

**Chapman Rhododendron
(*Rhododendron chapmanii*)**

**5-Year Status Review:
Summary and Evaluation**



St. Joseph State Buffer Preserve, Gulf County, Florida. Photos by Vivian Negrón-Ortiz

**U.S. Fish and Wildlife Service
Southeast Region
Florida Ecological Services
Panama City, Florida
March 2024**

5-YEAR STATUS REVIEW

Chapman Rhododendron (*Rhododendron chapmanii*)

GENERAL INFORMATION

Current Classification: Endangered

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Reviewers:

Lead Regional Office: Southeast Region, Carrie Straight, (404) 679-7226

Date of original listing: May 23, 1979 (44 FR 24248; April 24, 1979)

Methodology used to complete the review: In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a status review is to assess each threatened species or endangered species to determine whether its status has changed and if it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants (50 CFR 424.11). The U.S. Fish and Wildlife Service (Service) evaluated the biology, habitat, and threats of the *Rhododendron chapmanii* (Chapman's Rhododendron) to inform this status review.

We announced initiation of this review in the Federal Register on May 11, 2023 (88 FR 30324). We received no public comments during the 60-day open comment period. Key stakeholders were contacted while the review was being written, and various answers to questions and communications were received. This review was accomplished using information obtained from the 5-yr reviews of 2010 and 2019 (Service 2010 and 2019b), unpublished field survey results, reports of current research projects, peer reviewed scientific publications, unpublished field observations by Service, State and other experienced biologists, and personal communications.

FR Notice citation announcing the species is under active review:

88 FR 30327 (May 11, 2023).

Species' Recovery Priority Number at start of review (48 FR 43098)

8C. This ranking is based on a moderated threat due to habitat destruction, a high recovery potential, and its status as a species. 'C': in conflict with development and growth

Review History

Previous 5-year reviews on January 13, 2010, and September 3, 2019; both reviews recommended no change in status (Service 2010, 2019b).

REVIEW ANALYSIS

Listed Entity

Taxonomy and nomenclature

Rhododendron chapmanii (Alph. Wood) A. Gray is a perennial shrub found between upland mesic or scrubby flatwoods and floodplain swamps or baygalls, or within mesic pine flatwoods, or on the lower elevations of the sandhills native to mesic habitats (Service 2010). In North America, the subgenus *Rhododendron* is represented by about 25 species. This species has been treated as *R. minus* variety *chapmanii* (Duncan and Pullen's 1962, Luteyn et al. 1996, Gandhi and Zarucchi 2009) or as *R. chapmanii* (Miller 2013, Albach and Bauer 2021, Weakley 2022).

In 2021, Albach and Bauer explored morphological variation between *R. minus* and *R. chapmanii* (including two other species) and developed a field key to identify the species of *Rhododendron* sect. *Caroliniana*. The authors follow Miller (2013) and Weakley (2022) in recognizing these two taxa at the species level. In addition, the two varieties were morphologically assessed by Jones and Negrón-Ortiz (2014, 2014, as part of Jones' DFP project). In this project, seven vegetative and six floral characters were examined, and analyses found no overlap between the two varieties on any of the characters analyzed. Therefore, the Service will follow the current taxonomy, *R. chapmanii*, as stated by Albach and Bauer (2021) and Weakley (2022).

Distinct Population Segment (DPS) (61 FR 4722).

The Act defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate wildlife. This definition limits listing of a DPS to only vertebrate species. Because the species under review is a not a vertebrate, the DPS policy does not apply.

Recovery Criteria

Recovery Plan

Recovery plans are not regulatory documents and intended to provide guidance to the Service, States, and other partners on methods of minimizing threats to listed species and on criteria that may be used to determine when recovery is achieved. If the recovery criteria defined in the plan are still valid, meeting recovery criteria can indicate that the species no longer requires protections under the Act. However, when recommending whether a listed species should be delisted, the Service must apply the factors in section 4(a) of the Act (84 FR 45020).

The Recovery Plan was written and approved on September 8, 1983 (Service 1983) and amended on November 7, 2019 (Service 2019a). The amended Recovery Plan lists three delisting criteria:

1. The three (3) existing populations (Hosford, Gulf, and Clay) and their occupied habitat are conserved, restored, and properly managed, and monitoring demonstrates that the

populations are stable or increasing over multiple prescribed burn cycles, evidenced by a type of natural recruitment and/or multiple size-classes (addresses Factors A and D).

To date, two protected sites have been secured: one site of about 400+ clumps on the St. Joseph Bay State Buffer Preserve (SJBSBP) in Gulf County, and one population at Camp Blanding in Clay County composed of 31 clumps. The privately owned population near Hosford was the largest, is not protected, and was sold to a for-profit company who cleared and converted most of the land into cattle pasture (Fig. 3).

2. At least five (5) new populations are discovered or established within the historic range of the species on lands protected by a conservation mechanism, and exhibit stable or increasing trends over multiple prescribed burn cycles, evidenced by a type of recruitment and/or multiple size-classes (addresses Factors A and E).

Surveys / new populations. Using a species distribution model, 26 areas on public lands were surveyed for *R. chapmanii* (FNAI 2022). Plants were located at known occurrences in the SJBSBP, and no plants were found at other survey areas. However, a single *R. chapmanii* flowering plant was found on a private property near Deer Lake State Park (FNAI 2022, Fig. 1), Walton County, extending the geographic range of this species.

Establishing populations: If a new population of *R. chapmanii* were to be established, material from a single population should be used and population mixing should not occur as the ongoing genetic analysis revealed that the Hosford and Gulf County material are genetically distinct (ABG 2023b).

3. Threats (e.g. urban development, silviculture, agriculture, inadequate fire management, invasive species) have been reduced and/or managed to a degree that *R. chapmanii* will remain viable into the foreseeable future (addresses Factors A and D).

Habitat conversion to cattle pasture is a current threat to one of the existing population, Hosford, leading to extirpation of *R. chapmanii* plants with corresponding habitat. Therefore, Factors A and D have led to a reduction of this species' range overall genetic diversity, and thus its redundancy and resiliency.

At this time none of the recovery criteria have been met.

Biology and Habitat Summary

The previous 5-year reviews (Service 2010, 2019b) and the 2019 amended Recovery Plan (Service 2019a) provide details on the species' life history and biology.

Rhododendron chapmanii is a perennial shrub plant of about 10-30 cm long. *Rhododendron chapmanii* can be found in a transitional area between upland mesic or scrubby flatwoods and floodplain swamps or baygalls. This species is also found within mesic pine flatwoods or on the lower elevations of the sandhills. Consequently, it appears to require acidic sandy soil, good to moderately well-drained to somewhat poorly drained sandy soils of 0-5% slope, and no flooding. The habitat where this species occurs is defined as a fire-dependent community and classified as xeric hammock (Florida Natural Areas Inventory (FNAI) / Florida Department of Natural Resources (FDNR) 1990).

Endemic to the Florida Panhandle, it is known from only four populations (Fig. 1; FNAI 2024). These four populations are defined by clusters of 16 element occurrences (EOs) based on NatureServe 2002 guidance of EO separation distance of 1 km (NatureServe 2002; FNAI 2024), with most EOs composed of multiple source features or sites. The present patches within each EO are separated by clear cuts, pine plantations or residential/commercial development.

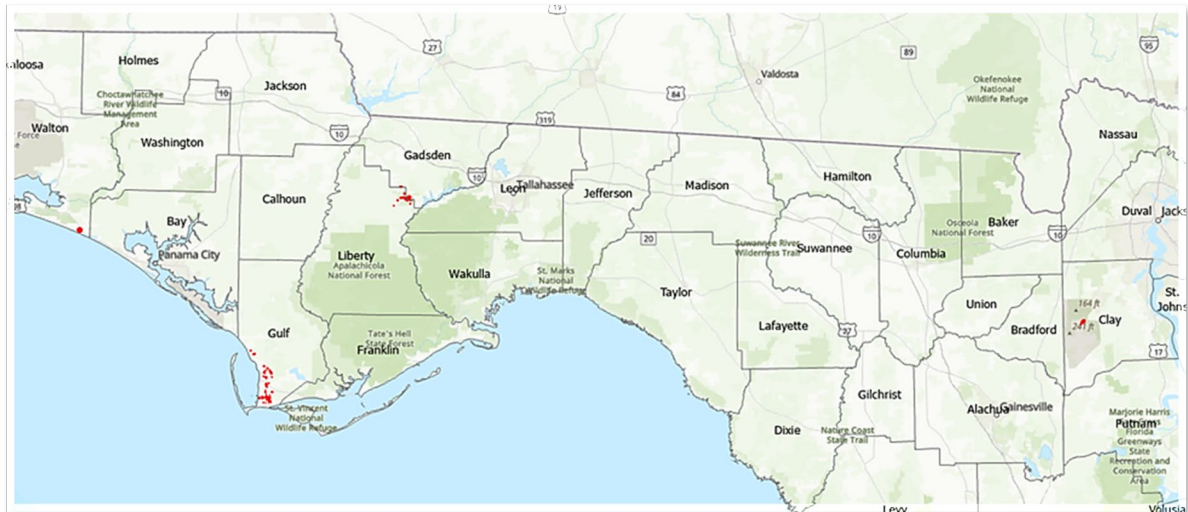


Figure 1. Geographic distribution of *Rhododendron chapmanii* (red dots) in Florida.

Clay County. The most geographically isolated of these populations is within the Florida National Guard post at Camp Blanding (Clay Co.), about 165 miles east of the Hosford population (Fig. 1). The area was developed in the early 1940's; therefore, this population likely covered a much larger area. Also, it was reduced by collectors for the purpose of the nursery trade (Service 1983, Hall 2005). This protected population is composed of 31 clumps that were located in 2005 by the Camp Blanding staff and censused consistently for four years. The clumps occur at two sites (Camp Blanding north and Camp Blanding south, Fig. 2) separated by 130 meters. In 2020, the staff cleaned up debris and vines encroaching the *R. chapmanii* clumps. According to the Camp Blanding Biologist, there has been no change to the population (Baldoni 2024, pers. comm.). The Recovery Plan mentioned that this site “seems unlikely” to be “planted by man”; therefore, it raised the possibility of being artificial. To answer this, the ABG is currently investigating whether these plants are cultivars using genetic markers (CP #F19AC00249).



Figure 2. Two sites with *R. chapmanii* at Camp Blanding. Figure from Hall (2005); sites represent one EO.

Gulf County. The Gulf Co. population is broadly distributed north from Mexico Beach south and into St. Joseph Bay State Buffer Preserve (SJBSBP). Surveys indicate the presence of 24 sites within 6,511 acres, totaling about 811 clumps, which represents 8 EOs (Schultz and Johnson 1997, FNAI 2019, FNAI 2024). This population occurs on private lands including those owned by St. Joe Company, and on the SJBSBP, plants are protected from threats of land use changes and well maintained with prescribed fire. Surveys conducted in 2020 at one of the sites, Windmark, indicate that this species is steadily increasing in plant numbers, from 34 in 2010 to 376 in 2020. Surveys also indicated that plants survived and increased in number post-Hurricane Michael (Icarus 2021).

Hosford (Liberty/Gadsden counties). The population in Liberty/Gadsden counties is privately owned by AgReserve, Inc. and was considered the largest of the four populations (Service 2019a, 2019b). However, its current size is unknown as most sites were cleared and prepared leaving the ground bare (Fig. 3). Surveys conducted between 1982 and 2001 indicated the presence of 30 sites representing six EOs (one EO in Gadsden County; one crossing into both Liberty and Gadsden counties, and four in Liberty County; FNAI 2024), with about 2,942 clumps (Schultz and Johnson 1997). The Service surveyed 19 sites in 2010 and found flowering plants at eight sites. In 2022, staff from the Atlanta Botanical Gardens

was able to visit five EOs and found plants in just two, each with less than 50 individuals (A. Smith 2022, pers. comm.). Therefore, the number of plants and sites have been reduced by habitat loss and modification (Fig. 3). A comprehensive survey is needed to assess the status of the Hosford plants and corresponded habitat.

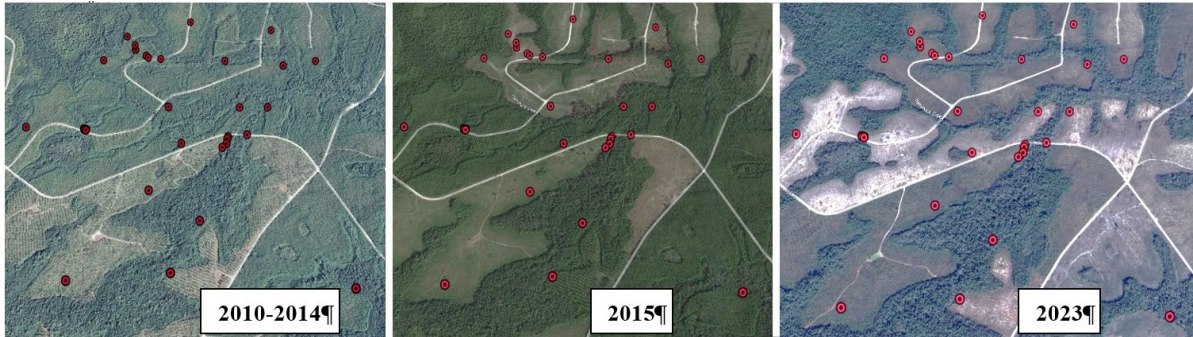


Figure 3. *Rhododendron chapmanii* (red) and corresponding habitat in Hosford, Florida. At these sites, *R. chapmanii* was last comprehensively surveyed in 2010 by Service botanist. Clearing of some managed timberland sites (present habitat 2010-2014) started in 2015 within two years of the land being sold. In 2023, several sites were cleared and prepared leaving the ground bare.

Walton County. The smallest and most recent documented EO found in 2022 occurs along a roadside in Walton County and found 80 km northwest from the nearest population. It is composed of one flowering plant with about 15 stems (FNAI 2024). This EO is classified as ‘verified existing, but its viability has not been evaluated.’

Surveys: Using a species distribution model developed by FNAI (2022) for *R. chapmanii*, 26 areas showing potential suitable habitat were surveyed (ABG 2023a). Areas included St. Joseph Bay State Buffer Preserve, Bluffs of St. Theresa, portions of the Apalachicola National Forest, Tate’s Hell State Forest, Ochlockonee River State Park, and a portion of St. Marks National Wildlife Refuge. No plants were found in the surveyed areas, except already known occurrences. This study was contracted by the ABG using funding from the CP No. #F19AC00250 (ABG 2023a).

Genetics, genetic variation, or trends in genetic variation

The Atlanta Botanical Garden (ABG 2023b) conducted a genetic study funded by the Coastal program (CP #F19AC00249). ABG collected 84 leaf samples from the Hosford (19 samples) and 65 samples from SJBSBP and included 11 samples from herbaria from the Hosford population, as access to Hosford plants was restricted by the private landowner. The study revealed that the Hosford and Gulf County populations are genetically distinct, 2) inbreeding across the range is moderate, and 3) genetic diversity is low. The Clay and Walton counties population were not included, but plants from both counties will be evaluated in 2024 and the genetic study will be completed shortly after (L. Esserman, ABG, 2024, pers. comm.).

Threats (Five-Factor Analysis) Summary

The status of a species is determined from an assessment of factors specified in section 4 (a)(1) of the Act. The summary of current threats to the species is below.

A. Present or threatened destruction, modification or curtailment of its habitat or range

To date, the population at Camp Blanding, Clay County composed of 31 clumps, and about 260+ clumps on the SJBSBP, Gulf County are secured. The Hosford population has not been secured. Habitat loss and modification remain the main threats to date for this species as a result of urban development, logging, and conversion of *R chapmanii*'s habitat for silviculture practices, cattle pasture, and other uses.

Forestry practices and residential/commercial development

Tree farming, i.e., privately owned forest managed (clearcutting, mechanical site preparation, and pine plantations) for timber production, is a primary threat since there are many thousands of acres of tree farms in the Florida Panhandle. In 2013, the St Joe Company sold more than 380,000 acres of its land to AgReserves, Inc., a for-profit company that has primarily focused on cattle grazing. The land sold included timberlands in Bay, Calhoun, Franklin, Gadsden, Gulf, Jefferson, Leon, Liberty, and Wakulla counties. This illustrates the level of threat to the species in these counties.

The privately owned Hosford population is the largest and genetically distinct, but the safety of this population is of concern because it is not protected, and habitat modification / degradation caused by land conversion to cattle pasture (red dots represent *R. chapmanii* documented sites) began in 2015 (Fig.3), two years after the land was sold to AgReserves, Inc. As of 2023, several sites within the population (plants and corresponding habitat) were already converted to cattle pasture. Plants along the edges of the cleared area are also of concern as edges typically experience increased solar radiation, lower humidity, higher soil temperature, and increased exotic species compared with the forest interior (Eldegard et al. 2015). In addition to the Hosford population, the *R. chapmanii* Gulf County population is primarily on tree farmland; therefore, tree farming is a threat to this population. Conversion of timberlands to cattle grazing and associated activities (direct removal of plants, trampling, herbivory, congregation, soil disturbance and compaction) pose a significant threat to this species, as these activities have been a cause of major habitat destruction and species endangerment in the western populations.

The St Joe Company is also one of the largest real estate operating companies in the Southeast. This Company develops both residential and commercial properties. Since the species occurs on Company-owned property in Gulf, Liberty, and Gadsden counties, Florida, there is no guarantee that these properties will not be utilized for residential or commercial development in the near future. More than a third of Florida's land is projected to be developed by 2070 along with a growth of about 33.7 million residents—almost 15 million more people than in 2010. Although the future scenario for the Panhandle¹ predicts that it

¹ <http://1000friendsofflorida.org/florida2070/wp-content/uploads/2016/09/florida2070summaryfinal.pdf>

will be the least developed region of the state, residential or commercial development still represents a significant threat to populations on private lands.

Fire suppression

Prescribed burnings are needed to maintain optimal habitat for *R. chapmanii* populations; specifically, to avoid the encroachment of *Cyrilla racemiflora* L. (swamp titi). In the absence of fire, swamp titi can grow in dense thickets competing with *R. chapmanii* and degrading habitat. Suppression of fire continues to threaten pineland and savanna flora as fire is an important element in the maintenance diversity of flatwoods and with insufficient frequency in longleaf pine communities, a woody midstory quickly develops (Glitzenstein et al. 1995).

Drainage

Drainage of adjacent bogs to increase areas of pine plantings or urban development affects seasonal hydrology. Drained sites become more desiccated, and this affect processes such as seed germination and seedling establishment. Therefore, drainage of adjacent bogs is still a threat due to tree farming activities.

B. Overutilization for commercial, recreational, scientific, or educational purposes

The Recovery Plan identified overutilization for commercial sale (ornamental plant sales) as a threat to *R. chapmanii*. Before the species' listing large numbers of plants were removed from the Camp Blanding and 100-200 plants were removed from the Hosford population in the 1960s (Service 1983). This plant is still sold by several nurseries (e.g., <https://shop.shadygardensnursery.com/>). This activity does not currently seem to be a major problem because most cuttings and seeds come from plants collected in the past. However, we cannot discount the possibility of sporadic plant removal.

C. Disease or predation: There is no evidence to suggest that this factor is a threat.

D. Inadequacy of existing regulatory mechanisms:

Federal

The Act prohibits the removal of federally listed threatened and 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 regulations or in the course of any violation of a state criminal trespass law. However, the Act does not provide protection for plants on non-federal lands unless it is in violation of state law. Since *R. chapmanii* is an endangered species, the seeds are regulated under these specified conditions. However, the seeds are not regulated if they are provided freely (no exchange of money, goods, or services; 7 CFR 319.37.2, USDA 2008).

Florida

Rhododendron chapmanii is protected under Florida State Law, chapter 581.185:

Preservation of native flora of Florida

(<https://www.flsenate.gov/Laws/Statutes/2013/581.185>), which includes preventions of take, transport, and the sale of the plants listed under the State Law. The rule Chap. 5B-40, Florida Administrative Code, contains the "Regulated Plant Index" (5B-40.0055) and lists endangered, threatened, and commercially exploited plant species for Florida; defines the categories; lists instances where permits may be issued; and describes penalties for violations

(Coile and Garland 2003). This law does not protect habitat or plants from impacts by private landowners on their own property.

Based on the information summarized above, the existing regulatory mechanisms are deemed inadequate to protect this species from existing and future threats.

E. Other natural or manmade factors affecting its continued existence:

Catastrophic events. Hurricanes, a primary disaster type for Florida, have impacted the Florida's East Coast, Gulf Coast, Panhandle, and Keys. As the warming of the ocean surface temperature continue to increase in the future, hurricane intensity and rainfall are projected to rise, increasing threats to rare plants and wildlife. As previously mentioned, the Florida Panhandle was impacted by Hurricane Michael in 2018. The effect of hurricane disturbance on *R. chapmanii* is currently unknown in most sites except for Windmark. The distribution and abundance of *R. chapmanii* have already been affected by habitat destruction and alteration, and hurricanes such like Michael potentially impacted several sites in Gulf County by increasing plant loss, decreasing the number of occupied sites, and thus, exacerbating fragmentation.

Drought intensity. Drought is considered a climate threat for Florida (<https://statesummaries.ncics.org/chapter/fl/>). The intensity of the drought is expected to increase, likely leading to more frequent wildfires, reductions in water supply and changes in hydrology. Changes in hydrology along with increasing temperatures will likely affect seed germination, as water and temperatures are critical factors in germination. Therefore, this rare species will likely become more vulnerable to extinction as a result of warmer climate.

Sea Level Rise. Using the National Oceanic and Atmospheric Administration (NOAA) Sea Level Rise and Coastal Flooding Impacts Viewer (NOAA 2024), the projections indicated that coastal habitat areas in Bay, Franklin, and Gulf counties would be largely inundated beginning at 0.305 m (one foot) of sea level rise. No *R. chapmanii* sites are projected to be at risk of extirpation within one foot of sea level rise, but by 2100 a sea level rise of three feet is expected, with possible extirpation of three sites in Gulf County.

Synthesis

Rhododendron chapmanii is a small evergreen shrub presently comprised of four populations located in five Florida counties four of which are in the panhandle. A new occurrence was recorded in 2022, increasing the total occurrences to 16 and extending the geographic range 80km northwest from the nearest known population. The main threat to this species is habitat destruction and modification. Conversion of much of the forest land to pulpwood plantations (clearcutting, mechanical site preparation, and pine plantations) and catastrophic events have extirpated some sites. Specifically, habitat conversion to cattle pasture is a current threat to the Hosford population, leading to extirpation of many *R. chapmanii* plants. Overharvesting was a threat of high importance in the past, but the present magnitude has been reduced. No problems have been detected with disease and predation. Current regulatory mechanisms are inadequate to protect the species from the identified threats. Threats have resulted in a reduction of this species' range and overall genetic diversity.

The species occurs on both private and public lands. The populations at Camp Blanding and the sites at the SJBSBP are protected and adequately managed. The privately owned population at Liberty/Gadsden counties is not protected and a working relationship is imperative to be fostered to help prevent a complete extirpation of this genetically unique population. The most recent documented EO in Walton County requires further investigation to initiate future conservation efforts. Because of the limited number and fragmentation of populations and the ongoing threats, *Rhododendron chapmanii* continues to meet the definition of an endangered species.

RECOMMENDATIONS FOR FUTURE ACTIVITIES

- Foster a working relationship to establish protection and management agreements with private landowner AgReserve, Inc.
- Hosford population: A comprehensive survey is needed to assess the status of the plants and corresponded habitat. *This recommendation is a priority.*
- Conduct surveys/inventories/demographic studies on each known population every five years.

Note: *Atlanta Botanical Garden initiated a detailed demographic study of Chapman's rhododendron in 2021 at St. Joseph State Buffer Preserve (CP #F20AC10631).*

- Reintroduce plants within the historic range, specifically in the sites where the plants have been extirpated, or in potential suitable habitat suggested by the species distribution modeling developed by FNAI (2022).
- Acquisition of land parcels adjacent to the St. Joseph State Buffer Preserve, Gulf County that has Chapman's rhododendron and a suite of other rare species.

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RESULTS / SIGNATURES

U.S. Fish and Wildlife Service

Status Review of *Rhododendron chapmanii* (Chapman Rhododendron)

Status Recommendation:

On the basis of this review, we recommend the following status for this species. A 5-year review presents a recommendation of the species status. Any change to the status requires a separate rulemaking process that includes public review and comment, as defined in the Act.

Downlist to Threatened

Uplist to Endangered

Delist:

The species is extinct

The species does not meet the definition of an endangered or threatened species

The listed entity does not meet the statutory definition of a species

No change needed

FIELD OFFICE APPROVAL:

Division Manager, Florida Ecological Services Field Office, U.S. Fish and Wildlife Service

Approve _____