



United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960
March 20, 2018



Service Consultation Number: 04EF2000-2015-F-0469

Memorandum to File

Subject: Biological Opinion for the proposed approval of the Lake Livingston Conservation Bank

Roxanna Hinzman
Field Supervisor
South Florida Ecological Services Office

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed Lake Livingston Conservation Bank (LLCB) located in Polk County, Florida, and its effects on the following species in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.):

Florida scrub-jay (<i>Aphelocoma coerulescens</i>)	threatened
Pygmy fringe-tree (<i>Chionanthus pygmaeus</i>)	endangered
Short-leaved rosemary (<i>Conradina brevifolia</i>)	endangered
Eastern indigo snake (<i>Drymarchon corais couperi</i>)	threatened
Blue-tailed mole skink (<i>Eumeces egregius lividus</i>)	threatened
Wood stork (<i>Mycteria americana</i>)	threatened
Sand skink (<i>Neoseps reynoldsi</i>)	threatened
Papery whitlow-wort (<i>Paronychia chartacea</i>)	threatened
Scrub plum (<i>Prunus geniculata</i>)	endangered
Florida panther (<i>Puma concolor coryi</i>)	endangered
Gopher tortoise (<i>Gopherus polyphemus</i>)	candidate

This biological opinion is based on information provided in the December 21, 2017, LLCB Conservation Bank Agreement which includes the habitat management plan, and other sources of information; and was completed pursuant to November 16, 2016, Service policy on *Streamlined Consultation Guidance for Restoration/Recovery Projects* and associated documents.

BIOLOGICAL OPINION

I. Description of the Proposed Action

The 2,424 acre (ac) Lake Livingston Property is one of the Lake Wales Ridge's largest remaining properties in private ownership that is dominated by natural habitat, including several hundred acres of scrub habitat. The intent of the 761 ac LLCB is to conserve, restore, enhance, manage, and maintain the land in perpetuity. The LLCB consists of multiple scrub and pasture polygons embedded with a wetland matrix, that will be made into a wetland mitigation bank, on parcels owned by one landowner. The goal of the LLCB is to create, enhance, and sustain a conservation area that is optimal for the scrub endemics – the sand skink and blue-tailed mole skink. To achieve this goal, the LLCB will be managed through the application of prescribed burns, the control and eradication of nuisance and exotic plant species, the control and eradication of nuisance exotic animal species, and the establishment and maintenance of site security and posting.

On LLCB there are a total of 449.9 acres of sand skink habitat consisting of 388.8 acres of scrub habitat and 61.1 acres of xeric improved pasture. All of the scrub habitats are overgrown and in need of the application of prescribed fire and removal of nuisance exotic species. Seventeen scrub habitats will be burned during the initial phase of management. The burns will be conducted by prescribed burn teams that have been certified to burn by the Florida Forest Service. Likewise, the creation and maintenance of firebreaks will be necessary prior to implementing a burn. The nuisance and exotic plant species will be eradicated by a licensed spray technician. In cooperation with the landowner and the ranchers that hold cattle leases, the implementation of the feral hog control program will continue and incorporate several methods of control including hunting and trapping. The 61.1 acres of xeric improved pasture will be restored to scrub habitat. Once the conservation easement is recorded, cattle will be removed from the conservation bank and the LLCB will be fenced. The improved pasture areas will be herbicided, disced, and planted with vegetation indigenous to scrub habitat. Species composition and relative abundance will be similar to that of the adjacent scrub.

Once the interim management is complete a long-term management plan will be implemented on LLCB. These activities include a sand skink survey every five years, fire rotation interval of every 8 years (may vary depending on structural and fuel responses of initial burns), vegetation community surveys every five years, nuisance and exotic species treatment to keep percentage below 1% (below 5% in the restoration areas), and fence repairs when needed. The interim and long-term management of LLCB will require personnel to enter areas inhabited by listed species, so a degree of trampling is inevitable. However scrub habitat is maintained by regular disturbance, primarily from fire, carefully – planned small-scale disturbances for monitoring purposes and larger disturbance for vegetation management are expected to be consistent with restoring and maintaining the scrub habitat and its biota.

Action area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. The Service has determined the area for this project consists of the 761-acre LLCB located within the 2424-acre Lake Livingston property that extends along the north, west, and south side of Lake Livingston in southeastern Polk County. It is situated on the Lake Wales Ridge east of State Road (SR) 27 and south of Frostproof in southeastern Polk County. The property is comprised of a mosaic of predominantly natural habitat and improved pasture positioned along the site's periphery.

Species Not Likely To Be Adversely Affected By The Proposed Action

Florida scrub-jay

Florida scrub-jays (scrub-jays) occupy the low-growing oak scrub community that only occurs on well-drained sandy soils along the Lake Wales, Atlantic Coast, Mount Dora and Winter Haven ridges. Optimal scrub-jay habitat is composed of fire-dependent, low-growing scrub oak species usually less than three meters in height and sparse ground cover interspersed with numerous patches of exposed sand. Habitat management for scrub-jays consists of the periodic burning of scrub tracts to maintain the desired shrub height, canopy closure and percentage of bare ground. Mechanical site renovation may also prove satisfactory for scrub-jay habitat management where prescribed burning is inadvisable. The continued existence of this species will depend on preservation and long-term management of suitable scrub habitat.

Scrub-jays have been observed on LLCB in the past. Bank managers attempted to document scrub-jays using Service protocol (Fitzpatrick *et al.*, 1991) in March and April of 2015. Call back tapes were played during appropriate weather conditions in the early morning hours. No jays responded to the playback tapes during these efforts. Bank managers intend to continue these survey efforts in September and October 2016, when jay "territorial displays are most frequent and vigorous". In addition to the jays that have been documented on site and the hundreds of acres of suitable habitat for jays in the vicinity, there are several other element occurrence records of jays within five miles of the LLCB. However, there is no documentation of any nesting activities occurring on LLCB.

The proposed activities of prescribed fire, herbicide treatments, and maintenance of LLCB are compatible with maintaining and enhancing scrub-jay habitat. Project implementation may preclude the use of an area, for a temporary period of time while the management activities are being conducted. Subsequent to any management action taken within the scrub habitat management level surveys will be conducted. If conditions change, such as scrub-jays move on to LLCB, the management strategies shall be altered, with input from the Service, to accommodate the presence of the new resource. The Service will be contacted within one week of an unforeseen or changed circumstance to discuss if adaptive management is necessary.

Based on the type of activities proposed, temporary nature of the effects, and the proposed minimization measures, this project is not likely to adversely affect this species. Therefore, no level of take is anticipated to occur throughout the duration of the proposed project.

Wood stork

LLCB is located within a core foraging area and wood storks have been observed foraging on site. Wood storks are expected to use the various wetlands and ephemeral ponds located throughout the Lake Livingston property as foraging habitat. The project site is approximately 12 miles from the nearest recorded nesting colony and does not exhibit the physical and biological features to support a colony itself. Wood storks are not expected to use the scrub or pasture areas.

Project implementation may preclude the use of an area, for a temporary period of time while the management activities are being conducted. Subsequent to any management action taken within the scrub habitat management level surveys will be conducted. If conditions change the management strategies shall be altered, with input from the Service, to accommodate the presence of the new resource. The Service will be contacted within one week of an unforeseen or changed circumstance to discuss if adaptive management is necessary.

Based on the type of activities proposed, temporary nature of the effects, and the proposed minimization measures, this project is not likely to adversely affect this species. Therefore, no level of take is anticipated to occur throughout the duration of the proposed project.

Florida panther

Radio-collar data and ground tracking indicate that panthers use the mosaic of habitats available to them as resting and denning sites, hunting grounds, and travel routes. Global Positioning System data has shown panthers ($n = 12$) use all habitats contained within their home ranges by selecting for forested habitat types and using all others in proportion to availability (Land et al. 2008). Panthers have been photographed by trail cameras on LLCB in 2010, 2012, and 2017. The Service's database has a record of a male panther on the Lake Livingston property in 2005. The Service has no records of female panthers on LLCB, and there are only three female panthers currently confirmed north of the Caloosahatchee River. The panthers photographed on LLCB are likely dispersing males. Areas north of the Caloosahatchee River, like LLCB, are important for panthers now and for future population expansion.

The proposed activities of prescribed fire, herbicide treatments, and maintenance of LLCB are compatible with maintaining and enhancing panther habitat. Prescribed burning is believed to be important to panthers because prey species (e.g., deer and hogs) are attracted to burned habitats to take advantage of changes in vegetation structure and composition, including exploiting hard mast that is exposed and increased quality or quantity of forage (Dees et al. 2001). Project implementation may preclude the use of an area, for a temporary period of time while the management activities are being conducted. Subsequent to any management action taken within

the scrub habitat management level surveys will be conducted. If conditions change the management strategies shall be altered, with input from the Service, to accommodate the presence of the new resource. The Service will be contacted within one week of an unforeseen or changed circumstance to discuss if adaptive management is necessary.

Based on the type of activities proposed, temporary nature of the effects, the proposed minimization measures, and what we know about panther use of this area, this project is not likely to adversely affect this species. Therefore, no level of take is anticipated to occur throughout the duration of the proposed project.

II. Status of the Species

A. Range-wide Condition

Pygmy-fringe tree

The Service listed the pygmy-fringe tree as endangered under the Act on January 21, 1987 (52 FR 2227 2234). Critical habitat has not been designated for the pygmy-fringe tree.

Pygmy-fringe tree is a large shrub that occurs primarily in scrub as well as high pineland, dry hammocks, and transitional habitats in central Florida. Much of this species' habitat has been lost because of land clearing for citrus production and residential development. This species is long-lived and persists in areas that are burned at a frequency between 20 and 70 years. The pygmy-fringe tree is a fire-dependent species that re-sprouts after fire events. Fire prevention, habitat fragmentation, or other factors that preclude the creation or maintenance of a mosaic of open, sandy patches could threaten this species (Service 1999).

Short-leaved rosemary

The Service listed the short-leaved rosemary as endangered under the Act on July 12, 1993 (58 FR 37432 37443). Critical habitat has not been designated for the short-leaved rosemary.

Short-leaved rosemary is one of five shrubby mints in the interior central Florida scrub. It inhabits white sand scrub on the Lake Wales Ridge in Polk and Highlands counties. Short-leaved rosemary is usually found interspersed in gaps between the shrubs on the bare sand with other small shrubs and herbs (Service 1992). This species is threatened with because of its restricted range and habitat destruction from residential, commercial, and agricultural land conversions. No specific information is available on the ecological requirements of short-leaved rosemary. However, existing information on the natural fire regimes of various scrub communities suggests that the white sand scrub inhabited by short-leaved rosemary requires periodic, patchy, high-intensity fires. Fire cycles of 15 to 20 years, or possibly less, reduce overstory competition and provide disturbed open sandy patches within which obligate seeding species may re-establish.

Eastern indigo snake

The Service listed the eastern subspecies of the indigo snake as threatened under the Act in the Federal Register (FR) on January 31, 1978. The State of Florida recognizes the eastern indigo snake as federally-designated Threatened. There is no designated critical habitat.

Throughout the eastern indigo snake's range, expanding urban areas are creating barriers to the dispersal of individuals and gene flow between populations, and habitat loss and degradation are a threat to the species (Lawler 1977; Moler 1985a). In central and southern Florida the eastern indigo snake is less dependent on any one habitat type but does avoid developed areas (Lawler 1977; Moler 1985b; Hyslop 2007). Throughout Florida, developed areas are expanding rapidly with population growth at the expense of wildlife habitat (Cerulean 2008). At the time of listing, other threats to the eastern indigo snake included commercial collection for the pet trade and mortality during the gassing of gopher tortoise burrows by individuals attempting to drive rattlesnakes out for collection (43 FR 4026 4029). Since their listing, additional potential threats to the species have expanded to include disease, road mortality, kills of indigo snakes by landowners and pets, and all-terrain vehicle use in gopher tortoise habitat (Service 2008).

Blue-tailed mole skink

The Service listed the blue-tailed mole skink as threatened under the Act on December 7, 1987 (52 FR 42658- 52 FR 42662). The State of Florida recognizes the blue-tailed mole skink as threatened. There is no designated critical habitat.

It is likely that ongoing residential and agricultural development of xeric upland habitat in central Florida has destroyed or degraded extensive tracts of habitat containing the blue-tailed mole skink. Continued habitat loss, fragmentation, and changes in land use threaten the existence of the subspecies. Improper habitat management and invasion by non-native and invasive species threaten the existence of blue-tailed mole skinks. Active management is necessary to maintain suitable habitat for skinks. Management of scrub habitat is problematic because much of the remaining habitat occurs in small fragmented areas surrounded by residential areas where prescribed burning may not be feasible. These residential areas are also often a source of non-native plants that invade native habitat. Many of the fragments are overgrown and in need of restoration.

Habitat degradation on protected and private sites continues to be a threat because vegetation restoration and management programs are costly and depend upon the availability of funding. Where prescribed fire is not feasible as a management technique because of smoke management and other concerns, mechanical treatment is sometimes used. However, heavy machinery disturbs the soil more than prescribed burning, and it often removes limited nutrients from the soil (Mushinsky et al. 2001). This changes the nutrient levels in the topsoil, affecting the vegetative composition of the site, whereas fire releases nutrients. Also,

if logs are removed from a site after mechanical treatment, prey abundance (termites) may be lower than it would be after a fire (Mushinsky et al. 2001).

Sand skink

The Service listed the sand skink as threatened under the Act in 1987 (52 FR 42658), and is listed as federally-designated threatened by the State. Critical habitat has not been designated for the sand skink.

The modification and destruction of xeric upland communities in central Florida were a primary consideration in listing the sand skink as threatened. By some estimates, as much as 90 percent of the scrub ecosystem has already been lost to residential development and conversion to agriculture, primarily citrus groves (Kautz 1993; Turner et al. 2006a). Xeric uplands remaining on private lands are especially vulnerable to destruction because of increasing residential and agricultural pressures.

Approximately 85 percent of xeric upland communities historically used by sand skinks on the Lake Wales Ridge (LWR) are estimated to have been lost due to development (Turner et al. 2006b). It is likely continued residential and agricultural development of xeric upland habitat in central Florida has destroyed or degraded habitat containing sand skinks. Protection of the sand skink from further habitat loss and degradation provides the most important means of ensuring its continued existence. Of the 73 locations examined by Turner et al. (2006a) on which sand skinks were reported, 39 are protected and, as of 2004, 27 were managed. Current efforts to expand the system of protected xeric upland communities on the LWR, coupled with implementation of effective land management practices, represent the most likely opportunity for assuring the sand skink's survival.

Papery whitlow wort

The Service listed the papery whitlow wort as threatened under the Act on January 21, 1987 (52 FR 2227 2234). Critical habitat has not been designated for the papery whitlow wort.

The papery whitlow wort is a small mat-forming herb with many bright yellowish-green branches radiating flatly from a taproot. This species consists of two geographically isolated subspecies with papery whitlow wort in the Florida peninsula and the similar Crystal Lake nailwort in the Florida panhandle. Papery whitlow wart is endemic to the scrub community on the Lake Wales Ridge, in Highlands, Polk, Osceola, Orange, and Lake counties. This species is most frequently seen in open, sunny gaps in rosemary balds within scrub vegetation. Management for papery whitlow-wort requires burning regimes that mimic the natural fire cycles of rosemary scrub (Service 1999).

Scrub plum

The Service listed the scrub plum as endangered under the Act on January 21, 1987 (52 FR 2227 2234). Critical habitat has not been designated for the scrub plum.

Scrub plum is typically associated with oak-dominated scrub and high pine communities along Florida's central ridges (Service 1999). Although the historic range was rather extensive compared to other narrowly endemic plants of Florida's central ridges, this species has declined with destruction and fragmentation of its scrub habitat. Habitat loss due to conversion to agriculture and residential development continues to threaten this species. Removal by plant collectors has been an additional threat that land acquisitions and conservation areas are alleviating. Fire suppression has degraded the habitat required by this species. This federally endangered species apparently requires periodic fire or other disturbances to maintain suitable habitat.

Gopher tortoise

The gopher tortoise is federally listed as a candidate species in the eastern part of its range, which is defined as east of the Mobile and Tombigbee Rivers in Alabama, Florida, Georgia, Louisiana, Mississippi, and South Carolina. Threats to the gopher tortoise, as identified in the Service's 12-month finding (Service 2011), include mortality associated with the unregulated harvest of rattlesnakes, diseases such as upper respiratory tract disease, nest depredation, the inadequacy of regulatory mechanisms, herbicide application, road mortality, and climate change. In addition, the destruction, modification, or curtailment of its habitat or range was identified as the most significant threat. Even though recovery criteria have not been characterized for the gopher tortoise in this part of its range, specific actions that can be taken to reduce threats to this species were recommended in the 12-month finding (Service 2011). Measures to reduce destruction, modification or curtailment of gopher tortoise habitat or range include restoring and managing appropriate habitat through techniques such as mechanical vegetation reduction and burning at short-term fire return intervals. Securing habitat that supports viable populations through land acquisition, conservation easements, and landowner incentive programs will also help alleviate this threat.

B. Environmental Baseline

Pygmy-fringe tree

A single specimen of pygmy-fringe tree was identified within a 17.6 ac scrub "island" habitat located on the northeast portion of the LLCB. Fire suppression and the presence of invasive and exotic plant species have resulted in the degradation and loss of pygmy-fringe tree habitat in the action area.

Short-leaved rosemary

A single specimen of short-leaved rosemary was identified within a 175.1 ac scrub “island” habitat located on the southwest portion of the LLCB. Fire suppression and the presence of invasive and exotic plant species have resulted in the degradation and loss of short-leaved rosemary habitat in the action area.

Eastern indigo snake

This species is present in a wide variety of habitats including the scrub and sandhill vegetation within the action area. Although we do not have specific information on the eastern indigo snake’s abundance within the action area, we can make assumptions about the maximum number of snakes that could be present on the site. Layne and Steiner (1996) determined the average home range for female indigo snakes to be 46 ac and overlapping male home ranges to be 184 ac. Assuming those estimates are comparable to the LLCB, it is possible for as many as 16 female snakes and 4 male snakes to be present on the 761 ac LLCB. The relatively large range of this snake and its use of a wide variety of natural and modified habitats mean that the action area comprises only a very small fraction of this species’ range.

Blue-tailed mole skink

This species occurs in a variety of open, sandy habitats, but appears to be rare wherever it occurs. Due to the difficulty in surveying for this skink species, the Service assumes it is present whenever sand skinks are present in Polk, Highlands, and Osceola Counties. Since sand skinks are present on 388.8 ac at LLCB, we assume blue-tailed mole skinks are also present in these areas.

Sand skink

This species occurs in open, sandy habitats, and is somewhat less rare than blue-tailed mole skinks. Pedestrian surveys for skinks at LLCB were conducted in both late spring and summer of 2014 and again in the late winter and spring of 2015 for preparation of Bank prospectus. Current surveys will occur February through April of 2018. As a result of previous surveys, 388.8 ac were identified as being occupied by sand skinks. There is no formula that relates the number of skink sign observed during surveys to skink density, so we cannot estimate the total number of skinks at LLCB.

Papery whitlow-wort

A single specimen of papery whitlow-wort was identified within a 28.2ac scrub “island” habitat located on the western portion of the LLCB. Fire suppression and the presence of invasive and exotic plant species have resulted in the degradation and loss of short-leaved rosemary habitat in the action area.

Scrub plum

A single specimen of scrub plum was identified within a 175.1ac scrub “island” habitat located on the southeast portion of the LLCB. Fire suppression and the presence of invasive and exotic plant species have resulted in the degradation and loss of short-leaved rosemary habitat in the action area.

Gopher tortoise

This species has a broad range that includes Florida, Georgia, Alabama, Mississippi, and Louisiana. Gopher tortoises require well-drained, sandy soils for burrowing and nest construction, an abundant herbaceous ground cover for food, and a generally open canopy that allow sunlight to reach the forest floor. At the LLCB, gopher tortoise and their burrows have been documented in all shrub habitats, in the xeric pastures, and in and along the edges of the mesic forest habitats. The density of tortoises per acre was not determined.

III. Effects of the Action on Listed Species and Cumulative Effects

Pygmy-fringe tree

LLCB management team will take care to avoid running over this species. All vehicle use will be contained as much as possible to the burn unit perimeter roads. The pygmy-fringe tree inhabits fire-adapted communities and is known to regrow after a fire; therefore, LLCB management activities are expected to be beneficial to this species.

Short-leaved rosemary

LLCB management team will take care to avoid running over this species. All vehicle use will be contained as much as possible to the burn unit perimeter roads. The short-leaved rosemary inhabits fire-adapted communities and is known to regrow after a fire; therefore, LLCB management activities are expected to be beneficial to this species.

Eastern indigo snake

The equipment used to maintain the fire breaks and conduct prescribed burns will have rubber tires. Fire crew and management team members will be trained to identify the species, learn about habitat needs that pertain to the health of the population, and learn about specific management practices that will avoid detrimental impacts to these snakes. Personnel will use caution to avoid running over snakes when operating vehicles.

Ring fires, which could trap indigo snakes inside the burn area, will not be used. If an indigo snake is observed inside the burn unit, ignition will cease and the snake will be allowed or be assisted to leave the unit. If that is not successful, fire activities will be delayed to give the snake time to find refuge underground before burning is continued. If fire threatens to burn

over a snake, crew members will attempt to extinguish the fire so the snake can be rescued. Any eastern indigo snakes in a burn project area may incur a brief period of disturbance to its patterns of feeding, breeding, or sheltering. Fire treatments could conceivably kill or injure snakes, but the proposed precautions make it very likely that snakes would successfully flee fires or escape into underground refugia. The eastern indigo snake has evolved in habitats prone to frequent fires and is expected to be able to respond to fire by seeking refuge in gopher tortoise burrows or other underground refugia, or fleeing the area. Prescribed fires and related activities are expected to improve prey species abundance in the regrowing vegetation. The eastern indigo snake inhabits fire-adapted vegetation; the management activities on LLCB are expected, over a term of several years to a decade, to be beneficial to the eastern indigo snake.

Blue-tailed mole skink

LLCB management team members will take care to avoid running over individuals. All vehicle use will be contained as much as possible to the burn unit perimeter roads. There is a risk of individuals being crushed by equipment. The fire crew and management team members supported by this project will be trained in identification of the blue-tailed mole skink, in habitat needs that pertain to the health of the population, and in specific management practices that will avoid detrimental impacts to individuals. Blue-tailed mole skinks are very unlikely to be seen (its fossorial behavior makes the chance of seeing one remote), but if one is seen, it will be allowed to move out of harm's way on its own before equipment use is resumed. Individuals, if present, could be killed by overheating from fire or from crushing by equipment. Blue-tailed mole skink populations are vulnerable to habitat degradation due to overgrown vegetation caused by fire exclusion. Prescribed fire and the associated activities are essential to maintain and restore its habitat. After treatment, this species is likely to benefit from the availability of more open sand habitat.

Sand skink

LLCB management team members will take care to avoid running over individuals. All vehicle use will be contained as much as possible to the burn unit perimeter roads. There is a risk of individuals being crushed by equipment. The fire crew and management team members supported by this project will be trained in identification of the sand skink, in habitat needs that pertain to the health of the population, and in specific management practices that will avoid detrimental impacts to individuals. Sand skinks are very unlikely to be seen (its fossorial behavior makes the chance of seeing one remote), but if one is seen, it will be allowed to move out of harm's way on its own before equipment use is resumed. Individuals, if present, could be killed by overheating from fire or from crushing by equipment. Sand skink populations are vulnerable to habitat degradation due to overgrown vegetation caused by fire exclusion. Prescribed fire and the associated activities are essential to maintain and restore its habitat. After treatment, this species is likely to benefit from the availability of more open sand habitat.

Papery whitlow wort

LLCB management team will take care to avoid running over this species. All vehicle use will be contained as much as possible to the burn unit perimeter roads. The papery whitlow-wort inhabits fire-adapted communities and is known to regrow after a fire; therefore, LLCB management activities are expected to be beneficial to this species.

Scrub plum

LLCB management team will take care to avoid running over this species. All vehicle use will be contained as much as possible to the burn unit perimeter roads. The scrub plum inhabits fire-adapted communities and is known to regrow after a fire; therefore, LLCB management activities are expected to be beneficial to this species.

Gopher tortoise

LLCB management team members will take care to avoid running over gopher tortoises. All vehicle use will be contained as much as possible to the burn unit perimeter roads. There is a risk of individuals being crushed by equipment. The fire crew and management team members supported by this project will be trained in identification of the gopher tortoise, its habitat needs that pertain to the health of the population, and in specific management practices that will avoid detrimental impacts to this species. If a gopher tortoise is seen, it will be allowed to move out of harm's way on its own before equipment use is resumed. Gopher tortoises, if present, could be killed by overheating from fire or from crushing by equipment. Gopher tortoise populations are vulnerable to habitat degradation due to overgrown vegetation caused by fire exclusion. Prescribed fire and the associated activities are essential to maintain and restore its habitat. After treatment, this species is likely to benefit from the availability of more open sand habitat with a greater abundance of herbaceous vegetation.

Cumulative Effects

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

On occasion, suppression of wildfires or out-of-control prescribed fires will be necessary. When fire suppression occurs, damage to plants and animals from fire suppression is unavoidable.

Because prescribed fire or equivalent mechanical treatments are essential to maintaining suitable scrub habitat, temporary impacts to listed species from prescribed fires is inescapable. Prescribed fires also reduce the threat posed by wildfires in overgrown

vegetation. By reducing fuel loads, prescribed fire programs can significantly reduce the threat of runaway wildfires threatening neighboring properties, in some cases, homes. Prescribed fires also serve to minimize the likelihood of damage to biological resources on conservation lands that can be caused by wildfires.

IV. Conclusion

Listed species

After reviewing the current status of the pygmy-fringe tree, short-leaved rosemary, eastern indigo snake, blue-tailed mole skink, sand sink, papery whitlow-wort, and scrub plum, the environmental baseline for the action area, the effects of the proposed action and cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of any of these species and will result in a net conservation benefit to the species. No critical habitat has been designated for these species therefore, none will be affected.

Candidate species

After reviewing the current status of the gopher tortoise, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's conference opinion that the action, as proposed, is not likely to jeopardize the continued existence of any of these species and will result in a net conservation benefit to the species. No critical habitat has been designated for these species; therefore, none will be affected.

The Service reached these conclusions because:

- A. The primary purpose of the proposed action is to conserve the pygmy-fringe tree, short-leaved rosemary, eastern indigo snake, blue-tailed mole skink, sand sink, papery whitlow-wort, and scrub plum;
- B. The proposed action was developed in coordination with the Service for that purpose;
- C. The proposed action gives full consideration to, and is consistent with, the survival and recovery needs of the pygmy-fringe tree, short-leaved rosemary, eastern indigo snake, blue-tailed mole skink, sand sink, papery whitlow-wort, and scrub plum, and the role of the action area in providing for those needs;
- D. There is either a proven track record for successful implementation of the proposed action, or there is a high level of certainty that the proposed action is likely to produce a beneficial impact for the listed species and/or the recovery support function of its critical habitat.
- E. Adverse impacts (including those that conform to incidental take) are likely to be small in magnitude, temporary (meaning not continuous, recurring, or chronic), short-term and geographically local with respect to each local population being addressed.

- F. The amount or extent of incidental take of listed species is likely to be low and is not likely to have adverse population-level impacts to the affected listed species.
- G. The project is not likely to cause a permanent net loss of habitat, a net loss of habitat function, a net loss of critical habitat or a net loss of functional value of critical habitat.

V. Incidental Take Statement

Sections 9 of the ESA and federal regulation pursuant to section 4(d) of the ESA prohibits the take of endangered and threatened species, respectively, without a special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants is provided to the extent that the Act prohibits the removal and reduction to possession of Federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law. Therefore, the pygmy-fringe tree, short-leaved rosemary, papery whitlow-wort, and scrub plum will not be mentioned further in this incidental take statement.

Eastern indigo snake

The Service anticipates incidental take of the eastern indigo snake will be difficult to detect for the following reasons: (1) wide-ranging distribution, not restricted to specialized habitats, (2) patchy distribution within suitable habitats, and (3) apparently suitable habitat may not be occupied. However, the Service anticipates incidental take of the indigo snake associated with conducting prescribed fires and related activities on LLCB. Due to the lack of surveys, in conjunction with the wide-ranging activity and use of a variety of habitat types by the indigo snake, it is difficult to determine the exact number of snakes that will be taken. Layne and Steiner (1996) determined the average home range for female indigo snakes to be 46 ac and overlapping male home ranges to be 186 ac. Assuming those estimates are comparable to the action area, it is possible for as many as 16 female snakes and 4 male snakes to be present on the 761 ac LLCB. It is difficult to determine the exact number of indigo snakes (adults, juveniles, hatchlings, and nests) that could be disturbed, injured or killed by the land management activities and which individuals (male or female) will be

affected in a particular manner. Because 16 female snakes are expected to be present, we also estimate 16 nests with eggs could also be within the action area during breeding season. However, because the indigo snake is able to escape and find refugia during prescribed fires and preparation work for fires, we anticipate that no more than 8 (50 percent) snakes will be harassed and that no more than 4 (25 percent) snakes will be injured or killed during the first 5 years of LLCB operation and during every 5-year period thereafter. The 16 nests with eggs that were estimated on site would also be lost because they cannot avoid the land management activities. The incidental take is expected to be in the form of harm, harassment, and direct mortality.

Blue-tailed mole skink

The Service anticipates incidental take of the blue-tailed mole skink will be difficult to detect for the following reasons: (1) its fossorial behavior, with individuals usually just beneath the surface of loose sand; and (2) low density within occupied scrub. However, the Service anticipates incidental take of the blue-tailed mole skink associated with conducting prescribed fires on a total of 388.8 occupied acres during the first 5 years of LLCB operation and no more frequently than once every 5-year period for the same occupied acres thereafter. The incidental take is expected to be in the form of harm, harassment, and direct mortality.

Sand skink

The Service anticipates incidental take of the sand skink will be difficult to detect for the following reasons: (1) its fossorial behavior, with individuals usually just beneath the surface of loose sand; and (2) low density within occupied scrub. However, the Service anticipates incidental take of the sand skink associated with conducting prescribed fires on a total of 388.8 occupied acres during the first 5 years of LLCB operation and no more frequently than once every 5-year period for the same occupied acres thereafter. The incidental take is expected to be in the form of harm, harassment, and direct mortality.

Gopher tortoise

The Service anticipates 449.9 ac of habitat could be temporarily disturbed during the first 5 years of LLCB operation and during every 5-year period thereafter as a result of this proposed action. Additionally, an unknown number of individuals of the species may be injured or killed. However, we anticipate incidental take of individual gopher tortoise will be difficult to detect because the gopher tortoise has a wide-ranging distribution, is not restricted to specialized habitats, occupies a patchy distribution within occupied habitats, and suitable habitat may not be occupied. While the exact amount of incidental take of individuals of each species may be difficult to predict, this number is expected to be minimal. Additionally, we anticipate both habitat and species benefits with the implementation of the proposed action that would exceed any incidental take. The incidental take is expected to be in the form of harm, harassment, and direct mortality.

Reasonable and Prudent Measures and Terms and Conditions

The Service is not aware of any reasonable and prudent measures that can be implemented to minimize take of the eastern indigo snake, blue-tailed mole skink, sand skink, or gopher tortoise beyond those that are already part of the proposed action. Therefore, the Service's Conservation Banking Program will require the Bank Sponsor to implement the LLCB as proposed.

In order to be exempt from the prohibitions of section 9 of the Act, the Service will require and the Sponsor for the LLCB must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and the reporting and monitoring requirements. These terms and conditions are non-discretionary:

1. Follow their Service-approved LLCB management plan that is part of the LLCB Agreement; and
2. Upon locating a dead, injured, or sick specimen of an eastern indigo snake, blue-tailed mole skink, sand skink, or gopher tortoise, initial notification must be made to the nearest Service Law Enforcement Office (Fish and Wildlife Service; 20501 Independence Blvd; Groveland, Florida 34736; 352-429-1037). Secondary notification should be made to the FWC Law Enforcement Office (Southwest Region; 3900 Drane Field Road; Lakeland, Florida 33811-1299; 863-648-3200). Care should be taken in handling sick or injured specimens to ensure effective treatment and care or in the handling of dead specimens to preserve biological material in the best possible state for later analysis as to the cause of death. In conjunction with the care of sick or injured specimens or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure evidence intrinsic to the specimen is not unnecessarily disturbed; and
3. Conduct monitoring and provide reports as outlined in the Service-approved monitoring and reporting schedule that is part of the LLCB Agreement; and

VI. Reinitiation Notice

This concludes formal consultation on the action(s) outlined in the (request/reinitiation request). As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The Service may confirm the conference opinion as a biological opinion issued through formal consultation if the gopher tortoise is listed in Florida. If the Service reviews the proposed action and finds there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference opinion as the biological opinion on the project and no further section 7 consultation will be necessary.

After listing of the gopher tortoise as endangered/threatened and any subsequent adoption of this conference opinion, the South Florida Ecological Services Office shall request reinitiation of consultation if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect the species or critical habitat in a manner or to an extent not considered in this conference opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the species or critical habitat that was not considered in this conference opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

VII. Literature Cited

- Cerulean, S. 2008. Wildlife 2060: What's at stake for Florida. *Tallahassee: Florida Fish and Wildlife Conservation Commission*, 28. [cited August 30, 2008]. Available from: myfwc.com/media/129053/FWS2060.pdf
- Dees, C.S., J.D. Clark, and F.T. Van Manen. 2001. Florida panther habitat use in response to prescribed fire. *Journal of Wildlife Management* 65:141-147
- Fitzpatrick, J.W., G.E. Woolfenden and M.T. Kopeny. 1991. Ecology and development-related habitat requirements of the Florida scrub jay (*Aphelocoma coerulescens coerulescens*). Florida Game and Freshwater Fish Commission, Nongame Wildlife Program Technical Report No .1 8. Tallahassee, FL
- Hyslop, N. L. 2007. Movements, habitat use, and survival of the threatened eastern indigo snake (*Drymarchon couperi*) in Georgia. PhD dissertation. University of Georgia; Athens, Georgia.
- Kautz, R.S. 1993. Trends in Florida wildlife habitat 1936-1987. *Florida Scientist* 56(1):7-24.
- Land, E.D., D.B. Shindle, R.J. Kawula, J.F. Benson, M.A. Lotz, and D.P. Onorato. 2008. Florida panther habitat selection analysis of Concurrent GPS and VHF telemetry data. *Journal of Wildlife Management* 72:633-639
- Lawler, H.E. 1977. The status of *Drymarchon corais couperi* (Holbrook), the eastern indigo snake, in the southeastern U.S.A. *Herpetological Review* 8(3):76-79.
- Layne, J.N. and T.M. Steiner. 1996. Eastern indigo snake (*Drymarchon corais couperi*): summary of research conducted on Archbold Biological Station. Report prepared under Order 43910-6-0134 to the U.S. Fish and Wildlife Service; Jackson, Mississippi.
- Moler, P.E. 1985a. Home range and seasonal activity of the eastern indigo snake, *Drymarchon corais couperi*, in northern Florida. Final Performance Report, Study E-1-06, III-A-5. Florida Game and Freshwater Fish Commission; Tallahassee, Florida.
- Moler, P.E. 1985b. Distribution of the eastern indigo snake, *Drymarchon corais couperi*, in Florida. *Herpetological Review* 16(2):37-38.
- Mushinsky, H.R., E.D. McCoy, K. Gianopulos, K. Penney, and C. Meyer. 2001. Biology of the threatened sand skink on restored scrub habitat and its responses to land management practices. Final report to the Disney Wildlife Conservation Fund. University of South Florida; Tampa, Florida.

- Turner, W.R., D.S. Wilcove, and H.M. Swain. 2006a. State of the Scrub: Conservation progress, management responsibilities, and land acquisition priorities for imperiled species of Florida's Lake Wales Ridge. Archbold Biological Station; Lake Placid, Florida [March 10, 2018]. Available from: www.archbold-station.org/documents/publicationspdf/Turner_etal-2006-StateotScrub.pdf
- Turner, W. R., D. S. Wilcove, and H. M. Swain. 2006b. Assessing the effectiveness of reserve acquisition programs in protecting rare and threatened species. *Conservation Biology* 20(6):1657-1669.
- U.S. Fish and Wildlife Service (Service). 1992. Endangered and threatened species of the southeast United States (The Red Book). Prepared by Ecological Services, Division of Endangered Species, Southeast Region, Government Printing Office; Washington, D.C.
- U.S. Fish and Wildlife Service (Service). 1999. South Florida multi-species recovery plan. Fish and Wildlife Service; Atlanta, Georgia.
- U.S. Fish and Wildlife Service (Service). 2008. Eastern Indigo Snake (*Drymarchon couperi*) 5-year review: summary and evaluation. Mississippi Ecological Services Office, Jackson, Mississippi.
- U.S. Fish and Wildlife Service (Service). 2011. 12-month finding on a petition to list the gopher tortoise as threatened in the eastern portion of its range. *Federal Register* 76:45130-45162.