning on TNRWMA are of primary concern due to the proximity of smoke-sensitive areas. Areas that may be affected by smoke (or particulates carried by smoke) include Highway 192, Highway 441, Crabgrass Road, and nearby residents.

To minimize smoke problems, preferred conditions will include a minimum mixing height of 1,700 feet and transport wind speed of 9 mph or more. We will favor winds that blow away from smoke-sensitive areas. Additionally, the use of backfires, as prescribed, will produce less smoke and consume fuel more completely than headfiring. Residual smoke problems (such as stumps, snags, or logs near state or county roads) will be promptly mopped-up and monitored to minimize smoke hazards.

Smoke management is difficult when night burning because smoke often stays close to the ground and smoke drift is difficult to predict. Additionally, smoke tends to seek lower laying areas (along streams and creeks). In general a surface wind speed of greater than 4 mph and relative humidity under 80 percent are recommended for night burns. Night burning will be approached with caution and in close association with the Florida Forest Service to avoid these problems.

G. Personnel

Under ideal conditions, burning can be conducted with a minimum crew of four. Most burns will be conducted with a crew size range of 4-12. Burn crew members will be assigned tasks according to their training, equipment, and burn requirements. Personnel from other state and federal agencies (FFS, DEP, SJRWMD) will be used if needed.

H. Equipment

All members of the fire crew will wear, at a minimum, the PPE required by FWC's Prescribed Burning and Wildfire Suppression Standards (Appendix B). Type VI engines, tractor-plows, farm tractors, 4-wheelers, and other equipment may be used as conditions require. Smoke caution signs for nearby roads will be deployed as necessary.

I. Permits and Notifications

A permit will be obtained from FFS on the afternoon before or the morning of the burn in accordance with the provisions of FS 590.125. Adjacent landowners near the planned burn may also be contacted.

J. Evaluation of Burn

Burns will be evaluated informally during and shortly after each burn by comparing burn objectives with burn effects. Objective Based Vegetation Monitoring (OBVM) data will be used to determine if the fire intensity is maintaining the desired vegetative composition and structure.

K. Special Considerations

Special attention will be given to ensure our burns do not adversely affect adjacent landowners and nearby roads. We will minimize smoke impacts on nearby roads and residents by utilizing the FFS's smoke screening tool and responding to changing weather conditions during the burn.

Sensitive wildlife resources, such as Red-cockaded Woodpecker cavity trees and Bald Eagle nests, will be depicted on burn maps and protected. Infrastructure within the burn unit such as power poles, informational signs, and gates will be depicted on burn maps and protected as well.

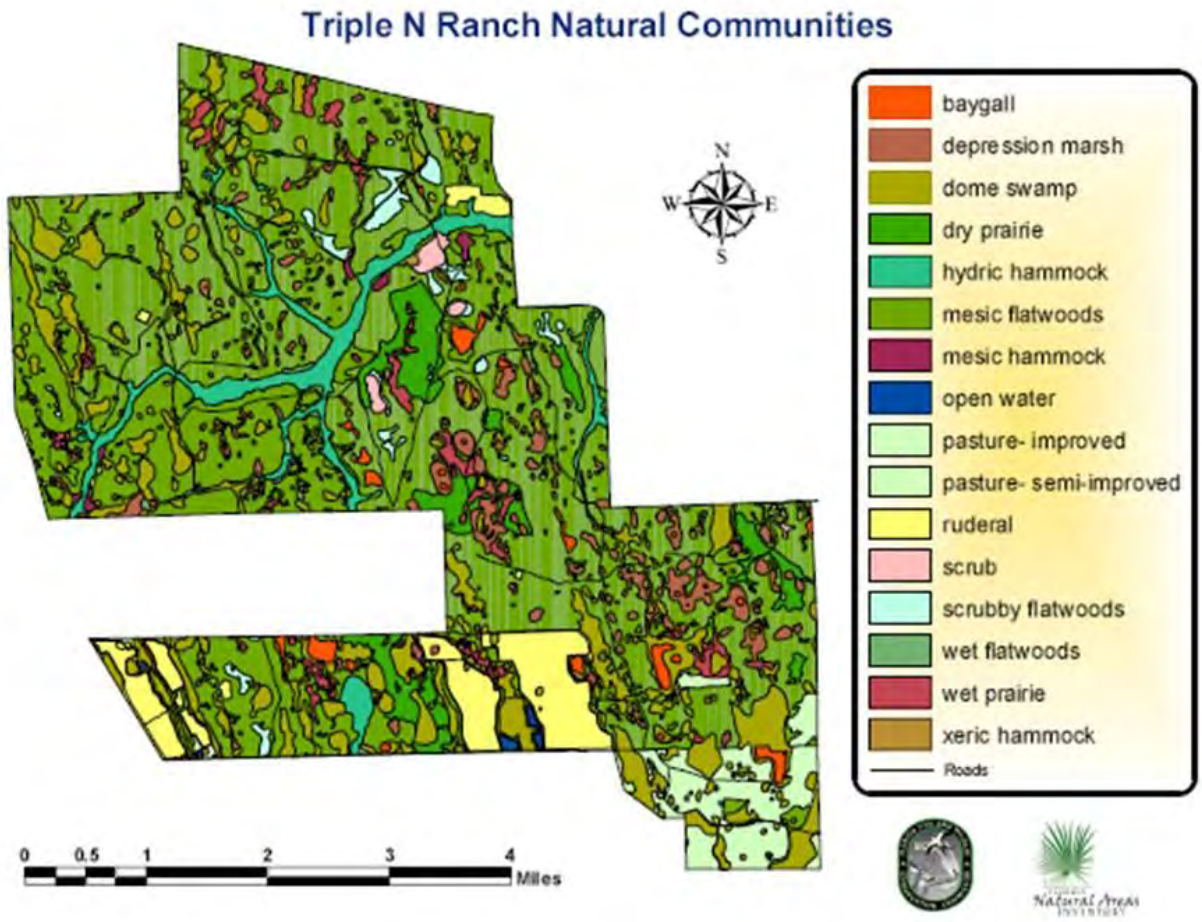


Figure 1: Natural Community map of Triple N Ranch Wildlife Management Area, Osceola County, FL

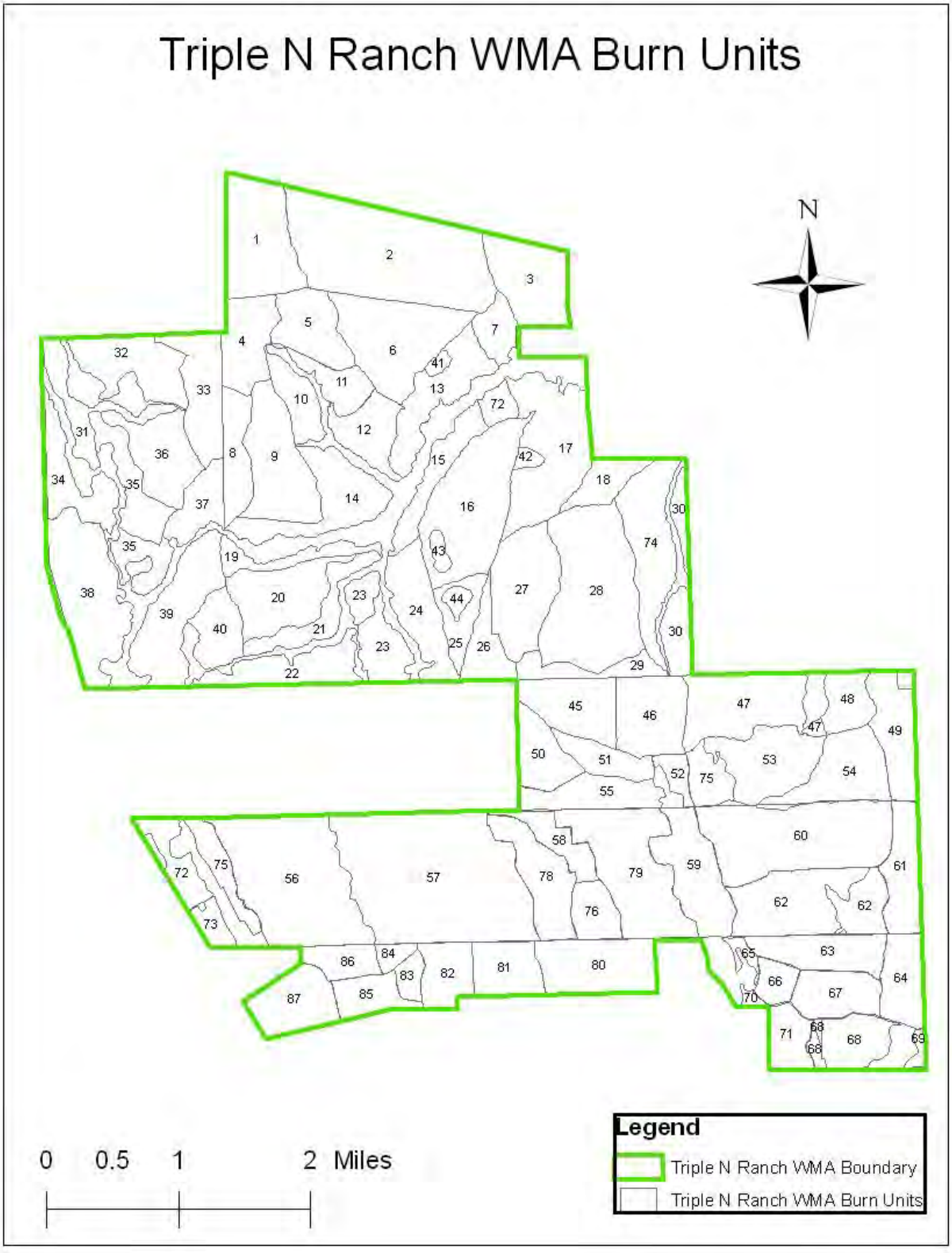


Figure 2: Defined burn units on Triple N Ranch Wildlife Management Area, Osceola County, FL.

Table 1: Number, size, and ten year schedule of burn units for Triple N Ranch Wildlife Management Area, Osceola County, FL.

UNIT	LAST_BURN	ACRES	Predominant Community	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1	3/16/2010	280	Mesic Flatwoods		280		280			280		280	
2	6/10/2009	638	Mesic Flatwoods	638			638		638			638	
3	5/12/2010	212	Mesic Flatwoods		212			212		212			212
4	5/26/2010	159	Mesic Flatwoods		159		159			159			159
5	7/19/2010	162	Mesic Flatwoods	162		162			162			162	
6	6/4/2009	321	Mesic Flatwoods	321		321			321			321	
7	6/22/2010	76	Mesic Flatwoods	76		76		76		76		76	
8	7/18/2011	125	Mesic Flatwoods		125		125		125		125		125
9	5/7/2010	263	Mesic Flatwoods		263			263			263		
10	6/1/2009	100	Mesic Flatwoods	100			100			100		100	
11	6/1/2009	91	Mesic Flatwoods	91			91		91			91	
12	6/1/2009	133	Mesic Flatwoods	133			133			133			133
13	1/27/2010	195	Mesic Flatwoods		195			195			195		
14	6/17/2010	227	Mesic Flatwoods			227		227			227		227
15	8/1/2011	125	Mesic Flatwoods			125		125			125		
16	8/1/2011	378	Dry Prairie		378		378		378		378		378
17	8/5/2011	344	Mesic Flatwoods		344			344			344		344
18	2/3/2011	86	Mesic Flatwoods		86			86		86		86	
19	7/12/2011	81	Mesic Flatwoods		81		81	81		81	81		81
20	6/4/2009	219	Mesic Flatwoods	219		219		219		219		219	
21	6/4/2009	114	Mesic Flatwoods		114		114		114		114		114
22	3/9/2010	167	Mesic Flatwoods		167		167		167		167		167
23	3/9/2010	157	Mesic Flatwoods		157		157		157		157		157
24	7/13/2009	188	Mesic Flatwoods	188		188			188		188		
25	4/30/2010	81	Mesic Flatwoods		81		81			81		81	
26	2/1/2011	100	Mesic Flatwoods		100		100		100		100		100
27	2/1/2011	261	Mesic Flatwoods		261		261		261		261		261
28	6/17/2010	486	Mesic Flatwoods	486		486		486		486		486	
29	6/17/2010	89	Mesic Flatwoods	89		89		89		89		89	
30	5/12/2010	129	Mesic Flatwoods	129		129		129		129		129	
31	5/26/2010	123	Mesic Flatwoods	123		123		123		123		123	
32	5/26/2010	203	Mesic Flatwoods		203			203		203		203	
33	7/18/2011	183	Mesic Flatwoods		183		183		183		183		183
34	1/24/2008	152	Mesic Flatwoods	152		152		152		152		152	
35	5/7/2010	220	Mesic Flatwoods	220			220		220			220	
36	2/18/2011	188	Mesic Flatwoods		188		188		188		188		188
37	7/18/2011	107	Mesic Flatwoods		107		107			107		107	
38	7/26/2011	341	Mesic Flatwoods		341			341			341		341
39	6/3/2010	264	Mesic Flatwoods	264		264			264		264		264
40	6/3/2010	115	Mesic Flatwoods	115		115			115		115		115
41	1/27/2010	15	Srubby Flatwoods	15		15		15		15		15	
42	8/5/2011	17	Srubby Flatwoods		17			17			17		17
43	8/1/2011	22	Srubby Flatwoods		22		22		22		22		22
44	4/30/2010	22	Srubby Flatwoods		22		22			22		22	
45	2/19/2011	185	Mesic Flatwoods		185		185		185		185		185
46	7/20/2011	198	Mesic Flatwoods		198		198		198		198		198
47	1/27/2010	265	Mesic Flatwoods		265		265			265		265	
48	6/18/2009	97	Dry Prairie	97		97		97		97		97	
49	4/16/2010	165	Mesic Flatwoods	165		165		165		165		165	
50	7/12/2011	127	Mesic Flatwoods		127		127		127		127		127
51	6/1/2010	94	Mesic Flatwoods	94		94		94		94		94	
52	3/8/2010	42	Mesic Flatwoods		42		42			42			42
53	3/8/2010	223	Mesic Flatwoods	223		223		223		223		223	
54	6/14/2010	205	Mesic Flatwoods		205			205	205		205		205
55	7/12/2011	144	Mesic Flatwoods		144		144		144		144		144
56	6/10/2009	534	Mesic Flatwoods	534		534		534		534			534
57	6/10/2009	803	Mesic Flatwoods	803		803		803		803			803
58	7/22/2011	90	Wet Prairie		90		90		90		90		90
59	7/22/2011	221	Mesic Flatwoods		221		221		221		221		221
60	6/17/2009	465	Mesic Flatwoods	465		465			465		465		
61	7/31/2009	153	Mesic Flatwoods	153		153		153		153		153	
62	7/24/2009	257	Mesic Flatwoods	257			257		257		257		257
63	3/16/2011	160	Improved Pasture		160		160		160		160		160
64	3/16/2011	132	Improved Pasture		132		132		132		132		132
65	3/16/2011	21	Improved Pasture		21		21		21		21		21
66	3/16/2011	56	Improved Pasture		56		56		56		56		56
67	3/16/2011	138	Improved Pasture		138		138		138		138		138
68	3/16/2011	140	Improved Pasture		120	120		120	120		120	120	
69	3/16/2011	16	Improved Pasture		16	16		16	16		16	16	
70	3/16/2011	12	Improved Pasture		12	12		12	12		12	12	
71	3/16/2011	91	Improved Pasture		91	91		91	91		91	91	
72	8/1/2011	43	Scrub				43					43	
72b	12/23/2008	93	Mesic flatwoods and Ruderal		93		93		93		93		93
73	1/24/2006	48	Mesic Flatwoods (Restored)			48		48		48		48	
74	5/12/2010	257	Mesic Flatwoods	257		257		257		257		257	
75	4/26/2011	81	Mesic Flatwoods			81		81			81	81	
75b	1/9/2009	81	Ruderal		81		81		81		81		81
76	1/26/2009	90	Mesic Flatwoods	90		90		90		90		90	
78	1/26/2009	190	Ruderal	190		190		190		190		190	
79	3/14/2011	366	Ruderal		366		366		366			366	
80	1/20/2011	234	Improved Pasture		234		234		234		234		234
81	1/20/2011	132	Improved Pasture		132		132		132		132		132
82	1/20/2011	119	Improved Pasture		119		119		119		119		119
83	1/20/2011	40	Improved Pasture	40		40		40		40		40	
84	1/20/2011	30	Improved Pasture	30		30		30		30		30	
85	1/20/2011	99	Improved Pasture	99		99		99		99		99	
86	1/20/2011	82	Improved Pasture	82		82		82		82		82	
87	unknown	172	Improved Pasture	172		172		172		172		172	
Total Units				**35**	**48**	**37**	**42**	**41**	**42**	**37**	**45**	**42**	**41**
Total Acres				**7273**	**7335**	**6555**	**6711**	**6986**	**7359**	**6136**	**7235**	**6335**	**7560**

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Appendix A. Natural Community Descriptions from Guide to the Natural Communities of Florida, Florida Natural Area Inventory and Florida Department of Natural Resources, 1990).

Baygall (201 Acres)

Baygalls are generally characterized as densely forested, peat-filled seepage depressions often at the base of sandy slopes. The canopy is composed of tall, densely packed, generally straight-boled evergreen hardwoods dominated by sweetbay, swamp red bay, and loblolly bay. A more or less open understory of shrubs and ferns commonly occurs, while sphagnum mats are often interlaced with the convoluted tree roots. Other typical plants include dahoon holly, Atlantic white cedar, fetterbush, male-berry, myrtle-leaved holly, large gallberry, wax myrtle, odorless wax myrtle, hurrah-bush, doghobble, white alder, possumhaw, red chokeberry, Virginia willow, laurel greenbrier, poison ivy, cinnamon fern, chain fern, wild grape, netted chain fern, sweetgum, cypress, lizard's tail, and needle palm. Typical animals include mole salamander, southern dusky salamander, southern mud salamander, opossum, southeastern shrew, short-tailed shrew, marsh rabbit, black bear, raccoon, southern mink, and bobcat.

Baygalls typically develop at the base of a slope where seepage usually maintains a saturated peat substrate. They may also be located at the edges of floodplains or in other flat areas where high lowland water tables help maintain soil moisture. Baygall soils are generally composed of peat with an acidic pH (3.5 - 4.5).

Since Baygalls rarely dry out enough to burn, the normal fire interval in these communities is probably 50-100 years or more. After a fire, bay trees usually resprout from the roots and replace themselves, but severe fires may change a Baygall into a different community. If only a small amount of surface peat is removed, a Baygall may be replaced by a Wet Flatwoods community. If the ground surface is lowered considerably, willows may invade, followed by a cypress-gum community. With recurrent fire, the site will become a shrub bog. If the subsurface peat does not burn and fire and hydrological regimes are undisturbed, a burned out bay forest may be replaced by a stand of white cedar.

Baygall is often associated with and may grade into Seepage Slope, Floodplain Forest or Floodplain Swamp. The species composition of Baygalls frequently overlaps with Bog, Dome Swamp, Basin Swamp, Strand Swamp, Bottomland Forest, Wet Flatwoods, and Hydric Hammock.

Baygalls are dependent upon seepage flow and a high water table. Alterations in the local or regional hydrology could impact Baygall communities. They may also need fire protection during droughts, especially if water tables are lowered. Baygalls are vulnerable to logging, peat mining, and conversion to agricultural land. When drained, the peat soils are valued

for farming, although they then begin to oxidize and disappear. The renewed interest in mining peat as fuel may place greater pressure on these wetlands.

Depression Marsh (779 Acres)

Depression Marsh is characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation often in concentric bands. Depression Marshes are similar in vegetation and physical features to, but are generally smaller than, Basin Marshes. Typical plants include St. John's wort, spikerush, yellow-eyed grass, chain fern, willows, maidencane, wax myrtle, swamp primrose, bloodroot, buttonbush, fire flag, pickerelweed, arrowheads, and bladderwort.

Larger and more permanent Depression Marshes may have many of the same plants and animals listed as typical of Basin Marshes. However, because of their isolation and small size, many Depression Marshes support a very different assemblage of species than that found in larger, more permanent wetlands. Depression Marshes are considered extremely important in providing breeding or foraging habitat for such species as the flatwoods salamander, mole salamander, tiger salamander, dwarf salamander, striped newt, oak toad, cricket frog, pinewoods treefrog, barking treefrog, squirrel treefrog, little grass frog, southern chorus frog, ornate chorus frog, narrowmouth toad, eastern spadefoot toad, gopher frog, white ibis, wood stork and sandhill crane. Depression Marshes occurring as isolated wetlands within larger upland ecosystems are of critical importance to many additional wetland and upland animals.

Depression Marshes are typical of karst regions where sand has slumped around or over a sinkhole and thereby created a conical depression subsequently filled by direct rain fall, runoff, or seepage from surrounding uplands. The substrate is usually acid sand with deepening peat toward the center. Some depressions may have developed or be maintained by a subsurface hardpan. Hydrological conditions vary, with most Depression Marshes drying in most years. Hydroperiods range widely from as few as 50 days or less to more than 200 days per year.

Fire is important to maintaining this community type by restricting invasion of shrubs and trees and the formation of peat. Fire frequency is often greatest around the periphery of the marsh and least toward the center. A severe peat fire can lower the ground surface and create a pond at the center of the marsh.

Depression Marshes are often associated with and grade into Wet Prairie, Seepage Slope, Wet Flatwoods, Mesic Flatwoods, Dome Swamp or Bog. They also may occur in association with various types of lakes, such as Sandhill Lake or Flatwoods Lake.

Depression Marshes are threatened by drainage, agriculture, pollution, fire suppression, and invasion of exotic species. Depression Marshes may be filled and converted to other uses. A regional lowering of the water table as a result of overuse may eliminate many Depression Marshes. Depression Marshes on some public lands have been deepened by explosives to allow for stocking with game fish. By preying upon the eggs and larvae of frogs and salamanders, these fish may eliminate the amphibians that depend on such seasonal wetlands for successful reproduction. Likewise, many species of invertebrates not adapted to predation by fishes may be eliminated.

Dome Swamp (2171 Acres)

Dome Swamps are characterized as shallow, forested, usually circular depressions that generally present a domed profile because smaller trees grow in the shallower waters at the outer edge, while bigger trees grow in the deeper water in the interior. Pond cypress, swamp tupelo, and slash pine are common plants. Other typical plants include red maple, dahoon holly, swamp bay, sweetbay, loblolly bay, pond apple, Virginia willow, fetterbush, chain fern, netted chain fern, poison ivy, laurel greenbrier, Spanish moss, wild pine, royal fern, cinnamon fern, coastal plain willow, maidencane, orchids, wax myrtle, swamp titi, St. John's wort, sawgrass, lizard's tail, swamp primrose, water hyssop, redroot, sphagnum moss, floating heart, buttonbush, arum, and fire flag. Typical animals include flatwoods salamander, mole salamander, dwarf salamander, oak toad, southern cricket frog, pinewoods treefrog, little grass frog, narrowmouth toad, alligator, snapping turtle, striped mud turtle, mud turtle, eastern mud snake, cottonmouth, woodstork, wood duck, swallow-tailed kite, barred owl, pileated woodpecker, great-crested flycatcher, prothonotory warbler, and rusty blackbird.

Dome Swamps typically develop in sandy flatwoods and in karst areas where sand has slumped around or over a sinkhole, creating a conical depression. Soils are composed of peat, which becomes thickest toward the center of the dome, and are generally underlain with acidic sands and then limestone, although other subsoils may also occur. Some domes have a clay lens that helps retain water levels.

Dome Swamps often derive much of their water through runoff from surrounding uplands, but they may also be connected with underground channels, in which case subterranean flows would dominate the hydrological regime. Dome Swamps generally function as reservoirs that recharge the aquifer when adjacent water tables drop during drought periods. The normal hydroperiod for Dome Swamps is 200 to 300 days per year with water being deepest and remaining longest near the center of the dome.

Fire is essential for the maintenance of a cypress dome community. Without periodic fires, hardwood invasion and peat accumulation would convert the dome to Bottomland Forest or Bog. Dome Swamps dominated by bays are close to this transition. Fire frequency is

greatest at the periphery of the dome and least in the interior where long hydroperiods and deep peat maintain high moisture levels for most of the year. The normal fire cycle might be as short as 3 to 5 years along the outer edge and as long as 100 to 150 years towards the center. The profile of a Dome Swamp (i.e., smaller trees at the periphery and largest trees near the center) is largely attributable to this fire regime. The shorter hydroperiods along the periphery permit fires to burn into the edge more often, occasionally killing the outer trees. Cypress is very tolerant of light surface fires, but muck fires burning into the peat can kill them, lower the ground surface, and transform a dome into a pond.

Dome Swamps may have a Depression Marsh or pond in their center, creating a doughnut appearance when viewed from above. Dome Swamps typically grade into Wet Prairie or Marl Prairie around the periphery, but they may also be bordered by Bottomland Forest or Swale. The species composition of Dome Swamps frequently overlaps with Strand Swamp, Wet Flatwoods, Basin Swamp, Baygall, Floodplain Swamp, and Freshwater Tidal Swamp.

Normal hydroperiods must be maintained. Somewhat deeper than normal water levels are not likely to do much harm, but extended hydroperiods will limit tree growth and prevent reproduction. Shortened hydroperiods will permit the invasion of mesophytic species, which will change the character of the understory and eventually allow hardwoods to replace cypress. Dome Swamps may also be degraded by pollution and the invasion of exotic plants.

Dry Prairie (654 Acres)

Dry Prairie is characterized as a nearly treeless plain with a dense ground cover of wiregrass, saw palmetto, and other grasses, herbs, and low shrubs. Other typical plants include broomsedge, carpet grass, runner oak, Indian grass, love grass, blazing star, rabbit tobacco, pine lily, marsh pink, milkwort, goldenrod, musky mint, pawpaw, dwarf wax myrtle, gallberry, stagger bush, fetterbush, and dwarf blueberry. Typical animals include box turtle, six-lined racerunner, black racer, coachwhip, turkey vulture, crested caracara, bobwhite, sandhill crane, burrowing owl, loggerhead shrike, meadowlark, grasshopper sparrow, least shrew, cotton rat, harvest mouse, spotted skunk, and bobcat.

Dry Prairie occurs on relatively flat, moderately to poorly drained terrain. The soils typically consist of 1 to 3 feet of acidic sands generally overlying an organic hardpan or clayey subsoil. The hardpan substantially reduces the movement of water below and above its surface, such that Dry Prairies may become flooded for short periods during rainy seasons. The normal water table, however, is several inches to several feet below the surface. Dry Prairie is very similar to Mesic Flatwoods in most respects, except that pines and palms are absent or at a density below one tree per acre.
The natural fire frequency in Dry Prairies appears to be every 1 to 4 years, which averages slightly more frequent than generally occurs in Mesic Flatwoods. The higher frequency of

fire is probably the primary factor that limits pine recruitment in this community. Some authorities suggest that fire every 1 to 4 years is unnaturally high and an artifact of human intervention; i.e., they suggest that Dry Prairie is not a natural biological community. Other authorities disagree and suggest that Dry Prairies were at one time more widespread. Further research is necessary to solve this controversy.

Dry Prairie is closely associated with and often grades into Wet Prairie or Mesic Flatwoods. Some Mesic Flatwoods differ only in having a pine overstory, and when timbered are often difficult to distinguish from Dry Prairies. Many of the plants and animals occurring in Dry Prairies also occur in Scrubby Flatwoods, Mesic Flatwoods, Sandhill, and Coastal Grassland.

Dry Prairies are apparently endemic to Florida and largely confined to a few regions of the state. Most representatives of this community have been converted to farm fields or citrus groves. The few remnants of Dry Prairie are disappearing rapidly. Because Dry Prairie is an important habitat for several animals that occur nowhere else in the eastern United States (e.g., caracara and burrowing owl), the preservation of existing tracts through appropriate management is paramount.

Hydric Hammock (628 Acres)

Hydric Hammock is characterized as a well developed hardwood and cabbage palm forest with a variable understory often dominated by palms and ferns. Typical plants include cabbage palm, diamond-leaf oak, red cedar, red maple, swamp bay, sweetbay, water oak, southern magnolia, wax myrtle, saw palmetto, bluestem palmetto, needle palm, poison ivy, dahoon holly, myrsine, hackberry, sweetgum, loblolly pine, Florida elm, swamp chestnut oak, American hornbeam, Walter viburnum, royal fern, peppervine, rattanvine, yellow jessamine, and Virginia creeper. Typical animals include green anole, flycatchers, warblers, and gray squirrel.

Hydric Hammock occurs on low, flat, wet sites where limestone may be near the surface and frequently outcrops. Soils are sands with considerable organic material that, although generally saturated, are inundated only for short periods following heavy rains. The normal hydroperiod is seldom over 60 days per year. Because of their generally saturated soils and the sparsity of herbaceous ground cover, Hydric Hammocks rarely burn.

Hydric Hammock occurs as patches in a variety of lowland situations, often in association with springs or karst seepage, and in extensive forests covering lowlands just inland of coastal communities. Hydric Hammock generally grades into Floodplain Swamp, Strand Swamp, Basin Swamp, Baygall, Wet Flatwoods, Coastal Berm, Maritime Hammock, Slope Forest, Upland Mixed Forest, or Upland Hardwood Forest. Hydric Hammock is often difficult to differentiate from Bottomland Forest, Prairie Hammock, and Floodplain Forest.

The normal hydrological regime must be maintained in Hydric Hammock. If the water table is lowered, Hydric Hammock will gradually change to mesic conditions. If the hammock is flooded, many trees will die and eventually be replaced by more hydrophytic species.

Mesic Flatwoods (8717 Acres)

Mesic Flatwoods are characterized as an open canopy forest of widely spaced pine trees with little or no understory but a dense ground cover of herbs and shrubs. Several variations of Mesic Flatwoods are recognized, the most common associations being longleaf pine - wiregrass - runner oak and slash pine - gallberry - saw palmetto. Other typical plants include: St. Johns-wort, dwarf huckleberry, fetterbush, dwarf wax myrtle, stagger bush, blueberry, gopher apple, tar flower, bog buttons, blackroot, false foxglove, white-topped aster, yellow-eyed grass, and cutthroat grass. Typical animals of Mesic Flatwoods include: oak toad, little grass frog, narrowmouth toad, black racer, red rat snake, southeastern kestrel, brown-headed nuthatch, pine warbler, Bachman's sparrow, cotton rat, cotton mouse, black bear, raccoon, gray fox, bobcat, and white-tailed deer.

Mesic Flatwoods occur on relatively flat, moderately to poorly drained terrain. The soils typically consist of 1-3 feet of acidic sands generally overlying an organic hardpan or clayey subsoil. The hardpan substantially reduces the percolation of water below and above its surface. During the rainy seasons, water frequently stands on the hardpan's surface and briefly inundates much of the flatwoods; while during the drier seasons, ground water is unobtainable for many plants whose roots fail to penetrate the hardpan. Thus, many plants are under the stress of water saturation during the wet seasons and under the stress of dehydration during the dry seasons.

Another important physical factor in Mesic Flatwoods is fire, which probably occurred every 1 to 8 years during pre-Columbian times. Nearly all plants and animals inhabiting this community are adapted to periodic fires; several species depend on fire for their continued existence. Without relatively frequent fires, Mesic Flatwoods succeed into hardwood-dominated forests whose closed canopy can essentially eliminate the ground cover herbs and shrubs. Additionally, the dense layer of litter that accumulates on unburned sites can eliminate the reproduction of pines which require a mineral soil substrate for proper germination. Thus, the integrity of the Mesic Flatwoods community is dependent on periodic fires. However, fires that are too frequent or too hot would eliminate pine recruitment and eventually transform Mesic Flatwoods into Dry Prairie.

Mesic Flatwoods are closely associated with and often grade into Wet Flatwoods, Dry Prairie, or Scrubby Flatwoods. The differences between these communities are generally

related to minor topographic changes. Wet Flatwoods occupy the lower wetter areas, while Scrubby Flatwoods occupy the higher drier areas.

Mesic Flatwoods are the most widespread biological community in Florida, occupying an estimated 30 to 50% of the state's uplands. However, very few undisturbed areas of Mesic Flatwoods exist because of habitat mismanagement and silvicultural, agricultural, or residential development. Mesic Flatwoods are often fairly resilient, and with proper management they can generally be restored.

Scrub (79 Acres)

Scrub occurs in many forms, but is often characterized as a closed to open canopy forest of sand pines with dense clumps or vast thickets of scrub oaks and other shrubs dominating the understory. The ground cover is generally very sparse, being dominated by ground lichens or, rarely, herbs. Open patches of barren sand are common. Where the overstory of sand pines is widely scattered or absent altogether, the understory and barren sands are exposed to more intense sunlight. Typical plants include sand pine, sand live oak, myrtle oak, Chapman's oak, scrub oak, saw palmetto, rosemary, rusty lyonia, ground lichens, scrub hickory, scrub palmetto, hog plum, silk bay, beak rush, milk peas, and stagger bush. Typical animals include red widow spider, scrub wolf spider, oak toad, Florida scrub lizard, blue-tailed mole skink, sand skink, six-lined racerunner, coachwhip, ground dove,scrub jay, loggerhead shrike, yellow-rumped warbler, rufous-sided towhee, Florida mouse, and spotted skunk. Scrubs of the Lake Wales Ridge are notable for the large number of narrowly endemic plants and animals that occur in them.

Scrub occurs on sand ridges along former shorelines. Some of the sand ridges originated as winddeposited dunes, others as wave-washed sand bars. Some Scrub soils are composed of well-washed, deep sands that are brilliant white at the surface; some Scrubs occur on yellow sands. The loose sands drain rapidly, creating very xeric conditions for which the plants appear to have evolved several water conservation strategies.

Scrub is essentially a fire maintained community. Ground vegetation is extremely sparse and leaf fall is minimal, thus reducing the chance of frequent ground fires. As the sand pines mature, however, they retain most of their branches and build up large fuel supplies in their crowns. When a fire does occur, this fuel supply, in combination with the resinous needles and high stand density, ensures a hot, fast burning fire. Such fires allow for the regeneration of the Scrub community which might otherwise succeed to Xeric Hammock. The minerals in the vegetation are deposited on the bare sand as ashes, and the heat of the fire generally facilitates the release
of pine seeds. As discerned from the life histories of the dominant plants, scrub probably burns catastrophically once every 20 to 80 years or longer.

Scrub is associated with and often grades into Sandhill, Scrubby Flatwoods, Coastal Strand, and Xeric Hammock. Some Xeric Hammocks are advanced successional stages of Scrub, making intermediate stages difficult to classify. Scrub occurs almost exclusively in Florida, although coastal scrubs extend into adjacent Alabama and Georgia.

Because Scrub occurs on high dry ground and is not an aesthetically pleasing habitat, at least to the uninitiated, this ecosystem and its many endangered and threatened species are rapidly being lost to development. Scrub is also readily damaged by off-road vehicle traffic or even foot traffic, which destroys the delicate ground cover and allows the loose sand to erode. Ground lichens may require 50 years or more to recover.

Scrubby Flatwoods (235 Acres)

Scrubby Flatwoods are characterized as an open canopy forest of widely scattered pine trees with a sparse shrubby understory and numerous areas of barren white sand. The vegetation is a combination of Scrub and Mesic Flatwoods species; Scrubby Flatwoods often occupy broad transitions or ecotones between these communities. Typical plants include longleaf pine, slash pine, sand live oak, Chapman's oak, myrtle oak, scrub oak, saw palmetto, staggerbush, wiregrass, dwarfblueberry, gopher apple, rusty lyonia, tarflower, golden-aster, lichens, silkbay, garberia, huckleberry, goldenrod, runner oak, pinweeds, and frostweed.

Scrubby Flatwoods generally occur intermingled with Mesic Flatwoods along slightly elevated relictual sandbars and dunes. The white sandy soil is several feet deep and drains rapidly. However, the water table is unlikely to be very deep. Scrubby Flatwoods normally do not flood even under extremely wet conditions. Temperatures and humidities of air and soil in Scrubby Flatwoods fluctuate substantially more than in most other communities because the scattered overstory, sparse understory, and barren sands of Scrubby Flatwoods do not ameliorate daily and seasonal changes very well.

Although the elevated, deeper sandy soils of scrubby flatwoods engender a drier environment than the surrounding mesic flatwoods, the general sparsity of ground vegetation and the greater proportion of relatively incombustible scrub-oak leaf litter reduces the frequency of naturally occurring fires. Only after a long absence of fire and during periods of drought does the leaf litter become sufficiently combustible and concentrated enough to support an ecological burn. Several species of plants in Scrubby Flatwoods are typical scrub plants which endure only when long intervals between fires occur. Thus, a periodicity of approximately 8 to 25 years between fires appears to be natural for this community.

Scrubby Flatwoods are associated with and often grade into Mesic Flatwoods, Scrub, Dry Prairie or Sandhills. This community is essentially a Mesic Flatwoods with a Scrub understory.

Wet Flatwoods (45 Acres)

Wet Flatwoods are characterized as relatively open-canopy forests of scattered pine trees or cabbage palms with either thick shrubby understory and very sparse ground cover, or a sparse understory and a dense ground cover of hydrophytic herbs and shrubs. Several variations exist between these extremes. Typical plants include pond pine, slash pine, sweetbay, spikerush, beakrush, sedges, dwarf wax myrtle, gallberry, titi, saw palmetto, creeping beggarweed, deer tongue, gay feather, greenbrier, bluestem, and pitcher plants. Typical animals include oak toad, cricket frog, chorus frog, black racer, yellow rat snake, diamondback rattlesnake, pygmy rattlesnake, red-shouldered hawk, bobwhite, opossum, cottontail rabbit, cotton rat, cotton mouse, raccoon, striped skunk, bobcat, and white-tailed deer.

Wet Flatwoods occur on relatively flat, poorly drained terrain. The soils typically consist of 1 to 3 feet of acidic sands generally overlying an organic hardpan or clay layer. Cabbage palm flatwoods tend to occur on more circumneutral sands (pH 6.0 - 7.5) underlain by marl or shell beds. The hardpan substantially reduces the percolation of water below and above its surface. During the rainy season, water frequently stands on the surface, inundating the flatwoods for 1 or more months per year. During the drier seasons, ground water is less accessible for many plants whose roots fail to penetrate the hardpan. Thus, many plants are under the stress of water saturation during the wet seasons, and under the stress of dehydration during the dry seasons.

Another important physical factor in Wet Flatwoods is fire. Natural fires probably occurred every 3 to 10 years during pre-Columbian times. Nearly all plants and animals inhabiting this community are adapted to periodic fires, and several species depend on fires for their continued existence. Without relatively frequent fires, Wet Flatwoods succeed into hardwood dominated forests whose closed canopy would essentially eliminate the ground cover herbs and shrubs. In fact, much of the variation in community structure is probably associated with fire frequency. Thus, the longer the period of time since the last fire, the more developed will be the understory shrubs. If the understory is allowed to grow for too long, the accumulation of needle drape and the height of flammable understory shrubs will increase the probability of a catastrophic canopy fire.

Wet Flatwoods are closely associated with and often grade into Hydric Hammock, Mesic Flatwoods, Wet Prairie, or Basin Swamp. Wet Flatwoods may also grade into Dome Swamp or Strand Swamp, but the absence of a Wet Prairie ecotone suggests that the hydrology has been disturbed.

Although Wet Flatwoods may have been an abundant biological community of the Coastal Plain at one time, examples with an intact overstory and understory, without exotics, and with the potential for future maintenance by fire are rare. They are relatively resilient to overstory damage but recover poorly when the ground cover or hydrology has been disturbed. Wet Flatwoods are vulnerable to disruptions of fire and hydrological regimes. Exotic plants readily invade Wet Flatwoods in south Florida and must be controlled promptly.

Wet Prairie (511 Acres)

Wet Prairie is characterized as a treeless plain with a sparse to dense ground cover of grasses and herbs, including wiregrass, toothache grass, maidencane, spikerush, and beakrush. Other typical plants include hatpins, marsh pinks, crownbeard, sundews, black-eyed susan, stargrass, white-top sedge, meadowbeauty, yellow-eyed grass, sneezeweed, sunflower, wax myrtle, pitcher plants, tickseed, St. John's wort, and panicums. Typical animals include cricket frog, chorus frog, little grass frog, black racer, yellow rat snake, cottonmouth, pygmy rattlesnake, northern harrier, caracara, southeastern kestrel, killdeer, long-billed marsh wren, red-winged blackbird, marsh rabbit, cotton rat, and cotton mouse.

Wet Prairie occurs on low, relatively flat, poorly drained terrain of the coastal plain. Soils typically consist of sands often with a substantial clay or organic component. The most important physical factors are hydrology and fire. Wet Prairie is seasonally inundated or saturated for 50 to 100 days each year and burns every 2 to 4 years. Wax myrtle quickly invades and will dominate Wet Prairies with longer fire intervals. In south Florida, melaleuca invasions can seriously impact Wet Prairies. Generally, Wet Prairies have a much shorter hydroperiod than other herbaceous wetlands and are subject to regular and prolonged desiccation during the dry season due to their flat topography.

Wet Prairie is closely associated with and often grades into Wet Flatwoods, Depression Marsh, Seepage Slope, Mesic Flatwoods, or Dry Prairie. Several other biological communities have somewhat similar species compositions or overlap in characteristics, including Swale, Seepage Slope, Basin Marsh, Floodplain Marsh, and Marl Prairie.

Wet Prairies were probably common throughout the Coastal Plain at one time. Few good quality, intact examples remain and some types, e.g. pitcher plant prairies, are becoming increasingly rarer. Wet Prairie is vulnerable to hydrological and fire regime alterations, overgrazing, and soil disturbances by off-road vehicles. Recovery from disturbances is often poor and slow.

Xeric Hammock (7 Acres)

Xeric Hammock is characterized as either a scrubby, dense, low canopy forest with little understory other than palmetto, or a multi-storied forest of tall trees with an open or closed canopy. Several gradations between these extremes exist. Typical plants include live oak, sand live oak, laurel oak, turkey oak, blackjack oak, red oak, sand post oak, staggerbush, saw palmetto, sparkleberry, pignut hickory, southern magnolia, redbay, American holly, wild olive, black cherry, fox grape, beautyberry, bluejack oak, Chapman's oak, persimmon, and yaupon. Typical animals include barking treefrog, spadefoot toad, gopher tortoise, worm lizard, fence lizard, black racer, red rat snake, hognose snake, crowned snake, screech-owl, turkey, blue jay, eastern mole, gray squirrel, and eastern flying squirrel.

Xeric Hammock is an advanced successional stage of Scrub or Sandhill. The variation in vegetation structure is predominantly due to the original community from which it developed. In all cases, however, the soils consist primarily of deep, excessively-drained sands that were derived from old dune systems. The sparsity of herbs and the relatively incombustible oak litter preclude most fires from invading Xeric Hammock. When fire does occur, it is nearly always catastrophic and may revert Xeric Hammock into another community type. Xeric Hammock only develops on sites that have been protected from fire for 30 or more years.

Xeric Hammocks are often associated with and grade into Scrub, Sandhill, Upland Mixed Forest or Slope Forest. The species composition of Xeric Hammock is also often similar to Prairie Hammock and Maritime Hammock. Xeric Hammock is often considered the climax community on sandy uplands.

Xeric Hammock occurs generally as isolated patches that rarely cover extensive areas. Mature examples are rare, and scrub derived types have always been scarce. Because of its general location on high ground with big trees, Xeric Hammock is prime residential property, especially when near the coast. Remaining tracts of Xeric Hammock require protection from fire and development.

APPENDIX B

DIVISION OF HABITAT AND SPECIES CONSERVATION
Internal Operating Policy
Revised March 2011

Subject: **Prescribed Burning and Wildfire Suppression Standards**

Policy:

The following policy shall apply to all Division of Habitat and Species Conservation (DHSC) employees engaged in prescribed burning or wildfire suppression activities.

General Guidelines:

This policy establishes minimum standards for participation in prescribed burning and wildfire suppression activities. In addition to conducting prescribed burning on Commission-managed lands, DHSC employees are periodically asked to assist the Florida Division of Forestry with wildland fire suppression efforts, particularly during declared wildfire emergencies. Working on prescribed fires or wildfires is an inherently dangerous and risky activity that can result in significant property damage, personal injury, or loss of life. Therefore, it is necessary to establish minimum standards for training and certification to insure DHSC employees have the appropriate skills and knowledge to perform these activities safely and effectively. Employees are encouraged to obtain higher levels of training and certification as warranted and approved through supervisory channels.

Chapter 1 Prescribed Burning

1.1 Prescribed Burn Participation: This section establishes minimum training, certification, and experience required for members of a prescribed burn team. These same standards apply to non-DHSC employees, volunteers, and contractors participating on a burn on FWC-managed state lands.

A. Crew Member Trainee: Employees who do not meet the requirements for Crew Member shall be classified as a Crew Member Trainee. A Crew Member Trainee may participate in prescribed burning activities provided that they are under the direct supervision of a Crew Member. A Crew Member may supervise no more than one Crew Member Trainee. It is recommended that no more than 40% of the burn crew be Crew Member Trainees.

   Note: Crew members may supervise more than one Crew Member Trainee, and more than 40% of the burn crew may be Crew Member Trainees during prescribed burns conducted during training classes.

B. Crew Member: May participate independently in prescribed burning activities. Shall have successfully completed the following level of training:

1) Interagency Basic Prescribed Fire Course; ***or***
2) Basic Wildland Firefighter Training (S-130) **and** Introduction to Wildland Fire Behavior (S-190).

C. Burn Manager Trainee: May serve as burn manager to fulfill the responsibilities of acquiring certified prescribed burn manager status. Burn Manager Trainee must be under the direct supervision of a Certified Burn Manager on prescribed burns that will be used to qualify them for certified prescribed burn manager status. Shall have successfully completed the following level of training and have the specified level of experience:

1) Interagency Basic Prescribed Fire Course;
2) S-130/S-190; ***and***
3) Participated on at least five prescribed burns.

D. Certified Burn Manager: May request prescribed burn authorizations and serve as burn manager. Shall have successfully completed the following level of training, and have the specified certification and level of experience:

1) Interagency Basic Prescribed Fire Course;
2) S-130/S-190;
3) Prescribed Burn Manager Certification; ***and***
4) Participated on at least ten prescribed burns.

1.2 Prescribed Burn Engine (Pumper Unit/Brush Truck) Operator: Before an employee may independently operate a water-delivery engine in support of active prescribed burns, they shall have successfully completed the following level of training and have the specified level of experience:

A. S-130/S-190;
B. On-the-job training for operation of water-delivery engines by a trained and/or experienced engine operator; ***or*** successful completion of Southern Area Engine Academy or Engine Operator (PMS 419); ***and***
C. Participated on at least five prescribed burns.

1.3 Prescribed Burn Tractor/Bulldozer Plow Unit Operator: Before an employee may independently operate tractor/dozer fire-plow during prescribed burns, they shall have successfully completed the following level of training and have the specified level of experience:

A. The wildland fire portion of Basic Fire Control Training; ***and***
B. Participated on at least five prescribed burns.

1.4 Prescribed Burn Aerial Ignition Dispenser (AID) Operator: Before an employee may independently operate an AID during a prescribed burn, they shall have successfully completed the following level of training and have the specified level of experience:

A. Qualified at or above Crew Member level for prescribed burning;
B. Completed an FWC AID training workshop or other courses that provide an equivalent level of training; ***and***
C. Participated on at least five prescribed burns.

1.5 General: All prescribed burns shall be conducted in complete compliance with all laws regulating the use of prescribed fire; specifically Chapter 590.125(3) F.S. and Chapter 5I-2 F.A.C. Burn plans shall have all the required elements as specified in Chapter 5I-2.006 as well as a contingency plan, mop-up standards, and standards for declaring the fire out. All prescribed burns shall be conducted as a certified prescribed burn, and managed by a certified prescribed burn manager.

Chapter 2 Wildfire Suppression

2.1 General: The Division of Forestry, or other firefighting entity, may request assistance from DHSC staff during a wildfire suppression incident. This request will usually be for a wildfire strike team. A wildfire strike team consists of one wildfire strike team leader, and two wildfire strike team members per Type V or VI engine. Standards for strike team members and leaders are outlined below. In addition, requests may be made for personnel to fill positions on a suppression incident that are not covered by the following standards. The decision to assist, and the level of assistance provided, on fire suppression incidents will be made by DHSC leadership (includes Division Director, Deputy Division Director, Section Leaders and/or Assistant Section Leaders) and the Wildland Fire Coordinator.

2.2 Wildfire Strike Team Member: Before an employee may participate on wildfire strike teams in support of wildfire suppression efforts, they shall have successfully completed the following level of training and have the specified level of experience:

A. S-130/S-190;
B. Southern Area Engine Academy;
C. Experience and demonstrated proficiency operating a Type V or VI engine; ***and***
D. Participated on at least ten prescribed burns and/or wildfire suppression incidents.

* Exception - Employees who do not meet the above standards can be approved by DHSC leadership and the Wildland Fire Coordinator to serve on a wildfire strike team. Exceptions can be granted when available strike team personnel are not sufficient to meet the requested need. Training and experience levels should be considered when approving exceptions.

2.3 Wildfire Strike Team Leader: Before an employee may serve as team leader for wildfire strike teams in support of wildfire suppression efforts, they shall have completed the following

level of training and have the specified level of experience **in addition to that required to participate on a wildfire strike team:**

A. Basic Incident Command System (I-200); ***and***
B. Experience as burn manager, crew boss, or strike team leader on at least ten prescribed burns or wildfire suppression incidents.

2.4 Wildfire Tractor/Bulldozer Plow Unit Operator: Before an employee may independently operate tractor/dozer fire-plow units in support of wildfire suppression efforts, they shall have completed the following level of training and have the specified level of experience:

A. The wildland fire portion of Basic Fire Control Training;
B. Experience and demonstrated proficiency operating a tractor/bulldozer plow unit; ***and***
C. Participated on at least ten prescribed burns or wildfire suppression incidents.

Chapter 3 Safety

3.1 Personal Protective Equipment: Required items of Personal Protective Equipment for all wildland fire activities include:

- Flame Resistant Shirt and Pants, or Jumpsuit
- Wildland Fire Hard Hat
- Leather Gloves
- Leather Boots – 8" Lace-up
- Eye Protection
- Bandana or Dust Mask
- Hand-held Radio
- Fire Shelter

Safety considerations and/or vegetative types may dictate that crew members wear additional equipment or in some cases deviate from the above required equipment. The burn manager/strike team leader shall determine what Personal Protective Equipment will be worn by their crew to maximize safety, and shall document justifications for any deviations of the required equipment.

3.2 Physical Standards: Prescribed burning and firefighting are physically demanding activities. Each prescribed burn crew/strike team member shall maintain a level of fitness that will allow full participation in these activities. It is the burn crew/strike team member's responsibility to make the burn manager/strike team leader aware of any limitations that may restrict their activities so that they can be assigned an appropriate role.

3.3 Mobile Equipment: The following is a list of required items for mobile equipment used during wildland fire activities. Mobile equipment includes all-terrain vehicles, utility vehicles, airboats, swamp buggies, trucks, tractors, and bulldozers.

- An ABC fire extinguisher that has been inspected, serviced, and maintained in accordance with the manufacturer's maintenance procedures shall be in or on all mobile equipment. Below are minimum sizes:
  - All-terrain and utility vehicles – 2.5 pound extinguisher
  - Trucks and tractors – 5 pound extinguisher
  - Bulldozers and Swamp Buggies– 10 pound extinguisher
  - Vessels – 5 pounds (could be two, 2.5 pound extinguishers)
- An operational winch shall be installed on all-terrain vehicles, utility vehicles, swamp buggies, and trucks used in the interior of a burn unit.
- An operational water delivery system with at least five gallons of water shall be installed in or on any mobile equipment used in the interior of a burn unit.

Chapter 4 Incident Reviews

4.1 Incident Reviews: This section outlines a mechanism for how DHSC will respond to and review a prescribed fire that had unintended negative consequences. The purpose of a fire-related incident review is to gather facts regarding the incident, and if necessary, recommend actions that may help minimize the chance of reoccurrence.

4.2 Fire-related Incident: A fire or smoke related incident that includes any of the following:

A. Notice of Violation;
B. Conducting a burn outside of the prescription;
C. Fire leaves the prescribed burn area;
D. Fire leaves the WMA or WEA; or
E. Fire causes property damage, personal injury, or loss of life.

4.3 Reporting of Fire-related Incidents: The burn manager shall notify their Regional Wildlife Management Biologist as soon as possible but no later than 8:00 am the day after the fire-related incident occurred. The Regional Wildlife Management Biologist shall notify THCR leadership and the Wildland Fire Coordinator of the incident as soon as possible. The notification should include the following:

A. Date, Time and Location of Incident
B. Brief Description of the Incident and Current Status
C. Other Agencies or Entities Assisting

THCR leadership will notify Division leadership and the Executive and Assistant Executive Director of any incidents involving escapes from the WMA, escapes requiring unplanned

suppression assistance, or any incidents resulting in private property damage or injury to a member of the public.

4.4 Fire-related Incident Review: A review of a fire-related incident initiated by the Wildland Fire Coordinator resulting in a written finding of facts and recommendations. The following guidelines should be used to determine the type of review conducted:

A. No Review – No review is required if the prescribed fire escaped from the burn unit, stayed on the WMA/WEA, and was suppressed. These incidents, however, need to be reported to the Regional Wildlife Management Biologist and the Wildland Fire Coordinator if Division of Forestry or other entity assisted with suppression efforts.
B. Level 1 Review – Review to be conducted by the Wildland Fire Coordinator or alternate if one or more of the following occurred and no Level 2 review criteria were met:
   1) A Notice of Violation was issued to the burn manager.
   2) Motorized equipment was damaged requiring the completion of an Equipment Damage Report.
   3) A Level 1 review is requested by DHSC leadership.
C. Level 2 Review – Review to be conducted by the Wildland Fire Coordinator or alternate, and one representative from at least three of the administrative regions if one or more of the following occur:
   1) Prescribed fire escaped from the burn unit and from the WMA/WEA.
   2) Injury or private property damage resulted from the fire or smoke. If an injury occurs to a member of the burn crew, the need to convene a review team will be determined by DHSC leadership.
   3) A Level 2 review is requested by DHSC leadership.

4.5 Fire-related Incident Report: Within 45 days of completing a Fire-related Incident Review, the Wildland Fire Coordinator shall submit a report to DHSC leadership for approval. The report should include: 1) a summary of the incident; 2) a review of the weather forecast and observed weather conditions; 3) a review of the burn prescription; 4) a summary of the execution of the burn and the suppression of the escape, if applicable; and 5) recommendations for future burns. After being approved, the report will be made available to appropriate personnel via e-mail and by being posted on the Terrestrial Habitat and Conservation's Wildland Fire Sharepoint site.

Approved: Signature on File

Division Director or Designee
Division of Habitat & Species Conservation
Florida Fish and Wildlife Conservation Commission

3-2-2011
Date

6

Recreation Master Plan
for
Triple N Ranch WMA

Florida Fish and Wildlife Conservation Commission

Office of Public Access and
Wildlife Viewing Services

April 2012

Triple N Ranch Wildlife Management Area
Recreation Master Plan

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I. Introduction

Purpose of Plan/Planning Process

This Recreation Master Plan serves as a guide for providing fish and wildlife recreational and educational experiences on Triple N Ranch Wildlife Management Area (Triple N). The RMP contains specific recommendations for recreational enhancements and educational products and programs. It also provides guidelines for monitoring recreation-related use to ensure resource protection and meaningful visitor experiences. The plan was developed by the Florida Fish and Wildlife Conservation Commission (FWC) Office of Public Access and Wildlife Viewing Services (PAWV) in collaboration with Triple N Field Staff with input from other FWC divisions and a Technical Assistance Group of recreational stakeholders (Appendix 1). An online survey (Appendix 2) was conducted to provide additional public input to the planning process.

Location

(Figure 1)

Triple N protects a total of 16,295 acres of flatwoods, swamps, prairies, and hammocks in central Osceola County. The property is a key part of a mosaic of public lands that protects the ecology of the region and helps to provide a linkage between the St. Johns River, the Kissimmee River, and the Lake Wales Ridge. Triple N supports a diversity of wildlife populations that provides opportunities for hunting, fishing and wildlife viewing. A network of roads and trails accommodates bicyclists, hikers, horseback riders, and other recreationists.

II. Resource Inventory

Topography and Hydrology

Triple N is relatively flat with a difference in elevation of approximately 35 feet between the higher areas and the creek bottoms. Crabgrass Creek flows west to east through the northern part of the WMA and is fed by several smaller branches and sloughs. Crabgrass Creek then flows through Herky Huffman/Bull Creek WMA to Jane Green Creek and the St. Johns River basin. The topography is suitable for easy to moderate hiking, but sandy soils and periodic flooding can make the experience more strenuous at times. There are no paddling opportunities due to variable water levels and creek obstructions.

Natural Communities

(Figure 2)

Mesic flatwoods are by far the most prevalent natural community on Triple N, comprising 50% of the WMA. Dome swamps (cypress domes) are the next most common community at 13% and are a common component of the flatwoods and prairie ecosystems of central Florida. Pasture (a remnant of cattle ranching) is 8% and each of the remaining 10 natural communities on the WMA represent 5% or less of the WMA. Six represent 1% or less of the area. Despite

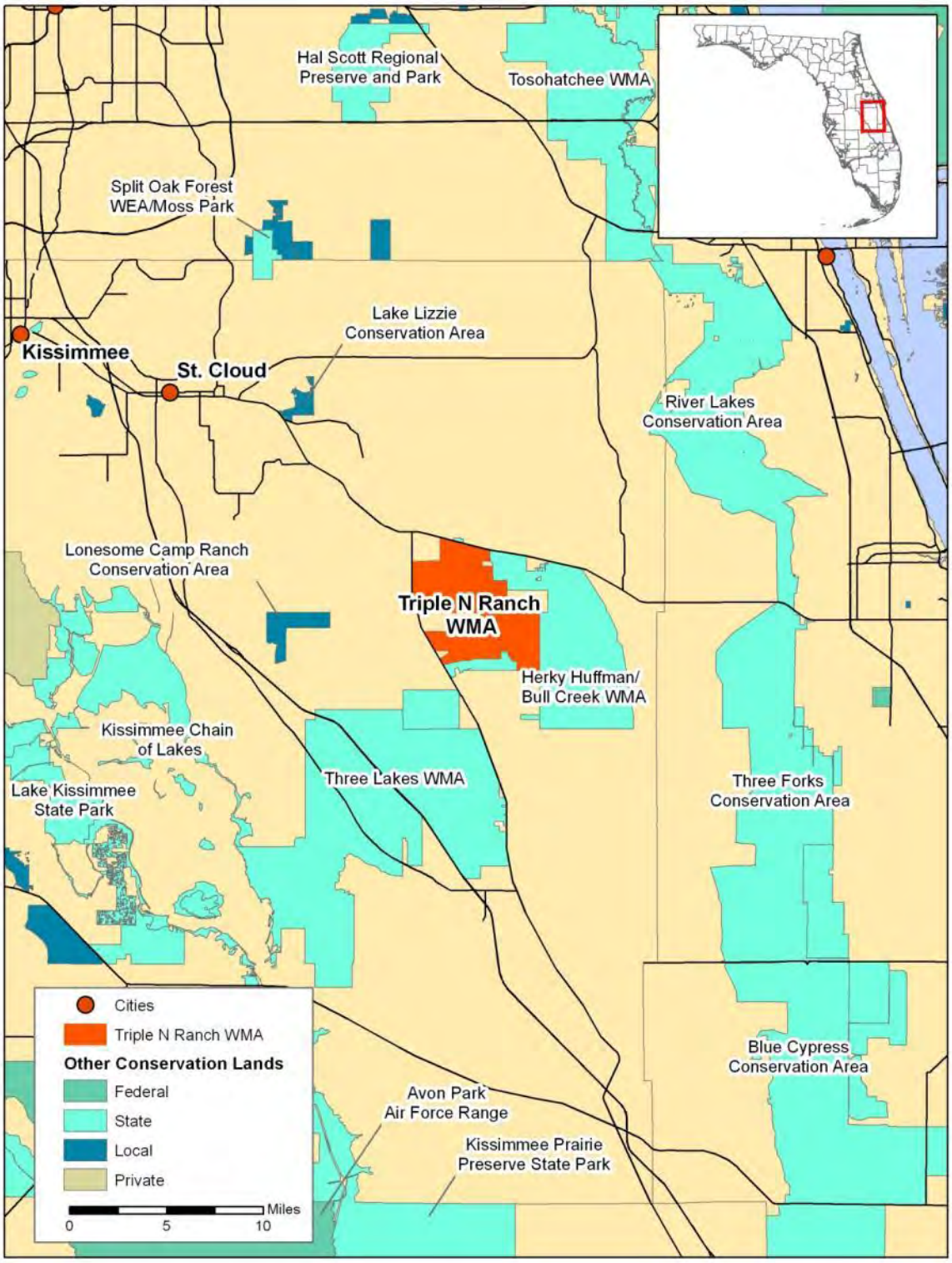

Figure1: Triple N Location Map

their small size, several are ecologically and recreationally significant. For example, mesic hammock has a sparse understory and shady canopy, making it an ideal location for low-impact recreation facilities such as picnic areas. Dry and wet prairie on the WMA are in excellent condition and contribute several unobstructed vistas over the Triple N landscape. Hydric hammocks along the creeks and drainages provide scenic settings and welcome shade immediately adjacent to the more open flatwoods and prairie areas.

Most of the natural communities on Triple N are in excellent condition and represent benchmark examples of native central Florida landscapes. They would be appropriate for interpretation of land management practices.

Sensitive Areas

Wetlands on Triple N are particularly sensitive to physical disturbance, which may churn up organic soils and displace wetland plants. Access to these areas should be controlled and monitored to avoid damage.

Wildlife

Wildlife viewing can be good at almost any spot on the WMA. Bird species, including the federally endangered red-cockaded woodpecker, can be seen in the flatwoods along with white-tailed deer, Sherman's fox squirrel and wild turkey. Sandhill cranes and wood storks are common in the open wetlands and prairies. More than 130 bird species are documented to occur on or near the area and several are among the "top 40 most sought-after birds" compiled by PAWV Wildlife Viewing Section: Bachman's sparrow, bald eagle, black-bellied whistling duck, crested caracara, limpkin, mottled duck, red-cockaded woodpecker, roseate spoonbill, sandhill crane, short-tailed hawk, swallow-tailed kite, and wood stork. Over 60 species of butterflies have been identified in the area including the Arogos skipper, Florida dusted skipper, Berry's skipper, Aaron's skipper, Black swallowtail, Cloudless sulphur, Eastern tiger swallowtail, , Meske's skipper, Palatka skipper, Palmetto skipper, Silver-spotted skipper, and Zebra heliconian. The WMA is within a designated Critical Butterfly Diversity Area.

Cultural Resources

The Florida Master Site File contains 1 historic site within the boundary of Triple N. This is the old Holopaw Sawmill Logging Railroad dating from the 19th and early 20th centuries.

Scenic Resources

Triple N offers a wide variety of scenic vistas including prairies and well-maintained flatwoods typical of the WMA. These habitats provide an interesting contrast with the forested cypress domes and hydric hammocks. The flatwoods and prairies are home to a wide variety of wildflowers including *Liatris* sp., *Carphephorus* sp., pine lily (*Lilium catesbaei*), and tickseed (*Coreopsis* sp.) with peak blooms in the fall.

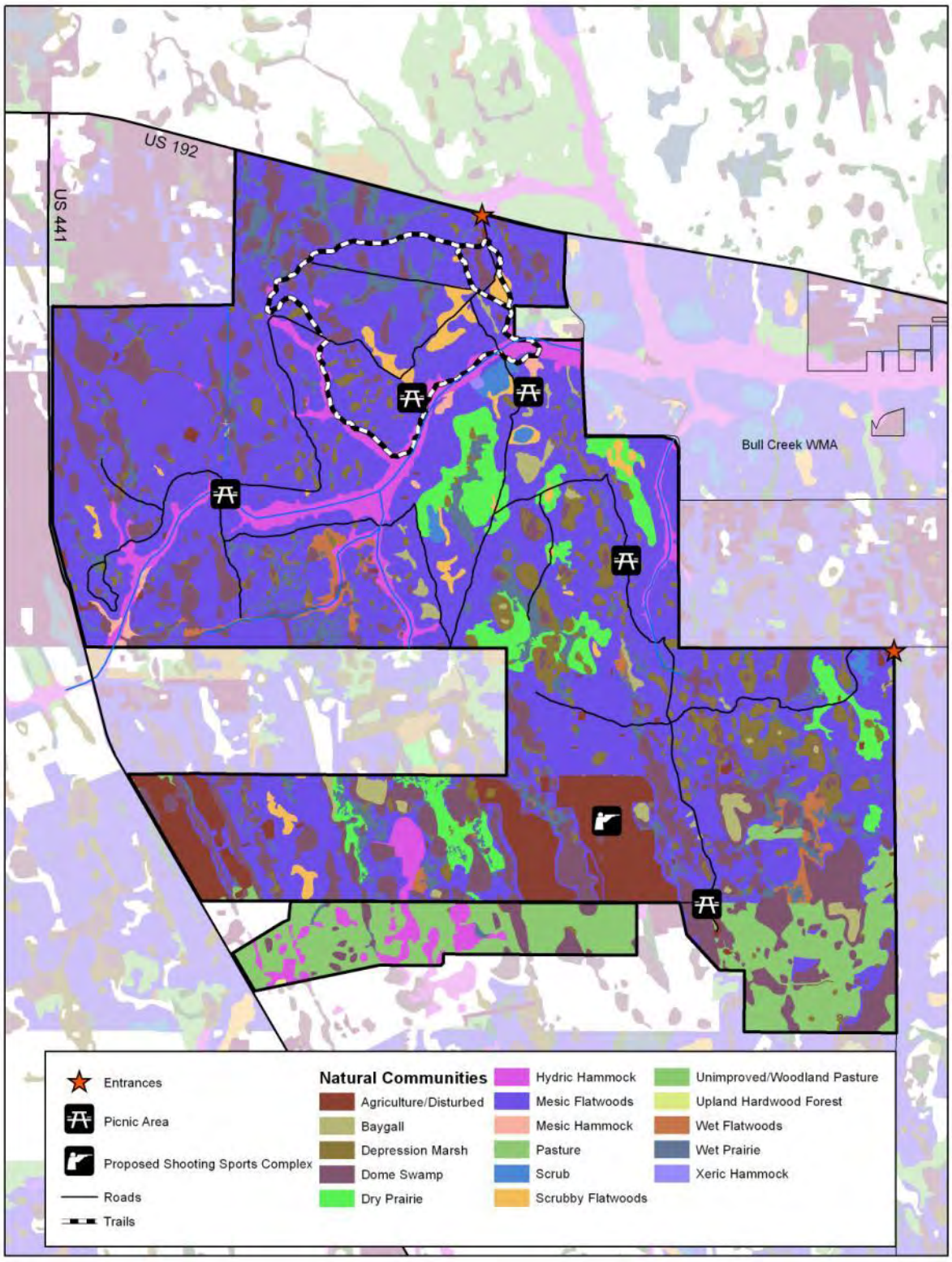

Figure 2: Triple N Natural Communities

Resource Management

The FWC's resource management goals for the area include enhancing and maintaining the native upland and wetland communities on the WMA. To accomplish this objective, the FWC is restoring disturbed sites, has instituted a program of prescribed burning and is eliminating or controlling nonnative invasive plants through mechanical and chemical treatments. Plants such as old-world climbing fern (*Lygodium microphyllum*), cogongrass (*Imperata cylindrica*), tropical soda apple (*Solanum viarum*), and Brazilian pepper (*Schinus terebinthifolius*) are problematic on the area. Other management activities include re-establishing hydrologic regimes to benefit fish and wildlife habitats.

III. Recreation Planning Context

The 2010 population estimate for Osceola County was 268,685 people with a projected growth to 357,800 (33% increase) in 2020 and 527,500 (96% increase) by 2040 (Enterprise Florida 2011). Hispanic or Latino groups comprise 45% of the county's population (US Census 2010). As with much of Florida, the Hispanic population of Osceola County is projected to grow at a higher rate than other demographic groups. Twenty-nine percent of the county's population identifies itself as non-white, with the largest groups being African American (11%), Other (10%) and multi-racial (4%). These demographic data will influence the design of infrastructure and interpretive materials in order to accommodate the full spectrum of potential visitors to the WMA.

	Osceola County		Florida		
Race/Ethnicity	**#**	**%**	**#**	**%**	**Difference**
Hispanic or Latino	122146	45.5%	4223806	22.5%	23.0%
Non-Hispanic or Latino	146539	54.5%	14577504	77.5%	-23.0%
White	190641	71.0%	14109162	75.0%	-4.1%
African American	30369	11.3%	2999862	16.0%	-4.7%
Asian	7406	2.8%	454821	2.4%	0.3%
American Indian/Alaskan Native	1452	0.5%	71458	0.4%	0.2%
Native Hawaiian/Pacific Islander	294	0.1%	12286	0.1%	0.0%
Other	27623	10.3%	681144	3.6%	6.7%
2 or more	10900	4.1%	472577	2.5%	1.5%

Population age distribution is slightly younger than the state distribution with a larger percentage under 18 and a larger percentage of people between the ages of 20 and 49.

	Osceola County		Florida		
Age/Gender	**#**	**%**	**#**	**%**	**Difference**
Male	131634	49.0%	9189355	48.9%	0.1%
Female	137051	51.0%	9611955	51.1%	-0.1%
<18	70416	26.2%	4002091	21.3%	4.9%
18+	198269	73.8%	14799219	78.7%	-4.9%
20-24	18007	6.7%	1228758	6.5%	0.2%
25-34	35301	13.1%	2289545	12.2%	1.0%
35-49	60070	22.4%	3832456	20.4%	2.0%
50-64	47026	17.5%	3677959	19.6%	-2.1%
65+	29656	11.0%	3259602	17.3%	-6.3%

As the regional population increases, the public use pressures on the WMA will likely increase. Recreational user groups can be expected to urge connections to trails on lands outside the WMA. Triple N is within 15 miles of several other public recreation areas that offer a variety of recreation opportunities. The recreational experiences proposed for Triple N are planned in consideration of this larger recreational context.

Area	**Hiking**	**Biking**	**Camping**	**Paddling**	**Fishing**	**Horseback Riding**	**Hunting**	**Wildlife Viewing**
Blue Cypress Conservation Area (SJRWMD)	✓	✓	✓	✓	✓	✗	✓	✓
Bull Creek WMA (FWC)	✓	✓	✓	✓	✓	✓	✓	✓
Kissimmee Chain of Lakes (SFWMD)	✓	✓	✓	✓	✓	✓	✓	✓
Lake Lizzie Conservation Area (Osceola Co.)	✓	✓	✗	✗	✗	✓	✗	✓
Lake Runnymede Conservation Area (Osceola Co.)	✓	✗	✗	✗	✗	✗	✗	✓
Lonesome Camp Ranch Conservation Area (Osceola Co.)	✓	✓	✓	✗	✗	✓	✗	✓
River Lakes Conservation Area (SJRWMD)	✓	✓	✓	✓	✓	✗	✓	✓
Three Forks Conservation Area (SJRWMD)	✓	✓	✓	✓	✓	✗	✓	✓
Three Lakes WMA (FWC)	✓	✓	✓	✓	✓	✓	✓	✓

The Florida Statewide Comprehensive Outdoor Recreation Plan (SCORP) collects data on participation levels in various outdoor recreation activities for different regions of Florida. The results for the East Central Region are summarized below.

Activity	Resident Participation (%)	Tourist Participation (%)
Paddling	14.7	0.9
Picnicking	47.7	9.3
Hiking	24.3	4.7
Unpaved Bicycle Trails	23.4	0.9
Nature Study	42.1	21.9
Equestrian Activities	6.6	0.9

The East Central Region is at approximately 50% of the statewide average level of service for hiking. At current participation levels, it is projected that over 130 additional miles of trail will be required over the next 10 years to maintain the current level of service; yet trail miles per 1,000 participants is projected to decline slightly over the same time period. Levels of service for the other listed activities are very close to the statewide mean. While the levels of service measures are just a general indicator of recreation availability they are useful in determining change in availability over time.

The FWC Division of Hunting and Game Management Hunter Safety and Ranges Section ranks Osceola County in the top 20 counties in terms of need for shooting sports facilities based on population and distribution of available public ranges.

The MPO (Metropolitan Planning Organization) established for Osceola County is Metroplan Orlando which includes Orange, Osceola, and Seminole counties. There are no planned improvements for any of the roadways near Triple N. There is a proposed toll road, the Southport Connector, which would be several miles to the northwest, but there are no anticipated impacts to Triple N. The Florida Department of Transportation does not have any of the roads near Triple N slated for improvement on their work plans through 2015.

Osceola County has adopted an Urban Growth Boundary (UGB) in its Comprehensive Plan. This boundary limits the expansion of development in the county and preserves the rural character outside of the UGB. Triple N is located outside of the UGB and is classified as “Conservation” on the current and future land use maps.

There are two Developments of Regional Impact (DRI) near Triple N that have the potential to impact the area and its natural and recreation resources. The first is Green Island DRI, located south of St. Cloud. This is a mixed use development with a maximum of 8,500 single family units and 4,500 multi-family units. A shopping mall, office park, research and industrial areas, school sites, and a golf course are also planned. The Green Island DRI has a buildout date of 2030.

The second is the Harmony DRI on US192 between Triple N and St. Cloud. This DRI was originally approved in 1992 and has a current buildout date of 2025. The Harmony DRI is a mixed use development with a maximum of 7,200 single and multi-family residential units, commercial space, office space, and light industrial space. Harmony also has an elementary school and a high school.

With an average county household size of 2.93 as of the 2010 census, by the buildout dates, the two DRIs combined could mean an additional 59,186 residents seeking recreation opportunities. This could potentially provide an additional 14,382 hikers or 24,917 birdwatchers/nature enthusiasts seeking recreation resources like those provided at Triple N.

IV. Interpretation

In this plan, emphasis is placed on integrating recreation and interpretive planning. Using this approach, the type of recreational experience offered and the location of recreation amenities provided, is strongly influenced by the interpretive goals for the area. Recreation opportunities thus become a means to an end - reaching visitors with important themes and concepts about an area's natural resources, plant communities, wildlife and wildlife management.

Visitor Experience Goals

Triple N has the potential to provide visitors with opportunities to see and learn about a variety of natural communities while engaging in recreational activities focused on fish and wildlife resources. Visitor experience goals are those concepts and experiences we want visitors to take away from their time at Triple N. These goals guide both interpretive and recreation planning.

At Triple N, the FWC will provide opportunities for visitors to:

1. Become oriented to and participate in a range of recreational activities on Triple N and adjoining natural areas while:

- Becoming acquainted with wildlife and natural plant communities
- Understanding Triple N's natural, cultural and commercial history within the context of the state's prehistory and modern history
- Appreciating Triple N as an oasis providing a retreat from the pressures of urban life and an opportunity to connect with the natural world

2. Learn information and stories associated with major interpretive themes, and other related information, through interpretive materials at welcome kiosks, trails and wildlife viewing sites.

3. Have an enjoyable recreational experience without impairing the natural and cultural values of the site. In terms of wildlife viewing, FWC's goal will be to facilitate positive, memorable experiences that keep wildlife disturbances to a minimum.

4. Safely participate in shooting sports and enhance skills required to responsibly harvest game animals.

5. Understand the management goals and activities of the FWC on Triple N.

Interpretive Themes

Interpretive concepts are categorized into themes and subthemes. All interpretive materials revolve around one or two primary themes, which allow visitors to understand and remember important messages. Primary themes also help set visitor experience goals and priorities and are considered in the design of amenities offered to nature-based recreationists. Subthemes expand upon and support the primary themes. These guide the development of all interpretive products, which may include sign panels, printed materials, electronic media and educational programming. This detailed media prescription will be developed at a later date.

Central Theme: Well-managed, high quality habitats at Triple N Ranch WMA provide a key link in a regional wildlife corridor.

Subtheme 1: Diverse plant and animal communities at Triple N Ranch WMA require a variety of management tools.

A. Science-based management allows managers to fine-tune their methods to fit the needs of individual species and ecosystems.
B. Prescribed fire is one of the most visible and effective management tools.
C. The control of nonnative invasive vegetation requires both chemical and mechanical treatments.
D. Management that benefits one species or habitat type often benefits many others.

Subtheme 2: Restoration benefits wildlife populations, gives visitors a glimpse of the original wild Florida and increases ecosystem resilience.

A. Restoration takes place on both uplands and wetlands, improving the quality of habitats, water resources and wildlife populations.
B. Restoration is a long-term solution that may appear destructive in the short-term.
C. As wildlife populations increase as a result of restoration, recreational opportunities such as hunting, fishing and wildlife viewing will improve.
D. Restored habitat improves species survival and may increase species' resilience to environmental changes.

Subtheme 3: Triple N Ranch WMA and its adjacent neighbors - Herky Huffman/Bull Creek WMA and Three Lakes WMA - create a large regional network of conservation lands in central Florida.

A. Linkages of wetlands and uplands across WMA boundaries create wildlife corridors and increased opportunities for connected recreation.

B. The three properties bridge the divide between the Kissimmee River and St. Johns River watersheds.
C. The WMA preserves evidence of the historical significance of the region, which included subsistence hunting and fishing, rangeland cattle grazing and timber harvesting.
D. The value of these conservation lands to recreationists and wildlife will increase as urban boundaries expand.

V. Recreation Assessment

Existing Recreational Use and Facilities

The purpose of this section is to identify and describe the existing recreational uses and facilities on Triple N and note their status and condition (Figure 3). This informs recommendations for achieving visitor experience goals and meeting future recreation demands and needs.

Triple N offers opportunities for a variety of high quality, wildlife-focused recreation activities. Based on the approved uses and activities as stated in the 2011-2021 Management Plan (MP), the analysis of existing resources and uses, and the interpretive themes developed for the area, the following activities will be continued and enhanced as described in this section:

- Astronomy
- Bicycling
- Camping (Conditional)
- Ecotourism (Conditional)
- Environmental Education
- Fishing (Conditional)
- Geocaching
- Hiking
- Horseback riding
- Hunting
- Shooting Sports Complex
- Wildlife observation

Visitation, as recorded by 2 separate vehicle and pedestrian counters installed and monitored by FWC, has averaged 19 visitors/day for July 2010 to July 2011.

Visitor Contact Points and Roads/Vehicle Access- The main entrance for Triple N is on US192. The camping area, toilet, check station, and entrance kiosk are all located along a limerock road (Road 1) approximately 0.25 miles from US192. A walk-in entrance on the east side of the WMA is adjacent to Herky Huffman/Bull Creek WMA at the end of Crabgrass Road. Improvements to parking, trail access and visibility will be made at the main entrance. This would also be a good location for a wildlife viewing structure such as a small platform or blind located a short way down the hiking trail that originates at

this point. The walk-in entrance has a grass surface, several large pine trees, and a small borrow pond. Designated parking and covered picnic tables will be installed at this location along with wayfinding signage for Triple N and Herky Huffman/Bull Creek WMA.

Vehicles are allowed on named and numbered roads during periods open to hunting and are prohibited at all other times. Tracked vehicles, all-terrain vehicles, airboats, and unlicensed/unregistered motorcycles are prohibited.

Loop Road and most other named and numbered roads are well-maintained limerock roads. Other roads vary in surface and condition and can be difficult to traverse in two-wheel drive vehicles due to loose sand or wet conditions.

Wayfinding signage on interior roads is to FWC standards and there are approach signs for Triple N on US192, all of which are in good condition.

Hunting - Hunting is an approved use on Triple N with seasons for special-opportunity deer, small game, wild hog, special-opportunity spring turkey, and migratory birds. There are 105 days of hunting each year excluding migratory birds; 58 of which are small game only. From 1 October to 30 April there are hunts on 18 out of 30 weekends and 9 of these weekends are small game hunts. There are 9 days of hunting each month in November and February, 8 days of hunting in March, and 13 days in April. During special-opportunity hunts, only those people with special-opportunity hunt permits may access the WMA. The WMA is open to all visitors during all other times. Quotas/special-opportunity permits limit the number of hunters accessing the area during most hunting seasons to provide a safe, high-quality-hunting experience.

Fishing/Boating/Paddling – Though fishing is available at all water bodies within the WMA, there is very little demand or opportunity for this activity. There are no notable paddling or boating opportunities on the area.

Trail Use – Hiking and bicycling are permitted on all areas of Triple N. Horseback riding is permitted only on named or numbered roads. These restrictions do not apply during small game season.

Trail infrastructure - There are 7.9 miles of recreational trails on Triple N that were developed in cooperation with the Florida Trail Association. The Flatwoods Loop is 2 miles, the Crabgrass Creek Loop is 2.5 miles, and the Triple N Loop is 7.9 miles. Note that due to shared trail segments the distance of the two loops differs from the total mileage on the ground. The trails traverse the mesic flatwoods and hydric hammocks of the northern part of the WMA. A trail connection will be evaluated from the east side of the loops, across Crabgrass Road, to a proposed trail on Herky Huffman/Bull Creek WMA. This connection would depend on fencing and other manmade and natural obstructions. A trail will also be marked connecting the loop trails to the walk-in entrance on the east side of the WMA.

Wildlife Viewing and Nature Study – Wildlife viewing opportunities are available throughout Triple N, with some of the best, most accessible, wildlife viewing opportunities located along the loop trails and along the creeks. There are no viewing structures at these sites to enhance the viewing experience although the trailhead at the entrance could accommodate a viewing structure.

Picnicking - There are currently no picnic shelters on the WMA. Picnic tables are located at several spots on Loop Road and other areas and these tables will be replaced with covered picnic tables due to the exposed nature of most of these sites. A pavilion-style picnic shelter would be appropriate for the old hunt camp site. Covered picnic tables will also be installed at the walk-in entrance.

Camping – Camping is available at the main entrance camping area during periods open to hunting. There is 1 toilet located at this camping area.

Geocaching – is allowed on the area. There are currently no permitted geocaches on Triple N although there have been permitted geocaches on the WMA in the past. Approval of new geocaches and disposition of existing geocaches is at the discretion of the site manager and coordinated by FWC's Office of Public Access and Wildlife Viewing Services.

Special Events/Tours – There no regular events at Triple N. The unique natural features of the WMA and well-managed natural communities would make it a suitable location for school and university field trips and conference/wildlife festival trips.

Shooting Sports Complex – There is no public shooting range available in Osceola County. The County has agreed to partner with FWC to develop a facility on Triple N. A disturbed area previously planted to citrus has been selected as a site to accommodate a shooting sports complex. This 355-acre complex will accommodate a variety of shooting sports opportunities. The complex will be designed and managed by FWC in compliance with all best management practices developed by the Department of Environmental Protection. The complex is described in Appendix 3.

Staff/Volunteers- A Biological Scientist III, a Biological Scientist II, and a Wildlife Technician are assigned to Triple N. Volunteers are occasionally used to help treat exotic plants and volunteers from the Florida Trail Association maintain the loop trails.

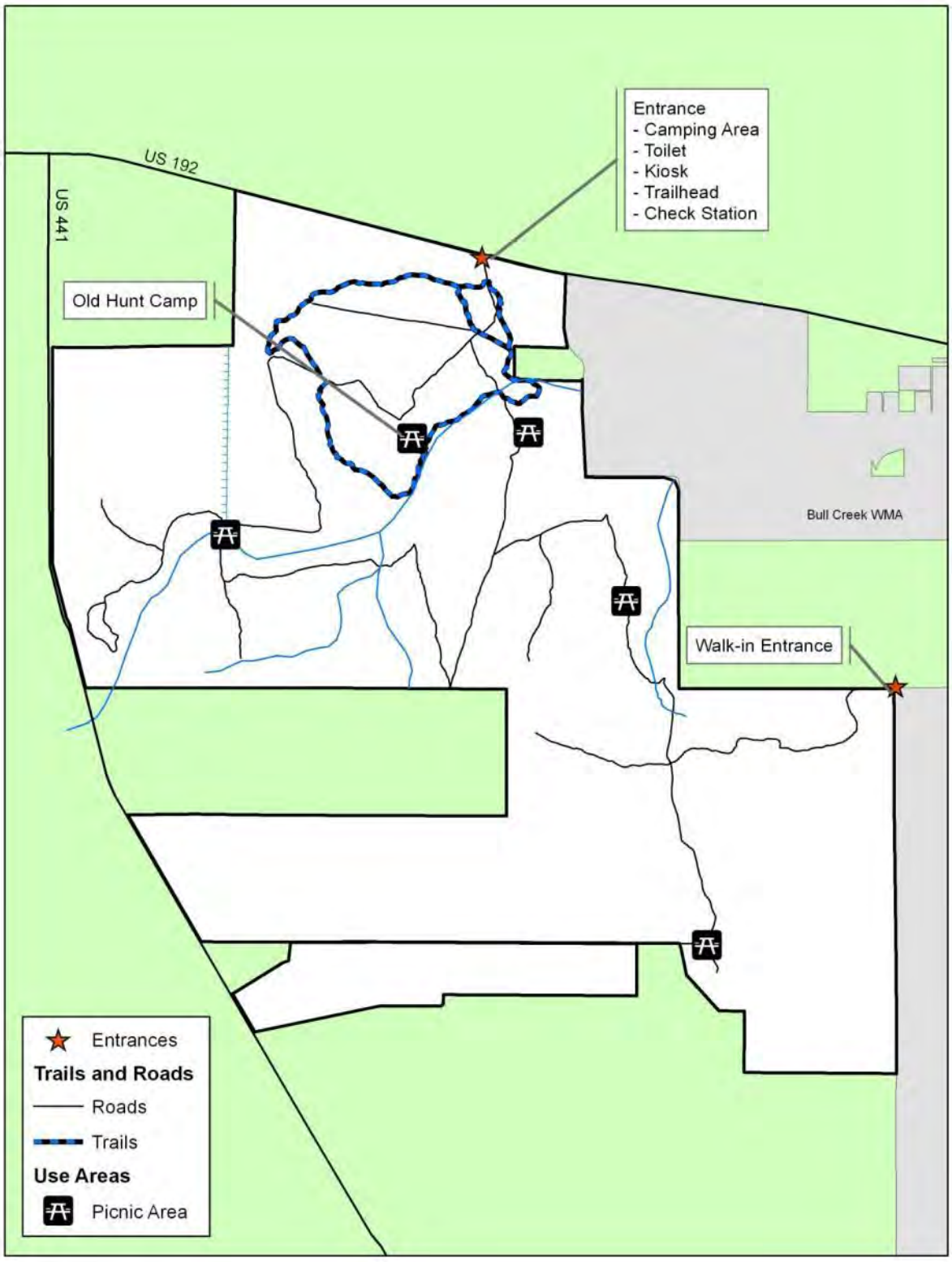

Figure 3: Triple N Existing Facilities

Recreation Sensitivity Analysis

(Figure 4)

While there are existing facilities at Triple N, it is useful to analyze the WMA in its entirety to determine optimum locations for recreation opportunities. To this end, a Recreation Sensitivity Analysis is developed (Appendix 4) that looks at the entire WMA, independent of existing infrastructure and opportunities, to look for the potential to relocate or improve facilities, and to determine locations for new infrastructure.

Recreation Zoning

Research of recreational use demonstrates that visitors come to recreate on public lands with many different expectations (NPS, 1997). Providing a variety of settings allows visitors to select the type of experience they desire, simplifies management and reduces conflicts between visitors who are seeking different types of experiences. The zones delineated by the planning team are provided in Figure 5. Each zone is described below in terms of the type of experience it offers, the natural resources related to the experience and the level of management required.

Primitive Zone

This zone offers an experience of solitude deep in a natural landscape with no evidence of human development. This zone can encompass sensitive natural resources. Access is difficult and the number of people should be limited. Only limited recreation and interpretation opportunities should be developed in this zone. A minimal level of management is necessary for resource protection and safety.

Semi-Primitive Non-motorized Zone

The semi-primitive zone provides a sense of being immersed in a natural landscape with opportunities for solitude. Observation structures, boardwalks, interpretative signs, and unpaved trails are the types of recreational facilities that are appropriate in this zone. A moderate level of management is provided for resource protection and safety.

Semi-Primitive Motorized Zone

The semi-primitive motorized zone provides a sense of being in a natural landscape with minimal human modification and moderate opportunities for solitude. Interpretative signs, wayfinding signs, vehicle pull-offs, unimproved parking locations, and unpaved roads are the types of recreational facilities that are appropriate in this zone. Roads are passable by two-wheel drive vehicle. A moderate level of management is provided for resource protection and safety.

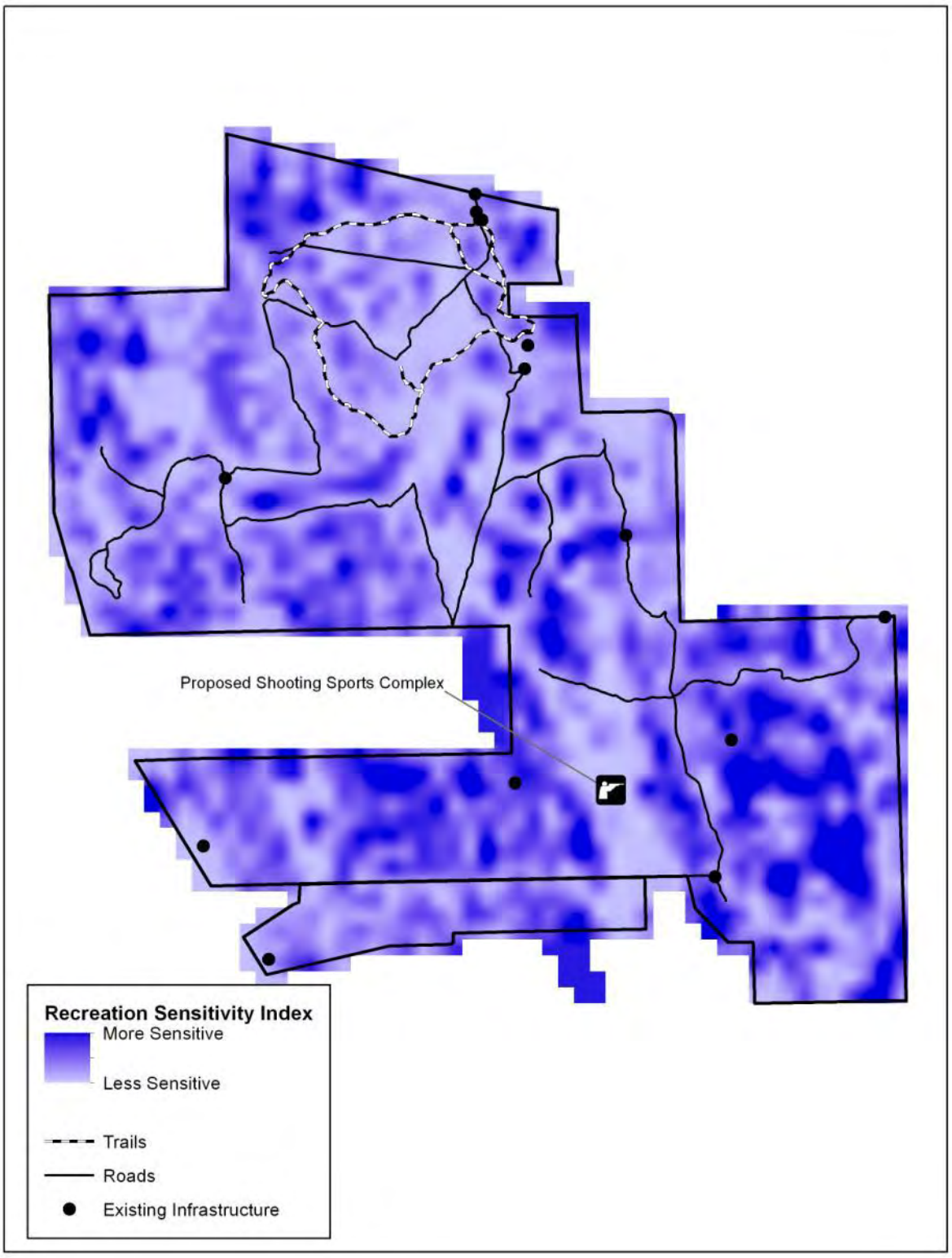

Figure 4: Triple N Recreation Sensitivity Index

Developed Zone

Developed zones are areas with visitor facilities such as parking, picnicking and toilets. The visitor's experience in this zone is highly social. Trails may be paved or hardened for access by people with disabilities. Visitors and facilities are intensively managed in this zone for resource protection and safety purposes. Staff should frequently monitor visitor behavior and attend to maintenance needs. The most intensive interpretation is provided in the developed zone. This is the most appropriate zone for building construction.

Carrying Capacity

In order to minimize disturbance of wildlife and other natural resources and to provide an enjoyable experience for visitors, FWC calculates a carrying capacity for its managed areas (Appendix 4). This carrying capacity takes into consideration natural community sensitivity, known locations of sensitive natural communities, known archaeological and historic sites, existing recreation facilities and wildlife disturbance distances with a turnover rate that varies with the activity or facility. This capacity is not a visitation goal but rather is a level at which the natural and recreation resources of the area can sustain use without damage. Current capacity for distributed recreational use on Triple N is 350 people per day (including hunting capacity). If all planned facilities are constructed, this capacity increases to 506 people per day. The daily capacity for the shooting sports complex after all phases of construction is 640 per day.

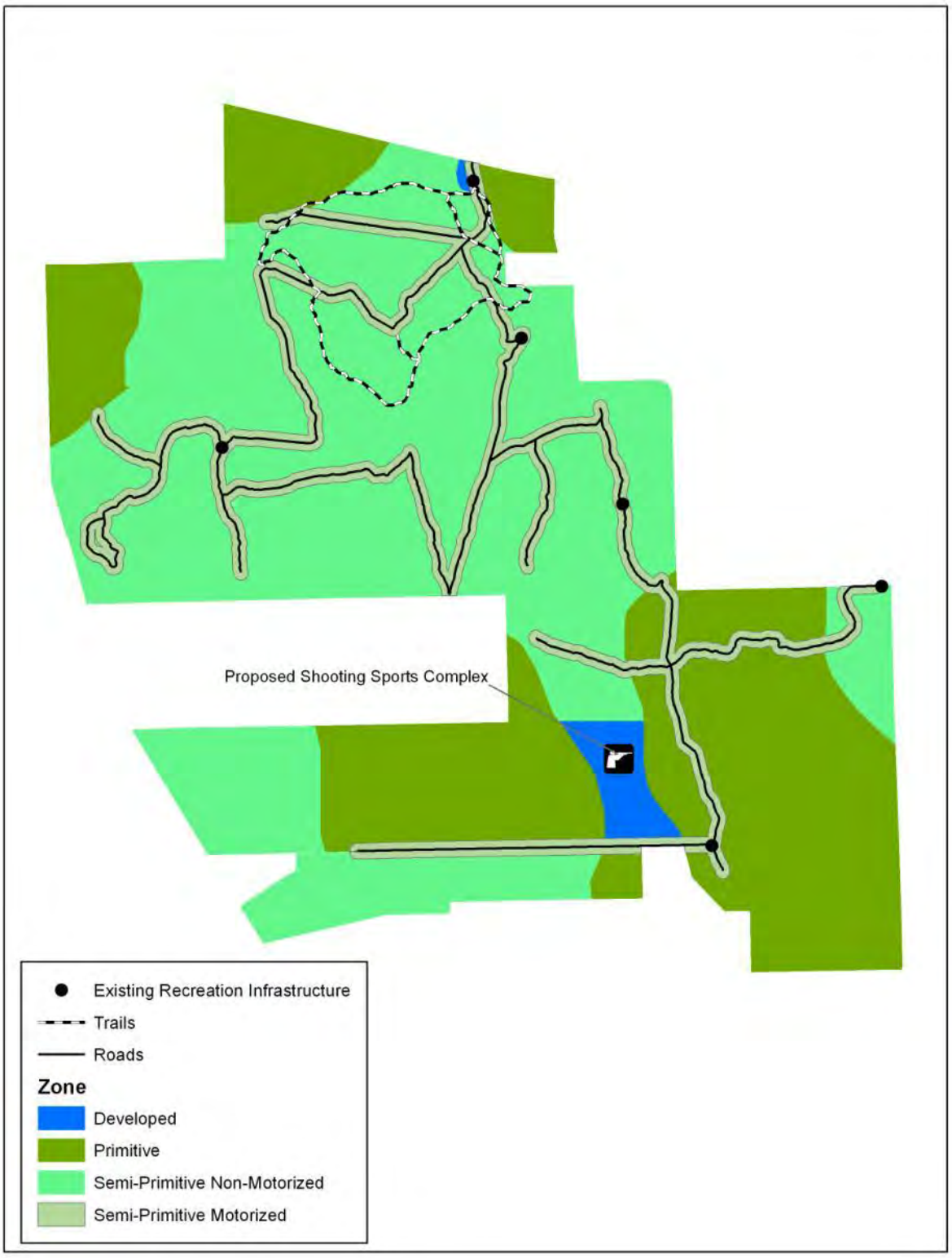

Figure 5: Triple N Recreation Zones

VI. Recreation Enhancements

Triple N Ranch WMA Recreation Use Potential

Triple N provides an opportunity for visitors to learn about and see examples of natural communities that are rapidly being converted to other uses in central Florida. The following sections of the plan provide for comprehensive interpretation of these communities, common and listed species of interest to visitors and FWC's management. Recommended recreation enhancements are those that provide a range of enjoyable opportunities to view wildlife without negatively impacting resources.

Goals and Objectives

Careful design and placement of recreational facilities can provide desirable visitor experiences and minimize impacts to the natural and cultural resources of the area. Construction and improvements will not harm wildlife, fragile habitats or historic and cultural sites. All planning and implementation should be done in accordance with guidelines in Appendix 5. A conceptual site plan for proposed recreation facilities is provided in Figure 6.

Goal A. Orient visitors to the area and its recreation opportunities and interpret WMA resources

1. Develop recreation guide.

2. Stock recreation guide, regulation summaries and bird list in brochure boxes at the main entrance.

3. Cross-promote Triple N with Herky Huffman/Bull Creek WMA and Three Lakes WMA. Explore the three WMAs from a regional perspective and an individual perspective (highlight the unique features of each WMA).

4. Develop a Spanish-language rack card for distribution within Osceola County covering Triple N Ranch WMA, Herky Huffman/Bull Creek WMA and Three Lakes WMA.

5. Maintain up-to-date information about the area on the FWC website.

Goal B. Enhance existing trail opportunities

1. Install standard wayfinding signs where needed; replace existing wayfinding signs with FWC-standard signage as they need to be replaced.

2. Monitor trail use and demand to determine the need for expanded trail opportunities.

Goal C. Create new trail opportunities

1. Construct and mark a new trail route from the loop trails to the walk-in entrance.

2. Explore the possibility of a connection across Crabgrass Road to a proposed trail at one of the walk-in entrances at Herky Huffman/Bull Creek WMA.

Goal D. Enhance existing facilities and develop new wildlife viewing opportunities

1. Install covered picnic tables at existing picnic sites, the main entrance, and the walk-in entrance.

2. Construct a pavilion-style shelter at the old hunt camp.

3. Upgrade the efficiency, effectiveness and appearance of the campground and entrance. Improve the functionality of the main entrance as a trailhead.

4. Explore the possibility of a viewing structure near the main entrance on one of the loop trails.

5. Improve the efficiency, effectiveness and appearance of the walk-in entrance.

6. Consider the diversity of potential users in facility design and improvements.

7. Develop a shooting sports complex as described in Appendix 3

Goal E. Direct and manage recreational use to minimize negative resource impacts and maximize visitor satisfaction

1. Implement a monitoring strategy to assess resource impacts and institute corrective management actions if indicators begin to approach standards.

2. Provide a location in partnership with Osceola County for a Shooting Sports Complex where the public can receive hunter safety training and safely participate in shooting sports.

3. Collect and evaluate information about visitor use and satisfaction:
    - Number of visitors to the area and patterns of visitation
    - User group conflicts
    - Origin and length of stay
    - Motivations for visiting and preferred experiences
    - What visitors already know about the area and primary interpretive themes.

Goal F. Coordinate with local, state and federal agencies and organizations when planning and implementing nature-based recreation opportunities and enhancements

1. Cross-promote Triple N with other regional public lands (i.e. Blue Cypress, Three Forks, River Lakes, etc.).

2. Work with the US Forest Service and Florida Trail Association to determine if Triple N would be an appropriate location for a FNST connection to Herky Huffman/Bull Creek WMA.

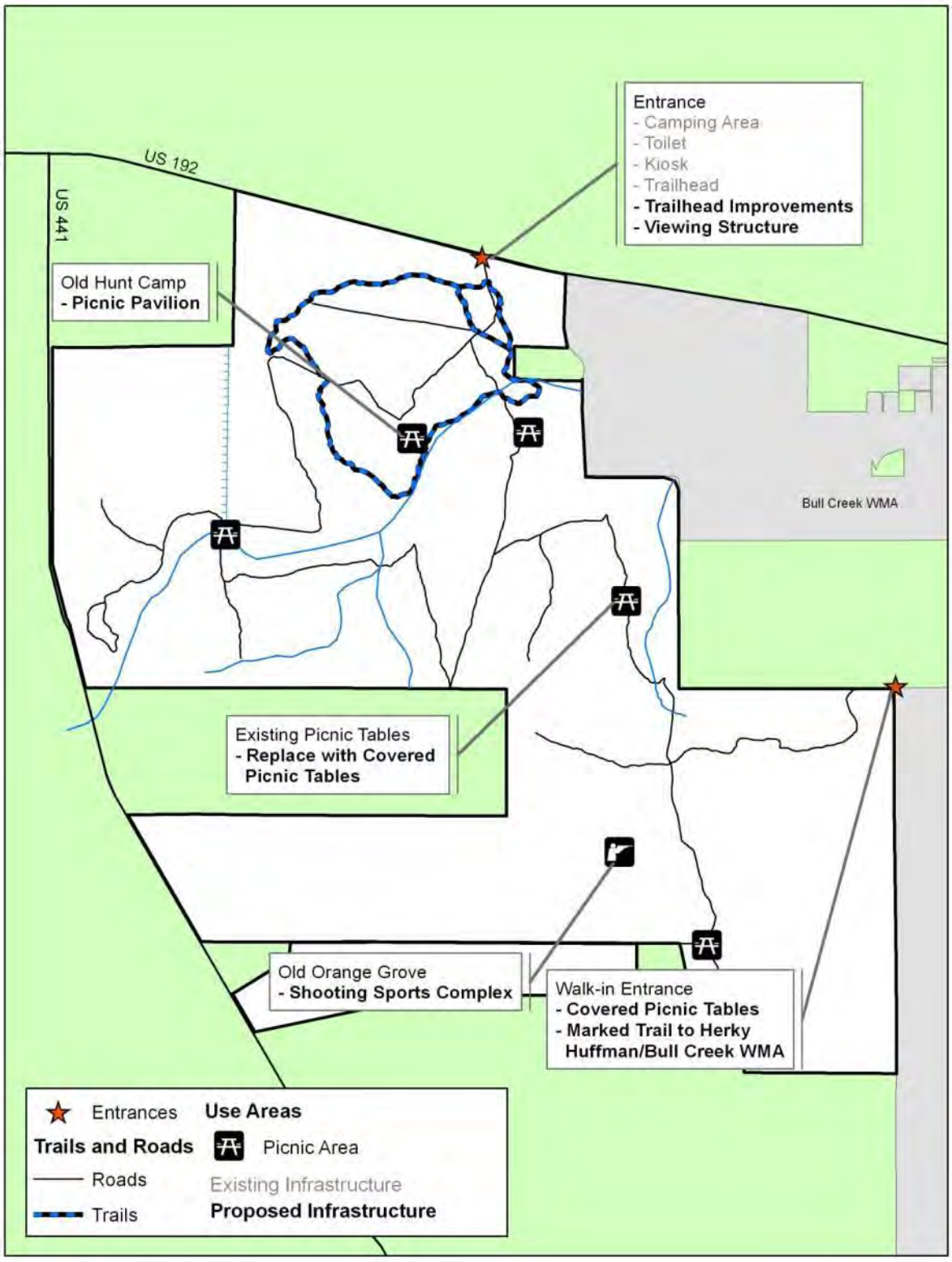

Figure 6: Triple N Proposed Recreation Facilities

Challenges and Strategies

There are several challenges facing the effective implementation and management of nature-based recreation opportunities on Triple N. Challenges and proposed strategies to address them are discussed in this section.

1. Challenge:

   Triple N is not a well-known recreation destination.

   Strategies:

   - Cross-promote Triple N with Herky Huffman/Bull Creek WMA, Three Lakes WMA, and other regional public lands.
   - Provide rack cards or similar publication at sources in St. Cloud and Kissimmee.
   - Work with Osceola County, St. Cloud, and Kissimmee tourism boards for promotion.

2. Challenge:

   As the population density around Triple N continues to increase, recreational use of the area will increase, potentially resulting in resource damage and wildlife disturbance.

   Strategies:

   - Periodically monitor all public use sites for environmental impacts and implement corrective actions when and where necessary.
   - Recreational use will be directed away from sensitive environments to the greatest degree possible.
   - Environmental protection information will be provided in all interpretive materials.

3. Challenge:

   As recreational use increases, conflicts among user groups may occur.

   Strategies:
   - Provide a range of recreational opportunities in a variety of settings to avoid user conflicts as much as possible.
   - Involve stakeholders and user groups during planning.
   - Ensure that user groups understand how to contact local staff to resolve problems.

- Provide opportunities for different user groups to volunteer together to maintain public access amenities.
- Display hunting information (dates, times and types) at all entrances to help all users make choices as to when to visit.

4. Challenge:

   45% of Osceola County's population identifies itself as Hispanic.

   Strategies:
   - Consider the unique needs and characteristics of the Hispanic population when designing and improving facilities.
   - Produce Spanish language materials, web products, and signage where possible and appropriate.

Summary of Proposed Infrastructure Enhancements

(Appendix 7)

- Shooting Sports Complex (Partnership with Osceola County)
- Trail connection to walk-in entrance.
- Trail connection to new Herky Huffman/Bull Creek WMA hiking trail across Crabgrass Road.
- Covered picnic tables at existing picnic spots.
- Picnic pavilion at Old Hunt Camp.
- Campground/Entrance improvements.
- Viewing structure near entrance.

Work Plans

PAWV will work with local staff to prepare annual work plans and budgets to implement the RMP for Triple N. PAWV will be responsible for 1) developing cost estimates for recreation-related facilities; 2) coordinating design and permitting; and 3) obtaining construction bids and the work of contractors during the construction phase. This includes pre-construction meetings, site visits at construction milestones and final reviews. Generally, the area manager and staff monitor construction sites frequently during the construction process to make sure contractor is not doing damage to the surrounding area.

PAWV will design interpretive materials for the areas in consultation with management area staff. Generally, the cost of producing maps and interpretive products and maps comes out of the PAWV budget.

Monitoring and Management of Recreation Facilities

PAWV will monitor recreation infrastructure on the WMA biannually including trail and structure photopoints. PAWV will also create an annual monitoring report at the end of each

fiscal year. Any impacts encountered during each monitoring will be brought to the attention of PAWV and WMA staff to determine the best course of action for correction and prevention.

Measurable indicators for monitoring key aspects of the visitor experience and resources at Triple N are described in Appendix 6. Indicators should be monitored for each zone, and when necessary, management actions taken to ensure that visitor use and resource impacts remain within the established standards.

References

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A Management Plan for Triple N Ranch Wildlife Management Area 2011 – 2021. Florida Fish and Wildlife Conservation Commission (2011).

Florida Office of Economic and Demographic Research. http://www.edr.state.fl.us (2011)

Florida Statewide Comprehensive Outdoor Recreation Plan 2008. Florida Department of Environmental Protection (2008).

National Park Service. The Visitor Experience and Resource Protection (VERP) Framework: A Handbook for Planners and Managers (1997).

Osceola County Comprehensive Plan. Osceola County (2007)

US Census 2010. US Census Bureau (2010)

Appendices

Appendix 1: Triple N Stakeholder Meeting Notes

24 August, 2011
Kissimmee IFAS Office

List of stakeholders in attendance:
Sherry Burroughs, Osceola TDC/Equestrian
Mick Karolick, Florida Trail Association
Bob Mindick, Osceola County Land Manager
Steve Monroe, Hunter
Larry Rosen, Florida Audubon Society
Dave Sibley, Florida Trail Association
Doug Voltolina, St. Johns River Water Management District

FWC staff in attendance:
Jerrie Lindsey, Director, Office of Public Access and Wildlife Viewing Services
Rich Noyes, Section Leader, Planning and Design
Tom M. Matthews, Recreation Planner
Ann Morrow, Interpretive Writer
Steve Glass, District Biologist
Tina Hannon, Three Lakes WMA Manager
Jeremy Olson, Triple N Ranch WMA Manager
Brett Walker, Herky Huffman/Bull Creek WMA Manager
Allison Jones, Trail Specialist
Josh Cucinella, Trail Specialist

Meeting Agenda:
Introduction and Overview of Recreation Planning - Jerrie Lindsey
Overview and History of Triple N – Jeremy Olson
Survey Results - Rich Noyes
Proposed Interpretive Themes - Ann Morrow
Overview of Proposed Recreation Improvements - Tom M. Matthews
Stakeholder Input
Review of Stakeholder Suggestions - Jerrie Lindsey

Responses to stakeholder comments and suggestions:

There were no suggestions specific to Triple N, although the following general comments were made:

- Designate equestrian trails
    - *All trails and roads are currently available to horseback riders. There are no plans to designate equestrian-only trails.*
- Opportunities for horse camping
    - *Camping is available at the main entrance during hunting periods. There are no plans to designate additional camping.*
- Designate trailer parking
    - *Large parking areas are available at the main entrance and walk-in entrance. FWC intends to revise the entrances to improve their function as trailheads.*
- Potable Water at entrance
    - *Due to budgetary restrictions and monitoring requirements there are no plans to provide potable water.*
- Educate the public on management activities
    - *This will be part of FWC's interpretation and outreach strategy.*

Appendix 2: Public Survey Results

Herky Huffman/Bull Creek WMA, Three Lakes WMA, Triple N Ranch WMA

Survey Participants

- 146 individuals completed the survey
- 68 individuals had visited Triple N.
- Many of the respondents visited more than one of the three WMA's (Bull Creek, Triple N Ranch, and Three Lakes).
- 6 individuals had never visited any of the three WMA's.

Top activities

- Hunting/Scouting 54%
- Wildlife Viewing/Photography 46%
- Hiking 42%
- Biking 8%

Visitor Satisfaction

- All activities were over 80% in the neutral to very satisfied ranges
- Significant dissatisfaction in:
    - Hunting, Scouting 12.12%
    - Wildlife Viewing, Photography 3.7%
    - Hiking 4.35%

Proposed improvements

- More hunting opportunities 38%
- Native plant checklists 15%
- Wildlife viewing blinds, structures 15%
- Interpretive trails with educational signs 15%
- Additional bathrooms 13%
- Bird checklists 12%
- Potable water 12%
- Improvements in comments
    - Electricity for campground
- Post hunting calendar at entrance for horseback riders.

Other Areas Visited

- Three Lakes: 6
- KICCO: 4
- Lake Tohopekaliga: 3
- Kissimmee PUA: 3
- Deseret Ranch: 2
- Ft. Drum: 2
- 1 each: Shingle Creek, Disney Wilderness Preserve, Forever Florida, Lake Lizzie.

Appendix 3: Shooting Sports Complex

It is the mission of FWC to continue the heritage of hunting by developing safe, responsible, and knowledgeable hunters. FWC must also fulfill the requirements of Section 372.5717 FS, regarding hunter safety courses and education to the public. This statute requires FWC to institute and coordinate hunter safety courses. The establishment of an adequate number of public shooting ranges is necessary to provide the facilities needed to teach these and related courses. Hunter education is essential to the success of many of FWC's responsibilities. Education of the hunting community about the proper use of firearms, protection afforded endangered species, and the importance of protection of wildlife habitat are significant aspects of FWC's duties.

The FWC currently operates eight public shooting ranges throughout the state. These facilities are used for hunter safety training purposes and as a place for sportsmen and women to enhance their skills so they can responsibly harvest game animals. Currently there are no public shooting ranges in Osceola County where Florida's hunter safety program can offer the public a place to take a course and participate in the firing of the firearms used in hunting. The area surrounding Osceola County has some of the highest demand for hunter safety courses in the state. The hunter safety program has great cooperation, but limited use, of the privately owned shooting facilities in neighboring counties.

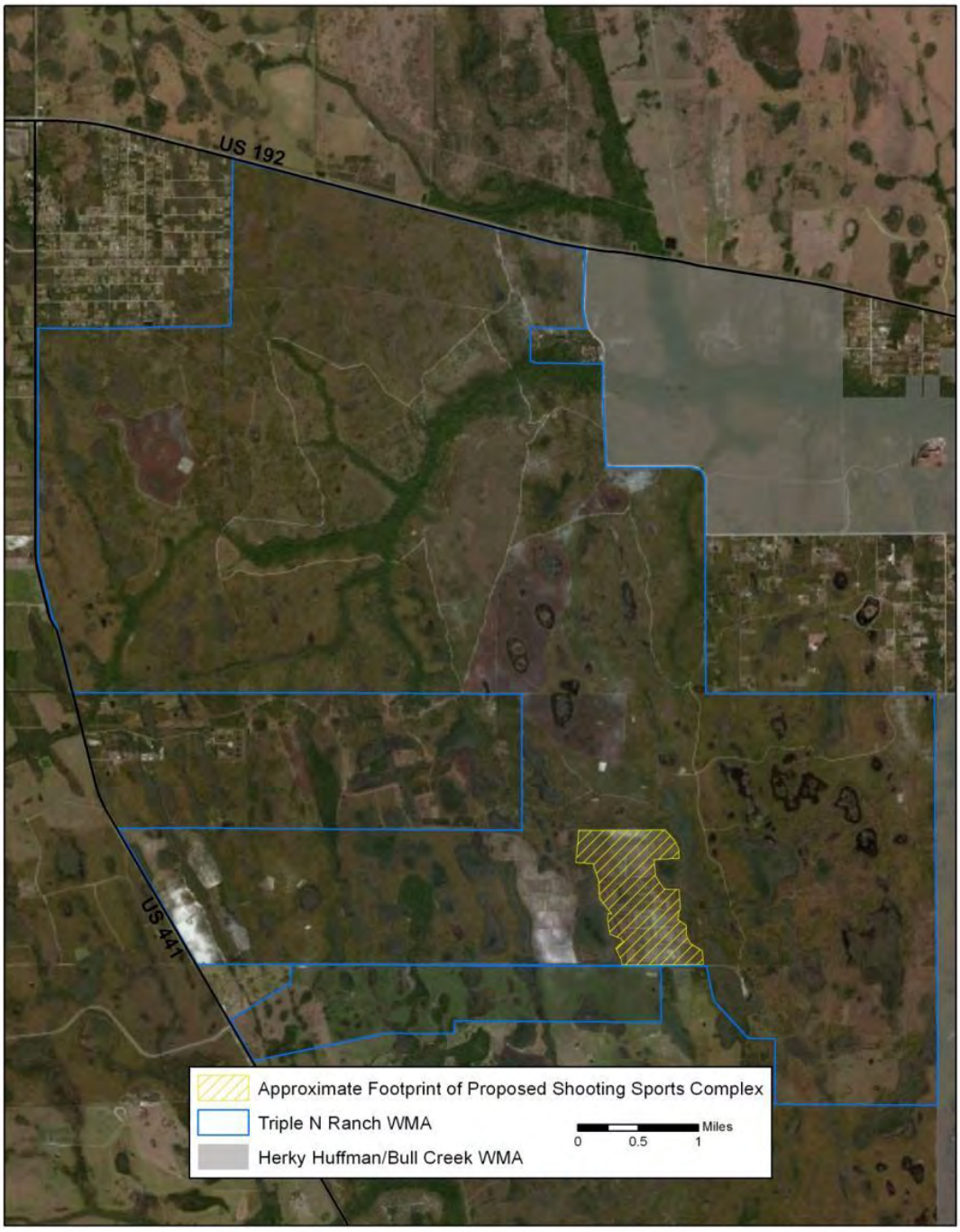
There was a series of site analyses of prospective lands within the vicinity to determine potential areas where a shooting sports complex might be most appropriate. It was determined that TNRWMA had the highest level of feasibility due to its isolated location, facility requirements, and to have the least impact on the TNRWMA natural communities; the proposed shooting complex on TNRWMA is on ~350 acres of a previous orange grove.

FWC has provided conceptual designs for the shooting complex and has allocated $1.4 million of federal aid funds towards the Osceola County site. The conceptual design for the shooting complex is laid out so that it can be built in phases based on public use and acquired funding.

Elements of the conceptual design include the following:

50 foot pistol range – 20 positions
15/25 yard pistol range – 35 positions
50/100 yard rifle range – 28 positions
200 yard rifle range – 20 positions
10 Bay Action Pistol Range
5-Stand Sporting Clays Range
15 station sporting clays range
1,000 yard high-power rifle range – 12 positions
Clubhouse, restrooms, classroom, and maintenance facilities

FWC will identify and coordinate with partners in order to develop, operate, and manage the shooting sports complex. This facility could provide a training site for hunter education students, volunteers, and law enforcement personnel and an opportunity for the public to practice their firearms proficiency so they can ethically harvest game.



Public Shooting Sports Complex

Appendix 4: Carrying Capacity Methodology

FWC Recreation Carrying Capacity

Carrying capacities for recreational users on FWC lands are developed using a methodology employing existing spatial data and models, recommended guidelines for spatial and temporal carrying capacity, recommended guidelines for minimizing wildlife disturbance by outdoor recreation, and site-specific characteristics. The intent of this methodology is to provide a realistic carrying capacity which is based on the best science and data available with a focus on minimizing wildlife and habitat disturbance and providing the type of recreation our visitors desire and FWC's managed areas can support. This methodology also provides a means of monitoring visitor impacts and allows for flexibility in responding to these impacts and adjusting the carrying capacity as necessary. The carrying capacities generated though this process are not a visitation goal but are a guideline included in the overall area Management Plan and used as a tool to help plan and develop recreation opportunities.

Sensitivity Analysis

An initial analysis of site sensitivity to recreation impacts is conducted using:

- Integrated Wildlife Habitat Ranking System model results for the site
- Natural community values based on threat rankings developed for the Florida Wildlife Legacy Initiative using the rankings for Roads, Incompatible Recreation Activities, and Conversion to Recreation Areas
- Natural community values based on the sensitivity guidelines published by the Florida Park Service
- Wetlands
- Slope
- Soils
- Known point locations of species-of-interest
- Known locations of sensitive resources
- Division of Historic Resources Master Site File sites
- Density of existing roads, trails and facilities
- Other datasets as available and appropriate

These data layers are converted to grids as necessary and normalized to a scale of 1-100. Then a weighted sum is calculated for all data resulting in a "Sensitivity Index" for the area with higher values being more sensitive to disturbance from recreation.

Recreation Zoning

Once the results of the Site Sensitivity model are obtained, a Recreation Zone Map is developed incorporating these results and any statutory or rule constraints for recreation activities. These Recreation Zone Maps will show the different types of recreation experiences appropriate for

each zone of the area. This guides potential trail lengths, trail types, types of facilities and other parameters related to recreation infrastructure.

Carrying Capacity Development

For linear recreation facilities (i.e. trails), a physical carrying capacity is developed based on trail length using a 100-meter buffer on either side of the trails. This buffer distance is consistent with the estimated area of wildlife disturbance along the trail. In addition, an additional 100-meter buffer is used between potential trail users to provide an undisturbed 100-meter area between users. This results in an estimate of 1 user or group every 300 meters along the trail. This estimate is generated using GIS and is adjusted to minimize disturbance "hot spots" such as overlapping disturbance buffers. Point facilities (i.e. observation structures) have a single 100-meter radius buffer. The temporal component of carrying capacity is developed based on the Florida Park Service turnover estimate of two per day on primitive hiking trails or four per day on shorter, improved nature trails. In addition, existing and planned parking and other trailhead limitations are factored into the estimate. If the site already has a Recreation Master Plan (RMP) developed, these estimates will be based on existing and planned facilities as detailed in the RMP. If the area does not have an RMP these estimates are based on potential trail corridors and potential point facility sites derived from the Recreation Zoning and site visits by PAWV and area staff. Another product of this estimate is a "Wildlife Habitat Disturbance Index" based on the ratio of potentially impacted habitat to impact-free habitat expressed as a percentage of the area potentially impacted by recreation.

Camping Facility Carrying Capacities

- Primitive tent camping with no facilities or limited facilities (fire ring, picnic table): 4 people/site with a turnover of once per day.
- Standard camping site (fire ring, picnic table, improved or paved pad, toilet facilities): 8 people/site with a turnover of once per day.
- Generally group camping will be 30 people per 5 acres of camping area.

Picnic Areas

- 8 tables/acre and 4 people/table with a turnover twice a day.

Structures

- Structures dependent on trails for access will be included in the calculated trail capacity.
- Structures that can be accessed independently of trails will have a carrying capacity determined on a case-by-case basis based on the type and size of the structure.

Shoreline Fishing Areas

- Shoreline fishing areas will have a capacity of 1 angler per 25 linear feet.

Seasonal Hunting

- For those areas with seasonal hunting use, carrying capacities range from one hunter per 75 acres to one hunter per 150 acres. The exact density chosen depends on a variety

of factors with game management most paramount, but is also influenced by the layout of the area and the chosen hunting framework. Areas with dove fields will have a dove field capacity of one hunter to 1.75 acres of dove fields. This capacity is in addition to the calculated capacity for non-hunting recreation uses. Areas with quota permits will have the hunting capacity established as double the maximum number of permits for any one season to account for guest permits.

As needed, capacities for other uses not listed above will use the carrying capacity guidelines published by the Florida Park Service as a baseline.

Recreation Impact Monitoring

To provide a quantitative measure of recreation impacts, limits will be established as "No impact ranks greater than 1," as observed during each biannual monitoring conducted by PAWV field staff. If any ranking values are greater than 1, the site will be assessed to determine the source of the impact. If impacts are the result of recreation activities (as opposed to facility design or other sources), the carrying capacity will be revisited and corrective measures will be developed by PAWV and area staff.

Appendix 5: Recreation and Wildlife Viewing Facilities Design Guidelines

- **Entrances**
  Should welcome visitors to the area, identify the Commission, describe the range of potential experiences on the area, and describe the wildlife viewing experiences by season, time of day or wildlife event.

- **Viewing structures**
  Structures should include wildlife identification or other interpretive information. The structure should be surrounded by and focused on wildlife and habitat, rather than being the focus itself. For towers, each level should focus visitor attention to a different habitat or feature.

- **Trails**
  Trails should be described at the trailhead with length or time required. If the focus is wildlife viewing, include best seasons. Interpretive panels or brochure stops should be well-spaced and focused by season.

General considerations in developing facilities:

- Locate viewing facilities on previously disturbed properties wherever possible.
- Preserve a sense of solitude and limit impact on natural resources by concentrating recreation uses in small “developed” zones and along existing road/trail corridors.
- Site facilities and design trails to minimize user conflicts.
- Avoid sensitive areas such as wetlands and route trails to avoid fragmenting habitat.
- Consider physical characteristics and the historical and natural character of the location.
- Adapt parking lots, buildings and other physical developments to existing topography.
- Retain on-site surface water run-off generated by development.
- Use porous pavements where surface hardening is required.
- Consider sewage disposal needs.
- Use native plants representative of the area for all landscaping.
- Design and build trails and observation structures to avoid disturbing wildlife and to minimize negative impacts such as erosion.
- Use elevated boardwalks in wet areas and swamps and walkovers to protect other sensitive areas.
- Incorporate wildlife viewing ethics into all interpretive materials.
- Incorporate interpretive themes into all brochures, trail guides and other materials produced to support recreation opportunities.
- Install interpretive signs and panels as appropriate at all recreation facilities.
- Route trails to interpret restoration and wildlife management activities.
- Insure interpretation of highly desired species viewable on the area.

Universal Access

Nature-based recreation facilities and programs must be developed and implemented in compliance with the Americans with Disabilities Act. All facilities in developed zones should be universally accessible. Recreation facilities in semi-primitive or primitive zones should be planned to be accessible to the degree possible except where:

5. compliance will cause harm to cultural, historic or religious sites or significant natural features or characteristics.
6. compliance will substantially alter the nature of the setting or purpose of the facility (or a portion of the facility).
7. compliance would require construction methods or materials prohibited by federal, state or local regulations or statutes, or compliance would not be feasible due to terrain or prevailing construction practices.

Appendix 6: Management and Monitoring

Recreation Facility Monitoring Protocol

Florida Fish and Wildlife Conservation Commission
Office of Public Access and Wildlife Viewing Services

Introduction

In order to better plan and manage recreation opportunities on lands managed by the Florida Fish and Wildlife Conservation Commission (FWC), FWC's Office of Recreation Services has developed a monitoring program for recreation-related facilities and infrastructure. Using both qualitative and semi-quantitative methods this program will encompass trails, signs, wildlife viewing structures and other facilities. Data obtained through this program will help FWC better plan, construct, and maintain facilities to provide the recreation experiences that are meaningful, enjoyable, and safe.

Materials

Digital camera
Tripod
Kaidan panoramic photo mount
VRWorx, or other software for creating panoramic photos
Monitoring forms
Tape measure
Compass
GPS (loaded with waypoints for monitoring points)
Hand tools for checking structure hardware

Monitoring Procedures

Photopoints

Photopoints should be recorded with GPS, which can also be used to navigate back to the photopoint location on future monitoring visits. A description of the location should be recorded to ensure maximum accuracy in relocating the photopoint.

Trails

Trails are monitored with a panoramic photopoint at the trailhead and a parallel photopoint (forward and backward along the trail) every mile for trails over 2 miles and every ½ mile for trails 2 miles and less. Additional photopoints may be needed for problem areas encountered on the trail. Photopoints are centered at the trail tread.

Assemble the panoramic photo gear and set the tripod over the photopoint, making sure the panoramic head is level. Standard photopoint height is 60" to the center of the camera lens while mounted on the panoramic mount. This may be modified for some photopoints depending on surrounding vegetation or other considerations, but the new height should be recorded and used each time that photopoint is taken. The easiest way to set the height is to assemble the tripod, panoramic mount, and camera on level ground, adjust the legs to their full length and adjust the center column to achieve the proper lens height. The center column can be marked with a permanent marker, tape, or scored with a small file or engraver and each mark should be labeled with the height and camera model. This will have to be done for each different camera that will be used for photopoints, although it is preferable that the same camera be used for all photopoints.

Cameras should be set to full wide zoom, landscape mode if available, with flash off. All photopoints begin with the detent closest to due north and continue in a clockwise direction. A log should be kept to record the photo numbers and their corresponding photopoint.

After downloading the images they should be processed into a flat panorama (a digital image composed of all of the photos for a particular photopoint). These panoramas along with the component images should be kept in a central location organized by WMA, Photopoint Number, and photopoint date. Parallel photopoints will not need to be processed but should be organized as above.

Use areas

Use areas have 2 photopoints. One is a panoramic photo taken at the center of the use area which follows the procedure for trailhead photopoints. The other is a single photo taken from the perimeter of the area. The compass bearing of the photo should be recorded and used for all subsequent photos taken at that photopoint.

Structures

Structures have a single photopoint. This is a single photo and the compass bearing of the photo should be recorded and used for all subsequent photos taken at that photopoint. If desired, a panoramic photo can be taken to represent the view from the structure (such as the top of a tower).

Physical inspections

- Check for presence or absence (smaller amenities such as fire rings and benches)
- Check for proper location (smaller amenities such as fire rings and benches)
- Inspect for damage (signs and structures)
- Check hardware and tighten or replace if necessary (signs and structures)

Trails should be traversed in their entirety, either on foot for shorter trails or by vehicle for longer trails. Trouble spots (erosion, trail braiding, shortcuts, litter, excess vegetation encroachment, etc.) should be recorded by GPS and noted on the monitoring form.

Monitoring Forms and Record Keeping

Monitoring forms are completed in the field. This can be done electronically using the Recon field computer or manually. If done manually they should be transferred to an electronic version by filling out the form on computer. Completed electronic forms are then placed in the appropriate location on the Project Management Site for that WMA along with any relevant GPS data (converted to Shapefile), photographs, photopoints, and other notes.

Any issues that need attention should be sent to the appropriate Recreation Planner via email. The Recreation Planner is responsible for ensuring the issue is brought to the attention of the appropriate personnel both internally and external to FWC and tracking the issue through resolution.

Trail Monitoring Form

Observers:_____ Date:_____ Site:_____

LITTER IMPACTS:

1	None	
2	Very Little	small isolated pieces of litter
3	Some	frequent small pieces or isolated large pieces of litter
4	Extensive	small areas used for trash dumping or multiple areas of high litter
5	Very Extensive	large areas used for trash dumping

Problem area locations/comments:

EROSION PROBLEMS:

1	Very little	mostly natural ground cover distribution, or man-made materials (concrete, aggregate, mulch, etc.)
2	Some	localized patches of bare soil from use or runoff from structures or impervious surfaces; vehicle tracks noticeable; standing water; minor hog damage.
3^2	Moderate	large areas of bare soil created by use; ruts from vehicles; areas muddied by use; roots partially exposed; heavy hog damage.
4	Extensive	channelization, washout, and/or undercutting banks; roots mostly exposed; deep ruts; trail widening.

Problem area locations/comments:

CORRIDOR CONDITION:

1	Within Standards	minimal vegetation encroachment
2	Exceeds Standards	trail needs some mowing/lopping/ chain-sawing; minor tree fall
3	Unacceptable	trail is generally overgrown and difficult to find. tree fall that impedes passage

If there were problem areas, please describe condition and exact location:

PHOTOPOINT INFORMATION

All photopoints should be taken with a lens height of 60", the flash set to "off", and no zoom. All panoramic photopoints start with a photo taken towards north, then continue in a clockwise direction.

New photopoints taken (photopoint type, coordinates, location description, lens azimuth, image numbers)

Existing photopoints taken (Photopoint Number, image numbers)

Use Area Monitoring Form

Observers:_____ Date:_____ Site:_____

LITTER IMPACTS:

Rating	Category	Description
1	None	
2	Very Little	small isolated pieces of litter
3^2	Some	frequent small pieces or isolated large pieces of litter
4	Extensive	small areas used for trash dumping or multiple areas of high litter
5	Very Extensive	large areas used for trash dumping

Comments:

STRUCTURE DAMAGE (shelters, picnic tables, kiosks, trash cans, grills, benches, etc.):

Rating	Category	Description
1	None	none/ loose bolts on new structures.
2	Very Little	minor graffiti or scratches, dirty, light crazing or oxidation, crooked, minor cracks.
3^2	Some	minor wood repair; extensive graffiti; cuts or gouges; bullet holes; major cracks, extensive crazing or fading.
4	Extensive	hazardous damage; rotten supports; severe rust; illegible signs; burnt.
5	Very Extensive	structure is missing or rendered completely ruined/ useless.

List of use-area structures with rankings:

EROSION PROBLEMS:

1	Very little	mostly natural ground cover distribution, or man-made materials (concrete, aggregate, mulch, etc.)
2	Some	localized patches of bare soil from use or runoff from structures or impervious surfaces; vehicle tracks noticeable; standing water; minor hog damage.
3^2	Moderate	large areas of bare soil created by use; ruts from vehicles; areas muddied by use; roots partially exposed; heavy hog damage.
4	Extensive	channelization, washout, and/or undercutting banks; roots mostly exposed; deep ruts; trail widening.

Problem area locations/Comments:

PHOTOPOINT INFORMATION

All photopoints should be taken with a lens height of 60", the flash set to "off", and no zoom.. All panoramic photopoints start with a photo taken towards north, then continue in a clockwise direction.

New photopoints taken (photopoint type, coordinates, location description, lens azimuth, image numbers)

Existing photopoints taken (Photopoint Number, image numbers)

Structure Damage Reporting Form

Observer: _____ Date:_____

Site: _____

Structure name/type:_____

Structure location (written description, coordinates):_____

Please rate and explain the extent of the damage in the following areas, where…

1=Minimal (no maintenance needed)
2=Moderate (maintenance recommended)
3=Severe (maintenance imperative)

TAKE CLOSE-UP PHOTOS OF ALL REPORTED DAMAGE

Cleanliness (graffiti, mildew, debris build-up, odor, etc.)

Structural Integrity (crooked, wobbly, or leaning)

Wood condition (rotten, vandalized)

Hardware (rusted, loose, missing)

Other (please describe)

WMA Visit Checklist

- ○ Trail maintenance needs
- ○ Sign maintenance needs
- ○ Structure maintenance needs
- ○ Day-use area condition/maintenance needs
- ○ Sufficient publications in field office
- ○ Brochure boxes adequately stocked
- ○ Hunting calendar posted and up-to-date
- ○ Users encountered on area (number, activity, address for future surveys)
- ○ Geocaches inspected
- ○ Manager concerns
- ○ New ideas for area enhancement

Appendix 7: Work Plan for Recreation Enhancements

Based on the prioritization of the goals and objectives listed in the RMP, the following list of projects and tasks has been ordered in terms of short and long term completion timeframes.

1. Tasks 2011-12

- Evaluate potential trail routes to walk-in entrance.
- Evaluate potential trail routes across Crabgrass Road to proposed HHBCWMA trail.

2. Tasks 2012-13

- Mark route to walk-in entrance.
- Mark route to HHBCWMA trail.
- Plan campground/entrance improvements.

3. Tasks 2013-14

- Install covered picnic tables at picnic areas.

4. Long Term Completion and Ongoing Tasks

- Viewing structure near entrance.
- Campground/entrance improvements.

13.12 FWC Apiary Policy

Florida Fish and Wildlife Conservation Commission

Apiary Policy

Division of Habitat and Species Conservation

Issued by:

Terrestrial Habitat Conservation and Restoration Section

9/1/2010

Enclosed is the HSC/THCR Apiary Policy for all Florida Fish and Wildlife Conservation Commission's Wildlife Management Areas and Wildlife and Environmental Areas

DIVISION OF HABITAT AND SPECIES CONSERVATION POLICY

Issued September 2010

SUBJECT: APIARY SITES ON FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION WILDLIFE MANAGEMENT AREAS AND WILDLIFE AND ENVIRONMENTAL AREAS

STATEMENT OF PURPOSE: It is the intent of this policy to determine which Florida Fish and Wildlife Conservation Commission (FWC) Wildlife Management Areas or Wildlife and Environmental Areas (WMA/WEA) may have apiary sites, and provides direction on site location, management and administration of said apiaries.

Definitions

Apiary – A place where bees and beehives are kept, especially a place where bees are raised for their honey.

Apiary Site – An area set aside on a WMA/WEA for the purpose of allowing a beekeeper to locate beehives in exchange for a fee as established by contract between the beekeeper and FWC.

Apiary Wait List – An apiary wait list will be maintained by the Terrestrial Habitat Conservation and Restoration (THCR) Section Leader's Office based on applications received from interested beekeepers. Only qualified apiarists will be added to the list. To become qualified the new apiarist must submit an application form and meet the criteria below under the section titled "Apiary Wait List and Apiary Application."

Beekeeper/Apiarist – A person who keeps honey bees for the purposes of securing commodities such as honey, beeswax, pollen; pollinating fruits and vegetables; raising queens and bees for sale to other farmers and/or for purposes satisfying natural scientific curiosity.

Best Management Practices – The Florida Department of Agriculture & Consumer Services (FDACS; Division of Plant Industry (DPI), Apiary Inspection Section, P.O. Box 147100, Gainesville, FL 332614-1416) provides Best Management Practices (BMP) for maintaining European Honey Bee colonies and FWC expects apiarists to follow the BMP.

Hive/Colony – Means any Langstroth-type structure with movable frames intended for the housing of a bee colony. A hive typically consists of a high body hive box with cover, honey frames, brood chambers and a bottom board and may have smaller super hive boxes stacked on top for the excess honey storage. A hive/colony includes one queen, bees, combs, honey, pollen and brood and may have additional supers stacked on top of a high body hive box.

Establishment of Apiary Sites on WMA/WEA

During the development of an individual WMA/WEA Management Plan, apiaries will be considered under the multiple-use concept as a possible use to be allowed on the area. "Approved" uses are deemed to be in concert with the purposes for state acquisition, with the Conceptual State Lands Management Plan, and with the FWC agency mission, goals, and objectives as expressed in the agency strategic plan and priorities documents. Items to consider when making this determination can also include:

- Were apiaries present on the area prior to acquisition?
- Are there suitable available sites on the WMA/WEA?
- Will the apiary assist in pollination of an onsite FWC or offsite (adjacent landowner) citrus grove or other agricultural operation?

For those WMA/WEAs that have not considered apiaries in their Management Plan, upon approval of this policy Regional Staff will work with the Conservation Acquisition and Planning (CAP) staff and THCR Section leadership to determine if apiaries are an approved use on the area. If apiaries are considered an approved use then a request will be made to the Division of State Lands to allow this use as part of an amended Management Plan. This request will be made through the THCR's Section Leader's office and coordinated by the CAP.

Determination of apiary site locations on WMA/WEAs should be done using the following guidelines:

- Apiary sites should be situated so as to be at least one-half mile from WMA/WEA property boundary lines, and at least one mile from any other known apiary site. Exceptions to this requirement must be reviewed by the Area Biologist and presented to the THCR Section Leader for approval.
- Site should be relatively level, fairly dry, and not be prone to flooding when bees would normally be present.
- Site should be accessible by roads which allow reasonable transfer of hives to the site by vehicle.
- If a site is to be located near human activity, such as, an agricultural field, food plot, wildlife opening, campsites, etc., or if the site may be manipulated by machinery at a time when bees would be present, then the apiary site should be located at a minimum of 150 to 200 yards from the edge of that activity. This will ensure minimal disturbance to the bees and minimize incidents with anyone working in the area.
- It is preferable to have apiary sites located adjacent to or off roads whenever possible. If traditional apiary sites were located on roads and the Area Biologist determines that the site will not impact use of the road by visitors then it will be allowed.
- FWC Area Biologist shall select apiary site(s) and the site(s) selected should not require excessive vegetation clearing (numerous large trees, dense shrubs) or ground disturbance (including fill).

WMA/WEA Staff Responsibilities

Area Biologist on WMAs/WEAs with approved apiary sites will forward a GIS shapefile depicting all the apiary site polygon(s), including a name or number with coordinates for each apiary site, to the THCR Contract Manager.

Area Biologist will monitor each apiary site no less than once a year to determine if the beekeeper is abiding by the contract requirements. If violations are noted, staff should bring them to the attention of the beekeeper for correction. If violations continue staff should notify the THCR Contract Manager who will determine if or what additional action is warranted.

Area Biologist will establish and maintain firelines around the apiary site to ensure the apiary site is ready when a planned burn is scheduled.

Area Biologist will advise the beekeeper of burn plans, road work, gate closures, or other site conditions and management activities that may affect the beekeeper's ability to manage or access the apiary site.

Area Biologist is not responsible to ensure access roads are in condition suitable for beekeepers to access their hives with anything other than a four wheeled drive vehicle. (The site of the apiary may be high and dry, but the roads accessing them may be difficult to impossible to get a two wheeled drive vehicle into during extreme weather, e.g., heavy rainfall events.)

Apiary Wait List and Apiary Application

An electronic waiting list for apiary sites will be maintained by the THCR's Contract Manager for each WMA/WEA. To be placed on the waiting list an interested beekeeper must submit an apiary application form to the contract manager (See Enclosed Application Form). Each applicant will be considered based on the following criteria:

- Proof of a valid registration with the FDACS/DPI.
- Proof of payment of outstanding special inspection fees for existing sites.
- A validated history of being an apiary manager.
- Three references that can attest to the applicant's beekeeping experience.

If an apiary site is becomes available on a WMA/WEA and there are beekeepers on the waiting list interested in that particular area, those individuals meeting the criteria above will be given preference. If there is more than one beekeeper meeting the criteria with their name on the list then a random drawing will be held by the THCR Contract Manager to determine who will receive the site. Beekeepers on the waiting list will be notified in writing of the random drawing's date/location and will be invited to attend. The individual's name selected during this drawing will be awarded the contract.

Apiary agreements are non-transferable. Each agreement serves as a contract between a specific individual or company and FWC, and the rights and responsibilities covered by an individual agreement cannot be transferred.

Contracts

Apiary contracts are for five (5) years and renewals are contingent upon a satisfactory performance evaluation by Area Biologist and concurrence of the THCR Section Leader. Approval is based on apiarist performance, adherence to rules and regulations and general cooperation. If an Area Biologist decides an apiarist whose contract is expiring is unacceptable he may recommend not approving the new contract. If this transpires then the wait list process using random selection will be used. If there is no apiarist on a current wait list then the apiarists who are in good standing with existing contracts will be notified to see if any want to be put on the wait list for the drawing. If none are interested then the site will be put on hold pending a valid request.

Pricing of Apiary Site(s)

Cost of each apiary site will be $40 annually which will include up to 50 beehives. Additional beehives will be charged at the rate of $40 per 50 beehives.

Pricing examples:

- A beekeeper is leasing 2 apiary sites with up to 100 beehives - the fee per year is $80.
- A beekeeper is leasing 3 apiary sites with up to 200 beehives - the fee per year is $160.

Note: The maximum number of hives/colonies allowed on an apiary site will be at the discretion of the apiarist. However, the apiarist is strongly recommended to follow the BMP as recommended by the FDACS/DPI. In addition to providing the BMP, FDACS/DPI's management has recommended 50 hives per site in pineland communities and no more than 100 hives per site in areas with bountiful resources. However, FWC will not dictate the number of hives on a site unless they create land management issues.

Bear Depredation Control at Apiary Site(s)

Beekeepers are required to consult with the WMA/WEA Area Biologist to see if electric fencing is required for their apiary sites. If the Area Biologist requires electric fencing then the Beekeeper shall construct and maintain electric fences for each apiary site. Numerous electric fence designs have been used to varying success and FWC as a courtesy provides an electric fence technical information bulletin with each Agreement. This bulletin is attached in order to assist the Beekeeper and/or provide a design that has been proven to be reasonable effective.

SUBJECT MATTER REFERENCES

Apiary Inspection Law - Chapter 586, Florida Statutes (see http://www.leg.state.fl.us/Statutes/), Rule Chapter 5B-54, Florida Administrative Code (see www.flrules.org).

The Board of Trustees of the Internal Improvement Trust Fund – Recommended Apiary Agreement Guidelines For Apiaries & Revisions to an Agreement for Apiary Activities on State Lands on September 23, 1986 S:\HSC\THCR\APIARY.BACKUP.POLICY\dlissupport@dos.state.fl.us_20100903_111446.pdf

Senate Resolution 580, September 21, 2006: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:sr580ats.txt.pdf

Attachments

Sample Apiary Agreement W/Attachments (Map Placeholder & Electric Fence Bulletin)
Sample Apiary Site Application Form W/Mission Statement
Best Management Practices for Maintaining European Honey Bee Colonies
Sample of Random Selection Process Procedure

APPROVED:

Signature on File

Division Director or Designee

DATE: 11 September 2010

APIARY AGREEMENT

AGREEMENT FOR APIARY ACTIVITIES ON STATE LANDS

THIS AGREEMENT is made by and between the Florida Fish and Wildlife Conservation Commission, 620 South Meridian Street, Tallahassee, FL 32399-1600, hereinafter known as "the COMMISSION," and (Insert Name and Address of Apiarist Here), telephone number (Insert Phone Number of Apiarist Here), hereinafter known as "the USER."

WITNESSETH

In consideration of the mutual promises to be kept by each and the payments to be made by the USER, the parties agree as follows:

1. TERM: This Agreement will begin (Insert date here) or the date signed by both parties, whichever is later, and will end five (5) years from the date of execution. Issuance of a new five (5) year Agreement is contingent upon satisfactory performance evaluation by the Area Biologist and approval of the THCR Section Leader.
2. The COMMISSION Agrees:

a. To provide apiary sites on state lands, which will be identified by the COMMISSION staff and located on the property identified in (4)(f) below.
b. To provide technical assistance for bear-proofing, if required by Area Biologist, of sites made available under this Agreement.
c. To allow the USER to place a total number of (insert number of hive boxes here) hive boxes on the COMMISSION-managed property at the apiary site(s).

3. The USER Agrees:
   a. To pay (Insert Total Dollars Here) on or before the execution date of this Agreement and each year thereafter on or before anniversary date of the original contract execution date, with check or money order payable to the Florida Fish and Wildlife Conservation Commission. All payments shall be remitted to The Florida Fish and Wildlife Conservation Commission, Finance and Budgeting, Accounting Section, PO Box 6150, Tallahassee, FL 32399-6150, and a copy of the check to The Florida Fish and Wildlife Conservation Commission, Terrestrial Habit Conservation and Restoration Section, Attn: Section Leader, 620 South Meridian Street, Tallahassee, Florida 32399-1600.
   b. To have no more than (Insert Number of Hive boxes here) hive boxes on the property at one time.
   c. To comply with the Florida Honey Certification and Honeybee Law, Chapter 586, Florida Statutes, and Rule 5B-54, Florida Administrative Code, and all other applicable federal, state, or local laws, rules or ordinances.
   d. To not damage, cut or remove any trees in the course of preparing for or conducting operations under this Agreement.
   e. To repair within 30 days of occurrence any damage to roads, trails, fences, bridges, ditches, or other public property caused by USER'S operations under this Agreement based on discretion of the COMMISSION to ensure the WMA/WEA management goals are met. All repairs will be coordinated with the Area Biologist to ensure management goals are met. If USER does not comply within the 30 day requirement, then the COMMISSION may use a third party to perform the repairs and charge the USER accordingly.
   f. To report any forest fires observed and to prevent forest fires during the course of operations under this Agreement.
   g. To abide by all WMA/WEA rules and regulations in addition to items in this Agreement.
   h. To notify the Area Biologist within 24 hours when a bear depredation event occurs.
   i. To post their name in an agreed upon location at each site covered by this Agreement or otherwise use an identifying system that is approved by the Area Biologist.
   j. To furnish proof of general liability insurance prior to starting apiary activities on state property or within 30 days of execution of this Agreement, whichever is earlier, and proof of annual renewal of the general liability insurance policy prior to or upon expiration date of the policy. The USER shall maintain continuous general liability insurance throughout the term of this Agreement for no less than $300,000 for bodily injury and $100,000 for property damage for each occurrence. Such a policy shall name

the COMMISSION as the Certificate Holder. The USER's current certificate of insurance shall contain a provision that the insurance will not be canceled for any reason during the term of this Agreement except after thirty (30) days written notice to the COMMISSION.

k. To be liable for all damage to persons or property resulting from operations under this Agreement, and to release, acquit, indemnify, save and hold harmless the COMMISSION, its officers, agents, employees and representatives from any and all claims, losses, damages, injuries and liabilities whatsoever, whether for personal injury or otherwise, resulting from, arising out of or in any way connected with activities under this Agreement or activities occurring from any other source not under this Agreement and the USER further agrees to assume all risks of loss and liabilities incidental to any natural or artificial condition occurring on state lands cover by this Agreement.

l. To construct and maintain electric fences, if required by the Area Biologist at the Area Biologist's discretion, to provide protection of apiaries from black bear depredation consistent with the technical information bulletin attached to this agreement, and, if so required, to maintain an open buffer around the fencing of five (5) feet or more. (See Attachment 1)

m. To remove all personal property from the site within thirty (30) days of termination or expiration of this Agreement. The USER understands that after this time, all the USER'S personal property remaining on the WMA/WEA shall be deemed abandoned and become the property of the COMMISSION, which will be utilized or disposed of at the sole discretion of the COMMISSION, and that reasonable storage and/or disposal fees and/or costs may be charged to the USER.

4. The parties mutually agree:
   a. This Agreement is not transferable.
   b. The USER's failure to submit payment by the due date established herein may result in cancellation of the Agreement by the COMMISSION.
   c. The USER's failure to submit proof of general liability insurance or proof of annual renewal in compliance with (3) (j) above may result in cancellation of this Agreement by the COMMISSION.
   d. This Agreement shall be in effect for a period of five (5) years and issuance of a new agreement will be contingent upon a satisfactory performance evaluation and approval of the Area Biologist and THCR Section Leader.
   e. Each apiary site shall be situated so as to be at least one-half (1/2) mile inward from state property lines and there shall be at least one (1) mile separation between sites. Exceptions to this rule must be reviewed by Area Biologist presented to and approved by the Terrestrial Habitat Conservation and Restoration Section Leader.
   f. The property covered by this Agreement is described as follows: That the property sites (Insert Area Name) Wildlife Management Area are represented by Attachment 2.
   g. In accordance with Section 287.134, Florida Statutes, an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal or reply on a

contract to provide goods or services to any public entity; may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant with any public entity; and may not transact business with a public entity.

h. As part of the consideration of this Agreement, the parties hereby waive trial by jury in action brought by either party pertaining to any matter whatsoever arising out of or in any way connected with this Agreement. Exclusive venue for all judicial actions pertaining to this Agreement is in Leon County, Florida.

i. This Agreement may be terminated by the COMMISSION upon thirty (30) days written notice to the USER in the event the continuation of the apiary activities are found to be incompatible with the COMMISSION'S management plans or for any other reason at the sole discretion of the COMMISSION.

This Area Intentionally Left Blank

IN WITNESS WHEREOF, the parties have executed this Agreement on the day and year last below written.

_____
USER SIGNATURE

Date: _____

_____
Witness

_____
Witness

Approved as to form and legality

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

_____
Mike Brooks, Section Leader
Terrestrial Habitat Conservation and Restoration

Date: _____

_____
Commission Attorney

Date: _____

AGREEMENT
ATTACHMENT 1

Use of Electric Fencing to Exclude Bears And Prevent Property Damage

Florida Fish and Wildlife Conservation Commission
Technical Information Bulletin (2001)

Electric fencing has proven effective in deterring bears from entering landfills, apiaries (beehives), livestock pens, gardens, orchards, and other high-value properties. Numerous electrical fence designs have been used with varying degrees of success. Design, quality of construction, and proper maintenance determine the effectiveness of an electric fence. The purpose of this technical bulletin is to assist the property owner in understanding and implementing electrical fencing as a tool to exclude and prevent damage caused by black bears.

Understanding Electric Fencing

Electric fencing provides an electrical shock when an animal comes into contact with the electrically charged wires of the fence. People unfamiliar with electric fencing often are afraid that it will injure, permanently damage, or kill an individual or pet that contacts the fence. **This is not true!** A properly constructed electric fence is safe to people, pets, and bears.

Components of Electric Fencing

An electric fence is composed of four main elements: a charger, fence posts, wire, and the ground rod.

Fence Charger. On a small scale electric fence (like that typically needed for bear exclusion), the largest cost is normally the fence charger. A fence charger's job is to send an electrical pulse into the wire of the fence. Contrary to popular belief, there is not a continuous charge of electricity running through the fence. Instead the charger emits a short pulse or burst of electricity through the fence. The intensity and duration of the electrical pulse varies with the type of charger or controller unit. Chargers with a high-voltage, short duration burst capacity are the best because they are harder to ground out by tall grass and weeds. These types are also the safest, because, even though the voltage is high (5 kilovolts) the duration of the burst is very short (2/10,000 of a second) (FitzGerald, 1984).

Two basic energy sources for chargers are batteries (12-volt automotive type) and household current (110 volt). Battery-type chargers are typically cheaper to purchase but require more maintenance

because of the necessity of charging the battery. The advantage of a battery powered charger is that it can be used in a remote location where 110-volt current is not available. Most units that are powered by a fully charged 12-volt deep-cycle batteries can last three weeks before needing a charge. Addition of a solar trickle charger will help prolong the duration of effective charge in 12-volt batteries.

Fence Posts. On small scale fences, the posts are normally the second largest expense involved in construction. Therefore, when planning an electric fence it is a good idea to utilize existing fencing in order to save money. If no existing fence is available, posts will need to be placed around the area needing protection. Posts may be wood, metal, plastic, or fiberglass. Wood and metal posts will need to have plastic insulators attached to them which prevent the electric wire from touching the post causing it to ground out. Plastic and fiberglass posts do not need insulators, the wire may be affixed directly to these posts. Wood and metal posts are typically more expensive and require the added expense of insulators, however, they are more durable and generally require less maintenance.

Wire. Fourteen to seventeen gauge wire is the most common size range used in electric fencing. Heavier wire (a lower gauge number) is more expensive but carries current with less resistance and is more durable (FitzGerald, 1984).

The two most common types of wire are galvanized and aluminum. Galvanized wire is simply a steel wire with a zinc coating to prevent rust, which makes the wire last longer. Some wire is more galvanized than others. The degree or amount of zinc coating that is around the core steel wire is measured in three classes. A class I galvanization means the wire has a thinner coating of zinc than a class II galvanization. Class III galvanized wire has the heaviest zinc coating and will last longer than the class I and class II wire (FitzGerald, 1984). In general, the cost of galvanized wire increases as the class or amount of galvanization increases.

Aluminum wire is typically more expensive than the galvanized wire. Some advantages of aluminum wire are: it will not rust, it conducts electricity four times better, and it weighs one-third less than steel wire.

The Ground Rod. The ground is an often overlooked, but critical part of an electric fence. Without a good ground, electricity will not flow through the wire. When an animal touches a charged wire, the body of the animal completes the electrical circuit and the animal feels the “shock”. The current must travel from the charger through the wire to the animal and then back through the ground to the charger if the animal is to feel the shock. The soil acts as the return “wire” (ground) in the circuit. However, if a bird was to land on a charged wire without touching the soil the bird would not complete the circuit and would be unaffected (FitzGerald, 1984). Some fence configurations use actual grounded wires within the fence to enhance the grounding system.

The ground may be a commercial ground rod or a copper tube or pipe driven six to eight feet in moist soil. Copper is expensive, so a copper coated steel pipe or any other good conducting metal pipe will

work also. Very dry soil can effect the ability to create a good ground and has sometimes been a problem during drought conditions.

Pipe may be a better choice than a solid rod during drought conditions, because water may be poured down the ground pipe to improve the ground. Some fence configurations use wires as the grounding system, rather than relying solely on the soil as a ground.

Recommended Electric Fence to Deter Black Bears

Conditions at fence sites will vary and will determine what the most effective fence configuration will be. Commission biologists welcome the opportunity to visit sites and provide custom tailored advice on constructing an effective electric fence. The following recommendation will cover most situations with low to moderate pressure from black bears. Use a five strand aluminum wire fence that is 40 inches high with wire spacing every eight inches apart using the previously mentioned wired grounding system (see Figure 1). The wire closest to the ground level (the lowest wire) should be a charged or "hot" wire. The second wire should be grounded. The third wire should be hot. The fourth wire should be grounded and the fifth wire should be hot. If using metal or wood posts, insulators must be used to keep the hot wires from grounding out. The cost of this type of electric fence utilizing fiberglass posts and a 110 volt fence charger is approximately $200 for a 40' x 40' area (160 linear feet of fence).

Materials:
1 - 1, 312 foot roll (1/4 mile) 14 gauge aluminum electric fence wire
1 - 50 foot roll 12 gauge insulated wire
20 - 5 foot 5/8 inch dia fiberglass fence posts
5 - plastic gate handles
1 - 110 volt fence charger
1 - 10 foot ground pipe
4 - plastic electric fence signs

Installation. These instructions are for a square shape fence exclusion, but the process would be very similar for other applications. Drive 4 corner posts 1-foot deep into ground and stake with guy wires. Clip, rake, and keep clear any vegetation in a 15-inch wide strip under the fence and apply herbicide. Attach and stretch the aluminum wire at 8-inch increments starting 8 inches from ground level. A loop of wire should be left on each wire at the first corner post. Once the wire has been stretched around the outside of all the corner posts back to the first post a plastic gate handle should be attached to each wire and the gate handles should be attached to each corresponding loop on the first corner post. Drive in the remaining 16 posts to the same depth at 8-foot intervals between corner posts. Secure each of the five wires to each of the posts with additional wire. Attach four plastic electric fence signs (one on each side) to the top wire of the fence. Attach a 12-gauge strand of insulated wire to the positive terminal of the fence charger and attach it to the first, third, and fifth wires of the fence. Attach another 12 gauge insulated wire to the negative terminal of the charger and attach this wire to the ground pipe

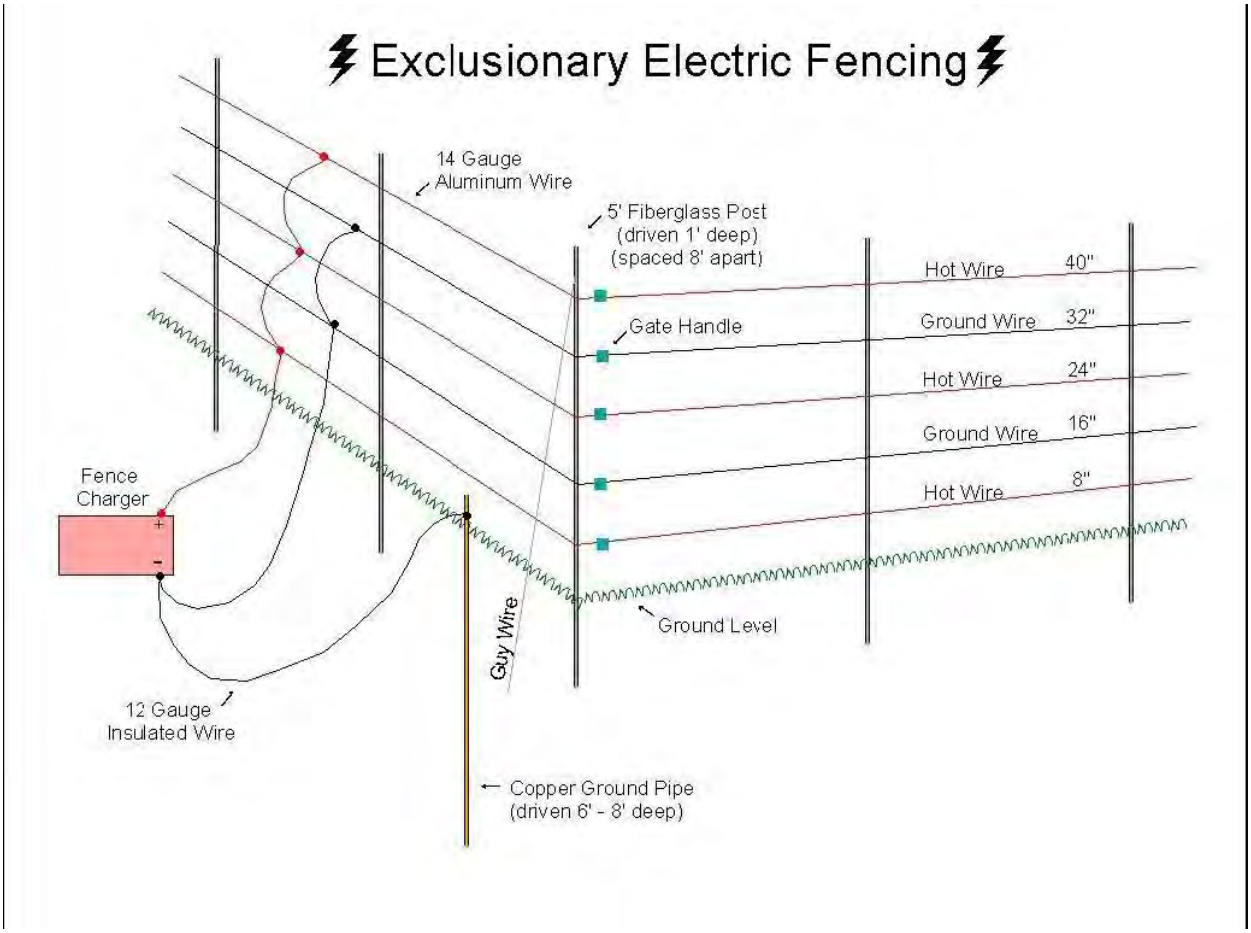
which has been driven into the ground 6 to 8-feet deep. Attach another 12 gauge insulated wire from the negative terminal of the charger to the second and fourth wires on the fence. Plug the charger into a 110 volt power supply and the fence is in operation.

Tips to improve the effectiveness of your electric fence to deter black bears:

1. If using a 12-volt fence charger, ensure that the battery is charged; check every two weeks.
2. Make sure terminals on the charger and battery are free of corrosion.
3. Make sure hot wires are not being grounded out by tall weeds, fallen tree branches, broken insulators, etc.
4. If fence wires have been broken and repaired, make sure wires are corrosion free where they have been spliced together. Also, tighten the fence at each corner post as wires that have been spliced and are loose make poor connections.
5. Be sure to rake vegetation from under and around the outside of the fence as this may act as an insulator.
6. To improve the ground around the perimeter of the fence add a piece of 24 inch chicken wire laying on the ground around the outside of the fence. This should be connected to ground.
7. During periods of drought pour water down the ground pipe and around the ground pipe to improve the ground. Digging a 6 inch deep 6 inch diameter hole around the ground pipe and back filling with rock salt will also improve the ground. Additional ground pipes may also be added to portions of the fence farthest from the charger.
8. To ensure that the bear solidly contacts the charged portion of the fence, a bait like bacon strips, a can of sardines, or tin foil with peanut butter may be attached to one of the top hot wires. Make sure these do not contact the ground, thus shorting out the fence.
9. When protecting a specific structure (like a shed or rabbit hutch), the fence should be placed 3 to 5 feet away from the structure (rather than on it) so that the bear encounters the fence before reaching the attractant.
10. Protect the fence charger from the elements by covering it with a plastic bucket or a wooden box.
11. Place plastic electric fence signs around the perimeter of your fence to improve visibility and to warn other people.

LITERATURE CITED

FitzGerald, James (1984), *The Best Fences*. Storey Publishing Bulletin A-92, Pownal, Vermont. p. 14-16.


Exclusionary Electric Fencing
14 Gauge
Aluminum Wire
5' Fiberglass Post
(driven 1' deep)
(spaced 8' apart)
Hot Wire 40"
Gate Handle
Ground Wire 32"
Hot Wire 24"
Ground Wire 16"
Hot Wire 8"
Fence
Charger
+
-
Guy Wire
Ground Level
12 Gauge
Insulated Wire
Copper Ground Pipe
(driven 6' - 8' deep)

AGREEMENT
ATTACHMENT 2

Place Holder for Map

Of

Apiary Locations

At

WMA/WEA

APIARY SITE APPLICATION FORM

Florida Fish and Wildlife
Conservation Commission

RETURN TO: The Florida Fish and Wildlife Conservation Commission, 620 South Meridian Street, Tallahassee, FL 32399-1600. Please print or type all information. Attach additional sheets if necessary.

Name _____ Telephone Number _____

Mailing Address _____

City or Town_____ County _____ Zip Code _____

Physical Address (If Different from Mailing Address)

_____

Company Name:

_____

Email Address

_____

Requested Wildlife Management or Wildlife and Environmental Area(s)(see attached list of WMA/WEAs with apiary sites):

WMA/WEA _____ County_____ # of Sites_____

WMA/WEA _____ County_____ # of Sites_____

WMA /WEA_____ County_____ # of Sites_____

WMA /WEA_____ County_____ # of Sites_____

Planned Number of Hives Per Site: _____ Permanent: ____ Seasonal: _____

Member of Beekeepers Association: Yes____ No____

Number of Years a Member_____

Name of Beekeepers Association:_____

Are you registered with Florida Department of Agriculture and Consumer Services/Division of Plant Industry (FDACS/DPI):_____Yes _____No _____N/A If yes, please provide proof.

Are you current with any and all special inspection fees:_____Yes _____No _____N/A. If yes, please provide proof.

Do you follow all recommended Best Management Practices from FDACS/DPI?:_____Yes _____No

If no, then please explain on a separate piece of paper.

Please provide below a chronological history of your beekeeping experience. If you need more space, please provide additional sheets:

References: If a new apiary contractor, please provide on a separate piece of paper at least 3 references who can verify your apiary experience. Provide each reference's name, address, phone number and email address (if applicable). Please attach reference sheet to this document and submit.

MISSION STATEMENT

Management
Of
Florida Fish and Wildlife Conservation Commission's
Wildlife Management Areas
And
Wildlife and Environmental Areas

The mission of the Florida Fish and Wildlife Conservation Commission (FWC) is to manage fish and wildlife resources for their long-term well-being and the benefit of the people. To aid in accomplishing this mission, one of FWC's management goals is to manage fire-adapted natural communities on our Wildlife Management and Environmental Areas (WMA/WEA) to support healthy populations of the plants and animal's characteristic of each natural community. In order to achieve this goal various habitat management techniques are used. These include prescribed burning, applications of herbicides and mechanical treatment of vegetation. These management efforts will take place at various times and locations on each of the FWC's WMA/WEAs. Staff on each WMA/WEA will work with and make users aware of these activities when necessary. Users must be aware and accept that these activities are necessary for the proper management of the area.

Note: This document is included as an attachment with each Application and executed Contract.

FDACS/DPI's BMP

Florida Department of Agriculture & Consumer Services

BEST MANAGEMENT PRACTICES FOR MAINTAINING EUROPEAN HONEY BEE COLONIES

1. Beekeepers will maintain a valid registration with the Florida Department of Agriculture and Consumer Services/Division of Plant Industry (FDACS/DPI), and be current with any and all special inspection fees.
2. A Florida apiary may be deemed as European Honey Bee with a minimum 10% random survey of colonies using the FABIS (Fast African Bee Identification System) and/or the computer-assisted morphometric procedure (i.e., Universal system for the detection of Africanized Honey Bees (AHB) (USDA-ID) or other approved methods by FDACS on a yearly basis or as requested.
3. Honey bee colony divisions or splits should be queened with production queens or queen cells from EHB breeder queens following Florida's Best Management Practices.
4. Florida beekeepers are discouraged from collecting swarms that cannot be immediately re-queened from EHB queen producers.
5. Florida Beekeepers should practice good swarm-prevention techniques to prevent an abundance of virgin queens and their ready mating with available AHB drones that carry the defensive trait.
6. Maintain all EHB colonies in a strong, healthy, populous condition to discourage usurpation (take over) swarms of AHB.
7. Do not allow any weak or empty colonies to exist in an Apiary, as they may be attractive to AHB swarms.
8. Recommend re-queening with European stock every six months unless using marked or clipped queens and having in possession a bill of sale from an EHB Queen Producer.
9. Immediately re-queen with a European Queen if previously installed clipped or marked queen is found missing.
10. Maintain one European drone source colony (250 square inches of drone comb) for every 10 colonies in order to reduce supercedure queens mating with AHB drones.
11. To protect public safety and reduce beekeeping liability, do not site apiaries in proximity of tethered or confined animals, students, the elderly, general public, drivers on public roadways, or visitors where this may have a higher likelihood of occurring.
12. Treat all honey bees with respect.

RANDOM
SELECTION PROCESS
FOR VACANT APIARY SITE

When an apiary site becomes available the following procedure is used to randomly select the next apiarist (beekeeper) for an available apiary site on a WMA or WEA. Only those who have been evaluated and deemed qualified to be an apiarist on a WMA/WEA through the Apiary Application process will be eligible for this selection process. The steps below will be followed by the THCR Contract Manager when a site becomes available to be filled by a qualified apiarist:

1. The THCR Contract Manager will maintain an "Apiary Wait List Folder" on the THCR SharePoint for each WMA/WEA with apiary sites.
2. A wait list is either created or updated when an Apiary Application(s) is received by the THCR Contract Manager from a qualified apiarist.
3. Upon receipt of an apiary site application, the THCR Contract Manager will review the WMA/WEA folder to see if there is an "Apiary Wait List".
4. If a list exists then the qualified applicant will be added to the list.
5. When an apiary site becomes available if there are more than one qualified apiarist then these apiarists will be contacted by certified letter to determine their interest.
6. The letter will request a response within 10 working days to make them eligible for the random drawing.
7. If there is no response or is negative then that apiarist will not be included in the random drawing and the name will be removed from the waiting list*.
8. If only one apiarist responds positively to the certified letter then the available site will be awarded to that interested apiarist.
9. If there are no apiarists on a wait list or all responses are negative then apiarists who currently have site(s) under Agreement and where not on the waiting list will be contacted to see if any have interest in the available site. If more than one responds then the random drawing process will be used to determine who will be awarded the site.
10. Steps to be performed by the THCR Contract Manager to execute the random selection for an available apiary site are listed below:
    a. The names of each interested apiarist will be noted on a 1" X 2" piece of paper and folded in half.
    b. The pieces of paper will be inserted into a "black film canister" which has a snap top and placed into a container and stirred up prior to the selection.
    c. A non-biased person will be selected to reach into the bowl (which will be held above the selection person's eyesight) and randomly select one of the canisters.
    d. The canister will be opened by the person performing the selection and the name is read aloud for those in attendance. Everyone in attendance will sign a witness sheet.
    e. The apiarist whose name is selected will be awarded the available site.
    f. A new Agreement will be developed by the THCR Contract Manager.

*****A new apiary application must be submitted once requestor's name is removed from a waiting list.

13.13 National Shooting Sports Foundation Market Report for Shooting Range Sports Complex

Main pages of the report, reflecting potential recreational shooters within 15, 35, and 50-mile radius, are included. The entire 82-page report is available by request.

Knowing Your Marketplace:

How many potential recreational shooters live in your trade area?

Having a better understanding of your marketplace begins with an estimation of the number of potential recreational shooters in your trade area.

The best method to accurately assess participation is to conduct a local market survey whereby a representative sample of the population is asked a series of questions pertaining to shooting sports participation. Since this method is *very costly* (hiring a research firm to conduct a telephone survey or a direct mail survey); an alternative method is to estimate participation based on state level data.

Each year the National Sporting Goods Association (NSGA) releases a report titled, "*Sports Participation – Shooting Sports*". The report provides an estimated number of active participants for several shooting sports disciplines. The data is provided demographically and geographically. Caution: the NSGA numbers are based on random household surveys and as such are subject to confidence and reliability errors typical with any survey. They provide a good estimate but the actual number of shooters in your marketplace will depend on many other variables.

For the purposes of this report, a series of statistical *factors* are derived using the NSGA state-level data and the known population of your specific trade area to estimate participation. Your trade area's population is based on U.S. Census projections. The statistical factors are calculated using the following formula:

$$\text{Factor} = \frac{\text{State Participants (Per Shooting Discipline)}}{\text{State Population}}$$

Factor x Trade Area Population = Customer Potential

Sources:

State-level participants: NSGA, Sports Participation in **2010**, Shooting Sports

Population: Neilsen Claritas iEXPRESS estimates for **2010**

Within a **15-mile radius of Osceola, FL 34739,** the population age 18 and over is **787**. In this age bracket there are approximately:

Target Shooting:

- **36** *potential* **HANDGUN** target shooters
- **19** *potential* **SHOTGUN** target shooters
- **13** *potential* **RIFLE** target shooters
- **7** *potential* **AIRGUN** target shooters

Hunting:

- **7** *potential* **HUNTERS** (using firearms)
- **1** *potential* **MUZZLELOADERS**
- **3** *potential* **BOW HUNTERS**

Other:

- **11** *potential* **PAINTBALL** participants

Note: There is overlap between the figures presented. A net (cumulative) figure is not available.

Knowing Your Marketplace:

How many potential recreational shooters live in your trade area?

Having a better understanding of your marketplace begins with an estimation of the number of potential recreational shooters in your trade area.

The best method to accurately assess participation is to conduct a local market survey whereby a representative sample of the population is asked a series of questions pertaining to shooting sports participation. Since this method is *very costly* (hiring a research firm to conduct a telephone survey or a direct mail survey); an alternative method is to estimate participation based on state level data.

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For the purposes of this report, a series of statistical *factors* are derived using the NSGA state-level data and the known population of your specific trade area to estimate participation. Your trade area's population is based on U.S. Census projections. The statistical factors are calculated using the following formula:

$$\text{Factor} = \frac{\text{State Participants (Per Shooting Discipline)}}{\text{State Population}}$$

Factor x Trade Area Population = Customer Potential

Sources:

State-level participants: NSGA, Sports Participation in **2010**, Shooting Sports

Population: Neilsen Claritas iEXPRESS estimates for **2010**

Within a **35-mile radius of Osceola, FL 34739,** the population age 18 and over is **474,270**. In this age bracket there are approximately:

Target Shooting:

- **21,755** *potential* **HANDGUN** target shooters
- **11,392** *potential* **SHOTGUN** target shooters
- **8,130** *potential* **RIFLE** target shooters
- **4,391** *potential* **AIRGUN** target shooters

Hunting:

- **4,291** *potential* **HUNTERS** (using firearms)
- **703** *potential* **MUZZLELOADERS**
- **1,606** *potential* **BOW HUNTERS**

Other:

- **6,750** *potential* **PAINTBALL** participants

Note: There is overlap between the figures presented. A net (cumulative) figure is not available.

Knowing Your Marketplace:

How many potential recreational shooters live in your trade area?

Having a better understanding of your marketplace begins with an estimation of the number of potential recreational shooters in your trade area.

The best method to accurately assess participation is to conduct a local market survey whereby a representative sample of the population is asked a series of questions pertaining to shooting sports participation. Since this method is *very costly* (hiring a research firm to conduct a telephone survey or a direct mail survey); an alternative method is to estimate participation based on state level data.

Each year the National Sporting Goods Association (NSGA) releases a report titled, "*Sports Participation – Shooting Sports*". The report provides an estimated number of active participants for several shooting sports disciplines. The data is provided demographically and geographically. Caution: the NSGA numbers are based on random household surveys and as such are subject to confidence and reliability errors typical with any survey. They provide a good estimate but the actual number of shooters in your marketplace will depend on many other variables.

For the purposes of this report, a series of statistical *factors* are derived using the NSGA state-level data and the known population of your specific trade area to estimate participation. Your trade area's population is based on U.S. Census projections. The statistical factors are calculated using the following formula:

$$\text{Factor} = \frac{\text{State Participants (Per Shooting Discipline)}}{\text{State Population}}$$

Factor x Trade Area Population = Customer Potential

Sources:

State-level participants: NSGA, Sports Participation in **2010**, Shooting Sports

Population: Neilsen Claritas iEXPRESS estimates for **2010**

Within a **50-mile radius of Osceola, FL 34739,** the population age 18 and over is **1,690,248**. In this age bracket there are approximately:

Target Shooting:

- **77,532** *potential* **HANDGUN** target shooters
- **40,599** *potential* **SHOTGUN** target shooters
- **28,974** *potential* **RIFLE** target shooters
- **15,649** *potential* **AIRGUN** target shooters

Hunting:

- **15,292** *potential* **HUNTERS** (using firearms)
- **2,504** *potential* **MUZZLELOADERS**
- **5,723** *potential* **BOW HUNTERS**

Other:

- **24,055** *potential* **PAINTBALL** participants

Note: There is overlap between the figures presented. A net (cumulative) figure is not available.

13.14 Management Procedures Guidelines - Management of Archaeological and Historical Resources

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, *'Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state."*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found in the following:
Chapter 253, F.S. – State Lands
Chapter 267, F.S. – Historical Resources
Chapter 872, F.S. – Offenses Concerning Dead Bodies and Graves
Other helpful citations and references:

Chapter 1A-32, F.A.C. – Archaeological Research

Chapter 1A-44, F.A.C. – Procedures for Reporting and Determining Jurisdiction Over Unmarked Human Burials

Chapter 1A-46, F.A C. – Archaeological and Historical Report Standards and Guidelines

The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, pre-testing of the project site by a certified archaeological monitor, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination**.** In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.
Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, the following information, at a minimum, must be submitted for comments and recommendations.

Project Description – A detailed description of the proposed project including all related activities. For land clearing or ground disturbing activities, the depth and extent of the disturbance, use of heavy equipment, location of lay down yard, etc. For historic structures, specific details regarding rehabilitation, demolition, etc.

Project Location – The exact location of the project indicated on a USGS Quadrangle map, is preferable. A management base map may be acceptable. Aerial photos indicating the exact project area as supplemental information are helpful.

Photographs – Photographs of the project area are always useful. Photographs of structures are required.

Description of Project Area – Note the acreage of the project, describe the present condition of project area, and any past land uses or disturbances.

Description of Structures – Describe the condition and setting of each building within project area if approximately fifty years of age or older.

Recorded Archaeological Sites or Historic Structures – Provide Florida Master Site File numbers for all recorded historic resources within or adjacent to the project area. This information should be in the current management plan; however, it can be obtained by contacting the Florida Master Site File at (850) 245-6440.

* * *

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Susan M. Harp
Historic Preservation Planner
Division of Historical Resources
Bureau of Historic Preservation
Compliance and Review Section

R.A. Gray Building
500 South Bronough Street
Tallahassee, FL 32399-0250
Phone: (850) 245-6367
Fax: (850) 245-6438

13.15 Operational Plan Fiscal Year 2011- 2012

Land Management Uniform Cost Accounting Council and FWC Activity Code Groupings

Resource Management

Exotic Species Control

211 Exotic plant control (mechanical)
212 Exotic plant control (chemical)

Prescribed Burning

206 Prescribed burning - growing season (April 1 to September 30)
207 Prescribed burning - dormant season (October 1 to March 31)
208 Firebreaks

Cultural Resource Management

201 Cultural resource management

Timber Management

202 Timber management

Hydrological Management

216 Dams, dikes, levees
217 Canals
218 Water level management
194 Lake restoration

Other

185 GIS
186 Biometrics
200 RESOURCE MANAGEMENT
203 Tree and shrub planting
282 Herbaceous seeding
283 Clearings
289 Native vegetation management (mechanical)
290 Native vegetation management (chemical)
221 Animal surveys
228 Inland aerial surveys
235 Vegetation and plant surveys
250 MONITORING AND ASSESSMENTS
252 Biomedical monitoring
263 Nest box monitoring
264 Population demographics
295 Biological data collection, analysis, and reporting
275 Permits and authorizations
276 Commission rule development and review

277 Relocation
278 CITES tags
281 Technical assistance
284 Feeding/watering
285 Nest structures
286 Population control
287 Stocking enhancements/population augmentation
288 Nuisance animal complaints
293 Mortality investigations
294 Program coordination and implementation - inter- and intra-agency coordination and program implementation at the section, bureau, or division level

Administration

Central Office/Headquarters

100 ADMINISTRATION - administrative tasks, including preparation of forms, word processing, photocopying, filing, and other clerical/secretarial duties.
104 Budget/purchasing/accounting

Districts/Regions

See Location code

Units/Projects

See Location code

Support

Land Management Planning

103 Meetings - includes workshops, conferences, staff, and other meetings.
204 Resource planning

Land Management Reviews

101 Project inspection - field inspections of projects.

Training/Staff Development

150 PERSONNEL MANAGEMENT - recruitment, hiring, training, counseling, and supervising.

Vehicle Purchase

Vehicle Operation and Maintenance

923 FEM - vehicles/equipment

Other

140 REPORT WRITING/EDITING/MANUSCRIPT PREPARATION
141 Grant applications
180 SYSTEMS ADMINISTRATION AND MANAGEMENT
182 Data management
184 Metadata development and management
187 IT
188 Web development

721 Geospatial analysis techniques
191 Stamp design coordination
226 Human dimensions surveys

Capital Improvements

New Facility Construction

910 New facility construction - buildings/structures
912 New construction - roads/bridges
913 New construction - trails
914 New construction - fences

Facility Maintenance

920 Facility and equipment maintenance (FEM) - buildings/structures
921 FEM - utilities
922 FEM - custodial functions
925 FEM - boating access
926 FEM - roads/bridges
927 FEM - trails
928 FEM - fences

Visitor Services/Recreation

Information/Education Programs

145 Technical bulletin

Operations

311 Boundary signs
312 Informational signs
320 Outreach and education - attending or developing educational or informational materials or events for the public
327 Becoming an Outdoor Woman - enhancement
331 Wings Over Florida
341 Public use administration (hunting)
342 Public use administration (non-hunting)
350 Customer service support - disseminating written or verbal information or assistance to the public
700 STUDIES
740 EVALUATIONS AND ASSESSMENTS
750 URTD assessment

Triple N Ranch WMA Fiscal year 2011 Projects: 7343

Activity	Title	Man Days	Salary	Fuel Cost	Other	Total	Units
103	Meetings	15.00	$3,006.60	$147.30	$500.00	$3,653.90	0
104	Budget/purchasing/accounting	5.00	$1,002.20	$49.10	$0.00	$1,051.30	0
128	New Vehicle and Equipment Purchases	0.00	$0.00	$0.00	$21,500.00	$21,500.00	0
140	Report writing/editing/ manuscript preparation	5.00	$1,002.20	$49.10	$0.00	$1,051.30	0
150	Personnel management	50.00	$10,022.00	$491.00	$1,500.00	$12,013.00	0
185	GIS	10.00	$2,004.40	$98.20	$0.00	$2,102.60	0
200	Resource Management	50.00	$10,022.00	$491.00	$2,500.00	$13,013.00	0
204	Resource planning	5.00	$1,002.20	$49.10	$0.00	$1,051.30	0
206	Prescribed burning - growing season	55.00	$11,024.20	$540.10	$1,500.00	$13,064.30	3000
207	Prescribed burning - dormant season	40.00	$8,017.60	$392.80	$1,500.00	$9,910.40	2500
208	Firebreaks	15.00	$3,006.60	$147.30	$0.00	$3,153.90	60
212	Exotic plant control (chemical)	30.00	$6,013.20	$294.60	$3,000.00	$9,307.80	0
219	Upland restoration	5.00	$1,002.20	$49.10	$0.00	$1,051.30	0
221	Animal surveys	30.00	$6,013.20	$294.60	$1,000.00	$7,307.80	0
235	Vegetation and plant surveys	4.00	$801.76	$39.28	$0.00	$841.04	0
250	Monitoring and assessments	6.00	$1,202.64	$58.92	$250.00	$1,511.56	0
282	Herbaceous seeding	25.00	$5,011.00	$245.50	$5,250.00	$10,506.50	40
283	Clearings	5.00	$1,002.20	$49.10	$0.00	$1,051.30	60

Activity	Title	Man Days	Salary	Fuel Cost	Other	Total	Units
289	Native vegetation management (mechanical)	15.00	$3,006.60	$147.30	$10,000.00	$13,153.90	100
294	Program coordination and implementation	5.00	$1,002.20	$49.10	$0.00	$1,051.30	0
295	Biological data collection, analysis, and reporting	17.00	$3,407.48	$166.94	$12,500.00	$16,074.42	0
311	Boundary signs	1.00	$200.44	$9.82	$0.00	$210.26	0
312	Informational signs	1.00	$200.44	$9.82	$300.00	$510.26	0
320	Outreach and education	1.00	$200.44	$9.82	$0.00	$210.26	0
341	Public use administration (hunting)	5.00	$1,002.20	$49.10	$0.00	$1,051.30	0
342	Public use administration (non-hunting)	1.00	$200.44	$9.82	$0.00	$210.26	0
350	Customer service support	2.00	$400.88	$19.64	$0.00	$420.52	0
920	FEM -- buildings/structures	15.00	$3,006.60	$147.30	$5,550.00	$8,703.90	4
921	FEM -- utilities	0.00	$0.00	$0.00	$1,500.00	$1,500.00	0
922	FEM -- custodial functions	2.00	$400.88	$19.64	$1,600.00	$2,020.52	0
923	FEM -- vehicles/equipment	60.00	$12,026.40	$589.20	$13,300.00	$25,915.60	0
926	FEM -- roads/bridges	15.00	$3,006.60	$147.30	$30,000.00	$33,153.90	20
928	FEM -- fences	5.00	$1,002.20	$49.10	$500.00	$1,551.30	3
All	totals	500	$100,220	$4,910	$113,750	$218,880	5787

13.16 Arthropod Control Plan

CHARLES H. BRONSON
COMMISSIONER

Florida Department of Agriculture and Consumer Services
Division of Agricultural Environmental Services

ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS

Chapters 388.4111, F.S. and 5E-13.042(4)(b), F.A.C.
Telephone: (850) 922-7011

For use in documenting an Arthropod control plan for lands designated by the State of Florida or any political subdivision thereof as being environmentally sensitive and biologically highly productive therein.

Name of Designated Land:
Triple N Ranch Wildlife Management Area

Is Control Work Necessary: ☐ Yes ☒ No

Location:
5285 N Kenansville Road, St. Cloud, FL, Osceola County

Land Management Agency:
Florida Fish and Wildlife Conservation Commission

Are Arthropod Surveillance Activities Necessary? ☐ Yes ☒ No
If "Yes", please explain:

Which Surveillance Techniques Are Proposed?
Please Check All That Apply:

☐ Landing Rate Counts ☐ Light Traps ☐ Sentinel Chickens

☐ Citizen Complaints ☐ Larval Dips ☐ Other

If "Other", please explain:
None at this time.

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Page 1 of 4

Arthropod Species for Which Control is Proposed:
None

Proposed Larval Control:
None

Proposed larval monitoring procedure:

Are post treatment counts being obtained: ☐ Yes ☒ No

Biological Control of Larvae: None

Might predacious fish be stocked: ☐ Yes ☒ No

Other biological controls that might be used:

Material to be Used for Larvaciding Applications:

(Please Check All That Apply:)

☐ Bti

☐ Bs

☐ Methoprene

☐ Non-Petroleum Surface Film

☐ Other, please specify:

Please specify the following for each larvacide:

Chemical or Common name:

☐ Ground ☐ Aerial

Rate of application:

Method of application:

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Page 2 of 4

Proposed Adult Mosquito Control: None

Aerial adulticiding ☐Yes ☒ No

Ground adulticiding ☐ Yes ☒ No

Please specify the following for each adulticide:

Chemical or common name:

Rate of application:

Method of application:

Proposed Modifications for Public Health Emergency Control: Arthropod control agency may request special exception to this plan during a threat to public or animal health declared by State Health Officer or Commissioner of Agriculture.

Proposed Notification Procedure for Control Activities:
None

Records:

Are records being kept in accordance with Chapter 388, F.S.:

☐ Yes ☐ No

Records Location:

How long are records maintained:

Vegetation Modification: None

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?
None

Proposed Land Modifications: None

Is any land modification, i.e., rotary ditching, proposed:
No

Include proposed operational schedules for water fluctuations:
NA

List any periodic restrictions, as applicable, for example peak fish spawning times.
NA

Proposed Modification of Aquatic Vegetation:
None

Land Manager Comments:
No vegetation modifications will be done for arthorpod control.

Arthropod Control Agency Comments:
At this time, we do not need to conduct any arthropod control on Triple N Ranch WMA.

Signature on File

Signature of Lands Manager or Representative Date

Signature on File

Signature of Mosquito Control Director / Manager Date

DACS-13868 07/08
Page 4 of 4

13.17 Letter of Compliance with Local Government Comprehensive Plan

December 7, 2012

Larame Ferry
Florida Fish and Wildlife Conservation Commission
Division of Habitat and Species Conservation
620 South Meridian Street
Tallahassee, FL 32399-1600

RE: Triple N Ranch WMA Comprehensive Plan Consistency Verification
Parcel ID Numbers and Subject Boundary Identified in Exhibit B

DEPARTMENT OF COMMUNITY DEVELOPMENT

Dave Tomek
Director

Robert Deatherage
Building

Mary Beth Salisbury
Community Resources

Joe Johnston
Customer Resources

Mahmoud Najda P.E.
Development Review

Kerry Godwin
Planning & Zoning

Dear Mr. Ferry:

This will confirm the receipt of your request to review the Triple N Ranch WMA Management Plan. Staff has reviewed the property use as a Wildlife Management Area for consistency with our Comprehensive Plan, Future Land Use designation, and Land Development Code as identified below.

Future Land Use: Rural/Agricultural and Conservation
Zoning: Agriculture and Conservation (AC)

As a Wildlife Management Area, the identified parcels are consistent with the Future Land Use Map (FLUM) designation of Rural/Agricultural and Conservation and Zoning designation of Agriculture and Conservation (AC). The Future Land Use and Zoning Maps are included as Exhibit B.

We appreciate the opportunity to be of service. If you need further assistance, please contact me at 407-742-0200.

Sincerely,

Signature on file

Kerry Godwin, RLA, AICP
Planning & Zoning Manager

KG/CC

Cc: Mary Beth Salisbury, Community Resources Manager (via email)
Bob Mindick, Public Lands Manager (via email)
Tina Demostene, Principal Planner (via email)
Cori Carpenter, Senior Planner (via email)

Osceola County

1 Courthouse Square
Suite 1100
Kissimmee, FL 34741
PH: (407) 742-0200
Fax: (407) 742-0206
www.osceola.org

Exhibit A

Tax Parcel Identification Numbers

Triple N Ranch WMA Parcels Map

Triple N Ranch WMA
Tax Parcel Identification Numbers

Parcels within the Triple N Ranch WMA (illustrated in peach on the attached map)

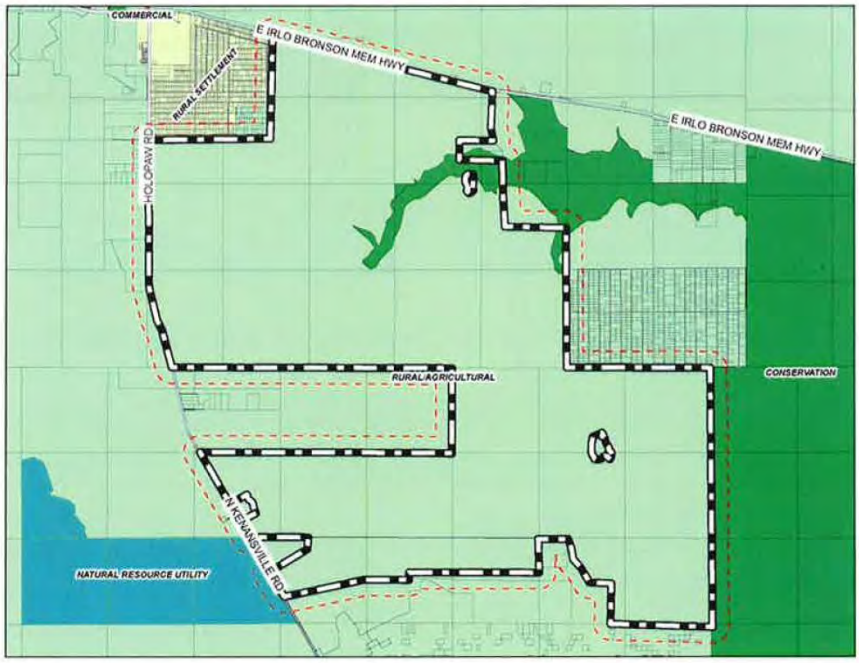
012833000000150000	162733000000200000	252732000000100000
022833000000100000	162833000000100000	272733000000300000
022833000000150000	172733000000300000	282733000000100000
032833000000100000	172833000000100000	282733000000200000
072833000000100000	182733000000200000	282733000000300000
082833000000100000	182833000000150000	292733000000100000
092833000000100000	192733000000100000	292733000000200000
102833000000100000	19273327300001F071	302733000000100000
112833000000100000	202733000000100000	312733000000100000
122833000000100000	212733000000100000	322733000000100000
132833000000100000	212733000000200000	332733000000100000
142833000000100000	212733000000500000	342733000000100000
152833000000100000	212733000000700000	342733000000200000
152833000000300000	242732000000100000	362732000000100000

Parcels partially within the Triple N Ranch WMA (illustrated in lavender on the attached map)

152733000000200000
222733000000300000
222733000000700000
272733000000100000
272733000000200000

Exhibit B

Future Land Use Map



Zoning Map