

The burrowing owl is a species of special concern in Florida and triggers 4 of the 6 statewide prioritization parameters (low proportion of populations modeled to persist on public lands, 95% chance of a 50% decline, unknown population status, and high Millsap supplemental score).

The literature suggests areas that can support at least 30 pair have potential to persist. Models indicate 21,916 acres of potential habitat for burrowing owls within current natural communities (14,820 acres on DIR, 1,832 acres on OKS, and 5,264 acres on SOW). Current landcover models estimate 92 acres of potential habitat on the OKSSF. However, these estimates are inflated. Potential habitat for burrowing owls has increased due to the species' ability to utilize human-created conditions, such as placing burrows in spoil banks (which allows it to survive in areas that were previously too wet) and foraging in pasture (which in some cases allows it to live in areas that previously were not suitable). As such, the altered landscape on the area has more potential habitat for the species than what occurred historically. However, much of the pasture modeled as potential habitat is too wet to be suitable if the berms and spoil banks are removed, and the sod in pastures does not provide the open sand patches the species needs even where it is dry enough. When using historic natural community data, models identified 5,334 acres on DIR with 0 acres on the rest of the complex.

On DIR, burrowing owls are currently using the GCR sites and artificial features, such as spoil banks. It is probable the species used the dry prairie that occurred on the property prior to conversion to pasture. These areas may contain enough potential habitat to maintain a population. However, if there are not enough burrowing owls on site to sustain a population, the nearest known population occurs in Immokalee, approximately 15 miles from the WMAs. It is improbable owls could successfully move between these sites, although it is possible other populations occur closer to the WMA complex. The PLCP model indicated there is potential habitat nearby, which is likely because many of the ranches have the same series of berms and spoil piles in association with open pasture. If this potential habitat exists, there may be owls in the area with which DIR's owls could interact, and this would enhance the chance of species persistence.

Dry prairie restoration ([Section 4.1.2](#)) will benefit this species and allow burrowing owls to exist in their historic range. Area managers recognize that some aspects of traditional natural community restoration may remove features critical to maintaining burrowing owls on the property. Therefore, disturbed areas or sections of artificial features where burrowing owls are present will be strategically maintained, when feasible, to further enhance the potential for this species. Planned and ongoing management actions, including ground cover restoration sites, should carry benefit to the burrowing owl by providing foraging habitat. [Section 4.3.3](#) contains land management recommendations for this species.

The areas' goal for the burrowing owl is to maintain appropriate habitat in a suitable condition that allows the individuals utilizing the WMA complex to function as a part of the regional population. Given the low opportunity to manage for this species on OKS and SOW and the marginal habitat quality that occurs on the areas, no SMA or measurable objectives are recommended. On DIR, the dry prairie restoration SMA and retention of some artificial features will benefit the burrowing

owl, and there is no need to designate additional SMAs for this species. Opportunistic monitoring is recommended for this species, and will be conducted primarily to prevent disturbance of nesting pairs from planned land management activities ([Section 5.2.5](#)). [Section 6.1.1](#) and [Section 6.6](#) describe coordination recommendations.

#### *3.2.4: Cooper's Hawk*

The Cooper's hawk is occasionally observed on DIR and OKS. It has not been documented on SOW, although staff believes it occurs on the area. On OKS, sightings usually occur in the hammocks on the southwest side of the property, and nesting may be occurring in this area and on the OKSSF, which contains small pockets of hardwood species preferred for nesting. Cooper's hawks are commonly associated with woodlands and nest in a variety of habitats including swamps, floodplain and bottomland forests, sand pine scrub and baygall. Nests are usually placed near the crown of a tree close to an edge in dense stands of oaks. Cooper's hawks primarily feed on other birds, so nests are located in proximity to suitable hunting areas.

The Cooper's hawk is not listed at either the state or federal level. The species triggers 1 of 6 prioritization parameters (PLCP PVA probability of a 50% decline on public lands). Models indicate 22,875 acres of potential habitat for Cooper's hawk within current natural communities (14,618 acres on DIR, 2,109 acres on OKS, and 6,148 acres on SOW). Current FNAI natural community data is not available for OKSSF; however, current landcover models estimate 5,154 acres of potential habitat on the OKSSF. Using historic natural community data, models identified 8,585 acres on the 3 lead WMAs, with an additional 11,019 acres on the OKSSF. While the results of the model indicate a significant decrease in potential habitat with natural community restoration, in reality, much of the area historically served as and will continue to serve as potential habitat for the Cooper's hawk. However, this complex of lands is at the southern extent of this species breeding range, and the Breeding Bird Atlas did not identify breeding in Hendry County.

Due to the generalist nature of this species, the opportunity for management at the WMA level to have a significant impact on this species is low. The OKS/DIR/SOW complex of WMAs provides a large amount of regional potential habitat for this species. While this species is expected to persist on the area without directed management, planned and ongoing prescribed fire and GCR in upland communities on DIR, SOW, and OKS will maintain and enhance suitable habitat.

Because Cooper's hawks are not considered management-dependent and the opportunity for this species is low, no SMA is necessary. There is no species management necessary for this species on the area. While no formal monitoring is recommended, if nests are encountered, they will be documented ([Section 5.2.5](#)).

The areas' goal is to continue to provide habitat capable of meeting the needs of this species to allow the Cooper's hawks on the WMA complex to function as part of the regional population. It is unlikely any single WMA could independently sustain a population of Cooper's hawks and what happens to the regional population

will influence the long-term persistence of this species on these WMAs. [Section 6.6](#) describes coordination recommendations.

### 3.2.5: Crested Caracara

Crested caracaras are occasionally seen on OKS, and breeding was documented in 2004 near the dove field on the southeast portion of the property. Crested caracaras are common on DIR and SOW. Although nesting has not been documented on SOW or DIR, area managers believe it occurs. Observations on DIR are most common along County Road 833 and the main road within the WMA. Caracaras occur on OKSSF, although breeding has not been documented. Staff has observed caracaras utilizing the private land to the north. Nesting is possible on the private land although it has not been confirmed. Caracaras prefer to forage in open areas with low ground and shrub cover, and currently much of the state's caracara population utilizes open pasture on private lands. Caracaras typically build their nests in a cabbage palm (*Sabal palmetto*) in an open area with scattered trees. Caracaras have high nest site fidelity; therefore, protection of known nest sites is important.

The crested caracara is federally listed as threatened and triggers 4 of 6 prioritization parameters (Millsap updated biological score, Millsap updated supplemental score, Legacy population trend and status), making it a high statewide priority. A majority of the crested caracara population in Florida occurs on private lands, further contributing to threats of habitat loss and degradation. Models indicate 23,335 acres of potential habitat for crested caracaras within current plant communities (15,305 acres on DIR, 1,896 acres on OKS, 6,134 acres on SOW). Current FNAI natural community data is not available for OKSSF; however, current landcover models estimate 3,370 acres of potential habitat on the OKSSF. Using historic natural community data, models identified 14,540 acres on the 3 lead WMAs, with an additional 11,019 acres on the OKSSF. The increase in potential habitat under current conditions is largely due to the conversion of native groundcover to pasture. While some natural community restoration may result in some decrease in potential habitat for this species, much of the restoration could still provide habitat for this species, especially dry prairie restoration.

Given that caracaras have relatively large home range sizes (average of 3,000 acres), this complex of lands could be important to the regional caracara population as it could potentially support up to 8 breeding pairs. The proximity to private ranchland increases the likelihood that there is a regional population of caracaras utilizing both the public and private lands; however, this complex of lands could not independently sustain a population of crested caracaras.

Even though restoration of pasture to flatwoods and management that favors the panther may result in some decrease in potential habitat for this species, ongoing efforts to restore and maintain the areas' plant community structure and function through prescribed fire and GCR will provide benefits to this species across the WMA complex; therefore, no SMA is required. However, the caracara will benefit from the planned dry prairie SMA. Caracaras forage in newly mowed or burned areas and prefer low groundcover in foraging areas. These open landscapes need a patchy occurrence of trees, particularly cabbage palm, in which this species nests.

The areas' goal is to maintain appropriate natural communities in a condition suitable to the species to ensure the crested caracaras occurring on DIR, SOW, and OKS function as a part of the larger regional population. The presence of pre-dispersal young with adults will be recorded. If there is reason to believe nesting is occurring, an attempt will be made to document the nest ([Section 5.2.5](#)). When nests are detected, management considerations around these sites will be implemented [Section 4.3.4](#). Since much of the state's caracara population utilizes private lands, coordination with private and other public landowners will be necessary to ensure persistence on the WMA complex. [Sections 6.1.4, 6.4, and 6.6](#) describe coordination recommendations. Considerations beyond the boundaries of the WMA complex are found in [Section 7](#).

### 3.2.6: Florida Grasshopper Sparrow

This WMA complex occurs at the southern edge of the known range for this species. There was 1 confirmed sighting of a Florida grasshopper sparrow in the OKS dove field in spring of 2001, and another unconfirmed sighting in 2006. Current habitat conditions on DIR are not ideal for this species; however, FNAI documented 2 observations of singing male grasshopper sparrows in 2006. In May 2009, FWC documented a single singing male moving between DIR and the private land to the north. All sightings occurred along the northern boundary of DIR. The private land may provide some potential habitat for grasshopper sparrows, however it is not known whether there is a population of grasshopper sparrows in the area or if the sightings were lone birds. The species is not known to occur on SOW, no potential habitat was modeled for this species on SOW, and therefore the species is not a focus of management on SOW.

Primary habitat for the grasshopper sparrow is dry prairie. This natural community does not currently occur in the area, although the GCR sites do provide suitable groundcover for the species. Habitat for this species contains large (> 50 acres) treeless grasslands maintained with frequent fire. Saw palmetto and dwarf oaks (*Quercus minima*) 12 to 28 inches (30 to 70 cm) in height that occur with sparse grasses such as threeawn (*Aristida stricta*) and bluestem (*Andropogon* spp.) typically constitute suitable prairie. Species experts indicate the Florida grasshopper sparrow utilizes pasture habitat, but only when in close proximity to occupied suitable dry prairie.

The Florida grasshopper sparrow is federally listed as endangered, and this species triggers all 6 of the statewide prioritization parameters. Since dry prairie is the primary natural community used by this species and it does not occur on the WMAs, models estimated 0 acres of potential habitat on OKS and DIR WMAs. However, GCR is capable of creating vegetation parameters similar to those of dry prairie, and therefore there is potential on DIR and OKS to provide some habitat in the future. Current FNAI natural community data is not available for OKSSF; however, current landcover models estimate 162 acres of potential habitat on the OKSSF. DIR is the only area where dry prairie occurred prior to landscape modification, and models estimate 4,396 acres of potential habitat if management could restore these acres. The literature suggests 593 - 3,330 acres are necessary to

support at least 50 pair, which provides some level of persistence; however, some literature suggest > 4,000 acres are necessary to support a viable population. Therefore, if management can restore all acres of potential habitat, this area could support a small population of this species.

Best management practices for this species include restoring dry prairie and using prescribed fire at 2 - 3 year interval to maintain open habitat and prevent the encroachment of pines and hardwoods into dry prairies. Sparrow populations decline on sites that have a burn frequency of greater than two years. However, the opportunity to manage grasshopper sparrows on DIR may be limited due to cattle grazing and the extensive conversion of natural communities to pasture and the cost of restoration. Additionally, unnatural water impoundment during the breeding season (May – June), such as cattle ponds, may reduce or eliminate breeding by sparrows; therefore, this practice should not occur in potential habitat for this species.

The current area goal on OKS and DIR is to determine whether a population of grasshopper sparrows is present. The measurable objective to accomplish this goal is to:

- 1) Complete a breeding season presence/ absence survey on DIR and OKS by 2012.

[Section 5.2.3](#) describes the monitoring effort recommended for this species. Following the initial survey and consultation with species experts, revised WMA goals will be adopted and additional objectives recommended if appropriate. As native habitat conditions for this species will not improve while grazing is practiced, it would be practical to designate a SMA on the area. This SMA would focus on restoration of dry prairie in selected MUs. The location and specific actions for the SMA will be selected based on survey results and input from species experts. This same information will be used to determine if there is a need for additional SMAs on OKS.

Species experts have indicated that if a sparrow population exists on the area, there is a moderate likelihood that the population also is using private land. Therefore, coordination with private landowners beyond the boundaries of the WMAs is recommended to attempt to confirm presence or absence ([Sections 6.1.4](#), and [6.7](#)). Additionally, staff should coordinate with FWRI and DOF to develop and conduct surveys and to share information ([Section 6.1.3](#) and [6.6](#)).

### *3.2.7: Florida Mottled Duck*

Mottled ducks are seasonally common on DIR and occasional on OKS; they are present when water levels are high. Nesting has not been documented, though area managers believe nesting is possible. The primary habitat mapped for DIR and OKS are seasonally inundated depression marshes. Mottled ducks are seasonally common on SOW, although this area may have more potential for nesting as there are approximately 495 acres of basin marsh on the WMA that remain wet for much of the year. Nesting females prefer upland areas near wetlands. Mottled ducks nest in dry marshes, pine flatwoods, citrus groves and urban areas. Habitats that are avoided include wet prairies, shrub and forested wetlands, open water and flooded areas. This

species prefers shallow water less than 10 inches deep and wetlands with emergent vegetation. Management activities that promote a mosaic of open water and cover within shallow emergent wetlands can enhance foraging habitat. In uplands adjacent to appropriate wetlands, management practices that maintain a generally open condition with some interspersions of cover such as thick patches of grass or palmetto will enhance nesting opportunities.

The mottled duck is not listed at either the state or federal level. This species triggers 2 of the 6 statewide prioritization parameters (Millsap supplemental score and Legacy population trend), making it a medium priority statewide. Models indicate 6,317 acres of potential mottled duck habitat within current plant communities (4,734 acres on DIR, 816 acres on OKS, and 767 acres on SOW). Current FNAI natural community data is not available for OKSSF. However, current landcover models estimate 16,140 acres of potential habitat on the OKSSF. Using historic natural community data, models identified 21,600 acres on the 3 lead WMAs, with an additional 20,802 acres on the OKSSF. The majority of habitat modeled on the areas for mottled ducks is basin marsh and depression marsh. Unfortunately, much of this potential habitat is surrounded by pasture, which is not ideal nesting habitat for this species. However, restoration of natural communities in these areas may increase potential for nesting in the future.

While basin marsh and depression marsh are not actively managed natural communities, prescribed fire is allowed to burn into and across wetlands, reducing hardwood encroachment. This will benefit mottled ducks using these marshes for foraging, which is the primary role of this WMA complex in the conservation of this species. Regionally, these areas have a minimal role in the conservation of the mottled duck as there is only a small amount of suitable breeding habitat. However, ongoing efforts to restore and maintain natural community structure and function should meet the needs of this species.

The FWC's Fish and Wildlife Research Institute (FWRI) is conducting a 3-year study (initiated in 2008) on mottled ducks in south Florida. The goal of the study is to gather population and habitat use information. Until this study is complete and management recommendations are available, the area managers at DIR, SOW, and OKS will continue to use prescribed fire in marsh communities and adjacent uplands, which should promote foraging and nesting habitat. Once management recommendations are available, staff will evaluate the compatibility of these recommendations with other management planned on the areas.

Because little management besides prescribed fire can be used in the WMAs' marsh system and there is a lack of information on habitat use patterns in south Florida, no SMA is recommended at this time. The goal for this WMA complex is to enhance and maintain high quality wetland habitats that allow the individuals occurring on the WMA complex to function as part of a regional Florida mottled duck population. In south Florida, patterns of habitat use, movement, and population size are poorly known. Therefore, it would be inappropriate to designate specific area-level management objectives; however, measurable objectives may be adopted following the completion of the FWRI study. Communication with FWRI will be a priority, [Sections 6.1.3](#) and [6.6](#) describe coordination efforts. Opportunistic observations of nesting activity and juveniles will be recorded ([Section 5.2.5](#)).

### 3.2.8: Florida Sandhill Crane

The Florida sandhill crane is common on SOW and DIR, and although nesting has not been documented, juveniles have been seen on the property. The species is common in depressional wetlands on OKS and 3 nests were documented in 2008/09. Although comprehensive searches for nests have not been done on DIR and SOW, area managers believe breeding occurs on all 3 areas. The status of this species on the OKSSF is unknown. This species uses a combination of shallow wetlands and open upland habitats with a majority of the vegetative cover  $\leq 20$  inches in height. Standing water is an important component of nesting habitat for Florida sandhill cranes. Nests consist of herbaceous plant material mounded in shallow water or marshy areas. Home range size varies seasonally and regionally. Home range varies for adult pairs from approximately 300 - 600 acres per pair. Habitat used includes a mosaic of emergent palustrine wetlands and open uplands such as pasture, prairie, and open pinelands.

The Florida sandhill crane is a State-listed threatened species that triggers 4 of 6 prioritization parameters (PLCP PVA proportion of pops modeled to persist on public lands, Millsap updated biological and supplemental scores and Legacy population trend), making it a moderate to high statewide priority. Concern for ongoing loss of habitat on private lands makes conservation of this species on State lands more of a priority. Sandhill cranes will occupy the same territory for many years, and typically move only when necessitated by environmental conditions (e.g. drought) or deteriorating habitat.

Models indicate 27,419 acres of potential habitat for the sandhill crane within current plant communities (18,588 acres on DIR, 2,593 acres on OKS, and 6,238 acres on SOW). Current FNAI natural community data is not available for the OKSSF; however, current landcover models estimate 10,928 acres of potential habitat on the OKSSF. Using historic natural communities data, models identified 21,939 acres on the three lead WMAs, with an additional 21,158 acres on the OKSSF. Species experts indicate that areas with at least 1,200 acres of good crane habitat can support 6 pairs. Six pairs can persist at least in the short term. Therefore, this complex of lands can have an important role in maintaining this species.

Planned and ongoing prescribed fire that is allowed to run into wetlands will help maintain these communities in open conditions suitable for sandhill cranes. As cranes occur throughout wetlands in the WMA complex, it is not necessary to designate an SMA.

The areas' goal is to maintain appropriate natural communities in a condition suitable to the species to ensure the Florida sandhill cranes occurring on this WMA complex function as a part of the regional population. When management actions are planned during the nesting season (December–June) in MUs likely to have crane nesting, localized wetland searches for sandhill crane nests will be conducted prior to conducting management activities. When nests are detected, management activities will be planned to avoid disturbance ([Section 4.3.5](#)). Sandhill crane nests also may be identified during ongoing management actions and actions taken for other species. When this occurs, nest locations will be documented. This level of monitoring is not

sufficient to be considered a full count, and will therefore be opportunistic ([Section 5.2.5](#)). Due to the large amount of potential habitat for cranes within the WMA complex, species experts indicate monitoring may be appropriate. However, more information is needed to determine the most appropriate approach to monitoring cranes in this area. A protocol is currently under development and, once completed, should be implemented if resources become available ([Section 5.2.1](#)). [Sections 6.1.3](#) and [6.6](#) describe coordination recommendations. Staff will share observations of nesting activity with appropriate cooperators ([Section 6.8](#)).

### 3.2.9: Limpkin

Limpkins are known to occasionally utilize swale and depression wetlands on OKS where apple snails (*Pomacea paludosa*) also occur, but nesting has not been documented. Limpkins also are observed occasionally utilizing an artificial ditch along OKS's east boundary. Limpkins are particularly common during the summer on SOW in the area's slough and in depression wetlands along the slough where native apple snails occur. Nesting has not been documented, but area managers believe it is possible on both SOW and OKS. On DIR, staff consider limpkins seasonally common and juveniles have been documented in the orange groves on the southeast corner of the management area. Limpkins are primarily observed utilizing artificial ditches and canals on DIR. Limpkins occasionally utilize the OKSSF, and may nest there.

Limpkins typically inhabit freshwater marshes, swamps, springs and spring runs. Limpkins are highly mobile and influenced by regional water levels and the availability of prey items, primarily apple snails. Apple snails are known to occur on all 3 lead WMAs, although exotic channeled apple snails (*P. canaliculata*), which is a possible threat to the native apple snail population, have been documented in the orange groves in the southern part of DIR.

Limpkins are a State species of special concern and trigger 1 of 6 prioritization parameters (Legacy population trend). Models indicate 7,798 acres of potential habitat for limpkins within current plant communities (5,582 acres on DIR, 864 acres on OKS, and 1,352 acres on SOW). Current FNAI natural community data is not available for OKSSF and models using landcover data estimate no potential habitat on the OKSSF. However, these models do not incorporate slough, which is used by the species. Area managers indicate the OKSSF models should be used cautiously, as the habitats on OKS also occur on the OKSSF, and in greater quantity. When using historic natural community data (including the slough), models estimate 21,256 acres on the OKSSF, and 17,645 acres on the three lead WMAs. It is not known if this is enough habitat to support an independent population of limpkins, but limpkins using DIR, SOW, and OKS are part of a larger regional population.

Since limpkins on DIR and SOW are primarily utilizing artificial habitats, area managers should consider plugging, rather than filling, select ditches; an action that will benefit burrowing owls, crested caracaras, and snail kites. Native apple snails, the primary food source of both limpkins and snail kites, persist in these artificial canals. Prescribed fire in wet prairie and wet flatwoods enhances foraging opportunities and can prevent shrub encroachment of wetland systems. Allowing

prescribed fire to burn into marsh systems will maintain or improve habitat conditions and continue to promote use of these wetlands by limpkins.

The areas' goal is to maintain and enhance natural communities to provide high quality wetlands that allow limpkins utilizing the WMA complex to function as a part of the regional population. It is improbable any except the largest of conservation lands could independently sustain a population of limpkins and what happens to the regional population will influence the long-term persistence of this species on these WMAs. Ongoing efforts to maintain natural community structure and function should meet the needs of this species, therefore no SMA is recommended.

Area staff will work toward the goal by promoting foraging and nesting opportunities by maintaining healthy aquatic ecosystems through ongoing natural community management and maintaining artificial habitat components that benefit the species. If nests are located, they will be protected during management activities ([Section 4.3.6](#)). Because this species has significant dispersal capabilities and is impacted by regional water levels, monitoring is not recommended because it would be difficult to determine if any documented change was reflective of local management or regional conditions. However, opportunistic observations of juveniles or nesting will be recorded ([Section 5.2.5](#)). [Section 6.6](#) describes coordination recommendations.

#### *3.2.10: Northern Bobwhite*

Northern bobwhites, or quail, are common and widespread on SOW and are heard occasionally on DIR and OKS. Breeding has been documented on all 3 areas and is believed to occur on the OKSSF. While systematic efforts to document local distribution and relative abundance have not been attempted, area managers believe the local population has declined, consistent with trends in the statewide population. Northern bobwhite have experienced significant range-wide population declines since the 1980's and are currently a major focus of many initiatives including the Upland Ecosystem Restoration Project. Northern bobwhites are typically associated with open canopy forests and grassland communities dominated by warm-season grasses, legumes, and patchy bare ground. Quail use areas with dense herbaceous cover for brooding and foraging; shrubs or other thickets are useful as roosting habitat or escape cover.

The northern bobwhite triggers 2 of 6 prioritization parameters (Legacy population trend and population status). Models indicate 13,779 acres of potential habitat for the bobwhite within current plant communities (6,848 acres on DIR, 1,807 acres on OKS, and 5,124 acres on SOW). Current FNAI natural community data is not available for OKSSF; however, current landcover models estimate 5,664 acres of potential habitat on the OKSSF. Using historic natural community data, models identified 14,312 acres on the three lead WMAs, with an additional 10,385 acres on the OKSSF. As the literature suggests that 2,000 - 4,000 acres are necessary to support a viable population, it appears these areas could support a viable population if management can successfully create and maintain preferred habitat conditions.

The amount of current potential habitat is overrepresented, as much of the complex's pine flatwoods have a bahiagrass groundcover rather than the native herbaceous vegetation preferred by this species. However, herbicide treatments applied in improved pasture, GCR efforts, and restoration of the semi-improved pastures (which do contain many native herbaceous species) are creating suitable habitat.

On DIR, the most suitable habitat exists in the south central and southwest areas of the property on an old farm field and an abandoned sugarcane field. The dry prairie restoration SMA discussed for the Florida grasshopper sparrow will benefit the northern bobwhite on DIR. However, it is important to note that current land uses perpetuate the unnatural groundcover, and large-scale restoration to native groundcover is impractical while cattle grazing occurs on the area. This hinders the potential for restoring this species to their optimal levels. Further, northern bobwhites utilize artificial spoil banks on DIR and SOW as refuge from water during seasonal inundation. This may signify that water levels on these areas are not optimal for northern bobwhite and the areas' potential quail population size may be less than indicated by acreage alone.

Oaks and shrubby vegetation dominate the mesic flatwoods in the southern part of OKS and this area will not become optimal for northern bobwhite because FWC manages these flatwoods in a mosaic pattern to benefit other species including the panther. Therefore, this area will continue to support quail but may never be optimal for quail. Semi-improved pasture restoration on OKS includes shrub reduction and herbicide treatments to increase native vegetation. These practices have created habitat for quail. Burn prescriptions focus on creating a mosaic habitat to ensure management benefiting northern bobwhite is compatible with management for other species, such as the Florida panther.

The GCR sites have helped increase habitat for northern bobwhites on all 3 areas. Although area-wide observations have decreased, incidental observations of northern bobwhites on the GCR sites have increased. Since northern bobwhites occur throughout the 3 areas, and planned and ongoing management for northern bobwhites and other species will benefit the species, there is no need to designate an SMA.

The areas' goal is to maintain a viable population of northern bobwhite on DIR, OKS, and SOW that functions as a part of the larger regional population. While managers believe northern bobwhite numbers will increase on these WMAs in response to management, abundance and trend information for the local population is not available, and it would be impractical to set measurable objectives. While systematic monitoring would provide population information, that information would not affect management plans for restoration and maintenance of high-quality natural communities; therefore, monitoring specifically for northern bobwhite is unnecessary. However, monitoring that provides information on a suite of avian species, including northern bobwhite, is recommended if resources and/or volunteers become available. Coordination recommendations are found in [Section 6.1.2](#) and [Section 6.6](#).

### 3.2.11: Snail Kite

Snail kites are rare on SOW. Only one observation of a foraging snail kite has been documented. Nesting has not been documented on any of the properties in this WMA complex. Snail kites are not known to occur on OKS, though they have been documented on the OKSSF. Snail kites are occasionally seen on DIR, particularly along the area's artificial canals and ditches. Recent observations from Dr. Ken Meyer ([Section 6.3](#)) indicate kites have been frequenting ephemeral wetlands on DIR and nearby private land. As such, it is possible snail kites may be using any of the wetlands on this complex that have suitable foraging conditions.

The snail kite is federally listed as endangered and triggers 4 of 6 prioritization parameters (Millsap updated biological and supplemental scores, Legacy population trend and status), making it a high statewide priority. The only parameters not triggered by this species are the PLCP PVA results. However, the results of this PVA should be ignored as more recent species-specific PVAs model this species to have high risk of decline and extinction.

Models indicate 3,395 acres of potential habitat for the snail kite within current plant communities (3,048 acres on DIR, 347 acres on SOW, and 0 acres on OKS). Current FNAI natural community data is not available for OKSSF; however, current landcover models estimate 14,287 acres of potential habitat on the OKSSF. Using historic natural community data, models identified 12,675 acres on the SOW and DIR WMAs, with an additional 19,268 acres on the OKSSF.

Regionally, snail kites have abandoned their major historic nesting site in Water Conservation Area (WCA) 3A. Managers speculate that changes in water management in WCA 3A have influenced the snail kite's use of the area. The regional goal is to restore snail kite nesting activity to their historic nesting areas. Snail kites will only continue to occur on DIR, OKS, and SOW if the regional population is stabilized, and increased. Nesting habitat on the properties is limited, and in areas with suitable nesting substrate, water levels are usually unsuitable during nesting season. Therefore, the role of the WMA complex for snail kites is primarily providing suitable foraging habitat. Species experts suggest the use of these areas by this species will always be limited, and therefore, the snail kite should not be a focus of management beyond ongoing actions on these areas.

Ongoing management actions that include allowing prescribed fire to burn into wetlands should enhance and maintain natural communities for use by snail kites. Retaining ditches that contain apple snails on DIR and SOW will benefit snail kites, as well as limpkins, and crested caracaras. Managers will consider plugging select ditches rather than filling them during restoration activities. [Section 4.3.7](#) describes additional land management recommendations.

The areas' goal is to enhance and maintain high-quality wetlands suitable for use by the regional snail kite population. Since snail kites occur only occasionally on the WMAs, no SMA is recommended and there are no measurable objectives. The University of Florida monitors snail kites on a statewide level, and performing systematic surveys for this species on the WMA complex is unnecessary. Monitoring for this species will be considered opportunistic ([Section 5.2.5](#)), and coordination recommendations are found in [Sections 6.1.1](#), [6.1.3](#), [6.4](#), and [6.6](#).

### 3.2.12: Southern Bald Eagle

Bald eagles are occasionally seen on DIR. One active nest has been identified in a slash pine that was once part of a more contiguous flatwoods. FWC's Bald Eagle Management Program monitors this nest. There is another nest within 3 miles to the north of nearby SOW, and there are 11 territories within 10 miles of the SOW/OKS/DIR complex. The nest on DIR was active in 2008. The closest off-site nest was last reported active in 2007. The eagle nest monitoring program did not survey Hendry County in the 2009/10 nesting season, but the county is scheduled for survey in the 2010/11 nesting season. The 2006 report by Mojica and Myers on Migration, Home Range, and Important Use Areas of Florida Sub-adult Bald Eagles did not identify this complex of areas as important use areas for foraging, migration, or nesting.

The southern bald eagle is a generalist and uses a number of natural communities. It is not considered management dependent, though it does benefit from active management that restores natural communities provided nest protection guidelines are followed. While this species triggers 0 of the 6 prioritization parameters, federal and state protections remain, and there is a state management plan to ensure the continued recovery of the species.

Models indicate 25,873 acres of potential habitat for bald eagles within current natural communities (17,354 acres on DIR, 1,712 acres on OKS, and 6,807 acres on SOW). Current FNAI natural community data is not available for OKSSF; however, current landcover models estimate 23,164 acres of potential habitat on the OKSSF. Using historic natural community data, models identified 18,545 acres on the 3 lead WMAs, with an additional 27,965 acres on the OKSSF. The decrease in habitat modeled on the lead areas is due to difficulty in generating a model for a generalist species. Restoration of pasture to natural habitat would not result in a significant decrease of habitat for the bald eagle.

Suitable nesting habitat is currently restricted on all 3 lead areas, particularly due to a lack of large pines suitable for nesting. Of the complex's existing large pines, several of the area's trees have been dying. Area managers believe this die off is result of tropical storm damage. The lack of mature pines will limit the potential for future nest trees. Because bald eagles prefer to forage over open water, a habitat that is limited in the area, the overall use of the areas by bald eagles will be limited.

Because there is limited potential to influence the species through actions beyond ongoing natural community management, no SMA is recommended. Ongoing and planned prescribed fire, exotic vegetation control, and GCR should continue to maintain or enhance habitat for this species by maintaining potential foraging habitat in wetland systems and potential nesting sites as pines mature. Managers will observe management considerations around existing and any future nesting sites ([Section 4.3.8](#)). If eagle behavior indicative of nesting (e.g. courtship flights, carrying sticks, etc) is observed, an effort will be made to determine the location of any potential nest on the area. Monitoring recommendations for this species are found in [Section 5.2.5](#). If bald eagle nesting is documented on site, the

nest will be reported and the taxa coordinator for this species notified ([Sections 6.1.3](#) and [Section 6.1.5](#)). [Section 6.6](#) describes other coordination recommendations.

The areas' goal is to promote suitable habitat for bald eagle foraging and nesting as area pines mature. However, the continued use of these areas by the bald eagle is dependent on conditions that influence the regional population.

### 3.2.13: Wading Birds

The white ibis (*Eudocimus albus*) is common on all 3 areas. Four of the 8 species of wading birds (great egret [*Ardea alba*], snowy egret [*Egretta thula*], little blue heron [*E. caerulea*], and tricolored heron [*E. tricolor*]) are commonly or occasionally seen on the WMA complex. Wood storks (*Mycteria Americana*) and roseate spoonbills (*Platalea ajaja*) are seen occasionally or rarely, and the reddish egret (*E. rufescens*) is not typically seen in this area.

Statewide, this group of species is a moderate priority. Several species are state-listed species of special concern and the wood stork is federally listed as endangered. The Millsap biological scores for the reddish egret, little blue heron and wood stork are high. The snowy egret, little blue heron, and roseate spoonbill are believed to have declining population trends while the tricolored heron and white ibis have unknown trends.

Models indicate 7,791 acres of potential habitat for wading birds within current natural communities (5,582 acres on DIR, 857 acres on OKS, and 1,352 acres on SOW). Current FNAI natural community data is not available for OKSSF; however, current landcover based models estimate 14,287 acres of potential habitat on the OKSSF. Using historic natural community data, models identify 17,621 acres on the three lead WMAs, with an additional 21,256 acres on the OKSSF.

There are several known roosts in the region, including those on the OKSSF, and a small number of nesting colonies on the areas. In 2008, a large white ibis roost was identified in cypress near a road on DIR; however, this roost was not utilized in 2009. A winter/spring roost averaging over 1,000 wading birds has been monitored on OKSSF since 2002. While there is some possibility of additional roost sites or small nesting colonies on the properties, the area's primary role in wading bird management is foraging habitat. Species experts have indicated that water levels in this particular area play a key role in influencing the onset of the breeding season for the wood stork in the region. There were 4 wood stork colonies documented near the WMA complex in 2010. All 4 were located in Collier County; 2 in Corkscrew Swamp Sanctuary and 2 on private land. The nearest colony is on private land approximately 2 ½ miles south of the OKSSF's southeastern boundary. The WMA complex is in the foraging consultation area for two of the nearby colonies.

While this group of species is a moderate priority, the opportunity to influence them through WMA-level management actions is low because they are wide ranging and heavily influenced by regional conditions. Natural community management that includes prescribed fire and exotic plant removal in wet prairie and wet flatwoods will enhance and maintain these natural communities in good condition for wading birds. Managers should plan the timing of management activities to avoid negatively influencing nesting wading bird colonies ([Section 4.3.9](#)).

The areas' goal is to provide suitable foraging, nesting, and roosting habitat that allow wading birds on the WMA complex to function as part of the larger regional population. A complete inventory of the WMA complex to identify potential and/or active wading bird colony and roost sites has never been attempted. Area managers believe the possibility of unknown colonies and/or roost sites in the vicinity is possible. There is, therefore a need for a baseline inventory of the WMA/OKSSF complex. The measurable objective is to:

- 1) Complete a baseline survey by 2016.

These monitoring recommendations and needs are discussed in [Section 5.2.4](#). Upon completion of the baseline inventory, additional measurable objectives may be considered. Coordination with species experts ([Section 6.1.3](#)) and surrounding area managers may be necessary ([Section 6.2](#)) to ensure proposed management and recreational activities consider the needs of these species. [Sections 6.4](#) and [6.6](#) describe other coordination recommendations.

#### *3.2.14: Big Cypress Fox Squirrel*

The big cypress fox squirrel has been observed on SOW in the south central portion of the property in MU 7 and at the boundary of MUs 15 and 25 near a filled ditch. Individuals persist on DIR in the southeast portion of the property near the field office. Area managers have observed 3 color phases (melanistic, albino, standard) on DIR. There are no known observations of the species on OKS but the species has been documented on the OKSSF. While there have been no recent area- or region-wide searches conducted, they were known to occur on private ranches in Hendry County.

The State lists this species as threatened and the species triggers 4 of 6 prioritization parameters (PLCP PVA proportion of populations modeled to persist on public lands, Millsap supplemental score, and Legacy population trend and population status). Habitat requirements for this subspecies are poorly understood. The big cypress fox squirrel has been reported using a variety of habitats, including dry cypress swamp, pine flatwoods, tropical hardwood forest, live oak woods, and mangrove forests. They also use a number of human-altered habitats including golf courses, suburban parks, residential areas and pastures when these occur in proximity to suitable habitat and/or have a variety of food producing plants. The species is known to use tree hollows and leaf nests for shelter, including platform nests in pines and hardwoods, and moss and stick nests in cypress, the tops of cabbage palms, and large clumps of bromeliads.

Models indicate 3,352 acres of potential habitat for the big cypress fox squirrel within current plant communities (2,073 acres on DIR, 280 acres on OKS, 999 acres on SOW). Current FNAI natural community data is not available for OKSSF; however, current landcover models estimate 8,185 acres of potential habitat on the OKSSF. Models using historic natural community data identified 15,809 acres of potential habitat on the 3 lead WMAs, with an additional 11,473 acres on the OKSSF. The PVA suggests at least 200 pairs are necessary to support a viable population. While there are no estimates in the literature for acreage necessary to

support the big cypress fox squirrel, the literature does suggest 2,000 - 9,000 acres are necessary to support a population of another subspecies of fox squirrel, the Sherman's fox squirrel (*Sciurus niger shermani*). Therefore, these areas have the potential to have a significant amount of habitat for this species.

Cattle grazing occurs on DIR. Cattle grazing can be used to maintain an open condition preferred by this species provided there is a variety of mast producing plants interspersed on the area. While the big cypress fox squirrel uses pasture, many ecologists believe the species would benefit from the increased plant diversity associated with replacing pasture with natural communities, particularly mesic flatwoods, dry prairie and prairie hammock. A long-term goal for DIR is to restore most of the property's pasture to a more natural condition, and this should provide benefits to this species. However, the extent of area to be restored and the cost of restoration necessitates it will take decades before restoration is complete. In the short-term, this species will benefit from the dry prairie SMA and the flatwoods and hammock restoration proposed in the panther SMA.

On SOW, the mature pines where the squirrels were seen were removed to facilitate hydrologic restoration. The restoration was completed in March of 2009, and a single squirrel was seen in April 2009. The effect of the project on the area's fox squirrels is unknown, and robust efforts to document distribution or abundance have not been attempted. However, the planting of tree islands to break up large expanses of pasture and the associated pine stingers connecting these islands will improve conditions for this species, as will other natural community restoration projects.

Several patches of thick cover on the OKSSF and at the southwest border of OKS represent habitat that is too dense to have significant use by this species. The best potential habitat for the big cypress fox squirrel on OKS is in the southwestern portion below the North Loop Trail/Trail 1. However, this area is overgrown and will not become optimal for this species because FWC is managing this area to provide cover for the Florida panther.

While it is possible that some efforts to retain dense vegetation for the benefit of panthers throughout the WMA complex will reduce the overall acres of potential habitat for the big cypress fox squirrel, natural community restoration and efforts to increase mast producing plants will benefit this species. Even though this species uses pasture, the net effect of restoring pasture to historic natural communities will benefit this species provided management is successful in maintaining a mosaic of open and dense vegetation and includes the planting of native mast producing plants. Planned and ongoing prescribed fire that maintains open patches with limited understory, dry prairie restoration, and flatwoods restoration and associated tree planting will enhance habitat for the big cypress fox squirrel in the WMA complex.

The goal for the WMA complex is to restore and maintain habitat in conditions suitable for use by the regional fox squirrel population. Since occurrences of this species are limited on the WMA complex, systematic monitoring is impractical and monitoring for this species will therefore be opportunistic ([Section 5.2.5](#)). Without monitoring, it is inappropriate to establish measurable objectives. [Section 4.3.10](#) describes detailed land management recommendations. [Section 6.6](#) describes coordination recommendations.

### 3.2.15: Florida Black Bear

The SOW/DIR/OKS complex of management lands is located in the northeastern edge of the primary and secondary ranges for the Big Cypress bear population. This WMA complex may serve as a corridor potentially linking the Big Cypress bear MU to the Highlands bear MU. Black bears are occasionally sighted in the WMA complex, nuisance bears from urban areas are released on OKS, and black bear are known to utilize pockets of thick habitat for denning that occur on OKSSF.

This State-listed threatened species triggers 2 of 6 prioritization parameters (PLCP PVA probability of a 50% decline on public lands and Millsap biological score). The Florida black bear is a wide-ranging species capable of significant dispersal. Home range sizes vary according to resource availability and the level of habitat fragmentation on the landscape. Suitable habitat contains a mosaic of natural communities that provide a diversity of foraging opportunities, cover when traveling between these habitat types, and adequate den sites.

Models indicate 7,440 acres of potential habitat for black bears within current natural communities (2,391 acres on DIR, 550 acres on OKS, and 4,499 acres on SOW). Current FNAI natural community data is not available for OKSSF; however, current landcover models estimate 23,673 acres of potential habitat on the OKSSF. Models using historic natural community data identified 17,372 acres on the 3 lead WMAs, with an additional 12,354 acres on the OKSSF. The current open pasture prevalent throughout the WMA complex is not optimal for the black bear. However, planned and ongoing restoration of natural communities, such as that planned for the Florida panther, will bring the area into a more suitable condition for this species. This species will benefit as pasture is replaced with the plant diversity associated with natural community restoration provided denning and travel cover are retained. Planned and ongoing prescribed fire that creates a mosaic of burned and unburned areas and actions taken for the Florida panther will maintain and improve habitat conditions for the Florida black bear.

The areas' goal is to provide suitable foraging and denning habitat for the Florida black bear. No measurable objectives or SMA are currently recommended. WMA-level monitoring would be impractical due to the species large home range. Therefore, monitoring for this species will be opportunistic ([Section 5.2.5](#)) and [Sections 6.6](#) and [6.1.6](#) describe coordination recommendations.

This species will benefit for land management actions taken for the Florida panther ([Section 4.1.1](#)), and no additional land management actions are currently recommended.

### 3.2.16: Florida Panther

Florida panthers occur on DIR, SOW, and OKS. This WMA complex falls within the primary and secondary zones for this species. A primary purpose of acquiring these WMAs was to support panther conservation. A long-term goal of these areas is to provide a panther corridor to conservation lands to the north.

Although no dens have been found on SOW or DIR, panthers are known to den on OKS and the adjacent OKSSF.

Florida panthers use a variety of habitats that generally consist of forested uplands and wetlands interspersed with more open habitats such as freshwater wetlands, dry prairie, old fields, pasture, and agricultural land. Several studies found a proportionally higher use of forested habitat types. However, non-forested habitats are important for hunting and maintaining prey species and serve as travel corridors between resting sites. This species triggers 4 of the 6 statewide prioritization parameters (high Millsap and supplemental scores, low population, unknown Legacy population trend). Statewide, this species is a high priority.

Models identify 2,666 acres of potential habitat for the panther within current plant communities (1,456 acres on DIR, 218 acres on OKS, and 992 acres on SOW). Current FNAI natural community data is not available for OKSSF; however, landcover models estimate 10,130 acres of potential habitat on the OKSSF. Models using historic natural community data identified 9,224 acres of potential habitat on the 3 lead WMAs, with an additional 11,019 acres on the OKSSF. The U.S. Fish and Wildlife Service (USFWS) Panther Recovery Plan indicates that a minimum of 4,800–12,000 square miles (3,072,000–7,680,000 acres) per metapopulation of 240 panthers is necessary to sustain a population. Telemetry data shows panthers utilizing slightly more habitat than is depicted by current habitat models, so the acreage estimations may be slightly low. While these WMAs cannot sustain a population of panthers in isolation, the complex provides crucial linkage between patches of suitable habitat for the regional population.

Land management for this species should focus on creating a mosaic of habitats that include patches of dense vegetation for resting and denning interspersed with open areas for stalking prey. Vertical vegetation structure in forested areas is critical to this species and management action should create and/or retain pockets of dense midstory and overstory vegetation. Panthers benefit from a diversity of vegetation, as it will produce greater forage for prey species. The southwest portion of the OKS and the eastern portion of SOW that border the OKSSF have the highest potential for achieving high-quality panther habitat, and staff is managing these portions of the property to provide cover. These areas are adjacent to an area designated as a dispersal zone for panthers. Current actions to replant native vegetation on SOW and OKS will continue to create more appropriate habitat conditions for panther.

The northwestern portion of DIR has the highest potential for achieving high-quality panther habitat; however, the presence of cattle limits the opportunity for management and ground cover restoration in this area. An SMA is recommended on DIR in MU 1 and the western portion of MU 2 ([Section 4.1.1](#)). The idea is to remove cattle grazing from the acres in the SMA to allow for habitat management more conducive to the needs of panthers and other focal species. This area is contiguous to the OKSSF, which contains the majority of panther activity, and will serve as a step in expanding suitable habitat into the interior of the WMA. As future strategies are developed, SMAs and management should focus on further expanding suitable habitat into the WMA, growing out from this area. No SMA is recommended on OKS. While no SMA is recommended for SOW, it should be noted that MUs 19, 20,

and 22 should be managed as or restored to flatwoods when resources become available; suitable habitat bordering the OKSSF will ensure travel corridors exist between the three areas. However, it is not necessary to designate these MUs as SMAs as this is already a consideration in the WMAs ongoing management. [Section 4.3.11](#) describes detailed land management recommendations.

The goal for this WMA complex is to manage and/or restore high quality denning, resting, and foraging habitat that allow the Florida panthers utilizing the WMAs to function as part of the regional population. As this species is wide-ranging and individuals utilizing DIR, SOW, and OKS are dependent on the regional network of management lands, it would be impractical to set measurable objectives at a WMA level. FWC's panther management team closely monitors the panther population, and additional systematic monitoring by local staff is unnecessary. [Section 5.2.5](#) describes the opportunistic monitoring recommended for this species. As this is a regionally dependent species, coordination with other teams and agencies is critical. [Sections 6.1.6, 6.6, and 6.7](#) describe coordination recommendations, and [Section 7](#) details considerations beyond the boundaries of the WMA complex.

#### *3.2.17: Limited Opportunity Species*

The gopher tortoise is not known to have naturally occurred on DIR or OKS nor has it been documented on the areas. FNAI documented 2 occurrences of the species on SOW prior to hydrologic restoration. However, water levels are now unsuitable for burrows, and the species has not been seen on SOW since the restoration was completed. This species was included in the area's focal species list because models estimated a combined 4,150 acres of potential habitat on the areas (319 acres on DIR, 2,888 acres on OKS, and 943 acres on SOW) when using statewide data. However, when models incorporate local soils data, 0 acres of potential habitat area are modeled to occur on each area. We believe the local data is more appropriate at estimating acres of potential habitat than the statewide data. As there is little to no suitable habitat and no habitat to add with restoration, this species should not be a focus of management. Therefore, no management is recommended for this species. Opportunistic monitoring recommendations are found in [Section 5.2.5](#). Should this species be detected on DIR, management and monitoring opportunities will be re-evaluated.

#### *3.2.18: Other Impertled Species*

With the exception of the listed species discussed above, the American alligator (*Alligator mississippiensis*) is the only listed wildlife species documented on the WMA complex. Planned and ongoing management activities that include allowing prescribed fire to run into wetland communities will continue to provide habitat for the American alligator.

Six rare plant species have been documented on OKS and 2 on DIR, although occurrence locations on DIR were not recorded. The giant orchid (*Pteroglossaspis [Eulophia] cristata*), redmargin zephyrlily (*Zephyranthes simpsonii*; aka Simpson's zephyr-lily or rain lily), and the leafless beaked ladies'-tresses (*Sacola*

[*Stenorrhynchos*] *lanceolata* var. *lanceolata*; aka leafless beaked orchid) are listed as threatened by the State of Florida. Cutthroat grass (*Panicum abscissum*), cardinal airplant (*Tillandsia fasciculata*; aka stiff-leaved wild-pine), and giant airplant (*T. utriculata*; aka giant wild-pine) are listed as endangered by the State of Florida. These areas do not have the benefit of a completed rare plant inventory and comprehensive rare plant inventories in appropriate MUs are recommended if resources become available.

The giant orchid is typically found in sandhill, scrub, pine flatwoods, and pine rockland natural communities that are actively managed. On OKS, it is found in improved or semi-improved pasture. Management for this species includes the use of prescribed fire to create sunny openings and reduce competition from woody species. Soil-disturbing activities such as bedding and plowing fire lanes can be destructive to giant orchid. Planned and ongoing prescribed fire and exotic vegetation control will continue to provide suitable habitat for this species. Locations where this species occurs should be documented and these locations avoided when conducting soil-disturbing activities.

Redmargin zephyrlily occurs on DIR and was found on OKS in MU 14 between the 1-acre GCR plots. This species inhabits wet pine flatwoods, meadows, pastures, roadsides, and glade borders. Ongoing and planned dormant season prescribed fire will encourage flowering and continue to provide habitat for this species.

Leafless beaked ladiestresses occur on DIR, OKS, and SOW. On OKS, the species occurs west of the eastern pines in MU 16 on the edge of wet prairie. On SOW, leafless beaked ladiestresses are found in flatwoods groundcover east of the driveway to the office between the road and office. This species is typically seen in flatwoods, hammocks, and disturbed areas. Management for this species includes protection from hydrologic alterations, logging, draining, and filling, enforcement of plant protection laws, and monitoring of off-road vehicles in natural areas. Planned and ongoing prescribed fire and removal of exotic vegetation will benefit this species.

Cutthroat grass communities occur within flatwoods, wet prairies, and depression marshes. Both occurrences on OKS are located on the margins of depressional wetlands in areas that may mimic seep hydrology. Observations come from MUs 9 and 13. Management for this species includes maintaining natural communities through prescribed fire to maintain open-canopied communities. Removal of exotic ground cover is also beneficial to this species. On OKS ongoing management actions that include prescribed fire, treatment of exotic vegetation, and GCR will promote the persistence of this species on the WMA. Timing of prescribed fire in cutthroat grass communities should include burning in the spring or summer to stimulate flowering.

Cardinal and giant airplants are scattered throughout OKS and the OKSSF, primarily found in large oaks in hammocks and on the OKSSF in cypress. These plants occur on the branches of trees, typically in swamp habitats. As with other members of this genus, management for this species includes protection of wetlands from draining, logging, and development, enforcement of plant protection laws, and natural community management.

It is possible that additional imperiled species occur on the WMA complex. Imperiled species on this management complex should continue to benefit from FWC's ongoing management actions that aim to restore natural community structure and function. Florida's imperiled species are adapted to these natural communities and have a higher probability of persistence under FWC management actions than in the absence of management. Location data for rare species should be documented and reported ([Section 6.5](#)).

#### **Section 4: Land Management Actions and Considerations**

Models identified potential habitat for 17 focal species on the WMA Complex ([Section 3.1](#)); however, not all of these species have the same level of management opportunity or need ([Section 3.2](#)). The FWC's natural community-based management, which emphasizes prescribed fire methods that promote a mosaic of burned and unburned areas, will promote the habitat conditions necessary for most of these species, without the need for further strategic management actions.

We may designate Strategic Management Areas (SMA) when actions over and above ongoing natural community management are required ([Section 4.1](#)). The designation of SMAs allows for identification of an area in which managers can apply specific land or species management action(s) to facilitate conservation of a species or group of species. An SMA is an area in which specific actions will occur that typically will not occur area-wide and can be used to do the following:

- Identify the area in which to apply specific land or species management that creates the highest probability for persistence/conservation of a species/suite of species. These specific actions may aid in restoring, enhancing or maintaining the habitat or population.
- Identify an area in which to focus specific management actions (land management or species management) for the best chance of success on large areas with more restoration/enhancement than can be accomplished in short order. This might be the first or next step in a sequential series of management actions that will increase the likelihood of occupation and/or persistence of a specific species.
- Identify an area that is so critical to the persistence of a species on the area that it warrants identification to ensure protection against negative alteration.
- Focus efforts on restoration/enhancement of a natural community that will benefit a priority species or a group of focal species. The SMA should identify the area in which these actions have the greatest positive impact for the species of interest.
- Identify areas that are critical for research or monitoring.
- Recommend specific OBVM DFCs in a specific area to benefit a specific species when we would not want to change the DFCs in the natural community area-wide.

We evaluated OBVM DFCs to ensure natural community management addresses the needs of these focal species ([Section 4.2](#)). Workshop participants did not identify the need to modify the existing DFC's for any of these areas.

Some species have specific protective measures or land management considerations that are necessary to ensure their continued use of the property. [Section 4.3](#) provides these recommendations.

#### 4.1: Strategic Management Areas

The intent on SOW, DIR, and OKS is to restore all appropriate natural communities to a condition that will provide high quality habitat for the Florida panther and the suite of species that benefit from a mosaic of natural communities. However, with the extent of altered landcover on DIR and the cost of restoration, this will be a long-term project. SMAs allow focus on areas with the highest possibility of success and/or areas most critical for the conservation of a species on the area. The WCPR process resulted in the identification of 1 SMA to be established immediately on DIR, and one to be established by 2014. For the SMA, goals, staff developed objectives and strategies to guide management. We define goals, objectives and strategies in [Section 1](#).

##### 4.1.1: Florida Panther

Staff designated an SMA for Florida panther ([Figure 1](#)) on DIR to focus attention on the need to concentrate initial restoration and management efforts in an area that will provide the most benefit to the Florida panther. Telemetry data shows most panther activity occurs on the OKSSF. MUs 1 and 2 share their western border with the OKSSF. Panther activity is limited on DIR. Telemetry data shows the most use in MUs 1 and 2, with activity significantly decreasing with distance from the OKSSF. We selected the MUs adjacent to the OKSSF to provide habitat connectivity into the WMA. The intent is to improve panther habitat in areas currently used by panthers and provide areas for eventual expansion into the WMA's interior. The western portion of DIR contains the most acreage of suitable habitat, although the groundcover is largely exotic and areas with dense understory are limited.

Desired habitat conditions for panther on DIR include areas with dense understory vegetation, particularly saw palmetto, interspersed with open areas. Dense understory provides some of the most important feeding, resting, and denning cover for panther. Saw palmetto is a typical component of quality denning and resting sites, and maintaining both vertical and horizontal understory components are important to optimize suitability. Patches of dense vegetation adjacent to areas that are more open provide critical areas for stalking and ambushing prey. Restoration is needed to provide these cover elements throughout much of the area. In the limited areas where these features currently exist, management practices should be encouraged to maintain this cover. Open marshes, dry-prairie/grasslands, and other vegetation types that can support high densities of prey species are also critical components of panther habitat. The long-term goal for this WMA complex is to provide suitable habitat throughout the complex that will support and encourage panther use and movement within and through the area.

Past logging, followed by conversion to pasture and agriculture, and recent hurricane damage has drastically reduced the acreage of flatwoods across the DIR. MU's 1 and 2 contain the only remnant flatwoods on the property, although the groundcover is primarily bahiagrass. Cattle grazing in these MUs limits the understory vegetation height and structure, and the majority of the MUs are fairly

open with little to no dense patches of vegetation. This SMA was developed to guide the first steps in what we anticipate will be a very long-term restoration project.

**SMA Goal:** Restore vegetation structure and composition to a mosaic that includes patches of dense understory vegetation required by the Florida panther.

**SMA Objective 1:** Exclude cattle from MU 1 and the western portion of MU 2 by 2014 to allow re-growth of dense understory vegetation preferred by Florida panthers for denning and resting.

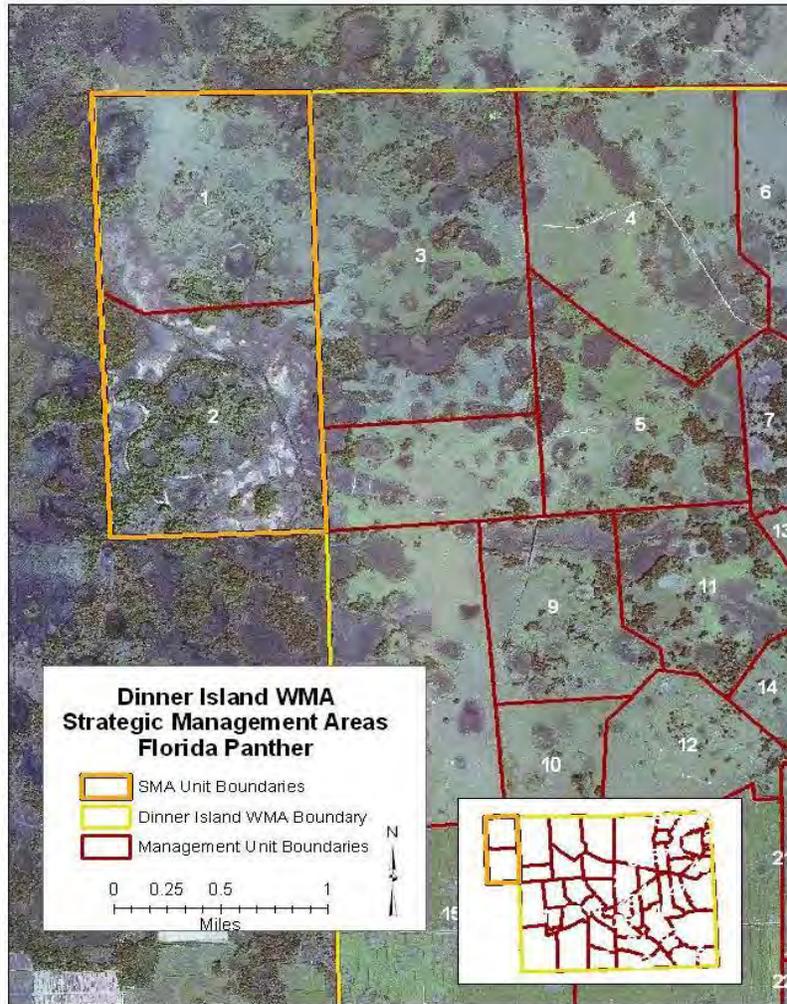
**SMA Objective 2:** Begin reforestation efforts in MUs 1 and 2 by 2016.

**Description of the SMA:** The SMA focuses on all of MU 1 and the western portion of MU 2. The total area for the SMA is 1,438 acres. The majority of this area is currently being maintained as improved pasture; however, this area also contains 38 acres of flatwoods and 95 acres of prairie hammock. The understory in these flatwoods and hammocks is primarily bahiagrass. The area has not received a successful prescribed fire in recent management history. There is swale and marsh in these units, which remain largely in good condition and do not require extensive restoration and management like the historic flatwoods and hammocks. Staff attempted to plant woody species, including Florida slash pine, in 2007. The planting had minimal success due to grazing and hurricane damage, and the area continues to lack sufficient overstory or midstory vegetation.

**Strategy:** Current land uses limit management options on the SMA. Grazing greatly decreases the density of understory vegetation, perpetuates unnatural ground cover, and prevents growth of overstory species. To ensure the greatest success in improving vegetation structure and composition, cattle must be excluded from the SMA prior to any restoration activity. Lease agreements allow FWC to remove select acreage from each lease on a yearly basis. Staff will work with lessees to remove the 1,438 acres from the grazing lease.

Site preparation for planting will begin within 1 year following the exclusion of cattle from the SMA, and reforestation efforts will begin when appropriate following any necessary groundcover treatments. Hammock improvements will begin with mechanical and chemical removal of exotic vegetation species. Currently, the major exotics in DIR's hammocks include Brazilian pepper, caesarweed, and tropical soda apple. Follow-up treatments will be necessary for complete control of these exotic species. Following successful treatment and removal of major exotic vegetation, the hammocks will be planted with native shade-tolerant species, with emphasis on mast-producing species.

Flatwoods improvements will be similar to the procedure used in groundcover restoration. Site preparation will involve removal of the current exotic bahiagrass cover with 2 - 3 herbicide treatments. Due to the time and expense required to collect and plant native seed, the flatwoods groundcover will not be planted following the typical GCR protocol. Instead, staff will allow these areas to go fallow to promote natural recruitment of native species. Experience on other parts of DIR has shown



**Figure 1:** Management units targeted for restoration associated with Florida Panther Strategic Management Area on Dinner Island Ranch WMA.

some promise in the use of this technique. Once management has successfully removed the exotic groundcover, staff will plant native slash pine as overstory vegetation. Staff will plant slash pine in dense stands to ensure the dense pine stands preferred by panthers are present if some tree mortality occurs after planting.

Reforestation of the SMA will involve planting native woody species beneficial to panthers, such as slash pine, pop ash, gallberry, beautyberry, fetterbush, myrsine, saw palmetto, live oak, and gumbo limbo. Changes in vegetation will be monitored through the OBVM process, and DFCs for the MUs will be identified when appropriate. The duration and scope of these restoration efforts will be dependent upon resources, and additional funding may be required to complete the project.

#### *4.1.2: Dry Prairie Restoration*

Staff identified the need to designate an SMA as a starting point for dry prairie restoration on DIR. Restoration of dry prairie is an extremely resource-intensive process. For this reason, it is only possible to restore small acreage at a time. Restoring dry prairie groundcover will carry benefits to a number of the focal species, most notably the Florida grasshopper sparrow. However, the status and distribution of this species on the WMA complex has not yet been determined. To select the most appropriate location for the dry prairie restoration SMA, staff should designate the location of the SMA only after completing surveys for the Florida grasshopper sparrow.

**SMA Goal:** Remove exotic bahiagrass and restore functional native dry prairie.

**SMA Objective 1:** Identify MUs for the SMA within 1 year following the completion of surveys for Florida grasshopper sparrows.

**SMA Objective 2:** Identify actions and additional objectives for the dry prairie SMA within 18 months following the completion of Florida grasshopper sparrow surveys.

**Description of the SMA:** Species experts will help determine the location and size of the SMA based on information gathered during completion of survey for the Florida grasshopper sparrow. Currently, the area's groundcover is a near monoculture of bahiagrass, which is of minimal value to native species. Restoring groundcover to native dry prairie will improve habitat conditions for a suite of grassland species, including: Florida grasshopper sparrows, Florida sandhill crane, northern bobwhite, Bachman's sparrow, burrowing owl, and crested caracara. Staff will draft a more detailed description of the dry prairie SMA within 18 months following the completion of the grasshopper sparrow survey.

**Strategy:** Habitat improvements in the dry prairie SMA will closely follow those for GCR projects. General actions will include site preparation with herbicide and

planting native vegetation species. Staff will draft detailed strategy actions within 18 months following the completion of the Florida grasshopper sparrow surveys.

**4.2: Objective-Based Vegetation Management Considerations**

Staff will use Objective-Based Vegetation Management (OBVM) to monitor progress towards Desired Future Conditions (DFCs) of various natural community parameters (Table 4, Table 5, and Table 6). As such, OBVM will be effective in monitoring progress towards land management strategies.

The OBVM DFCs target a range in values for various habitat parameters within actively managed communities. However, some focal species may require a more restricted range in habitat parameters than is reflected in the DFCs. The workshop gives participants the opportunity to suggest modifications to the existing DFC, or add specific vegetative parameters necessary for certain species. Workshop participants did not identify the need to modify the existing DFC's for any of these areas.

**Table 4.** Desired Future Conditions for specific vegetative parameters in actively managed natural communities at Dinner Island Ranch WMA as identified via the OBVM workshop process.

<b>Mesic Flatwoods</b>		<b>Dry Prairie</b>	
Basal area	10-40	Pine Stem Count	0
Av. Max Shrub Height *	≤ 4	Av. Max. Shrub Height *	≤ 3'
Shrub Cover (%)	20-40	Shrub Cover (%)	≤ 10
Av. Max Serenoa Height *	≤ 4	Serenoa Cover (%)	30 - 50
Serenoa Cover (%)	20-40	Av. Max. Serenoa Height *	≤ 2
Herb Cover (%)	≥ 25	Herb Cover (%)	≥ 20
Exotics	0	Wiry Cover (%)	≥ 10
Weedy Cover (%)	< 5	Exotics	0
Species Composition		Weedy Cover (%)	< 5
		Species Composition	

<b>Wet Prairie</b>		<b>Prairie Hammock<sup>1</sup></b>	
Pine Stem Count	≤ 3 stem/ac	Species Composition	
Av. Max. Shrub Height	≤ 2'	Shrub Cover (%)	n/a
Shrub Cover (%)	≤ 20	Herb Cover (%)	n/a
Herb Cover (%)	≥ 40	Exotics	n/a
Wiry Cover (%)	≥ 30		
Exotics	0		
Weedy Cover (%)	< 5		
Species Composition			

\* average of non-zero heights

<sup>1</sup> Prairie Hammock is a community of interest, not actively managed for monitoring purposes.

**Table 5.** Desired Future Conditions for specific vegetative parameters in actively managed natural communities at Spirit of the Wild WMA as identified via the OBVM workshop process.

<b>Mesic Flatwoods</b>		<b>Wet Prairie</b>	
Basal area	10-40	Pine Stem Count	≤ 3 stem/ac
Av. Max Shrub Height	≤ 4'	Av. Max. Shrub Height*	≤ 2'
Shrub Cover (%)	20-40	Shrub Cover (%)	≤ 20
Av. Max Serenoa Height	< 4'	Herb Cover (%)	≥ 40
Serenoa Cover (%)	20-40	Wiry Cover (%)	≥ 30
Herb Cover (%)	≥ 25	Exotics	0
Exotics	0	Weedy Cover (%)	< 5
Weedy Cover (%)	< 5		

**Table 6.** Desired Future Conditions for specific vegetative parameters in actively managed natural communities at Okaloacoochee Slough WMA as identified via the OBVM workshop process.

<b>Mesic Flatwoods</b>		<b>Depression Marsh</b>	
Pine Stem Density ≥ 6 ft	15-25 stem/ac	Tree Stem Density	0 stem/ac
Other Stem ≥ 6 ft.	5-10 stem/ac	Willow Cover	≤ 10%
Total Basal Area	20-40	Exotic Cover	0%
Avg. Max. Shrub Ht	≤ 6 ft		
Avg. Max. Palmetto Ht	≤ 5 ft		
Palmetto Cover	10 – 30%		
Total Shrub Cover	20 - 40%		
Total Herb. Cover	≥ 45%		
Exotics Cover	0%		
Weedy Cover	≤ 15%		

#### 4.3: Further Land Management Considerations

Most generalist or wide-ranging species benefit from management that restores the natural structure and function of natural communities they use. However, for some species, specific management recommendations and precautions are necessary to ensure the continued suitability of the area for the species. The following recommendations should help ensure the WMA complex continues to fulfill its role in the conservation of these species.

##### 4.3.1: American Swallow-Tailed Kite

Because swallow-tailed kites exhibit high nest site fidelity, protect known nest sites from disturbance and alteration, and retain the tallest pines in the area of nest sites. Maintaining a 330-foot protective buffer around active nests during nest season should minimize the chance of disturbance. If documented on the area, allow nesting

areas to have a higher shrub height and density than surrounding areas when feasible. If kite activity is observed during nesting season, particularly if kites are observed carrying nesting material, mobbing, or in groups of 3 or more, this information will be documented and an effort to locate the nest should be made. For information on how to locate nests, see:

Meyer, K. D., and M. W. Collopy. 1995. Status, distribution, and habitat requirements of the American swallow-tailed kite (*Elanoides forficatus*) in Florida. Project Report, Florida Game and Fresh Water Fish Commission, Tallahassee. [Link to Meyer and Collopy, 1995.](#)

It is important to preserve future potential nest trees. This can be done by retaining the largest, oldest trees on the landscape during land management activities.

#### 4.3.2: *Bachman's Sparrow*

On OKS, DIR, and SOW removal of pasture grasses and efforts to restore native ground cover will provide the more suitable habitat for Bachman's sparrows. GCR efforts will be beneficial throughout the WMA complex. GCR efforts should be used in conjunction with prescribed fire, which also improves the quality of habitat for this species, and is the primary land management tool recommended to promote habitat for Bachman's sparrow where native groundcover exists. Once appropriate groundcover exists, suitable habitat can be maintained through the frequent ( $\leq 3$  year rotation) use of prescribed fire. The occurrence of fire is critical to sustaining this species as use of an area by Bachman's sparrows declines rapidly around 18 months post-fire, and Bachman's sparrows may abandon habitat if fire is excluded for more than 3 years. When using mechanical treatments to reduce understory, make an effort to retain some small patches of shrubs, and follow the mechanical treatment with a prescribed burn. This type of land management also will benefit northern bobwhite and a number of other species.

#### 4.3.3: *Burrowing Owl*

The burrowing owls on DIR, OKS, and SOW occur on artificial landscape features and on pasture that occurs in place of dry prairie. Restoration activities that include filling all ditches or removing all canals would remove artificial habitats that allow owls to use the area. As such, to accommodate this species, staff will retain select ditches and spoil berms to provide habitat for the burrowing owl. During restoration activities, area managers should consider plugging, rather than filling ditches in areas where burrowing owls occur. Additionally, where water control structures are in place, maintaining spoil banks in areas where owls are present will ensure suitable burrowing substrate is available. Artificial perches provide hunting and observation sites for burrowing owls. Wooden fence posts or other perches placed in immediate vicinity of burrows will provide a suitable perch. Placing a T perch near known burrows will not only benefit the owl, but will aid managers in their efforts to avoid burrows during management activities.

Cattle grazing will reduce vegetation height to a level that is beneficial for burrowing owls, but cattle may also degrade/destroy burrows by trampling or wallowing in them. Area managers should consider excluding cattle from the immediate vicinity of known active burrows, when feasible. When active burrows are identified, activity within 33 feet should be avoided from February 15 through July 10. Heavy equipment should not be used around burrows to avoid collapsing burrows.

#### 4.3.4: Crested Caracara

Crested caracaras have high fidelity to their home ranges and nest sites. Staff will protect known nesting sites and maintain home ranges in suitable condition if individuals are known to occupy a particular MU. Management actions like cattle grazing, mowing, shredding, and prescribed burning will improve habitat conditions by creating areas with low ground and shrub cover. Following the guidance in Morrison 2001 (cited below), staff will limit management actions during the breeding season if a nest is located. Crested caracaras are most likely to flush from the nest, which can be detrimental to eggs or young, if disturbance occurs within 1,000 feet of the nest during the first 2 - 3 weeks of nesting. Maintain this distance (1,000 feet) as a buffer around known nests. Morrison (2001) suggests historic management can continue (if the birds are used to it) during nesting season, as long as the first 2 - 3 weeks of nesting are avoided. A significant increase in human activity within the home range or territory can cause caracaras to abandon the area, even outside of the nesting season. Complete management guidelines are available in:

Morrison, J.L. 2001. Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara (*Caracara cheriway audubonii*) in Florida. Florida Fish and Wildlife Conservation Commission, Technical Report No. 18. Tallahassee, FL. 19 pp. [Link to Tech Report 18, Morrison 2001](#)

#### 4.3.5: Florida Sandhill Crane

Prescribed fire improves the quality of upland habitat for this species and maintains wetlands in suitable condition by reducing invasion by shrubby and woody species. Cattle grazing is capable of maintaining the open condition preferred by this species. Mechanical treatments can be useful in reducing growth of brush on wetland edges when fire cannot successfully reduce the shrubs. Increased shrub cover around wetlands impedes crane movement while increasing the potential of predation by bobcats (*Lynx rufus*). The marsh/upland ecotone is an important foraging habitat for sandhill cranes, which use this habitat in a greater proportion when not overgrown with shrubs. In known nesting areas, management actions should occur outside of the nesting season (December - June) and after the young are able to fly. A 400-ft buffer will minimize the likelihood of disturbance. Management should be considerate of the seasonality of wetland management activities to avoid flooding of nests or reducing foraging habitat. For management recommendations see:

Stys, B. 1997. Ecology of the Florida sandhill crane. Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Technical Report No. 15. Tallahassee, Fl. 20 pp. [Link to Tech Report 15: Stys, 1997.](#)

#### 4.3.6: Limpkin

It is possible that ongoing actions (e.g., prescribed fire, mechanical treatment, and herbicide) could have negative impacts on limpkins if the needs of the species are not considered during the planning of these activities. Staff can reduce the potential of having negative impacts on these species by taking actions to avoid disturbing nests. This is accomplished by identifying and protecting or avoiding these areas when conducting management activities, such as prescribed burning in wetlands during nesting season.

#### 4.3.7: Snail Kite

Allowing prescribed fire to burn into marsh and wet prairie habitats can help maintain these communities in an open condition beneficial to snail kites. Ideal habitat management includes creating deeper water sloughs that will not dry up each year, or providing alternate deep-water sources nearby (< 164 feet) so the snails can survive and/or recolonize the shallow emergent marshes. Fire during low water regimes allows the control and reduction of dense emergent plant growth that can reduce use of the marshes and access to the snails by the snail kites.

If an active nest is identified, managers will alert the FWC Snail Kite Coordinator and follow the management guidelines found at [Snail Kite Management Guidelines](#) (or any subsequent version). An FWC Snail Kite management plan will be available in the near future, and guidelines from the updated plan will be followed. In particular, increased activity will be prohibited within a 1,640-ft limited activity buffer zone of the active nest.

#### 4.3.8: Southern Bald Eagle

Protection of bald eagle nests, including avoiding disturbance of nesting eagles, is necessary to continue the recovery of this species. Managers will consider the management guidelines available at [FWC Bald Eagle Management Plan](#) (or any subsequent version) when planning activities within 660 feet of known eagle nests. Staff will document and report any new nests that are located. Staff will check the bald eagle nest locator ([FWC Bald Eagle Nest Locator](#)) annually to determine if any new nests are detected within 660 feet of the WMA complex via the statewide monitoring efforts. It is undesirable to have unnaturally dense stands around eagle nests. Continue to manage stands in which eagle nest buffers occur, but with proper planning to avoid negative impacts to the eagles, per the guidance of the management plan. During management activities, retain large mature pines as potential nesting sites.

#### *4.3.9: Wading Birds*

It is possible that ongoing actions (e.g., prescribed fire, timber harvest) could have negative impacts on wading birds if the needs of the species are not considered during the planning of these activities. Providing a 330-ft buffer around nesting colonies during nesting season will ensure adequate protection of these resources. Additionally, plan any mechanical and/or chemical control of aquatic vegetation at a time that avoids disturbance to the colony, and using methods that do not damage the plants in which wading birds construct their nests.

#### *4.3.10: Big Cypress Fox Squirrel*

Best management practices for this species include protecting large areas of pine flatwoods in a mosaic of other forested communities. Burn pine communities every 2 - 5 years (April - July, if possible) to maintain open conditions. Allow fires to burn into cypress and other wetland communities to produce broad, diverse transitions between communities. In current rangeland conditions, retain and plant if necessary native mast producing trees (e.g., pines and oaks) to provide food and cover. Light grazing that removes understory vegetation may benefit this species when used in conjunction with prescribed fire.

In areas where fox squirrels are known to occur, emphasis should be placed on maintaining patches of uplands with low shrub and ground cover. Slow-moving fires that heavily ground prune some areas while leaving others unburned should produce a mosaic of uplands that are suitable to the fox squirrel without conflicting with the needs of other focal species.

#### *4.3.11: Florida Panther*

Panthers need a diversity of cover types available for stalking prey, for use as daytime rest sites and for use as den sites. The rest and den sites in particular need to contain dense understory with tall, dense vegetation. Individual patches do not need to be acres in size but should be present throughout the property. Protecting forested areas from the loss of canopy coverage is important, and area managers should apply prescribed fire using methods that will not kill overstory vegetation in forested areas. Additionally, apply fire using techniques that create a mosaic of burned and unburned areas, as this will benefit panthers. During the planning of land management activities on the WMA complex, consider promoting and protecting travel corridors for panthers within the WMA complex and across boundaries to other managed areas. If denning is confirmed on the area, management activities will be planned to occur only after the panther and kittens have left the unit. Black bears will also benefit from this type of management.

## Section 5: Species Management Opportunities

The focal species approach taken here represents a science-based approach to ecosystem management. Though this method relies on a suite of individual species, land management actions focused on these species directly benefit associated species. For some species, land management actions alone are insufficient in aiding recovery. These include species that are not present on a site and have limited dispersal capabilities are unlikely to occupy a site without reintroduction once habitat restoration is complete. Additionally, species that are currently present but occur at low densities, have low reproduction potential, or have other limitations that inhibit recovery, may require species-specific management. This section provides species management recommendations ([Section 5.1](#)) as well as monitoring recommendations ([Section 5.2](#)) to assess species response to land management and to determine the need for additional species management. [Section 5.3](#) identifies research necessary to guide future management.

### 5.1: Species Management

Species management as used here refers to non-monitoring actions taken for a specific species. It can include actions such as translocation, restocking, installing artificial cavities, etc. [Section 5.2](#) covers monitoring related actions, including banding or tagging. [Section 2](#) and [Section 4](#) provide information on land management actions, such as prescribed fire or mechanical treatments.

Workshop participants did not identify any species management needs on DIR, SOW, or OKS.

### 5.2: Species Monitoring

Monitoring is critical to evaluating the impact of the management actions described in this Strategy. While we are unable to monitor all of the focal species on OKS, DIR, and SOW, the recommended monitoring will assess species in all actively managed communities, select wetland dependant species, and includes opportunistic monitoring for uncommon or hard to monitor species. Data collected will be reported to the regional conservation biologist for inclusion in the appropriate database developed for the WCPR program. We will make monitoring data available to cooperating agencies and organizations such as FNAI ([Section 6](#)).

This section provides the list of monitoring actions recommended for the area, and provides the purpose for the monitoring. The FWC is in the process of standardizing monitoring protocols for a number of these species. Approved protocols are available at [Monitoring Protocol Section of the WCPR SharePoint Site](#). When protocols are finalized, they will be implemented in accordance with the timeframe described in this Strategy.

#### *5.2.1: Florida Sandhill Crane Monitoring*

The purpose of monitoring Florida sandhill cranes is to monitor coarse changes in abundance or distribution over time. Staff will conduct surveys following

a protocol that is currently under development. Additional resources will be necessary for the completion and repetition of these surveys.

#### *5.2.2: Bachman's Sparrow Surveys*

The purpose of monitoring Bachman's sparrows is to determine whether a population occurs on the WMA complex. Surveys will be point counts conducted during peak breeding season (April – May) and only in areas with suitable habitat where sparrows are likely to occur. If necessary, call-back tapes may be incorporated into the call station protocol. If Bachman's sparrows are detected, additional surveys may be considered with the purpose being to track the general trend in the population.

#### *5.2.3: Grasshopper Sparrow Surveys*

The purpose of monitoring Florida grasshopper sparrows is to determine whether a population occurs on or near the WMA complex. Surveys will be standardized point counts using call-back tapes during peak breeding season (May). Additional resources and assistance from FWRI may be necessary to conduct the surveys. If the Florida grasshopper sparrow is detected, additional surveys may be considered.

#### *5.2.4: Aerial Wading Bird Roost/ Colony Surveys*

The purpose of monitoring wading birds is to identify nesting colonies on and near the WMA complex to guide timing of management actions to avoid disturbing nesting. These surveys will not provide accurate counts of nests or even complete identification of all species in the colony, but will provide useful information on the location of colonies. Surveys will be conducted using standardized aerial transects, and should be repeated for 3 years to account for seasonal population fluctuations due to yearly changes in water levels. Funding for helicopter time will be necessary to complete these surveys.

#### *5.2.5: Opportunistic Monitoring*

The purpose of opportunistic monitoring is to document the presence of specific species. Opportunistic monitoring is the process of recording important information as it is encountered. Staff will document opportunistic sightings by recording information including the species, approximate lat/long or appropriate management unit, number of individuals, behavior, and habitat type. Record encounters with or sign of the following focal species:

- Gopher tortoise
- Burrowing owl
- Florida panther
- Florida sandhill crane (nesting activity or juveniles)
- Swallow-tailed kite (aggregations of 3 or more birds on a regular basis in one area during spring and any nesting activity)

- Cooper’s hawk (nesting activity)
- Florida black bear
- Limpkin (nesting or occurrence of dependant young)
- Mottled duck (nesting or occurrence of dependant young)
- Snail kite (nesting activity or > 10 foraging birds)
- Southern bald eagle (nesting activity)
- Crested caracara (nesting activity or occurrence of dependant young)
- Any listed species not mentioned in this section

### 5.3: Species Research Needs

Species management recommendations in other sections of this document are based on the most current information regarding management strategies for a given species. However, cases arise when little or no information is available to guide management. This section outlines research needs identified through the WCPR process. Workshop participants did not identify any species research needs on DIR, SOW, or OKS.

## Section 6: Intra/Inter Agency Coordination

Throughout the WCPR process, there were many recommendations regarding possible management strategies for focal species. THCR staff can handle most proposed management actions; however, cases may arise when coordination with other sections in FWC or other agencies is necessary or increases efficiency. This section identifies cases in which coordination is necessary outside of THCR, identifies the entity to coordinate with, and provides position contacts for these entities.

We attempt to provide the name, position and contact information for the people holding the position when this Strategy is drafted. As positions experience turnover, when in doubt, contact the current Section Leader /supervisor to determine the appropriate individual.

### 6.1: Florida Fish & Wildlife Conservation Commission (FWC)

#### 6.1.1: Species Conservation Planning Section (SCP)

Monitoring animal populations on a WMA/WEA gives managers a way to gauge animal response to management. If this information is not shared with others, valuable data that can be used to assess statewide conservation efforts often is lost. Therefore, share monitoring data with the appropriate taxa coordinator and program coordinator for species in which conservation initiatives or other management programs have been developed. The regional SCP biologist is a good source of information on the regional status of non-game species. Additionally, FWC staff is authorized to handle federally listed species if it is done consistent with the requirements of the agency’s Endangered Species Act Section 6 Cooperative Agreement. To meet these requirements, staff will provide reporting as outlined in the Agreement to the agency’s Endangered Species Coordinator. Please note some contacts will also be covered under [Section 6.1.3: FWRL](#), and [Section 6.1.5: Florida’s Wildlife Legacy Initiative](#).

Contacts:

Elsa Haubold, Species Conservation Planning Section Leader: (850) 488-3831  
Robin Boughton, Avian Taxa Coordinator: (352) 732-1225  
Zach Welch, Snail Kite Coordinator: (352) 266-6139  
Ricardo Zambrano, Regional Biologist: (561) 625-5122  
Brad Gruver, Endangered Species Coordinator: (850) 488-3831

*6.1.2: Hunting & Game Management (HGM)*

As the FWC has a statewide quail strategy, information collected on northern bobwhite should be shared with the small game coordinator.

Contacts:

Paul Schulz, Section Leader: (850) 488-3831  
Chuck McKelvy, Small Game Program Coordinator: (850) 342-0256

*6.1.3: Fish and Wildlife Research Institute (FWRI)*

Area staff will communicate with FWRI's mottled duck team to obtain the most recent survey results for DIR, OKS, and SOW. Additionally, significant observations of southern bald eagle, Florida grasshopper sparrows, snail kite, and wading birds will be shared with FWRI. Area staff will cooperate with FWRI to develop a standard monitoring protocol for Florida sandhill cranes and for monitoring of Florida grasshopper sparrows.

Contacts:

Tim O'Meara, Section Leader: (850) 488-3831  
Ron Bielefeld, FWRI Wildlife Biologist (Florida mottled duck): (772) 228-9125  
Janell Brush, FWRI Wildlife Biologist (bald eagle, snail kite): (352) 955-2081  
Jim Rodgers, FWRI Wildlife Biologist (wading birds): (352) 955-2081  
Marty Folk, FWRI Wildlife Biologist (Florida sandhill crane): (407) 348-3009  
Mike Delany, FWRI Wildlife Biologist (grasshopper sparrow): (352) 955-2081 x114  
Karl Miller, FWRI Wildlife Biologist (upland birds): (352) 955-2081 X104

*6.1.4: Habitat Conservation Scientific Services Section (HCSS)*

Since conservation of wide-ranging species, such as the crested caracara and burrowing owl is dependent on cooperation with surrounding private landowners, developing working relationships with landowners will be critical to the conservation of the species. HCSS works with many private landowners and may be able to assist in making contacts or providing incentives for management activities on neighboring private lands. Maintaining communication regarding current and future projects will be critical.

Contacts:

Scott Sanders, HCSS Section Leader: (850) 488-3831  
HCSS Southwest Regional Biologist (Vacant): (863) 647-4000  
Chris Greene, HCSS Southwest Region: (941)833-3540

*6.1.5: Florida's Wildlife Legacy Initiative (FLWI)*

Monitoring animal populations on a WMA gives managers a way to gauge animal response to management. If staff does not share this information with others, valuable data that can be used to assess statewide conservation efforts often is lost. FLWI can be helpful in identifying and assisting with partnering efforts, and might be a source of funding via the State Wildlife Grants program. Therefore, regular communication with this section will be a priority.

Contacts:

Katherine Haley, Florida's Wildlife Legacy Initiative: (850) 410-0656 x17297  
Mary Truglio, South Region Legacy Biologist: (561) 625-5122

*6.1.6: Imperiled Species Management Section (ISMS)*

Staff at OKS, DIR, and SOW will maintain communication with the Panther Management Team to address panther habitat improvements, as well as the WMA complex's role in the statewide panther management plan.

Contact:

Kipp Frohlich, Section Leader: (850) 922-4330  
Darrell Land, Panther Team Leader: (239) 417-6352  
Mike Orlando, Assistant Bear Program Coordinator: (386) 965-2464

**6.2: South Florida Water Management District (SFWMD)**

The SFWMD has a grant program that may assist with management and restoration activities. Additionally, Mark Cook, in the Everglades Division, maintains a regional database for wading bird monitoring. Wading bird data from the WMA complex should be shared with the SFWMD.

Contacts:

Mark Cook, Sr. Environmental Scientist, Everglades Division: (561) 681-2500 x4539

**6.3: Avian Research and Conservation Institute (ARCI)**

The Avian Research and Conservation Institute (ARCI) surveys and keeps information on American swallow-tailed kite populations and have recently documented snail kite use on DIR. Location information on the swallow-tailed kite and snail kite, particularly nests or nesting behavior, should be shared with ARCI.

Contacts:

Dr. Ken Meyer, avian researcher: (352) 335-415: meyer@arcinst.org

**6.4: United States Fish and Wildlife Service (USFWS)**

The USFWS maintains records on the federally listed snail kite, crested caracara, and wood stork. Nest and colony locations should be shared with USFWS. Additionally, USFWS may serve as a source of information on and possible assistance with federally listed species. Therefore, communication with USFWS regarding listed species should occur whenever appropriate.

Contacts:

Heather Tipton, Fish and Wildlife Biologist: (772) 562-3909, ext. 296

Sandra Sneckenberger, Fish and Wildlife Biologist: (772) 562-3909, ext. 321

**6.5: Florida Natural Areas Inventory (FNAI)**

The FNAI collects, interprets, and disseminates ecological information critical to the conservation of Florida's biological diversity. The FNAI's database and expertise facilitate environmentally sound planning and natural resource management to protect the plants, animals, and communities that represent Florida's natural heritage. The FNAI maintains a database of rare and listed species that is often used for planning purposes. As such, staff should share information about element occurrences on the WMA complex with FNAI to ensure this information is included in their database. FWC also has a contract with FNAI for plant and animal surveys if the need exists and resources are available.

Contacts:

Dan Hipes, Chief Scientist: (850) 224-8207

**6.6: Florida Division of Forestry (DOF)**

The DOF can assist with timber management on State lands. They also issue authorizations for prescribed burning and will assist on escaped fires. Staff should continue to coordinate with DOF on these issues. Since the OKSSF is contiguous with the three FWC-managed areas in this district, communication and coordination with DOF regarding management activities and monitoring will be critical to ensure the persistence of several species.

Contacts:

Greg Cox, Forest Area Supervisor, Hendry County, Caloosahatchee District: (239) 690-3500

Kevin Podkowka, Forest Resource Admin., Caloosahatchee District: (239) 690-3500

Dennis Hardin, Florida Statewide Endangered and Threatened Plant Conservation Program Coordinator, Tallahassee: (850) 414-8293

Dexter Sowell, Biologist II, Caloosahatchee District: (239) 690-3500 x 122

## 6.7: Alico

Since conservation of wide-ranging species is dependent on cooperation with surrounding private landowners, developing working relationships with landowners will be critical to the conservation of the species. Alico is a large landowner that borders the WMA complex and several of the focal species occur on the property.

### Contacts:

Alico LaBelle Office: (863)675-2966

John Threet: (863)657-2966 office; (863)673-4781 cell

Eddie Henderson, Security: (863)673-6040

Willie Cockram, Heavy Equipment\*\* (863)673-4489

## Section 7: Beyond the Boundaries Considerations

There is enough potential habitat (with restoration) to support many of the WMA complex's focal species. With restoration, the complex can support a viable population of northern bobwhite, and can support a viable population of Bachman's sparrow if the species occurs in the area. Further, this WMA complex is part of a network of conservation lands that will help ensure the continued existence of many of the wide-ranging focal species. Wide-ranging species such as the American swallow-tailed kite, Cooper's hawk, mottled duck, limpkin, bald eagle and wading birds will continue to exist on this complex as long as regional conditions are conducive to their persistence. The complex plays a significant role in the regional persistence of some listed species such as caracara, the Florida sandhill crane, black bear and Florida panther, and with restoration, could play a significant role in the conservation of the big cypress fox squirrel. There is potential that with significant restoration, DIR could play a significant role in the conservation of the burrowing owl and the Florida grasshopper sparrow. However, the complex is part of a Florida Forever land acquisition project that has not been completed. While DIR, OKS, and SOW can play a role in supporting the regional population of species, ultimately, the continued existence of these species on this complex is dependent on what happens to the regional populations.

However, the current management boundaries identified for the areas do not include all important habitat for focal species, such as the lands identified as Strategic Habitat Conservation Areas (SHCAs) for American swallow-tailed kite, big cypress fox squirrel, Florida black bear, Cooper's hawk, Florida grasshopper sparrow, burrowing owl, Florida panther, and snail kite. Further, the majority of the land in this WMA complex is currently in a highly altered and unnatural state. Without considerable restoration, which will require a great deal of time and resources, these areas cannot fulfill their conservation role for many species, such as Bachman's sparrows and Florida grasshopper sparrows that prefer native groundcover.

The FWC originally identified SHCAs in the Closing the Gaps in Florida's Wildlife Habitat Conservation System report (Cox et al. 1994; available at [Closing the Gaps Report, 1994](#)). The goal of SHCAs is to identify the minimum amount of land needed in Florida to ensure long-term survival of key components to Florida's biological diversity. The SHCAs identify important remaining habitat conservation needs on private lands. New SHCAs have been identified in recent FWC efforts to update the Closing the Gaps entitled "Wildlife

Habitat Conservation Needs in Florida: Updated Recommendations for Strategic Habitat Conservation Areas” (available at [Wildlife Habitat Conservation Needs in Florida Web Information](#)). Although it is unlikely Florida will acquire all property identified in SHCAs, property acquisition and encouraging land use and management that is compatible with the needs of OKS, DIR, and SOW’s focal species should be a priority in the area.

While OKS, SOW, DIR, the OKSSF and the current condition and management of neighboring lands provide an opportunity to further the conservation of many focal and imperiled species, significant changes in management or land use beyond the boundaries may have significant impact on some species. Much of the surrounding land is used for cattle and citrus. Urban development of these areas may significantly reduce habitat for many species, such as the crested caracara, that can persist in highly altered but undeveloped habitat. As many of the area’s species are dependent upon fire-maintained upland habitat, any change that impedes the ability to conduct prescribed fire would be detrimental to the persistence of species such as the big cypress fox squirrel. Species that require large home ranges or are dependent on dispersal for maintaining a population are particularly affected by adjacent land management or development. Many of the WMA complex’s species are dependent on the availability of suitable habitat on adjacent private lands. There is a possibility populations of Florida grasshopper sparrows, burrowing owls, big cypress fox squirrels, or Bachman’s sparrows occur on nearby private lands. We believe the Florida sandhill cranes and caracaras that use this complex of lands are dependent on private lands. We know the panther and black bear use these private lands. As such, the actions of adjacent landowners will determine if some of these focal species will persist on the areas. Area staff should make every effort to cooperate on the conservation of focal species with adjacent private landowners. Staff should coordinate with HCSS to ensure private landowners are informed about incentive programs to encourage conservation-based management and receive the proper technical assistance. Fostering a positive relationship with neighboring landowners may increase the willingness of the landowner to become a partner in conservation-based land management. Such partnerships are critical to the long-term persistence of species, such as the Florida panther and the Florida black bear on OKS, DIR, and SOW.

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## 13.7 FWC Apiary Policy

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# Apiary Policy

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## Division of Habitat and Species Conservation

Issued by:  
Terrestrial Habitat Conservation and Restoration Section  
9/1/2010

## 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](http://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](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](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:**

\_\_\_\_\_  
**Division Director or Designee**

**DATE:** \_\_\_\_\_

**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

FLORIDA FISH AND WILDLIFE  
CONSERVATION COMMISSION

Date: \_\_\_\_\_  
\_\_\_\_\_

Mike Brooks, Section Leader  
Terrestrial Habitat Conservation  
Restoration

\_\_\_\_\_  
and  
Witness

Date:

\_\_\_\_\_  
\_\_\_\_\_  
Witness

Approved as to form and legality

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Commission Attorney

Date:

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# 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

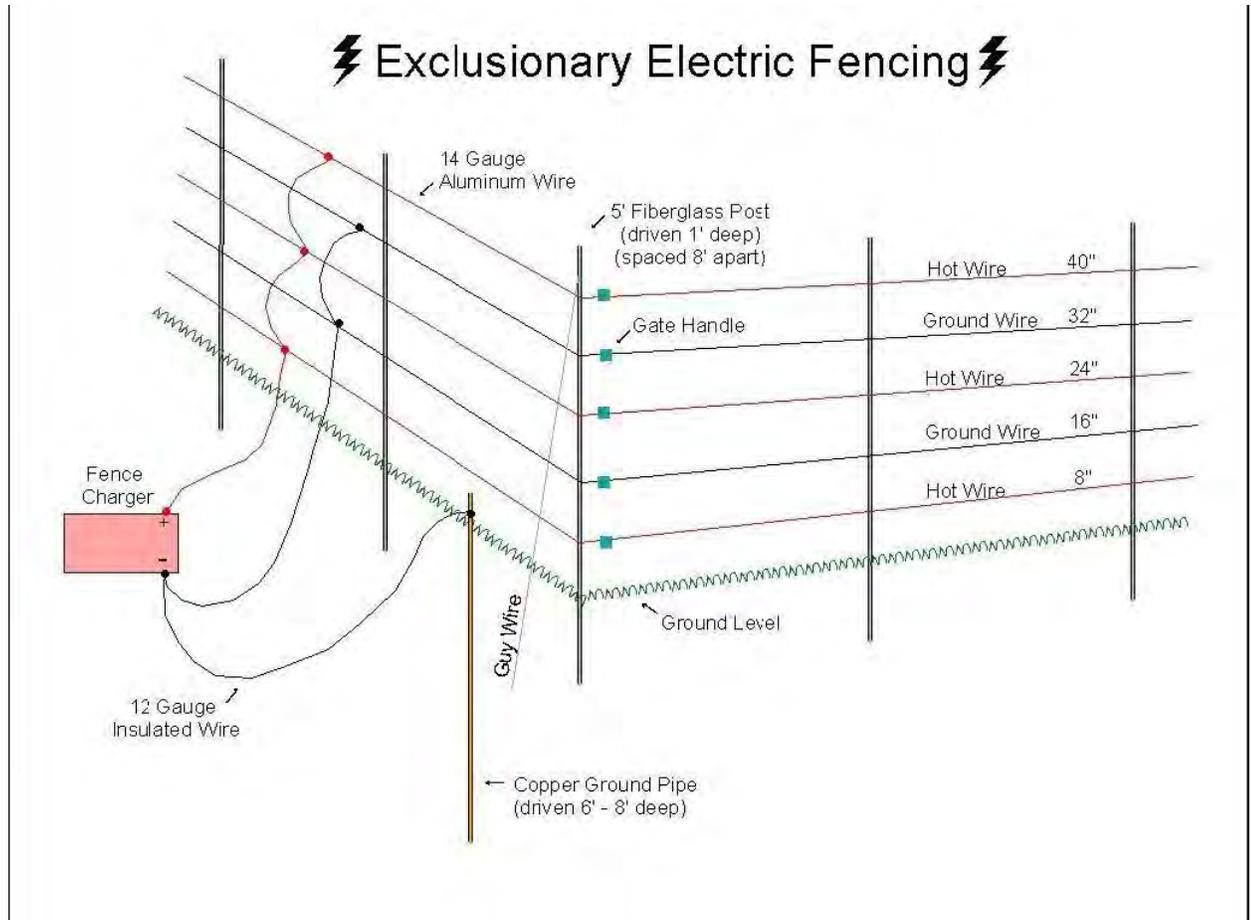
corresponding loop on the first corner post. Drive in the remaining 16 posts to the same depth at 8-foot intervals between corner posts. Secure each of the five wires to each of the posts with additional wire. Attach four plastic electric fence signs (one on each side) to the top wire of the fence. Attach 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.



**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.

### 13.7.1 OSWMA Apiary Assessment

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Jean McCollom

Biological Scientist III

10-28-11

### **Apiary Feasibility on Okaloacoochee Slough Wildlife Management Area**

The current Okaloacoochee Slough Wildlife Management Area Management Plan lists Apiaries as a Conditional Use under Analysis of Multiple Use Potential. Thus, the guidelines set forth in the FWC Apiary Policy were used along with ArcGIS, to assess the feasibility of permitting apiary sites within the WMA. Based on the following criteria outlined in the policy, local staff does not believe that apiaries are appropriate on the Okaloacoochee Slough WMA.

- 1.) Apiary sites should be situated at least ½ mile from WMA property boundary lines.

As seen in Figure 1, approximately 750 acres of the WMA are more than ½ mile from the property boundary.

- 2.) Sites should be relatively level, fairly dry, and not prone to flooding when bees would be normally present.

During the growing season/rainy season, nearly the entire management area is subject to flooding. Plant communities in the potential area include depression marsh and swale which have standing water much of the year, and semi-improved pasture currently being restored to hydric and mesic flatwoods communities which are prone to flooding during the growing season/rainy season.

- 3.) Sites should be accessible by roads which allow for reasonable transfer of hives to the site by vehicle.

There are no roads bordering or within the potential area. Disked firelines to and within the potential area require off-road vehicles and flood during the rainy season.

- 4.) If a site is to be located near human activity, then the apiary site should be located at a minimum of 150-200 yards from the edge of that activity.

The potential area is not within 150 yards of human activities except hunting and occasional hikers.

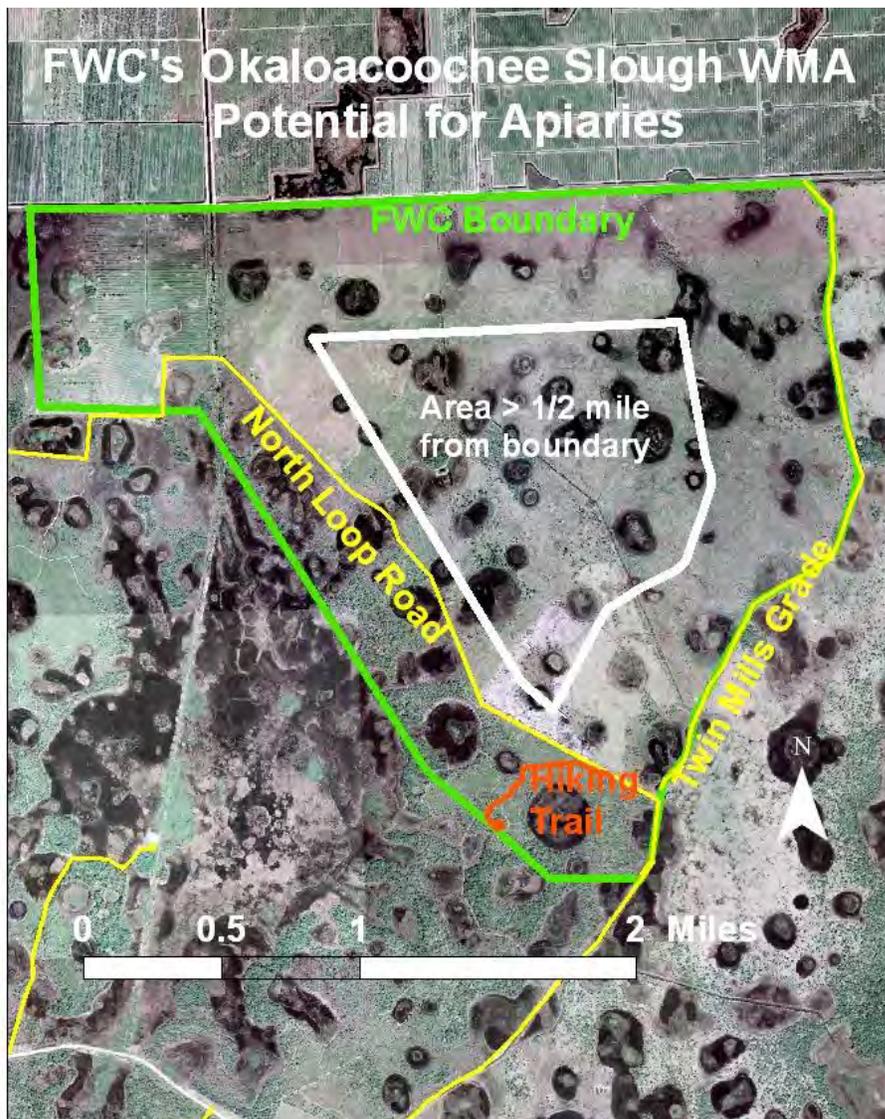
- 5.) It is preferable to have apiary sites located adjacent to or off roads whenever possible.

There are no roads bordering or within the potential area. Disked firelines to and within the potential area require off-road vehicles and flood during the rainy season. North Loop Road is only passable much of the year with a swamp buggy due to water depth in one depression marsh and in the slough approximately 1/3<sup>rd</sup> of the way along the SW border of the area and the road is at least 1/10<sup>th</sup> of a mile from the potential area.

- 6.) FWC Area Biologist shall select apiary sites and the site shall not require excessive vegetation clearing or ground disturbance (including fill).

Although it would not be necessary to clear excessive amounts of vegetation to install an apiary site on Okaloacoochee Slough WMA, it would probably be necessary to elevate the site by bringing in fill due to the tendency of the management area to flood during the wet season.

Figure 1.



## 13.8 Prescribed Burning Plan

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**Prescribed Burn Plan**  
for the  
Florida Fish and Wildlife  
managed portion  
of  
Okaloacoochee Slough Wildlife  
Management Area

Florida Fish and Wildlife  
Conservation Commission  
2001

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## Introduction

This Burn Plan includes a portion of the Okaloacoochee Slough Wildlife Management Area (OKS WMA) comprising roughly 3000 acres in the northeast portion of the WMA (Figure 1). The portion of the OKS WMA addressed in this plan was purchased by the Fish and Wildlife Conservation Commission (FWC) with its Inholdings and Additions fund and is leased to FWC by the Board of Trustees of the Internal Improvement Trust Fund (Trustees). The remainder of the OKS WMA is owned by the Trustees and the South Florida Water Management District, and is leased to the Department of Agriculture and Consumer Services, Division of Forestry (DOF).

The FWC portion of OKS WMA comprises 2,923.45 acres located in west-central Hendry County, north of County Road 832 (Figure 2). The parcel is located in portions of Sections 20, 21, 22, 23, 26, 27, 28, 33 and 34 of Township 44 South, Range 30 East.

According to the CARL acquisition documents, “The primary objective of management of the Okaloacoochee Slough CARL project is to maintain and restore the Okaloacoochee Slough sawgrass marsh and the swamps, hammocks, and pine flatwoods associated with it. Achieving this objective is extremely important to the survival of several declining species of wildlife in South Florida, especially the Florida panther, black bear, wood stork, Audubon’s crested caracara, snail kite, American swallow-tailed kite and sandhill crane.”

## Geology & Climate

Hendry County is mostly flat, with elevations ranging from 15 to 35 feet above sea level. The FWC-managed portion of OKS WMA lies in west-central Hendry County, and in the northerly portion of the Everglades. The OKS WMA lies within the Southwest Florida Flatwoods Ecoregion, and the underlying geologic formation is known as the Immokalee Rise. Soils associated with this ecoregion are rich in organic materials and are extremely fertile. Drainage is typically adequate in the developed parts of the County (including OKS WMA), but due to the high water table, drainage is usually accomplished with a system of canals, water control structures, holding ponds and by land filling. Soils are predominantly Oldsmar, with large areas of Wabasso and Boca.

Hendry County is located in the warm subtropical portion of the state. The average annual temperature is 74.2 degrees Fahrenheit. The average summer temperature is 82.7 degrees in July, and winter temperatures average 64.4 in February. Rainfall averages 56 inches annually with average monthly precipitation ranging from two to nine inches. The wet season normally extends from July through September, while winter is the normal dry season.

## Historic Land Use

Prior to state acquisition in December, 1998, the FWC-acquired tract, as well as most of the main tract leased to DOF, was owned by Alico Corporation. The FWC tract was historically managed primarily for cattle. The land was logged beginning in the early part of the century, and continuing until approximately 1992. Removal of virgin pine timber and pulpwood took place during this time period.

Portions of the property were ditched and cultivated to produce tomatoes, watermelons and cucumbers, but cultivation for these purposes ceased approximately two decades ago. Historic agricultural uses on adjacent lands, primarily to the north and east, continue to consist of row crops, improved pasture and citrus plantations. Other past uses of the properties included hunting and camping.

Though the area has been logged several times, there are pockets of pine left around the property in small heads or along fences. Some depressional wetlands were ditched, but do not appear to be severely drained, so they still retain native wetland vegetation. Two areas in the western portion of the property were used for row crops.

Due to previous land use, there is several cover types currently present on the property which will require different approaches to burning (Figure 3). These include:

**Semi-Improved Pasture** - The largest cover type is semi-improved pasture with bahiagrass (*Paspalum notatum*) and other pasture grasses present, but also with native vegetation. The distribution of native versus pasture vegetation is patchy. Native shrubs are present, covering more of the area than would probably be there if a natural fire regime were in place.

**Improved Pasture** – This area was root-raked and cleared, with palmettos (*Serenoa repens*) and shrubs removed. Bahiagrass was planted and dominates the area. Short wax myrtle (*Myrica cerifera*) bushes are invading the pasture.

**Improved Pasture with Large Wax Myrtles** – This area was also rootraked and cleared and planted with bahiagrass. Wax myrtle shrubs became established and have grown very large, about 10 feet tall on average, and cover more than half the area, sometimes forming dense thickets with very little understory.

**Wet Oldfield with Large Wax Myrtles** – There is evidence that this area was farmed on aerial photography, though it is very wet and was originally part of the slough. Since agriculture stopped, wax myrtles became established and are about 8 feet tall. Herbaceous vegetation is composed primarily of native marsh and wet prairie species.

**Oldfield** – This area has perimeter and interior ditches with raised rows in between. The ditches are 3-5 feet deep. The ditches contain native vegetation, but the raised areas are

covered with torpedograss (*Panicum repens*) and shrubs are established, mainly wax myrtle.

**Wooded and Rough** – These areas are succeeding to hammock vegetation, most likely due to lack of fire. They contain dense shrubs, including wax myrtle, gallberry (*Ilex glabra*), and lyonias (*Lyonia spp.*). Trees are more dominant as the area grades down to the slough, with hammock vegetation closest to the slough. Oaks (*Quercus laurifolia* and *virginiana*), South Florida slash pines (*Pinus elliottii*, var. *densa*), and cabbage palms (*Sabal palmetto*) are the most common trees. Though some hammock vegetation may have historically occurred near the slough, these areas appear to be much overgrown flatwoods left unburned and undisturbed.

**Slough** – A portion of the slough is still intact with native vegetation characteristic of sawgrass (*Cladium jamaicense*) and other herbaceous marshes and wet prairies.

**Wet Prairie** – A portion of the west boundary contains native wet prairie vegetation that was part of the slough before historic alterations.

## Plant Communities

Plant communities are very mixed within burn units (BUs). There are remnant pine heads and fencerows, depressional wetlands, gradations of wet to mesic flatwoods, and hammock vegetation often around the perimeter of depressional wetlands and slough. Given the heterogeneous nature of plant communities, burns will require customizing to retain or reduce multiple components.

A comprehensive vegetative inventory has not been performed. However, using aerial photography, FNAI has completed mapping of current natural communities on the FWC portion of OKS WMA. Five FNAI natural community types are identified in this map (Figure 4). The following are descriptions of the five Florida Natural Areas Inventory (FNAI) natural community types found on the FWC portion of OKS WMA:

**Wet / Mesic Flatwoods** - This natural community type is characterized by a widely-spaced overstory of South Florida slash pine with a well-developed understory including species such as saw palmetto, cabbage palm, gallberry, fetterbush (*Lyonia lucida*), St. Johns-wort (*Hypericum tetrapetalum*), waxmyrtle, swamp fern (*Blechnum serrulatum*), shortspike bluestem (*Andropogon spp.*), brackenfern (*Pteridium aquilinum*), blazing star (*Liatris spp.*) and wiregrass (*Aristida stricta*).

**Wet Flatwoods** - 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 South Florida slash pine, sweetbay, spikerush (*Eleocharis spp.*), beakrush sedges (*Rhynchospora spp.*), wax myrtle, gallberry, saw palmetto, creeping beggarweed

(*Desmodium incanum*), deer tongue (*Carphephorus odoratissimus*), gay feather (*Liatris* spp.), greenbrier (*Smilax* spp.), bluestem (*Andropogon* spp.), and pitcher plants (*Sarracenia* spp.).

**Depression Marsh** - These numerous water-filled depressions occur throughout the FWC-managed area. Vegetation generally occurs within concentric rings, dependent on water depths. Outer, less frequently-flooded rings, include species such as muhly grass (*Muhlenbergia capillaris*), umbrella grass (*Fuirena scirpoidea*), pennywort (*Hydrocotyle umbellata*), southern cutgrass (*Leersia hexandra*), sand cordgrass (*Spartina bakeri*), sundew (*Drosera capillaris*), nutgrass (*Scleria* spp.) and yellow-eyed grasses (*Xyris* spp.). The deeper areas within the depressions contain St. Johns-wort (*Hypericum* spp.), bloodroot (*Lacnanthes caroliniana*), corkwood (*Stillingia aquatica*), maidencane (*Panicum hemitomon*), scirpoid rush (*Juncus scirpoides*) and sedges (*Cyperus* spp.). The deepest waters support sawgrass, soft-rush (*Juncus* spp.), pickerelweed (*Pontederia cordata*), duck potatoes (*Sagittaria lancifolia* and *S. graminifolia*) and buttonbush. Some of the smaller, shallower depressions do not show the gradation described above, but are dominated almost exclusively by maidencane.

**Dome Swamp** –This community was misinterpreted on aerial photography and is not present.

**Wet Prairies** - This type typically forms a zone around the edges of a natural community apparently somewhat unique to the OKS WMA lands, the Prairie Hammock (similar to the FNAI Mesic Hammock classification). The lower, wetter prairie areas outside the Prairie Hammocks are generally comprised of a dense growth of sand cordgrass, but may grade into a dense stand of saw palmetto prior to giving way to hammock vegetation. This ring of palmetto may also contain some scattered specimens of Brazilian pepper (*Schinus terebinthifolius*).

Historic Plant Communities are based on a cursory evaluation of 1940s photography by the area biologist (Figure 5). Plant communities are grouped for this initial evaluation. One of the main objectives of the burn program is to restore historic plant communities. The following communities were identified:

**Slough** - The Slough comprised much of the western portion of the property with an arm of the slough projecting northeast into the center of the area.

**Hydric & Mesic Flatwoods** - The majority of the area was pine flatwoods; due to the flatness of the area it is not possible to differentiate hydric or wet flatwoods from mesic flatwoods on these aerals.

**Wet Prairie & Marsh** - The area is dotted with depressional wetlands grading from wet prairie communities on the outer higher portions to marsh community in the deeper areas where hydroperiods are long enough to for and maintain organic soils.

## **Burn Objectives**

The primary burn objectives for the FWC-managed portion of OKS WMA are:

1. Maintain and promote the health of native plant communities.
2. Provide natural habitat including cover and more nutritious food for wildlife.
3. Reduce fuel loads to natural community levels.
4. Reduce shrub cover and stimulate herbaceous vegetation.
5. Promote biological diversity by maintaining a mosaic of habitats.
6. Minimize exotic plants.
7. Promote pine regeneration in historic areas.
8. Preserve archeological sites including the sawdust pile at the old mill site on the south line and the cowpens along the north line.
9. Protect the fence along the east side of Twin Mills Road.
10. Prepare the dovefield for planting for dove hunting.

Since there are no structures on the property at this time, protecting on-site property is not an issue.

## **Burn History**

There are no records of prescribed burns or wildfires on the area before purchase. Alico has not used prescribed fire as a management tool for several decades say current employees. The only area burned since FWC began managing the property is the 80-acre dovefield area. It was burned in Spring 2000 for site preparation before herbicide treatment, disking, and planting millet for the fall dove hunts. The dovefield is in BU 20.

## **Burn Strategies**

All units will require initial cooler fuel reduction burns if pines are to be retained, since the previous landowner did not burn and fuel loads under trees is heavy. Hot growing season burns should follow to reduce shrub cover, a major goal in restoring native communities to a natural state. Wetlands will require Spring burns to allow water levels to go below ground in the wetlands. Since no burn unit is homogeneous, these factors will need to be balanced based on the individual components.

Since most of the area was originally pine flatwoods, once communities are restored to a more natural plant cover, burn rotation would be 3-5 years with predominantly growing season burns, but a mix of burn dates and intensities to mimic natural conditions. Since these are southern slash pine flatwoods, a species without a grass stage, rotations are slightly longer than longleaf pine flatwoods to allow young trees to mature enough to survive fire.

The burn units dominated by Oldfields, Improved Pasture, and Semi-Improved Pasture (mostly Fire Behavior Prediction System [FBPS] Fuel Models 1 and 3) will be burned on a 2-5 year rotation once fuel loading is reduced to sufficient level to protect pines. Initially cooler winter burns will be used to reduce shrub heights under pines. Then until shrub reduction is achieved, hotter burns with shorter rotations when shrubs are actively growing will be used.

Wet Oldfield with Large Myrtles and Improved Pasture with Large Myrtles will be difficult to burn without some mechanical treatment. If possible, these areas will be chopped or shrubs reduced by grinding or cutting before burning. These areas most closely resemble southern rough (FBPS Fuel Model 7), though the wax myrtle is not as flammable and the shrubs are not continuous. In much of these areas, there is little groundcover vegetation under the shrubs, so a crown fire through the shrubs would be necessary to reduce shrub cover and encourage herbaceous growth, but this would need to be carried by bahiagrass between shrub clumps, a tricky combination. Also, very dry conditions would be necessary in the Wet Oldfield with Large Myrtles since it is a low area actually within the slough.

Wooded & Rough cover types are partially southern rough (FBPS Fuel Model 7) or mixed pine hardwood open woodlands (FBPS Fuel Model 9). The goal is to restore this area to flatwoods, which will require eliminating the majority of the woody cover. There does appear to be enough herbaceous fuel to carry the fire. Initial burning will aim at reducing oaks and shrubs. Mechanical treatment is an option. This would speed restoration, but might be detrimental to native groundcover. These areas should be burned as often as sufficient groundcover is available to carry the fire throughout the units.

Wet Prairie and Slough cover types / communities are in good shape and should not require fuel reduction burns. Wet Prairies should be burned every 1-3 years, water levels permitting. Slough should be burned every 2-4 years, water levels permitting. Caution should be taken during extremely dry periods to avoid ground fires in organic soils.

## Legal Requirements

All burns must meet the following requirements:

1. Conducted with a Burn Boss Certified by the Florida Division of Forestry
2. Burn Authorization from the Florida Division of Forestry
3. A written burn prescription
4. Fuel Moisture calculation
5. Smoke Screening evaluation
6. Aerial or detailed map of burn unit and surrounding area.
7. Weather, personnel and equipment must be within prescription
8. Neighboring landowners, FWC Law Enforcement dispatch, the FWC supervisor, OKS State Forest, Hendry County Sheriff Department, and local fire departments should be notified of the burn.

## Smoke and Surrounding Hazards

The following form has been created to use for smoke screening on each burn (Figure 6). Smoke sensitive areas are marked on the topographic map. A red protractor grid on a clear vinyl sheet is placed over the topographic map in the center of the burn unit to be screened. For each burn unit a chart is prepared, showing which areas smoke could reach given wind direction; an example for BU 10 is shown in Table 1. This makes it possible to see which sensitive areas will be affected whatever the wind direction and allow for quick evaluation if wind directions differ from predictions or change during or after a burn.

Burn Unit	Radius	Sensitive Areas	Wind From									
			N	NE	E	SE	S	SW	W	NW		
10	5 mi	CR832	X	X								X
		Sears Road			X							
	10 mi	CR832	X	X	X					X	X	
		Sears Road			X							
		SR29		X	X	X	X	X				
		SR80				X						
		Child Development		X	X							
		Airport 80										
		Airport LaBelle				X						
		Schools LaBelle				X						
		LaBelle				X						
		Felda		X								
		The unit is 3.4 miles from CR832										

Table 1. An example of a smoke screening table created using the topographic map and an overlay (Figure 6) for BU 10.

No smoke sensitive areas are within the 2-mile range for any burn unit. CR832 could be within the 5-mile range. A portion of SR80 and SR29 as well as part of LaBelle could be within the 10-mile range under some wind directions for some burn units. A smoke screening map and chart should be attached to each burn prescription.

## Fuel Moisture

Range of fuel moisture will be included in each BU prescription. Fuel moisture will be calculated using the method described in Figure 8).

## Burn Units

Burn Units are shown in Figure 7. Table 2 lists burn unit acreage and Cover Types as shown in Figure 3. Table 3 lists burn units and their Current and Historic Plant Communities as shown on Figures 4 and 5.

Burn Unit	Acres	Fuel Model	Dominant Cover Type	Other Cover Types Present
1	93	1	Wet Prairie	
2	139	3	Oldfield	
3	82	3	Oldfield	
4	90	1	Improved Pasture	
5	106	1	Improved Pasture	
6	39	1	Improved Pasture	
7	200	1	Improved Pasture	
8-9	218	3	Semi-improved Pasture	Improved Pasture
10	166	3	Semi-improved Pasture	
11	209	3	Semi-improved Pasture	Improved Pasture and Slough
12-15	640	3	Semi-improved Pasture	
16	56	1 & 7	Semi-improved Pasture	Improved Pasture, Wooded & Rough, and Slough
17-18	183	3	Improved Pasture with large myrtles	Wooded & Rough and Slough
19	73	3 & 9	Improved Pasture with large myrtles	Wooded & Rough and Slough
20	255	1	Improved Pasture with large myrtles	
21	18	1 & 7	Wet Oldfield with Large Myrtles	
22	40	1 & 7	Wet Oldfield with Large Myrtles	
23	64	1 & 7	Wet Oldfield with Large Myrtles	
24	37	3	Wooded & Rough	
25	77	7 & 9	Wooded & Rough	

26	19	3	Wetland	
27	25	7 & 9	Wooded & Rough	
28	0	3	Wetland	
29	15	7 & 9	Wooded & Rough	
30	28	7	Wooded & Rough	
31	33	7 & 9	Wooded & Rough	
32	92	7 & 9	Wooded & Rough	
33	26	3	Wetland	
34	54	7 & 9	Wooded & Rough	

Table 2. Burn Units as shown in Figure 7 with acreage and Cover Types for each unit as shown in Figure 3.

11

<b>Burn Unit</b>	<b>Dominant Current Plant Community</b>	<b>Other Current Plant Communities Present</b>	<b>Dominant Historic Plant Community</b>	<b>Other Historic Plant Communities Present</b>
1	Wet/mesic Flatwoods	Depression Marsh & Wet Prairie	Slough	
2	Pasture/agric	Depression Marsh	Slough	
3	Pasture/agric		Slough	Flatwoods
4	Pasture/agric	Depression Marsh	Slough	Wet prairie & marsh
5	Pasture/agric	Depression Marsh	Flatwoods	Wet prairie & marsh
6	Pasture/agric		Flatwoods	
7	Pasture/agric	Depression Marsh	Flatwoods	Wet prairie & marsh
8-9	Pasture/agric	Depression Marsh	Flatwoods	Wet prairie & marsh
10	Pasture/agric	Depression Marsh	Flatwoods	Wet prairie & marsh
11	Pasture/agric	Depression Marsh	Flatwoods	Wet Prairie & Marsh and Slough
12-15	Pasture/agric	Depression Marsh	Flatwoods	Wet prairie & marsh
16	Pasture/agric	Depression Marsh	Flatwoods	Wet Prairie & Marsh and Slough
17-18	Pasture/agric	Depression Marsh	Flatwoods	Wet Prairie & Marsh and Slough
19	Pasture/agric	Depression Marsh	Flatwoods	Wet prairie & marsh
20	Pasture/agric	Depression Marsh	Flatwoods	Wet prairie & marsh
21	Depression Marsh	Wet/mesic Flatwoods & Wet Prairie	Slough	
22	Pasture/agric	Depression Marsh, Wet/mesic Flatwoods, & Wet Prairie	Slough	
23	Depression Marsh	Pasture/agric & Wet Flatwoods	Slough	
24	Depression Marsh	Pasture/agric	Slough	
25	Wet/mesic Flatwoods	Depression Marsh & Wet Flatwoods	Flatwoods	Wet prairie & marsh
26	Depression Marsh		Wet prairie & marsh	

27	Wet/mesic Flatwoods	Wet Flatwoods	Flatwoods	
28	Depression Marsh		Wet prairie & marsh	
29	Wet Flatwoods		Flatwoods	
30	Pasture/agric		Flatwoods	Wet prairie & marsh
31	Pasture/agric		Flatwoods	
32	Pasture/agric	Depression Marsh & Wet Flatwoods	Flatwoods	Wet prairie & marsh
33	Depression Marsh		Wet prairie & marsh	
34	Wet/mesic Flatwoods	Depression Marsh	Flatwoods	Wet prairie & marsh

Table 3. Burn Units as shown in Figure 7 with Current and Historic plant communities as shown in Figures 4 and 5 respectively.

Burn Units were set up based on natural fire breaks (such as BU 25 SW side is the slough) and roads or trails wherever possible. Some lines will need to be cut such as the vertical and horizontal lines dividing BUs 4-7 and lines that will have to be put in dividing Bus 12-15. Some units could be combined, especially once fuel loads are reduced, such as the smaller units below Trail 1 like Bus 29 and 31. Wherever possible, burn units were chosen to contain consistent cover type, though given the heterogeneity of the area, this was difficult. Units south of Trail 1 are small due to heavy fuel loads and lack of secure fire breaks. If better breaks can be established, units can be combined.

## Priorities

First priority will be given to the cover types Improved Pasture and Semi-Improved Pasture including BUs 4-15. Wax myrtle bushes are invading these areas, but are still relatively small and may be able to be set back with fire alone. This will take frequent hot burns when the myrtles are actively growing; myrtles often start growing in February, so Winter, Spring, or Summer burns are good.

Second priority would include wet prairie in BU1 since this community is in good natural condition and it would be good to keep it that way. This also applies to the slough in BUs 17-18 and 24, though there may need to be fuel reduction burns in the surrounding units since the slough would need to be burned during extremely dry conditions.

Next, cooler burns in the Wooded & Rough areas south of Trail 1 could be started to reduce fuel loads, followed by frequent burns to reduce woody vegetation.

If a very dry year occurs, putting fire through BUs 22 and 23 to keep the wetlands open and hopefully reduce shrubs, especially new smaller ones, would be wise.

Postponing burning the Improved Pasture with Large Myrtles cover type until some mechanical treatment can be used to reduce shrub cover and height is recommended.

The lowest priority is the deep ditched and furrowed Oldfield in BUs 2 and 3, which will require major earthmoving to restore. Until funds are available and this area is targeted for combined methods of restoration including leveling, treating the torpedograss, and applying fire, this area would be last on the priority list to burn.

## **Adaptive Management**

Since we are just beginning to manage this area, we will need to review and adapt this plan based on our experience with fire on the landscape and how it affects plant communities and cover types. We also may need to make adjustments to accommodate other land management activities such as exotic plant control, groundcover restoration, and hydrologic restoration. This should be considered as a preliminary plan to be adjusted as additional knowledge is obtained.

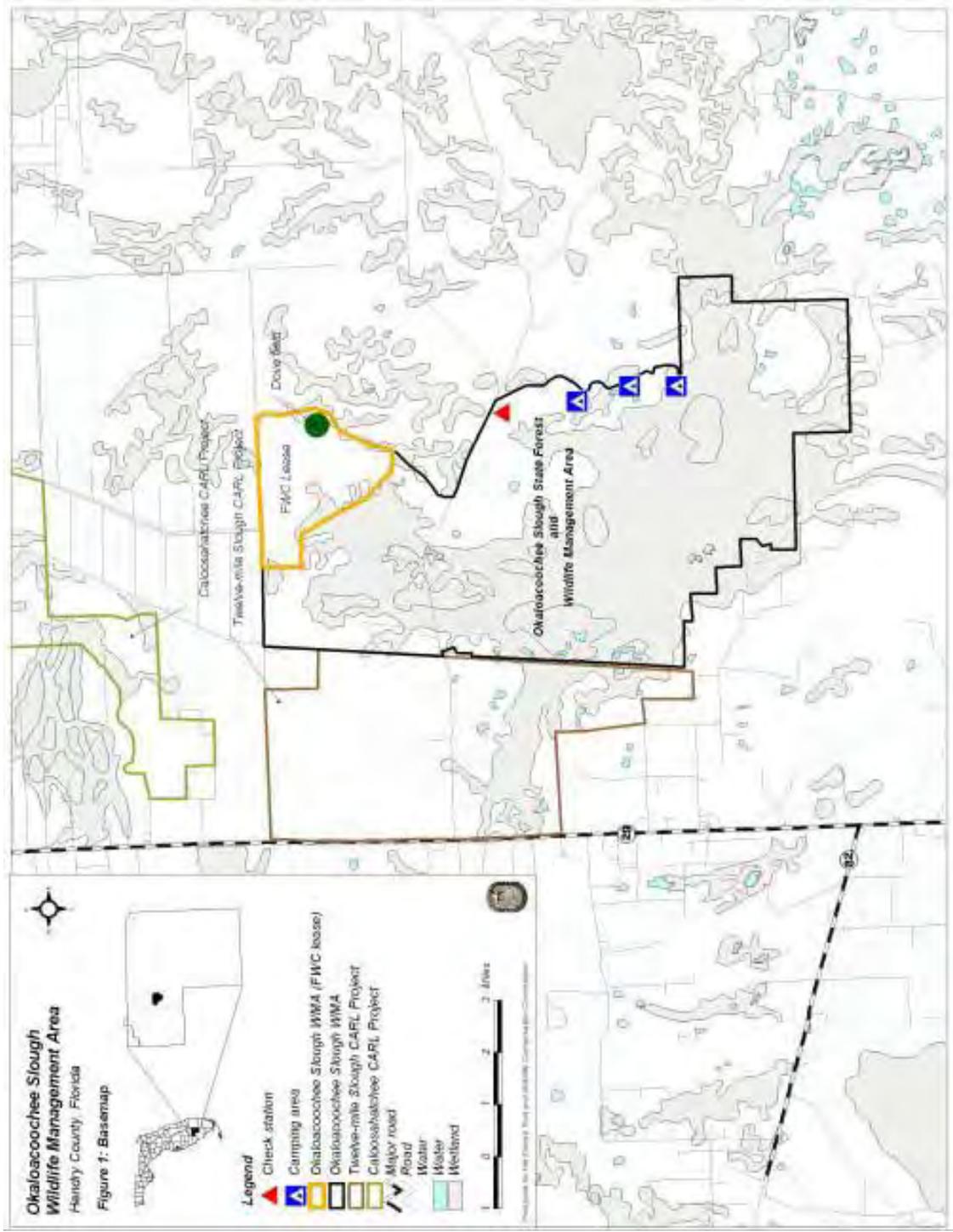


Figure 1. Area map of Okaloacoochee Wildlife Management Area including the portions managed by FWC and the Florida Division of Forestry.

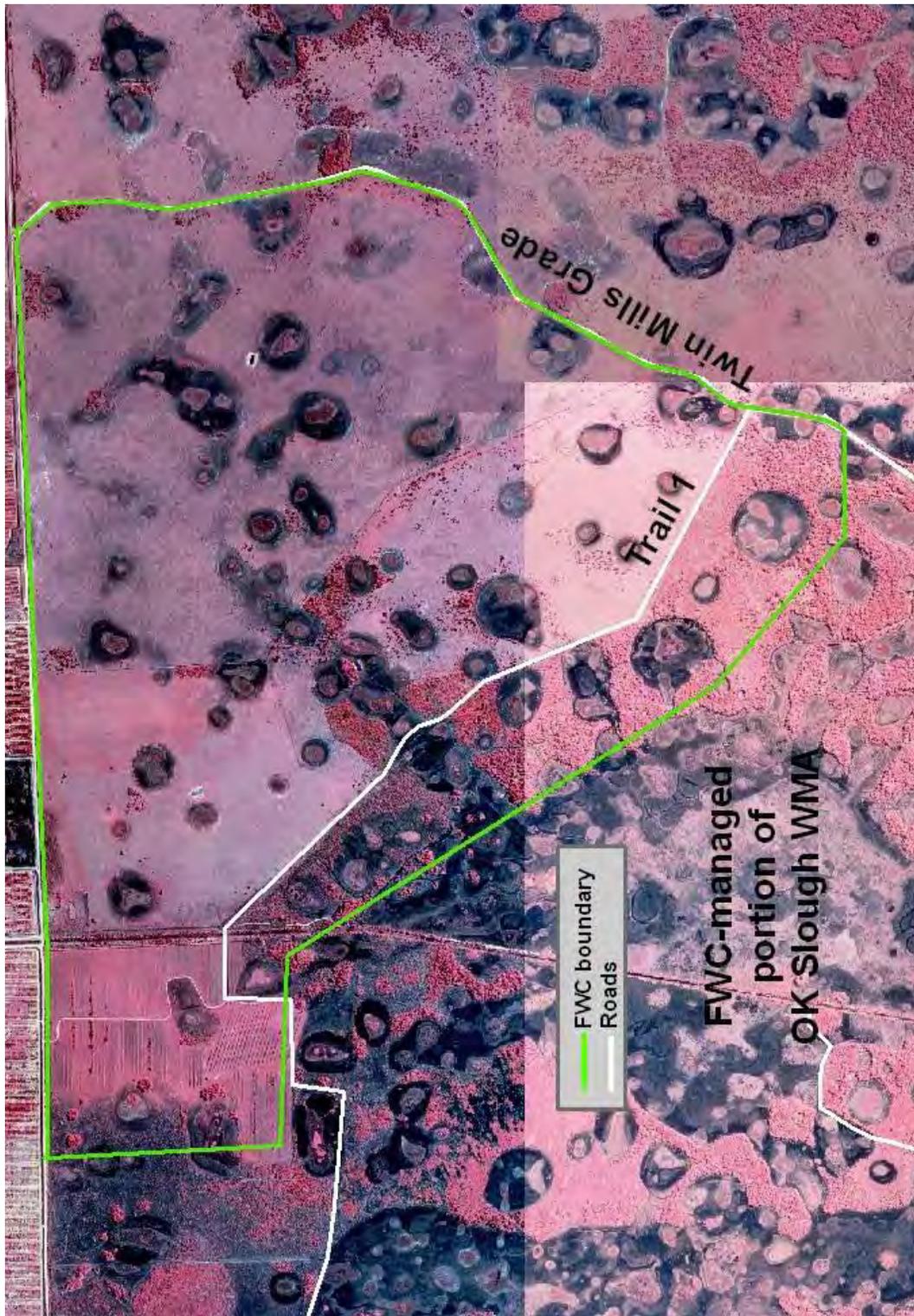


Figure 2. Aerial of the FWC-managed portion of Okaloacoochee Slough Wildlife Management Area.

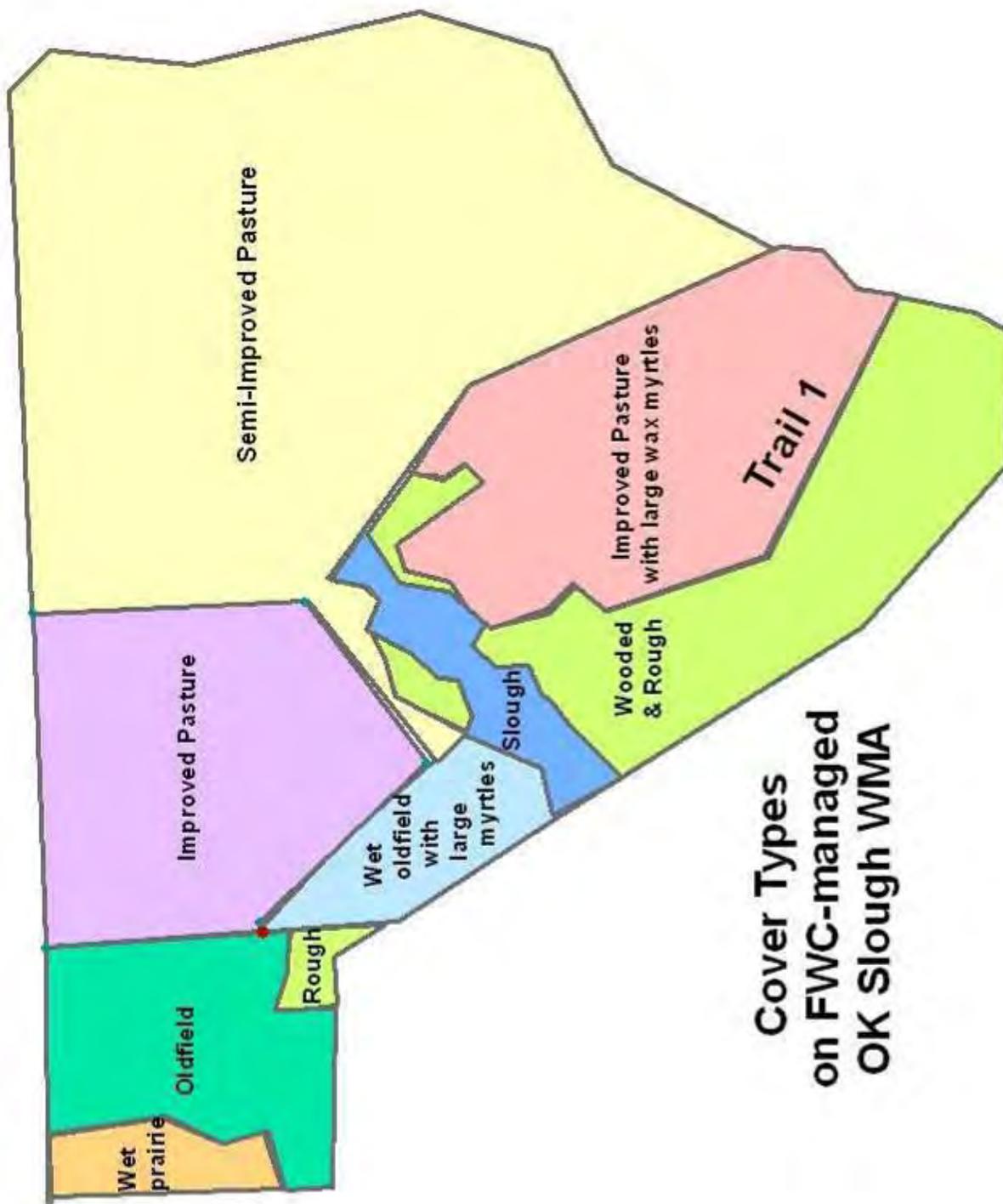


Figure 3. Cover Types on the FWC-managed portion of Okaloacoochee Slough Wildlife Management Area.

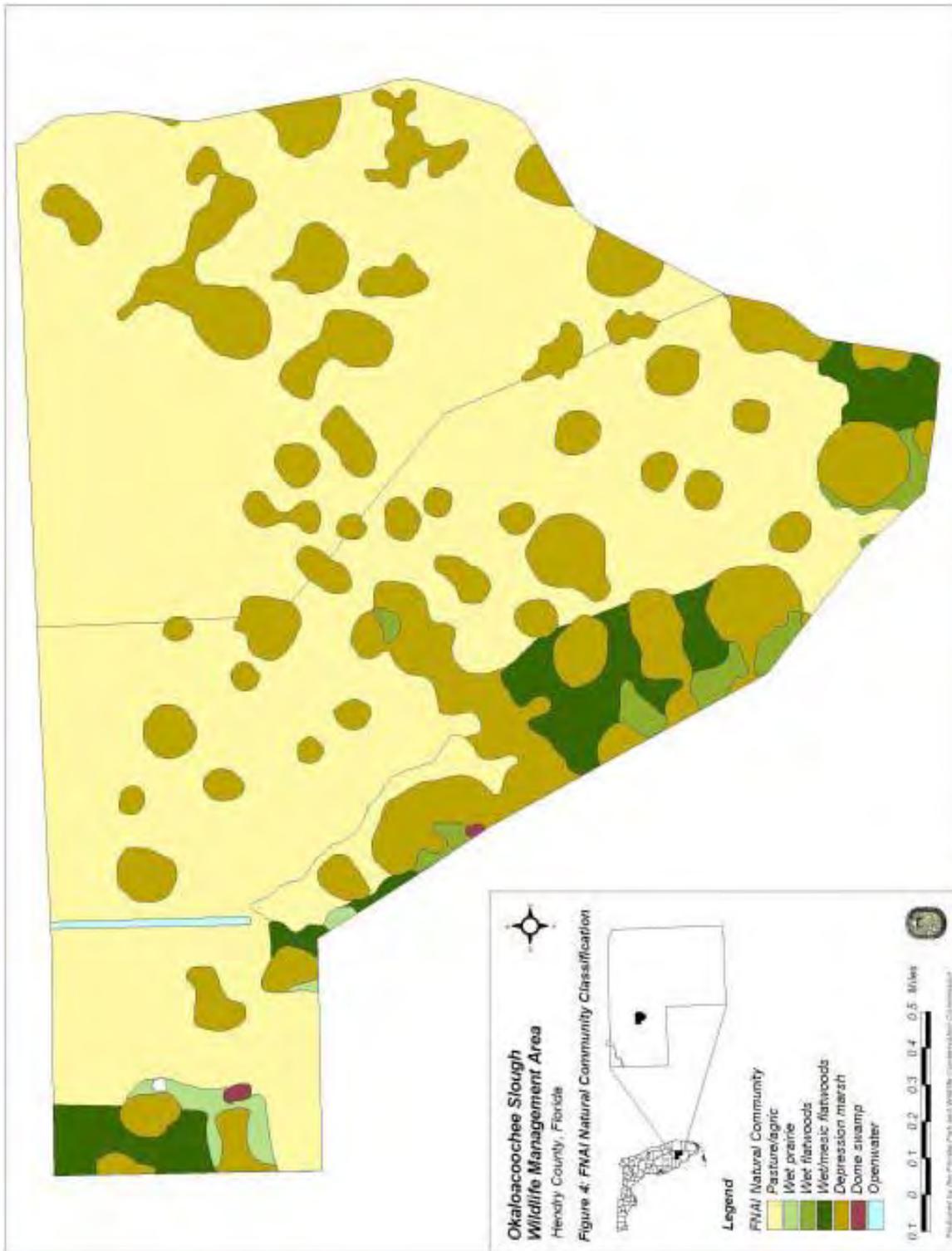


Figure 4. Florida Natural Areas Inventory map of current Plant Communities on the FWC-managed portion of Okaloacoochee Slough Wildlife Management Area.

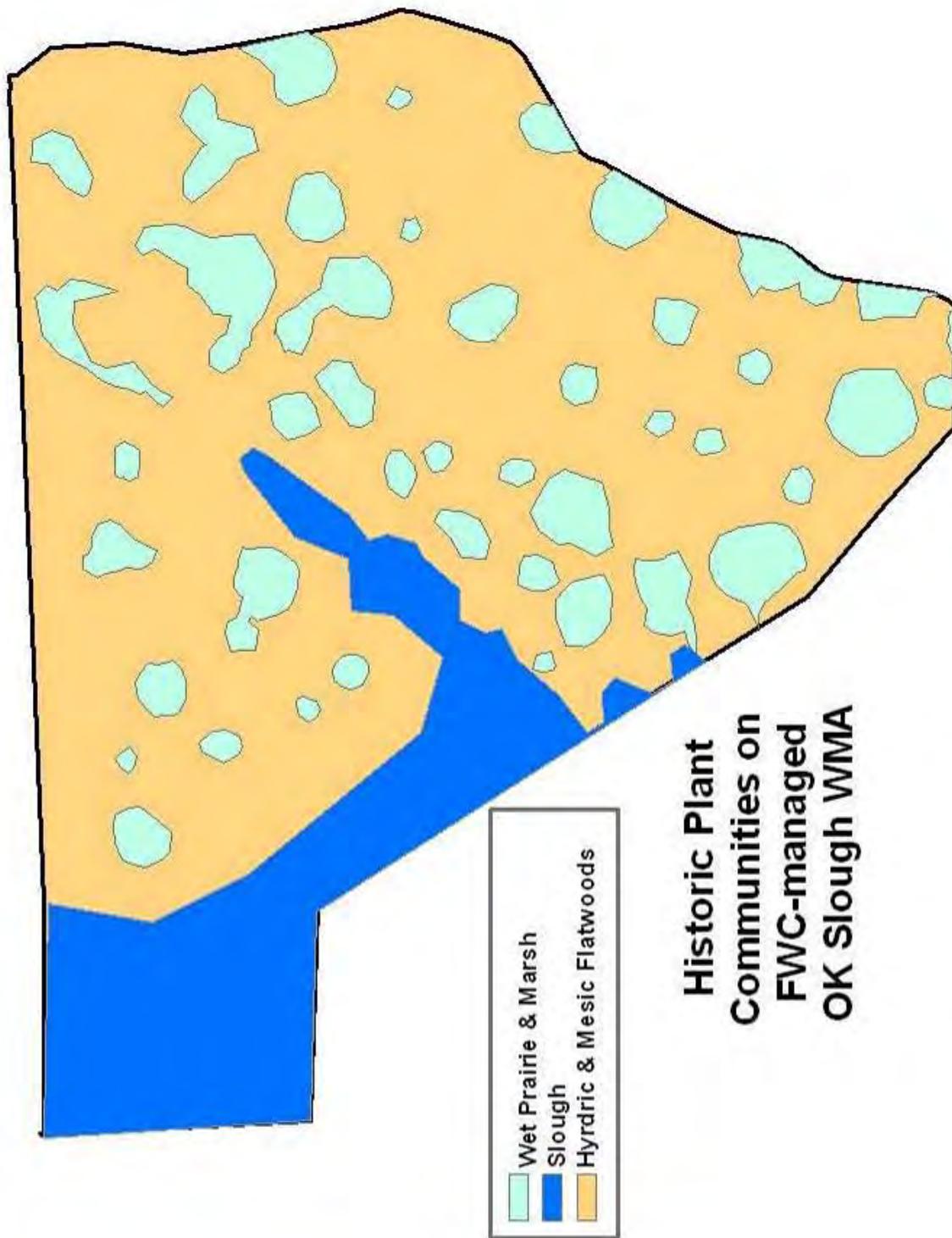


Figure 5. Historic Plant Communities on the FWC-managed portion of Okaloacoochee Slough Wildlife Management Area based on 1940s aerial photography.

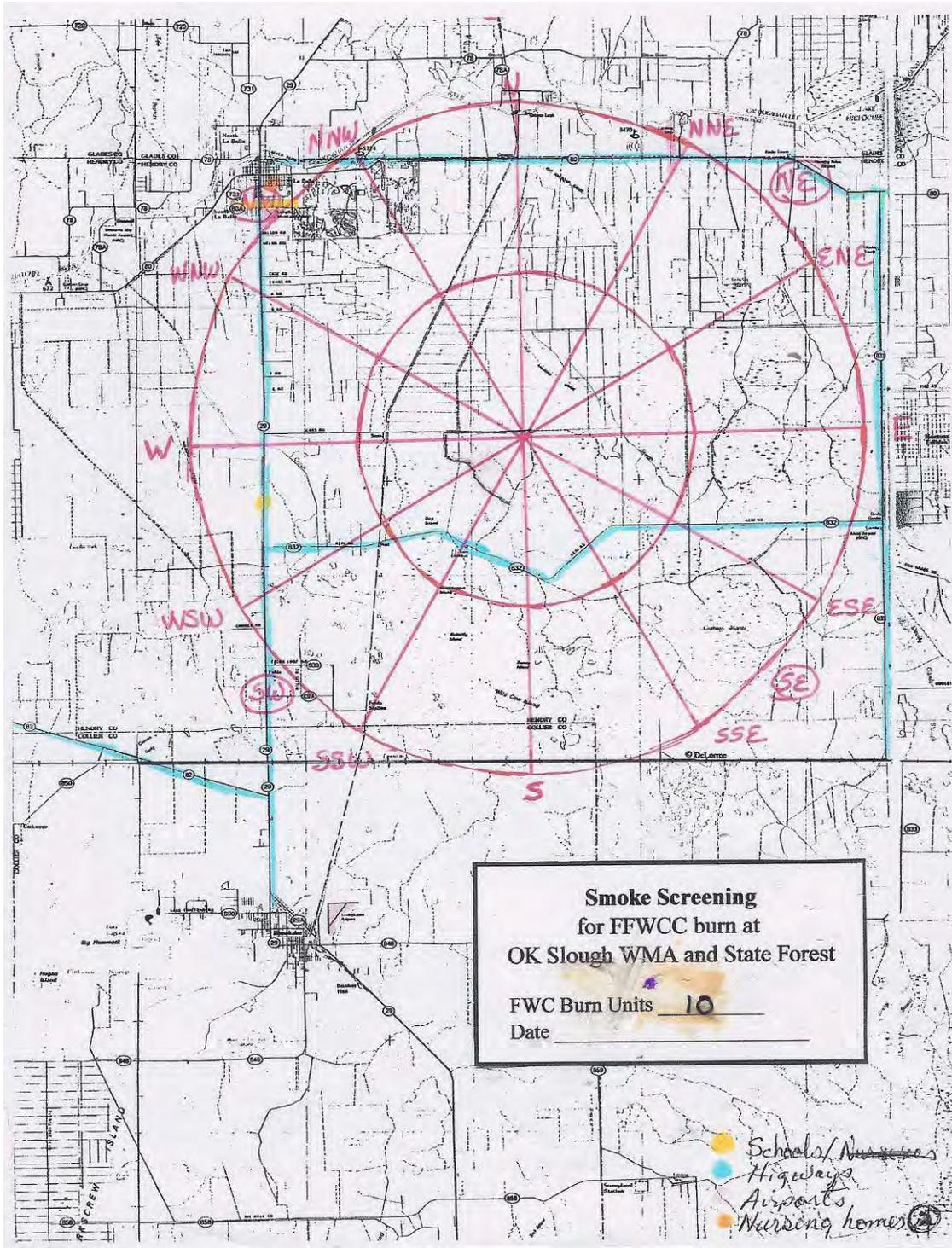


Figure 6. Smoke screening topographic map and with red protractor overlay showing circles for the 5-mile radius and 10-mile radius. The overlay is placed in the center of the burn unit and then a table like Table 1 is created indicating smoke sensitive areas based on each wind direction. The placement of the overlay shows the smoke distribution for BU 10.

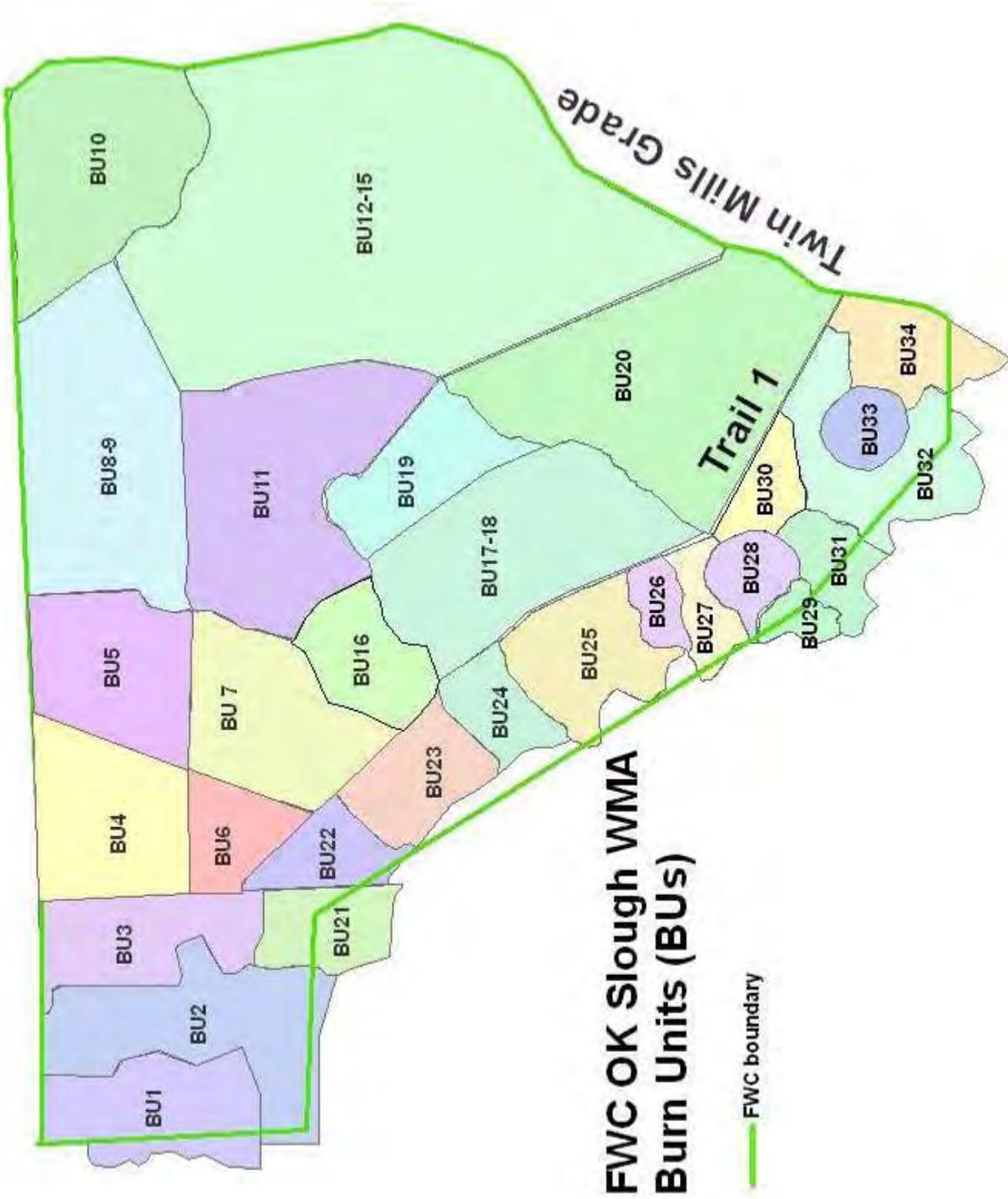


Figure 7. Burn Units for the FWC-managed portion of Okaloacoochee Slough Wildlife Management Area.

**REFERENCE FUEL MOISTURE  
RELATIVE HUMIDITY (PERCENT)**

	DAY TIME 8:00 AM - 7:59 PM														NIGHT TIME 8:00 PM - 7:59 AM													
Dry Bulb Temperature (°F)	30	35	40	45	50	55	60	65	70	75	80	85	30	35	40	45	50	55	60	65	70	75	80	85				
30 - 49	5	6	7	7	7	8	9	9	10	10	11	12	7	8	9	9	11	11	12	13	14	16	18	21				
50 - 69	5	6	6	7	7	8	8	9	9	10	11	12	6	8	8	9	10	11	11	12	14	16	17	20				
70 - 89	5	5	6	7	7	8	8	8	9	10	10	11	6	7	8	9	10	10	11	12	13	15	17	20				
90 - 109	4	5	6	7	7	8	8	8	9	10	10	11	6	7	8	9	9	10	10	11	13	14	16	19				

**DEAD FUEL MOISTURE CONTENT CORRECTIONS**

November, December, January						February, March, April August, September, October						May, June, July					
Daytime 8:00 AM - 7:59 PM						8:00 AM - 7:59 PM						8:00 AM - 7:59 PM					
8	10	12	2	4	6	8	10	12	2	4	6	8	10	12	2	4	6
(Exposed-less than 50% shading of surface fuels)																	
4	3	2	2	3	4	3	1	1	1	1	3	2	1	0	0	1	2
(Shaded-greater than 50% shading of surface fuels)																	
4	4	4	4	4	4	3	3	3	3	4	4	3	3	3	3	4	4

NIGHT TIME 8:00 PM - 10:00 PM	
9	14

This set of tables allows you to arrive at a close estimate of the fine dead fuel moisture (FDFM) that is present in your burn zones at the time of a planned burn or any other time a FDFM reading is desired. Using the top table, select the °F (dry bulb) obtained and the relative humidity calculated. Then find the reference fuel moisture as governed by time of day (either between 8:00 am and 7:59 PM, or "night time"). Using this number go to the table below and based on time of day, month of year and whether the area is +50% shaded or -50% shaded (cloud cover counts as shade), you can gain a correction factor to arrive at fine dead fuel moisture. If you are burning at night until 10 PM, any time of year, two figures are provided. If FDFM for all times and other RE/Temp./season is desired refer to How to Predict the Spread and Intensity of Forest and Range Fires by Richard Rothermel which is in your Interagency Rx Burn manual.

**Example:** It's 11:30 am 12/16/92 and you have a RH of 68% and temperatures of 72°F in open flatwoods with 30% canopy cover and have a fair sky. Your reference # is 8. It's daytime in December so your correction factor is 3.  $8 + 3 = 11$  which is your FDFM.

**Note:** A more accurate "approximation" will be derived if you add 2% for table values totaling 10% or more and 1% for those of less than 10%. Therefore, in the above example, the FDFM value you would use would be 13%.

Figure8. Procedure for calculating fuel moisture.

## **13.9 Management Procedures Guidelines - Management of Archaeological and Historical Resources**

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**Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties**  
(revised March 2013)

**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 at:  
<http://www.flheritage.com/preservation/compliance/guidelines.cfm>

#### 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, 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, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at:

[http://www.flheritage.com/preservation/compliance/docs/minimum\\_review\\_documentation\\_requirements.pdf](http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf) .

\* \* \*

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

Deena S. Woodward  
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) 245-6425

Toll Free: (800) 847-7278

Fax: (850) 245-6435

## **13.10 Operation Plan Fiscal Year 2014 – 2015**

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## Land Management Uniform Accounting Council Categories and Subcategories

### 1. Resource Management

- a. Exotic Species Control. -- Invasive exotic plant and animal removal activities and costs for inventorying, planning, preparing, executing, evaluating, monitoring and reporting. Also includes equipment, chemicals, protective clothing and supplies. Includes nuisance native feral animal and plant control.
- b. Prescribed Burning. -- Prescribed burning activities and costs for assessing, planning, preparing, executing, evaluating and reporting. Also includes equipment, protective clothing and supplies.
- c. Cultural Resource Management. -- Management activities and costs for assessing, planning, executing, evaluating and reporting, and for all maintenance, restoration or monitoring activities for prehistoric and historic sites, features and collection objects.
- d. Timber Management. -- Activities and costs related to the establishment of a stand of potentially merchantable timber, harvest of merchantable timber, and cultural treatments intended primarily to improve the growth and overall health of a stand of merchantable timber. Also includes activities and costs related to the cutting of merchantable timber in natural community and habitat restoration projects.
- e. Hydrological Management. -- Hydrological management and restoration activities and costs for assessing, monitoring, planning, preparing, executing, evaluating and reporting. Includes water level management, repair, removal or back-filling of ditches, canals, berms and dams. Also includes water quality and water quantity monitoring.
- f. Other. -- All other resource management activities and costs not captured in other specific subcategories. Examples include natural community and habitat restoration through other techniques; plant, animal or biological community survey, monitoring and research; listed species management; technical assistance; and evaluating and commenting on resource impacts to parks.

### 2. Administration

- a. Central Office/Headquarters. -- Headquarters units conducting general administration of land under management by the agency. Includes upper management direction, administration and fiscal, budget, personnel, purchasing and record keeping required for operations oversight and specific programs. Includes all duties unless they specifically relate to other categories or subcategories.
- b. Districts/Regions. -- Sub-state administrative districts or regions conducting general administration of the properties under their management. Includes all duties, unless they specifically relate to other categories or subcategories.

General operating costs of district or region administrative facilities are included.

- c. Units/Projects. -- Conducting general administration duties at a specific management unit (state park, state forest, state wildlife management area, etc.). Includes supervisory duties, fiscal and record keeping duties, and any other duties that do not specifically relate to other categories or subcategories. General operating costs for the property, such as utilities, telephones and garbage collection, are included.

### **3. Support**

- a. Land Management Planning. -- Developing land management plans required by Sec. 253.034, F.S. Includes researching and compiling plan information, materials and maps, coordinating planning activities, conducting review activities (internal reviews, public meetings, advisory group meetings, ARC, etc.), and promulgating draft plans and final plans.
- b. Land Management Reviews. -- Planning, organizing and conducting land management reviews by teams created under Sec. 259.036, F.S. Includes preparing and responding to land management review reports. Also includes similar work conducted as part of internal agency land management reviews.
- c. Training/Staff Development. -- Staff training and development costs incurred in any facet of the agency's land management activities.
- d. Vehicle Purchase. -- Acquisition of any vehicle purchased primarily for land management purposes or to support any category of land management activity by the agency.
- e. Vehicle Operation and Maintenance. -- Costs of operating and upkeep of any vehicle used by the agency to support any category of land management activity.
- f. Other. -- Any other support activity or cost not captured by other categories or subcategories.

### **4. Capital Improvements**

- a. New Facility Construction. -- Use of Fixed Capital Outlay (FCO) or other budget authority for all new facility design and construction activities. Includes new roads, parking and all other infrastructure.
- b. Facility Maintenance. -- Use of Fixed Capital Outlay (FCO) or other budget authority for all repairs or renovations to existing facilities, roads or other infrastructure. Also includes ADA accessibility improvements and renovations.

### **5. Visitor Services/Recreation**

- a. Information/Education Programs. -- Interpretive, environmental education and marketing programs that explain or promote the agency’s mission or instill in visitors an understanding and appreciation for Florida’s natural and cultural resources and their proper use and care. Includes signs, brochures, maps and other public information materials that are produced or disseminated.
- b. Operations. -- Includes the non-administrative and non-support costs involved in providing public access to lands. Includes all actions required to manage visitor activities in a way to ensure safe and enjoyable use by the public. Includes routine maintenance, cleaning and other work required to provide safe and efficient utilization of facilities and resources that support visitor use and recreation. Includes protection activities required by staff to safeguard natural and cultural resources, facilities, material, staff and visitors.

**6. Law Enforcement**

The provision of all activities for enforcing criminal, conservation and boating laws on land, freshwater and marine environments and all costs associated with these services. Includes the provision of uniform patrol. Includes overt and covert criminal investigations. Includes regulation of commercial wildlife trade. Also includes the direction and administration of all law enforcement programs and activities, and all associated costs.

**Land Management Uniform Accounting Council Categories and FWC Activity Codes**

**Resource Management**

Exotic Species Control

- 210 Exotic species control
- 211 Exotic plant control (mechanical)
- 212 Exotic plant control (chemical)

Prescribed Burning

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

Cultural Resource Management

- 201 Cultural resource management

Timber Management

- 202 Timber management

Hydrological Management

- 215 Hydrology 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
213	Wildlife management
214	Listed Species management
219	Upland restoration
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
253	Ecological monitoring
256	Habitat monitoring analysis
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	Other resource management
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 C inter- and intra-agency coordination and program implementation at the section, bureau, or division level
296	Habitat protection technical assistance
750	URTD assessment
789	Site Preparation – GCR
790	Irrigation – GCR
791	Seed Collection – Hand
792	Seed Collection – Mechanical
793	Herbicide Maintenance Treatment

## **Administration**

### Central Office/Headquarters

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

## **Support**

### Land Management Planning

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

Land Management Reviews

- 209 Land Management Reviews
- 101 Project inspection C field inspections of projects.

Training/Staff Development

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

Vehicle Purchase

- 128 New Vehicle and Equipment Purchase

Vehicle Operation and Maintenance

- 923 FEM C 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

**Capitol Improvements**

New Facility Construction

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

Facility Maintenance

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

**Visitor Services/Recreation**

Information/Education Programs

- 145 Technical bulletin

Operations

- 311 Boundary signs
- 312 Informational signs
- 320 Outreach and education C attending or developing educational or informational materials or events for the public
- 327 Becoming an Outdoor Woman C enhancement
- 331 Wings Over Florida

- 339 Range safety operations
- 341 Public use administration (hunting)
- 342 Public use administration (non-hunting)
- 350 Customer service support C disseminating written or verbal information or assistance to the public
- 700 STUDIES
- 740 EVALUATIONS AND ASSESSMENTS

## **Law Enforcement**

### **FWC Activity Code Numeric Listing**

- 100 ADMINISTRATION C administrative tasks, including preparation of forms, word processing, photocopying, filing, and other clerical/secretarial duties.
- 101 Project inspection C field inspections of projects.
- 103 Meetings C includes workshops, conferences, staff, and other meetings.
- 104 Budget/purchasing/accounting
- 128 New Vehicle and Equipment Purchase
- 140 REPORT WRITING/EDITING/MANUSCRIPT PREPARATION
- 141 Grant applications
- 145 Technical bulletin
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- 186 Biometrics
- 187 IT
- 188 Web development
- 191 Stamp design coordination
- 194 Lake restoration
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- 202 Timber management
- 203 Tree and shrub planting
- 204 Resource planning
- 205 Prescribed burning
- 206 Prescribed burning C growing season (April 1 to September 30)
- 207 Prescribed burning C dormant season (October 1 to March 31)
- 208 Firebreaks
- 209 Land Management Reviews
- 210 Exotic species control
- 211 Exotic plant control (mechanical)
- 212 Exotic plant control (chemical)
- 213 Wildlife management
- 214 Listed Species management
- 215 Hydrology management
- 216 Dams, dikes, levees

217	Canals
218	Water level management
219	Upland restoration
221	Animal surveys
226	Human dimensions surveys
228	Inland aerial surveys
235	Vegetation and plant surveys
250	MONITORING AND ASSESSMENTS
252	Biomedical monitoring
253	Ecological monitoring
256	Habitat monitoring analysis
263	Nest box monitoring
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275	Permits and authorizations
276	Commission rule development and review
277	Relocation
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283	Clearings
284	Feeding/watering
285	Nest structures
286	Population control
287	Stocking enhancements/population augmentation
288	Nuisance animal complaints
289	Native vegetation management (mechanical)
290	Native vegetation management (chemical)
293	Mortality investigations
294	Program coordination and implementation C inter- and intra-agency coordination and program implementation at the section, bureau, or division level
295	Biological data collection, analysis, and reporting
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790	Irrigation – GCR
791	Seed Collection – Hand

- 792 Seed Collection – Mechanical
- 793 Herbicide Maintenance Treatment
- 910 New facility construction C buildings/structures
- 912 New construction C roads/bridges
- 913 New construction C trails
- 914 New construction C fences
- 920 Facility and equipment maintenance ( FEM) C buildings/structures
- 921 FEM C utilities
- 922 FEM C custodial functions
- 923 FEM C vehicles/equipment
- 925 FEM C boating access
- 926 FEM C roads/bridges
- 927 FEM C trails
- 928 FEM C fences

Okaloacoochee Slough WMA Operational Plan Cost Estimate – Fiscal Year 2014-2015

Activity Title	Man Days	Salary	FuelCost	Other	Total
100 Administration	1.00	\$211.59	\$18.25	\$300.00	\$529.84
103 Meetings	10.00	\$2,115.90	\$182.50	\$600.00	\$2,898.40
104 Budget/purchasing/accounting	5.00	\$1,057.95	\$91.25	\$0.00	\$1,149.20
150 Personnel management	15.00	\$3,173.85	\$273.75	\$600.00	\$4,047.60
163 Program Supervision	5.00	\$1,057.95	\$91.25	\$0.00	\$1,149.20
176 Planning	12.00	\$2,539.08	\$219.00	\$0.00	\$2,758.08
185 GIS	12.00	\$2,539.08	\$219.00	\$0.00	\$2,758.08
196 Material Distribution	0.00	\$0.00	\$0.00	\$0.00	\$0.00
200 Resource Management	30.00	\$6,347.70	\$547.50	\$49,000.00	\$55,895.20
203 Tree and shrub planting	6.00	\$1,269.54	\$109.50	\$18,000.00	\$19,379.04
204 Resource planning	15.00	\$3,173.85	\$273.75	\$0.00	\$3,447.60
205 Burning	3.00	\$634.77	\$54.75	\$0.00	\$689.52
206 Prescribed burning - growing season	10.00	\$2,115.90	\$182.50	\$0.00	\$2,298.40
207 Prescribed burning - dormant season	10.00	\$2,115.90	\$182.50	\$0.00	\$2,298.40
208 Firebreaks	6.00	\$1,269.54	\$109.50	\$0.00	\$1,379.04
211 Exotic plant control (mechanical)	2.00	\$423.18	\$36.50	\$0.00	\$459.68
212 Exotic plant control (chemical)	40.00	\$8,463.60	\$730.00	\$112,000.00	\$121,193.60
218 Water level management	30.00	\$6,347.70	\$547.50	\$0.00	\$6,895.20
219 Upland restoration	0.00	\$0.00	\$0.00	\$0.00	\$0.00
221 Animal surveys	20.00	\$4,231.80	\$365.00	\$32,000.00	\$36,596.80
235 Vegetation and plant surveys	3.00	\$634.77	\$54.75	\$15,000.00	\$15,689.52
250 Monitoring and assessments	20.00	\$4,231.80	\$365.00	\$0.00	\$4,596.80
282 Herbaceous seeding	0.00	\$0.00	\$0.00	\$0.00	\$0.00
289 Native vegetation management (mechanical)	0.00	\$0.00	\$0.00	\$0.00	\$0.00
290 Native vegetation management (chemical)	0.00	\$0.00	\$0.00	\$0.00	\$0.00
294 Program coordination and	20.00	\$4,231.80	\$365.00	\$0.00	\$4,596.80

<b>Activity Title</b>	<b>Man Days</b>	<b>Salary</b>	<b>FuelCost</b>	<b>Other</b>	<b>Total</b>
implementation					
295 Biological data collection, analysis, and reporting	2.00	\$423.18	\$36.50	\$3,600.00	\$4,059.68
341 Public use administration (hunting)	7.00	\$1,481.13	\$127.75	\$0.00	\$1,608.88
342 Public use administration (non-hunting)	2.00	\$423.18	\$36.50	\$0.00	\$459.68
789 Site Preparation	0.00	\$0.00	\$0.00	\$0.00	\$0.00
791 Seed Collect - Hand	0.00	\$0.00	\$0.00	\$0.00	\$0.00
792 Seed Collect - Machine	0.00	\$0.00	\$0.00	\$0.00	\$0.00
793 Herbicide Maintenance Treatment	5.00	\$1,057.95	\$91.25	\$35,000.00	\$36,149.20
914 New construction -- fences	0.00	\$0.00	\$0.00	\$0.00	\$0.00
920 FEM -- buildings/structures	3.00	\$634.77	\$54.75	\$7,000.00	\$7,689.52
921 FEM -- utilities	1.00	\$211.59	\$18.25	\$800.00	\$1,029.84
923 FEM -- vehicles/equipment	15.00	\$3,173.85	\$273.75	\$8,000.00	\$11,447.60
926 FEM -- roads/bridges	0.00	\$0.00	\$0.00	\$0.00	\$0.00
All totals	310.00	\$65,592.90	\$5,657.50	\$281,900.00	\$353,150.40

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## 13.11 Arthropod Management Plan

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ADAM H. PUTNAM  
COMMISSIONER

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

**ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS**

Section 388.4111, F.S.  
Telephone: (850) 617-7997

**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. Fill this form out if control work is necessary or planned.**

Name of Designated Land:

Okaloacoochee Slough Wildlife Management Area

Is Control Work Necessary:  Yes  No

Location:

Ca 3000 acres in Hendry County south of Sears Road and west of Twin Mills Grade northeast of the Okaloacoochee Slough State Forest, the center of the property being approximately latitude 26degrees 38' 4" and longitude -81degrees 19' 18"

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:

Arthropod Species for Which Control is Proposed:

None

Proposed Larval Control:

Proposed larval monitoring procedure:

Are post treatment counts being obtained:

Yes

No

Biological Control of Larvae:

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:)

Bt:

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:

Proposed Adult Mosquito Control:

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:

Contact Jean McCollom, Biologist for the WMA (jean.mccollom@myfwc.com 863/612-0775) and her supervisor Beth Morford, District Biologist (beth.morford@myfwc.com 561/722-2188)

Records:

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

Yes  No

Records Location:

How long are records maintained:

Vegetation Modification:

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?

None

Proposed Land Modifications:

Is any land modification, i.e., rotary ditching, proposed:

None

Include proposed operational schedules for water fluctuations:

None

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

None

Proposed Modification of Aquatic Vegetation:

None

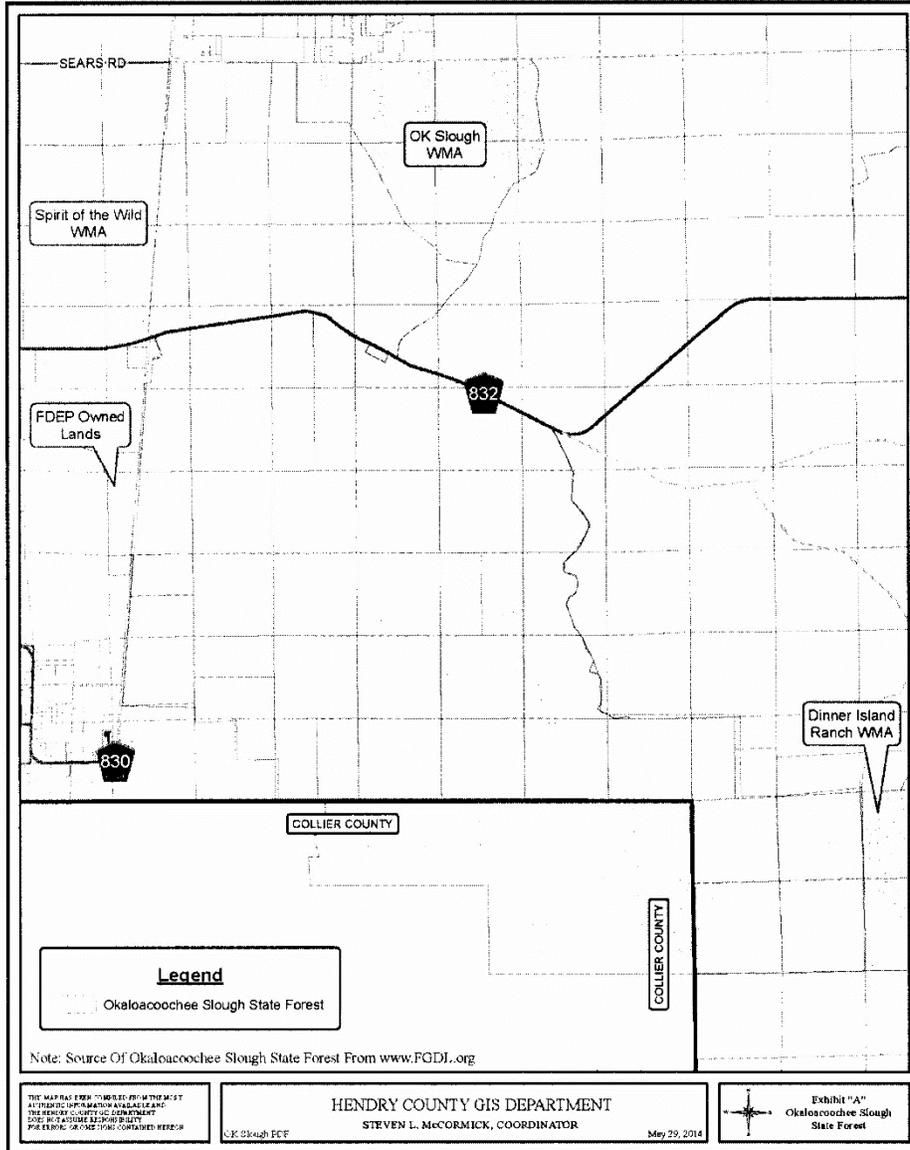
Land Manager Comments:

Okaloacoochee Slough Wildlife Management Area is managed as a natural area with a mandate to restore and maintain the area as natural plant communities for wildlife. We have requested that Hendry County not spray our area since invertebrates are essential food for many of the native animals. The County has marked the Okaloacoochee Slough Wildlife Management Area as a no spray zone for mosquito control. We are far removed from urban areas.

Arthropod Control Agency Comments:

	5/29/14
Signature of Lands Manager or Representative	Date
 (R. Shane Parker)	5/29/14
Signature of Mosquito Control Director / Manager	Date

Figure showing the location of Okaloacoochee Slough Wildlife Management Area (OK Slough WMA) in relation to the OK Slough State Forest, Spirit of the Wild WMA and Dinner Island Ranch WMA.



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## **13.12 Hendry County Letter of Compliance with Local Government Comprehensive Plan**

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# HENDRY COUNTY PLANNING & ZONING DEPARTMENT

POST OFFICE BOX 2340 • 640 S MAIN ST • LABELLE, FLORIDA 33975 • (863) 675-5240 • FAX: (863) 674-4194

February 4, 2015

Lance Jacobson  
Conservation Planner  
Florida Fish and Wildlife Conservation Commission  
Division of Habitat and Species Conservation  
Land Conservation and Planning

Ref: Okaloachoochee Slough Management Plan

Dear Mr. Jacobson:

Hendry County has reviewed the Okaloachoochee Slough Management Plan (Plan) and has a number of comments and concerns as follows:

1. We have reviewed Figure 11: Optimal Conservation Planning Boundary (OCPB) overlaid on the Hendry County Future Land Use Map and have the following comments and concerns.
  - a. There are several properties that are, approved, proposed or intended for varying levels of development that are included in the overlay. Hendry County cannot support this map as it creates the potential for legal challenges.
  - b. Hendry County already has +/- 159,789.46 acres designated as conservation and cannot be developed. This does not include the several thousands of acres designated as Long Term agriculture, Natural resource Areas, Connected Open space that are currently required within the Rodina and Southwest Hendry County Sector Plans. Planning for and designating additional lands would be contrary to Hendry County's goals for economic diversity and expanding the tax base.
  - c. In addition, the overlay is contrary to the County's future plans for development and infrastructure improvements.
2. Section 5.11.2 Optimal Conservation Planning Boundary refers to the ORB however, I do not see where there is a map associated with it. Do you have one you can send?
3. Section 5.11, Section 8.6, and Figure 11 – The language in these sections would suggest that the County needs to preserve additional lands over and above the current +/- 159,789.46 acres that would prevent future development in certain areas of Hendry

County. Again, this is contrary to the Hendry County Comprehensive Plan and approved and proposed development plans.

4. Sections 1.9, Page 6 – The name of the three private water control districts listed are incorrect. The correct names are as follows: Gerber Groves Water Control District, Collins Slough Water Control District, and Devil’s Garden Water Control District.
5. Section 2.8, Page 46 – Is there a map that identifies the location of the cultural sites?
6. Section 11 – states that an arthropod control plan was developed in cooperation with Hendry County and it is in conformance with the local government comprehensive plan. The language should be revised to reflect that it was an Arthropod Management Plan and not an Arthropod Control Plan and there is no reference to this management plan in the Comprehensive Plan so the statement that it is in compliance is not correct. Please see attached a copy of the executed Arthropod Management Plan.
7. Section 13.11, Appendices – Page 344 states Arthropod Control Plan and should state Arthropod Management Plan.; Page 346 states “Intentionally Left Blank Pending Arthropod Control Plan”. The plan should be included as it has already been approved and is stated as such in Section 11. Also, this page should be revised to reflect earlier comment regarding the name of the plan.
8. Sections 13, Appendices – Page 148 – please correct the spelling of Commissioner Karson Turner’s name.

Based on these comments and concerns, Hendry County cannot support the Plan as is. Please let us know what the steps are to address Hendry County’s comments and concerns.

Regards,



Margaret Emblidge, AICP  
Planning & Community Development Director

CC:  
Charles Chapman, Hendry County Administrator  
Shane Parker, Hendry County Public Works Director

Attachment:  
Arthropod Management Plan



ADAM H. PUTNAM  
COMMISSIONER

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

**ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS**

Section 388.4111, F.S.  
Telephone: (850) 617-7997

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. Fill this form out if control work is necessary or planned.

Name of Designated Land:

Okaloacoochee Slough Wildlife Management Area

Is Control Work Necessary:  Yes  No

Location:

Ca 3000 acres in Hendry County south of Sears Road and west of Twin Mills Grade northeast of the Okaloacoochee Slough State Forest, the center of the property being approximately latitude 26degrees 38' 4" and longitude -81degrees 19' 18"

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:

Arthropod Species for Which Control is Proposed:

None

Proposed Larval Control:

Proposed larval monitoring procedure:

Are post treatment counts being obtained:

Yes

No

Biological Control of Larvae:

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 larvicide:

Chemical or Common name:

Ground

Aerial

Rate of application:

Method of application:

Proposed Adult Mosquito Control:

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:

Contact Jean McCollom, Biologist for the WMA (jean.mccollom@myfwc.com 863/612-0775) and her supervisor Beth Morford, District Biologist (beth.morford@myfwc.com 561/722-2188)

Records:

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

Yes  No

Records Location:

How long are records maintained:

Vegetation Modification:

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?

None

Proposed Land Modifications:

Is any land modification, i.e., rotary ditching, proposed:

None

Include proposed operational schedules for water fluctuations:

None

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

None

Proposed Modification of Aquatic Vegetation:

None

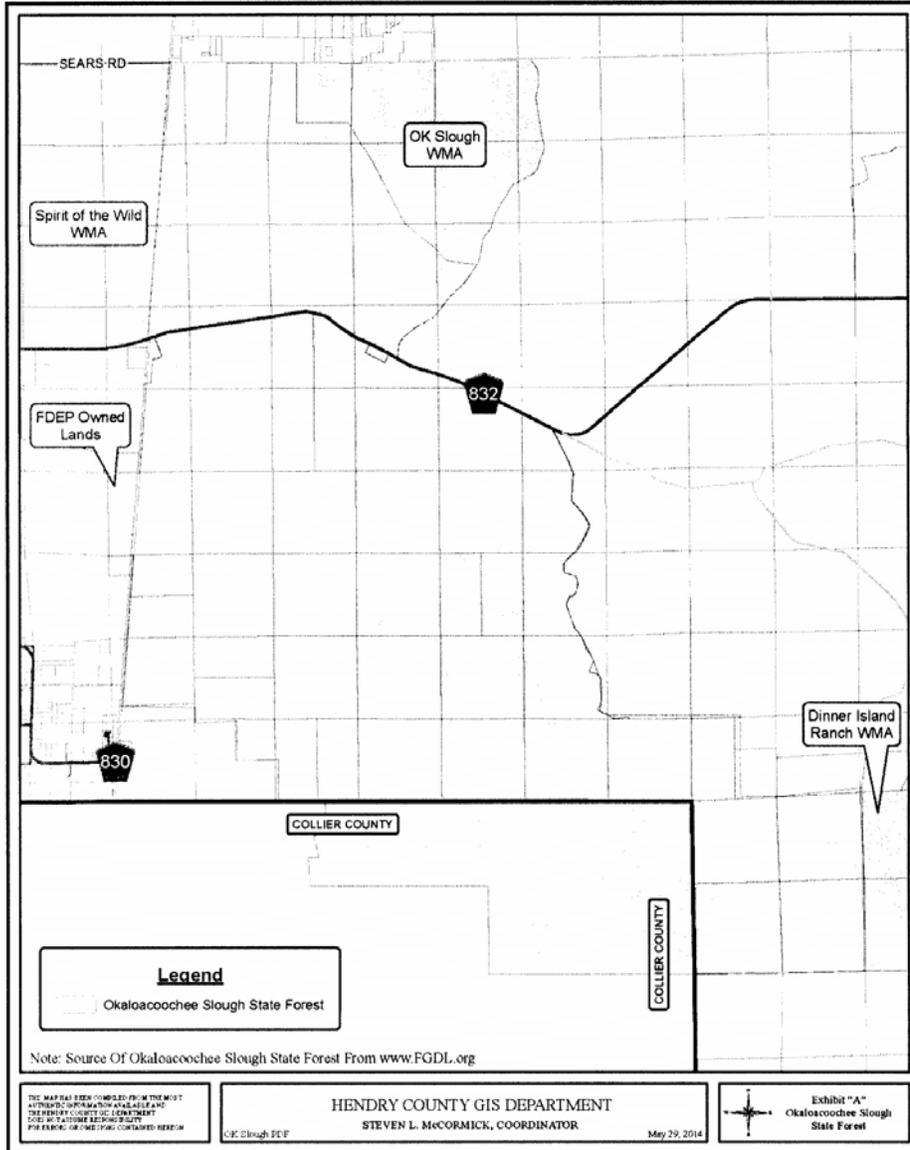
Land Manager Comments:

Okaloacoochee Slough Wildlife Management Area is managed as a natural area with a mandate to restore and maintain the area as natural plant communities for wildlife. We have requested that Hendry County not spray our area since invertebrates are essential food for many of the native animals. The County has marked the Okaloacoochee Slough Wildlife Management Area as a no spray zone for mosquito control. We are far removed from urban areas.

Arthropod Control Agency Comments:

	5/29/14
Signature of Lands Manager or Representative	Date
 (R. Shane Parker)	5/29/14
Signature of Mosquito Control Director / Manager	Date

Figure showing the location of Okaloacoochee Slough Wildlife Management Area (OK Slough WMA) in relation to the OK Slough State Forest, Spirit of the Wild WMS and Dinner Island Ranch WMA.





**Florida Fish and Wildlife Conservation Commission**

**Commissioners**

**Richard A. Corbett**  
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Immokalee

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Panama City

**Charles W. Roberts III**  
Tallahassee

**Executive Staff**

**Nick Wiley**  
Executive Director

**Eric Sutton**  
Assistant Executive Director

**Karen Ventimiglia**  
Chief of Staff

**Land Conservation and Planning**

**Gary Cochran**  
Administrator

(850) 487-9185

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

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32399-1600  
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Hearing/speech-impaired:  
(800) 955-8771 (T)  
(800) 955-8770 (V)

MyFWC.com

March 2, 2015

Ms. Margaret Emblidge, AICP  
Planning & Community Development Director  
Hendry County, Florida

RE: Okaloacoochee Slough WMA Management Plan

Dear Ms. Emblidge,

Thank you for your letter from February 4, 2015, detailing Hendry County's (County) review comments and recommendations on the Florida Fish and Wildlife Conservation Commission's (FWC) Okaloacoochee Slough Wildlife Management Area (OSWMA) Management Plan (Plan). This letter is to follow up on continuing discussions between FWC staff and your office regarding your review of the OSWMA Plan. As you know, the Plan management plan has been submitted to the County to review for its compliance with the County's Comprehensive Plan. The FWC appreciates Hendry County's review and suggested revisions to the OSWMA Management Plan.

To provide ease of reference the below format of this letter first provides each of your comments followed by the FWC's respective response to each comment. Following are FWC's responses to your comments on the Plan.

*Hendry County Comment: We have reviewed Figure 11: Optimal Conservation Planning Boundary (OCPB) overlaid on the Hendry County Future Land Use Map and have the following comments and concerns: There are several properties that are, approved, proposed or intended for varying levels of development that are included in the overlay. Hendry County cannot support this map as it creates the potential for legal challenges. Hendry County already has +/- 159,789.46 acres designated as conservation and cannot be developed. This does not include the several thousands of acres designated as Long Term agriculture, Natural resource Areas, Connected Open space that are currently required within the Rodina and Southwest Hendry County Sector Plans. Planning for and designating additional lands would be contrary to Hendry County's goals for economic diversity and expanding the tax base. In addition, the overlay is contrary to the County's future plans for development and infrastructure improvements.*

**FWC Response:** The FWC appreciates and understands the County's concerns and plans for expanding its tax base and economic diversity. The development of an "optimum boundary" map is a required element for all state conservation land management plans. The OCPB is simply a "planning tool" that identifies surrounding lands that may be potentially important to the ongoing conservation of fish and wildlife resources and the

overall management of a particular FWC management area. As it is merely represents a planning tool analysis, the FWC's OCPBs do not have any legal standing or effect on the County's respective Comprehensive Land Use Plan designations, zoning designations or any aspect of the County's legal jurisdiction, ordinances or regulations regarding potential future development of privately owned lands within the County. Moreover, any future conservation of lands within the OCPB is entirely voluntary and dependent of upon the sole discretion and agreement of any respective landowner to participate in any future conservation action for their land before any potential acquisition of lands within the boundary could occur. Consequently, development of OCPBs only represent a resource planning analysis of adjacent lands surrounding each wildlife management conservation area. The OCPB is based upon an Environmental Resource Analysis (ERA) using Geographic Information Systems (GIS) models. The ERA-GIS analysis analyzes the fish and wildlife resource data of each FWC management area and their potential relationship or interaction with resources on surrounding lands. As you will note many, although not all, of the lands within the OCPB are already included within a State approved Florida Forever Projects. Generally, any surrounding Florida Forever Project is automatically included within the OCPB as they represent lands that the State has placed on the Florida Forever List that have already been vetted and approved for inclusion on the list for their statewide significance for conservation. Lands included within each Florida Forever Project have been approved for inclusion on the Florida Forever List by the respective landowners within each project as well as the Acquisition and Restoration Council and the Board of Trustees or Governor and Cabinet. Additional lands within the OSWMA OCPB were identified because their existing resources and rural character may be important for continuing management of OSWMA for prescribed burning buffers, public access, and other operational management considerations and because they may be important for wildlife conservation. From FWC's review of the County's Comprehensive Land Use Plan it appears that all of the lands within the OSWMA OCPB have been designated as "Agriculture" or "Agriculture Conservation" in Hendry County's Future Land Use map. Consequently, it is important to reiterate that the OCPB only represents a resource and operational management planning analysis of lands surrounding a particular wildlife management conservation area and do not have any formal bearing or standing with respect to any aspect of potential future development of privately owned lands with the County or any other county of the state. Additionally, it should also be reiterated that landowner participation in voluntary landowner stewardship conservation programs, conservation easements, and conservation acquisitions is entirely voluntary and at the sole discretion of private landowners.

Hendry County Comment: *Section 5.11.2 Optimal Conservation Planning Boundary refers to the (Optimal Resource Boundary) ORB however, I do not see where there is a map associated with it. Do you have one you can send?*

FWC Response: The ORB is a resource planning tool that is one element of the FWC's ERA GIS analysis described above that is used to develop the OCPB. The ORB primarily focuses on important wildlife species, such as the Florida panther for this particular area, the OSWMA, and their potential habitat adjacent to an FWC wildlife management area. It also identifies and excludes developed areas. The OCPB is derived from the ORB using such factors as habitat linkages, management challenges, land use and zoning, and infrastructure. Once the OCPB is developed it replaces the ORB as the primary tool FWC uses to identify lands that may potentially benefit conservation in the area. For these reasons, we do not have a map of the ORB as such since the results of the ORB analysis are analyzed and incorporated into the OCPB as appropriate.

Hendry County Comment: *Sections 1.9, Page 6 – The name of the three private water control districts listed are incorrect. The correct names are as follows: Gerber Groves Water Control District, Collins Slough Water Control District, and Devil's Garden Water Control District.*

FWC Response: The FWC appreciates the County providing the correct names and the FWC has corrected these discrepancies within the Plan.

Hendry County Comment: *Section 2.8, Page 46 – Is there a map that identifies the location of the cultural sites?*

FWC Response: In an effort to prevent looting and disturbance at cultural sites, it is the FWC's standard practice to not produce maps showing the location of cultural and archeological resources. The FWC works closely with the Florida Department of State's Division of Historical Resources (DHR) to ensure all known sites are recorded in DHR's Master Site File. For these reasons, we recommend you contact the DHR for more information on cultural or historical resources.

Hendry County Comment: *Section 11 – states that an arthropod control plan was developed in cooperation with Hendry County and it is in conformance with the local government comprehensive plan. The language should be revised to reflect that it was an Arthropod Management Plan and not an Arthropod Control Plan and there is no reference to this management plan in the Comprehensive Plan so the statement that it is in compliance is not correct.*

FWC Response: The FWC appreciates the County noting the discrepancy and the FWC has corrected this discrepancy within the Plan regarding the OSWMA "Arthropod Management Plan". The sentence stating: "This plan is also in conformance with the Local Government Comprehensive Plan as approved and adopted for Hendry County, Florida," was referring to the OSWMA Management Plan, not the Arthropod Management Plan. The

Ms. Margaret Emblidge  
Page 4  
March 2, 2015

language of this sentence has been improved to clarify which plan is being referred to.

*Hendry County Comment: Section 13.11, Appendices – Page 344 states Arthropod Control Plan and should state Arthropod Management Plan.; Page 346 states “Intentionally Left Blank Pending Arthropod Control Plan”. The plan should be included as it has already been approved and is stated as such in Section 11. Also, this page should be revised to reflect earlier comment regarding the name of the plan.*

**FWC Response:** The FWC has the approved OSWMA Arthropod Management Plan on file and it will be included in the final OSWMA Management Plan.

*Hendry County Comment: Sections 13, Appendices – Page 148 – please correct the spelling of Commissioner Karson Turner’s name.*

**FWC Response:** The FWC appreciates the County noting the discrepancy regarding Commissioner Turner’s name, and the FWC has corrected this discrepancy within the Management Advisory Group Report in the appendix of the Plan.

Again, the FWC appreciates the County’s review of the OSWMA Management Plan, and we welcome any further input the County may have. Please contact Lance Jacobson at (850) 487-9767 if you have any questions or wish to further discuss this Plan.

Sincerely,

Gary Cochran  
Land Conservation & Planning Administrator  
Florida Fish and Wildlife Conservation Commission  
(850) 487-9185  
Email: [Gary.Cochran@MyFWC.com](mailto:Gary.Cochran@MyFWC.com)

CC:  
Lance Jacobson  
Conservation Planner  
Florida Fish and Wildlife Conservation Commission  
(850) 487-9767  
Email: [Lance.Jacobson@myFWC.com](mailto:Lance.Jacobson@myFWC.com)