

Longspurred Mint (*Dicerandra cornutissima*)

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

**U.S. Fish and Wildlife Service
Jacksonville Ecological Services Field Office
Southeast Region
Jacksonville, Florida**

5-YEAR REVIEW

Species reviewed: Longspurred mint (*Dicerandra cornutissima*)

TABLE OF CONTENTS

I.	GENERAL INFORMATION.....	1
A.	Methodology Used to Complete the Review.....	1
B.	Reviewers	1
C.	Background.....	1
II.	REVIEW ANALYSIS.....	2
A.	Application of the 1996 Distinct Population Segment (DPS) Policy.....	2
B.	Recovery Criteria.....	3
C.	Updated Information and Current Species Status.....	4
D.	Synthesis.....	12
III.	RESULTS.....	13
A.	Recommended Classification.....	13
B.	New Recovery Priority Number.....	13
IV.	RECOMMENDATIONS FOR FUTURE ACTIONS.....	13
V.	REFERENCES.....	14
	APPENDIX.....	17

5-YEAR REVIEW
Longspurred mint/*Dicerandra cornutissima*

I. GENERAL INFORMATION

A. Methodology used to complete the review: In conducting this 5-year review, we relied on available information pertaining to historic and current distributions, life history, and habitat of this species. The Service lead recovery biologist for this species conducted the review. Our sources include the final rule listing this species under the Act; the recovery plan; peer reviewed scientific publications; unpublished field observations by the Service, State, and other experienced biologists; unpublished survey reports; and notes and communications from other qualified biologists. The public notice for this review was published on April 26, 2007, with a 60-day public comment period. No comments were received for this species.

B. Reviewers

Lead Region - Southeast Region: Kelly Bibb, 404-679-7132
Nikki Lamp, 404-679-7091

Lead Field Office - Jacksonville, FL, Ecological Services: Annie Dziergowski,
904-731-3089

C. Background

1. **FR Notice citation announcing initiation of this review:** 72 FR 20866, April 26, 2007
2. **Species status:** Unknown (2007 Recovery Data Call). The overall status of this plant is listed as unknown because the last comprehensive population survey for all the sites was conducted in 1991. *Dicerandra cornutissima* was originally found in Marion and Sumter Counties, Florida, in an area south-southwest of Ocala. Currently, the species is only known to occur at four sites in Marion County. Two sites are located on private lands: one in the Ocala Waterway Estates subdivision (several thousand plants) and the other in the Marion Oaks subdivision (several hundred plants) (Wunderlin 1984). The number of plants is believed to have decreased due to increased development at both sites. A third site occurs on protected lands at the Marjorie Harris Carr Cross Florida Greenway. In addition, a fourth site is located at several areas along the I-75 right-of-way in Marion County. These areas have been impacted due to road construction along road rights-of-way, habitat clearing, and encroachment by exotic plants. Other historic sites where this species was found include Rainbow Lakes Estates in 1993, along State Road 200 near Bahia Oaks development in 1991, and south of Marion Oaks along a powerline in Sumter County in 1988. The site along the powerline was

discovered after the recovery plan was written in 1987 where it is noted that additional habitat might exist for *D. cornutissima* in Sumter County. However these three historic sites have not been surveyed for over a decade and it is unknown if *D. cornutissima* still occurs at these locations.

3. **Recovery achieved:** 1 (0-25% recovery objectives achieved), 2007 Recovery Data Call.

4. **Listing history:**
Original Listing
FR notice: 50 FR 212
Date listed: November 1, 1985
Entity listed: Species
Classification: Endangered

5. **Associated rulemakings:** None

6. **Review History:**

A previous 5-year review for this species was noticed on November 6, 1991 (56 FR 56384). In this review, the status of many species was simultaneously evaluated with no in-depth assessment of the five factors or threats as they pertained to the individual species. The notices summarily listed these species and stated that no changes in the designation of these species were warranted at that time. In particular, no changes were proposed for the status of the species in this review.

Final Recovery Plan-1987

Recovery Data Call- 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, and 1998.

7. **Species' Recovery Priority Number at start of review (48 FR 43098):** 2C. The "2" indicates a high degree of threat and high recovery potential; the "C" reflects a high degree of conflict.

8. **Recovery Plan:**

Name of plan: Recovery Plan for Three Florida Mints

Date issued: July 1, 1987

II. REVIEW ANALYSIS

A. Application of the 1996 Distinct Population Segment (DPS) policy

1. **Is the species under review listed as a DPS?** No. 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 DPS to only vertebrate species of fish and wildlife. Because the species under review is a plant the DPS policy is not applicable.

B. Recovery Criteria

1. **Does the species have a final, approved recovery plan containing objective, measurable criteria?** Yes
2. **Adequacy of recovery criteria.**
 - a. **Do the recovery criteria reflect the best available and most up-to-date information on the biology of the species and its habitat?** No. New information on this species has been collected since the recovery plan was written in 1987. As a result, the recovery goals and criteria should be revised to address the recovery actions needed to reduce threats to this species.
 - b. **Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and is there no new information to consider regarding existing or new threats)?** Factor A (present or threatened destruction, modification, or curtailment of its habitat or range) was identified as the primary threat affecting the species at the time of listing and is the only listing factor addressed in the recovery plan. Based on new information, Factor E (other natural or manmade factors affecting its continued existence) also should be included in the recovery criteria to address threats such as fire suppression and competition from exotic plants.
3. **List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information. For threats-related recovery criteria, please note which of the 5 listing factors are addressed by that criterion. If any of the 5-listing factors are not relevant to this species, please note that here.**

In 1987, the recovery criteria for *D. cornutissima* was: “Reclassification to threatened status when ten separate, self-sustaining populations of the species are established at secure, maintained sites in peninsular Florida. Recovery and delisting could be considered for any species if 20 separate, self-sustaining populations are established at secure sites in peninsular Florida.”

Of the five listing factors, habitat loss and destruction from development (Factor A) is the only factor addressed in the recovery plan. Currently, the Marjorie Harris Carr Cross Florida Greenway (CFG) is the only site that meets the recovery criteria of being secure and maintained. The areas along the I-75 right-of-ways where this species is found is maintained by mowing but would not be considered secure. The other two sites at Marion Oaks and Ocala Waterway Estates subdivisions are not secure since they are found on private lands. It has not been determined how many populations each of these sites currently has. Other natural factors such as fire suppression and competition from invasive exotic species (Factor E) have impacted areas occupied by *D. cornutissima* and should be addressed during the revision of the recovery plan. Factors B, C, and D have not been documented as threats at this time.

C. Updated Information and Current Species Status

1. Biology and Habitat

- a. **Abundance, population trends, demographic features, or demographic trends:** *D. cornutissima* was originally found in Marion and Sumter Counties. Currently *D. cornutissima* is only known to occur at four sites in Marion County: CFG, along the I-75 right-of-way, Marion Oaks subdivision, and Ocala Waterways Estates subdivision. A survey of the historic locations of *D. cornutissima* in Sumter County was conducted in 1984 and no plants were found (Wunderlin 1984). Florida Natural Areas Inventory (FNAI) has a record of *D. cornutissima* south of Marion Oaks along a powerline in Sumter County in 1988. The site along the powerline was discovered after the recovery plan was written in 1987. The recovery plan states that there was no suitable habitat left at the sites surveyed in 1984 in Sumter County, although suitable habitat may still exist between Sumter County and southern Marion County. (USFWS 1987, Wunderlin 1984). Other FNAI records include plants on private lands in Marion County near Rainbow Lakes Estates in 1993 and along State Road 200 (Bahia Oaks development) in 1991. No surveys of these sites have occurred since the early 1990s. Adjacent protected lands (Ross Prairie State Forest, Halpata Tastanaki Preserve, and Potts Preserve) have been surveyed the past five years but no *D. cornutissima* have been located in suitable habitat at these locations (A. Johnson, FNAI, personnel communication, 2008).

Monitoring of *D. cornutissima* has occurred as recently as 2008 at the CFG and the I-75 right-of-way. At CFG over 14,000

plants were found and along the I-75 right-of-way 731 plants have been documented. The two sites on private lands in Marion County (Marion Oaks and Ocala Waterway Estates subdivisions) have had periodic surveys but no long-term monitoring has occurred.

In 1975, *D. cornutissima* was first documented along the Cross Florida Barge Canal (now the CFG) in sand pine scrub (Florida Game and Freshwater Fish Commission 1976). This area at CFG was thought to have been extirpated in 1981; however, surveys in 1988 on the Cross Florida Barge Canal lands found six additional areas of *D. cornutissima* including the one area previously recorded in 1975 (Johnson 1988). In 1991, the Canal Authority transferred the land to the CFG. FNAI was then contracted to conduct a biological inventory in which they found four areas with this species where it had previously been found during the 1975 and 1988 surveys (Knight *et al.* 1991).

From 2001-2005, CFG again funded FNAI to conduct exotic and rare plant surveys at on their properties mentioned above, which included looking for areas with *D. cornutissima*. Five areas were located; three were historic areas already recorded with FNAI (Herring 2005).

Most recently (2007-2008), FNAI was contracted by CFG to perform a natural community mapping survey of the CFG. Also included in the mapping survey of natural communities were rare and exotic species surveys. Since the 2001-2005 surveys, the CFG had acquired additional land and *D. cornutissima* was found to occur at some of those new acquisitions. In particular, additional *D. cornutissima* were documented within Marion County, north and west of the I-75 CFG Landbridge within a tract called “the triangle.” *D. cornutissima* follows the western boundary of the CFG triangle along both sides of a firebreak that serves as an ecotone between the CFG scrub and what was (or currently is) the Ocala Waterway Estates subdivision. *D. cornutissima* also follows an east/west southern boundary of the triangle scattered along an open and deep, white, sandy road that borders sandhill. The eastern edge of the triangle borders the western side of I-75 where additional *D. cornutissima* occur.

Since the first *D. cornutissima* survey of the Cross Florida Barge Canal (1975) to the present survey of the CFG (2008), many *D. cornutissima* have been documented on this site. The majority of *D. cornutissima* at the CFG occurs west of I-75 in

the canal diggings along an east/west road within sandhill and scrub habitats. As described in the preceding paragraphs, *D. cornutissima* was also recently documented occurring along a north/south and southern boundary road of the triangle tract in primarily scrub habitat. East of I-75, *D. cornutissima* has only been located in a few localities. Historically, before the habitat centering around what is now I-75 in Marion County was urbanized (pre-interstate, Barge Canal, and housing subdivisions), the land was unfragmented and *D. cornutissima* probably occurred naturally throughout the scrub and sandhill in openings. Perhaps there was only one area of *D. cornutissima*, a huge and unfragmented occurrence. Today, it might be correct to consider *D. cornutissima* occurs in Marion County as a single area that has been fragmented from the Barge Canal diggings and associated roads, housing subdivisions, and I-75. An estimate of the current number of *D. cornutissima* individuals on the CFG is approximately 14,222 plants (Herring, FNAI, personal communication, 2008).

In 1995, *D. cornutissima* was inadvertently impacted by construction of stormwater swales associated with road widening along I-75 in Marion County. To mitigate these impacts, the Florida Department of Transportation (FDOT) agreed to leave sod off the new swale backslopes and investigate techniques to restore this species in suitable areas along I-75. FDOT conducted a small study with three test plots in one of the excavated backslopes. One plot was sown with collected *D. cornutissima* seeds, one plot was planted with nursery-grown seedlings, and one plot was left unplanted. Both of the planted plots achieved high seedling survival (although germination rates were low), and more *D. cornutissima* grew in these plots than in the unplanted plot. However, because of the small numbers of plants and the lack of replicates to test the variables among the plots, it was not possible to determine if active planting is superior to passive recruitment. Many new plants were informally observed growing in the un-sodded backslopes outside the test plots, and in 2005, surveys located additional plants outside the test plots along both the west and east sides of I-75 in Marion County (Herring 2005). The successful seedling survival in the planted plots holds promise for re-establishing extirpated populations in areas where habitat has been restored.

During the 2005 FNAI survey, a total of 731 *D. cornutissima* plants were documented on the Marion County, FDOT I-75 right-of-way with 344 plants occurring along the west side and

387 plants recorded on the east side of the interstate. Some of the *D. cornutissima* along the west side of I-75 have spread under the CFG boundary fence where there are openings in the thick scrub there.

Dicerandra cornutissima was also historically located north and south of the CFG in the Marion Oaks subdivision and Ocala Waterway Estates subdivisions. Although the 1987 recovery plan documented several thousand plants at both sites (USFWS 1987), no recent surveys have been conducted. There were two general areas within Marion Oaks where *D. cornutissima* were found, the northern end along County Road 484 and the southern end near the Sumter County line. Habitat loss from an increase in development has occurred at these sites in recent years, so additional surveys should be conducted to determine if these areas are still occupied and to what extent. Historic records show that *D. cornutissima* also was found at Rainbow Lakes Estates (1993) and along State Road 200 near the Bahia Oaks development (1991) in Marion County, as well as, south of Marion Oaks along a powerline in Sumter County (1988). Surveys are needed to determine if these areas are still occupied by *D. cornutissima*.

- b. Genetics, genetic variation, or trends in genetic variation:** McDonald and Hamrick (1996) looked at the genetic diversity among four *Dicerandra* species, *Ceratiola ericoides*, and *Eryngium cuneifolium*. They found genetic variation is still present in relict populations of rare scrub taxa and sites in several different scrub regions throughout Peninsular Florida need to be protected to preserve this variation. *D. cornutissima* along the Mt. Dora Ridge in Marion County were genetically similar to *D. immaculata* found on the Atlantic Coastal Ridge (McDonald and Hamrick 1996). Both species are found in similar habitats that need periodic prescribed fires.
- c. Taxonomic classification or changes in nomenclature:** None. The Integrated Taxonomic Information System (ITIS 2008) was checked while conducting this review.
- d. Spatial distribution, trends in spatial distribution, or historic range:** When listed in 1985, *D. cornutissima* was only found at four locations, along Interstate I-75, Cross Florida Barge Canal (now CFG), and two residential subdivisions (Ocala Waterway Estates and Marion Oaks). *D. cornutissima* still occurs at these sites. Within Marion Oaks subdivision, this species was found along the northern end near

County Road 484 and southern end (about 4 miles south) near the Sumter County line. In 1938 and 1946, *D. cornutissima* was found in northern Sumter County seven miles south of the Marion Oaks subdivision. In 1984, no suitable habitat was found at these sites when surveyed (Wunderlin 1984). Other historic locations include areas south of Marion Oaks along a powerline in Sumter County (1988), near Rainbow Lakes Estates (1993) in Marion County, and along State Road 200 near the Bahia Oaks development (1991) in Marion County. Only the site near Rainbow Lakes Estates appears to still have suitable habitat (A. Johnson, FNAI, personal communication, 2008). However, surveys are needed to determine if these areas are still occupied by *D. cornutissima*.

Dicerandra cornutissima was originally found along the right-of-way of the Cross Florida Barge Canal in 1975 (Florida Game and Freshwater Fish Commission 1976). This population was thought to have been extirpated in 1981; however, Johnson located it in 1988 at several other locations along the Cross Florida Barge Canal. In 1991, after the Cross Florida Barge Canal project was abandoned, the property (now CFG) was acquired by the State of Florida and leased to the Florida Department of Environmental Protection (FDEP) and is now managed by the Office of Greenways and Trails (OGT). A biological inventory of CFG was conducted in 1991, which located the same areas with *D. cornutissima* during the 1975 and 1988 surveys of CFG (Knight *et al.* 1991). Surveys conducted by FNAI from 2001 to present have located this species along additional roads and the old barge canal right-of-way (Herring 2005).

Along the I-75 right-of-way, *D. cornutissima* is currently being managed by FDOT. FDOT has managed these sites by avoiding mowing in areas occupied by this species as well as eradicating invasive cogon grass (*Imperata cylindrica*) at many of the sites where *D. cornutissima* occurs along I-75. The densest populations of *D. cornutissima* appeared in the viewsheds of several billboards and along the fence lines after the impacts from the roadside construction occurred. The vegetation in the billboard viewsheds appeared to be maintained at a few feet in height, possibly by bush-hogging every few years, and the fence lines were disked by FDOT every few years. Shortly thereafter, the billboards were removed and the viewsheds are no longer maintained, and disked along the fence line was discontinued. The density of *D. cornutissima* appears to have decreased in both the former

viewsheds and along the fence lines (Stephen Tonjes, FDOT, personal communication, 2008).

In 1987, two large tracts of privately owned land that make up the Marion Oaks and Ocala Waterway Estates subdivisions contained the largest populations of several thousand plants each (USFWS 1987). During the late 1980s and early 1990s, both subdivisions were more or less abandoned; however, development has begun to increase in both of these areas. *D. cornutissima* was found historically along the road rights-of-way in the sand pine scrub in these subdivisions. The current distribution of this species is unknown at these sites.

- e. **Habitat or ecosystem conditions:** *D. cornutissima* is endemic to sand pine scrub habitat that can best be described as scrub composed of overstory of older mature sand pine (*Pinus clausa*), with an open to thick understory of sand live oak (*Quercus geminate*), Chapman's oak (*Q. chapmanii*), myrtle oak (*Q. myrtifolia*), saw palmetto (*Serenoa repens*), scrub palmetto (*Sabal etonia*), Florida rosemary (*Ceratiola ericoides*), and the state listed *Garberia heterophylla* (Herring 2005). The ground cover component of this habitat is composed of patchy occurrences of lichens (*Cladina evansii*, *Cladina subtenuis*, and *Cladonia leporine*), as well as grasses such as wiregrass (*Aristida stricta*), arrowfeather threeawn (*Aristida purpurescens*), and sandy field beaksedge (*Rhynchospora megalocarpa*). *D. cornutissima* grows well in open, sandy patches usually along roadside edges. Although *D. cornutissima* occurs in a fire-adapted habitat, the timing of fires related to the plants survivorship and reproduction is not known (Herring 2005).

At CFG, *D. cornutissima* mostly occurs within sand pine-dominated scrub that has a mosaic of sandhill throughout the site (Herring 2005). The overstory is open, consisting of mostly sand pine, but longleaf pines are occasionally found. Fire suppression in the sandhill has led to an invasion of sand pine, but prescribed burning of this area needs to be conducted carefully, since response of *D. cornutissima* is unknown (Herring 2005). Menges (1992) found that a similar species, *D. frutescens*, a short-lived perennial is killed by fire and re-establishes vigorously from seed. Weekley (2006) notes its close relative *D. christmanii* is also killed by fire and re-establishes from seed. There has recently been research (K. Holsinger, University of Connecticut, unpublished data, 2008) to show that longer intervals of fire (more than 12 years) may

be optimum for these species. Therefore, research on the similar *D. frutescens*, which grows in yellow sand scrub at Archbold Biological Station on the Lake Wales Ridge, should be considered to elucidate the effects of fire on *Dicerandra* species and help refine prescribed burning activities (A. Johnson, FNAI, personal communication, 2008).

Further east on the CFG, along the I-75 right-of-way, and Marion Oaks and Ocala Waterway Estates subdivisions, *D. cornutissima* occurs along roadside edges, its preferred habitat (Herring 2005). Care must be taken along these edges to not move dirt, mow, and establish fire lines with heavy equipment (Herring 2005). There are plans at CFG to manage the scrub habitat using mechanical means to open the habitat and reduce the sand pine. Due to the close proximity of I-75 to this site, prescribed burning is extremely difficult. The OGT recently completed a management plan for CFG that has goals and objectives to protect, enhance, and increase *D. cornutissima* found on the site (FDEP 2007).

f.

Other:

D. cornutissima seeds are being held in long-term storage at Historic Bok Sanctuary (HBS). Live specimens are also found in the nursery and endangered plant gardens located at HBS. HBS is affiliated with the national Center for Plant Conservation (CPC) in St. Louis, MO, and has collaborated to conserve Florida's rarest plant species including storing seeds of endangered plants for the CPC national seed bank.

2. **Five-Factor Analysis**

a.

Present or threatened destruction, modification or curtailment of its habitat or range: Habitat destruction remains the greatest threat to *D. cornutissima*. In the past, habitat loss occurred due to development. The CFG are the only site where long-term protection and management are occurring. Although the sites along the I-75 right-of way are protected from development, this population has been impacted by road construction, exotic plant invasion, and other road-related activities. The other two remaining site where *D. cornutissima* is found (Marion Oaks and Ocala Waterway Estates subdivisions) occur on private property and are susceptible to destruction due to urban development.

Prior to listing, *D. cornutissima* was found in Sumter County in 1936, 1948, and again in 1984, however, much of the habitat in

Sumter County where this species occurred has been degraded by development or lack of management. Florida Natural Areas Inventory (FNAI) has a record of *D. cornutissima* south of Marion Oaks along a powerline in Sumter County in 1988. In Marion County, the lack of management (i.e., prescribed fire) has also led to habitat degradation of this species. Without natural caused or prescribed fires, sand pine creates a dense overstory, making the habitat unsuitable for *D. cornutissima*. However, surveys are needed to determine if areas in Marion and Sumter Counties are still occupied by *D. cornutissima*. At most of the sites where this species occurs or where suitable habitat exists, management is needed. Prescribed fires could be difficult due to the close proximity to homes and major roads and highways.

- b. Overutilization for commercial, recreational, scientific, or educational purposes:** Not known as a threat at the time of listing or at present.
- c. Disease or predation:** Not known as a threat at the time of listing or at present.
- d. Inadequacy of existing regulatory mechanisms:** The Florida Administrative Code 5B-40 (Preservation of Native Flora in Florida) provides the Florida Department of Agriculture and Consumer Services with limited authority to protect these plants (primarily from the standpoint of illegal harvest) on state and private lands. Only a few populations of *D. cornutissima* are located on protected land (CFG) where they are being managed. The FDOT is managing the I-75 right-of-way by controlling exotics however the right-of-way would not be considered protected land.

CFG was acquired by the State of Florida in 1991, after Congress de-authorized the Cross Florida Barge Canal construction and transferred all the lands to the State. CFG has an approved unit management plan in place to protect *D. cornutissima* (FDEP 2007).

FDOT currently manages for *D. cornutissima* along the I-75 right-of-way by working with their contractors that mow this right-of-way to avoid routine mowing outside the highway clear zone (approximately 36 feet from the travel lanes) and to control the cogon grass found on the right-of-way. A monitoring and management program should be established, including experimentation with different regimes of vegetation

management outside the clear zone and re-establishment of an extirpated cluster of *D. cornutissima* that occurred within the southbound rest area before the construction.

Two of the populations occur on private lands with little to no protection. The Service's Partners for Fish and Wildlife program could work with these landowners to better manage and protect these populations.

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

Invasive species: The introduction of cogon grass along the I-75 right-of-way as well as on a few sites in the CFG in areas occupied by *D. cornutissima* has reduced the amount of suitable habitat for this species. FDOT has sprayed these areas to control the cogon grass and has been successful in eliminating this exotic plant in some areas. Persistent and vigilant control of exotic plants like cogon grass and natal grass (*Rhynchelytrum repens*) needs to continue along the I-75 right-of-way and areas within the CFG.

Fire suppression: *D. cornutissima* occurs mainly along the open sandy patches that have been naturally maintained with fire. Where fire has been suppressed for long periods, pine and oak canopy cover increase and understory vegetation density increases, reducing open sandy patches. The majority of sites containing *D. cornutissima* are degraded due to fire exclusion or lack of mechanical vegetative management. CFG has implemented mechanical vegetative management techniques to maintain or enhance *D. cornutissima* habitat. Prescribed fire would be difficult to use due to the close proximity of I-75 to CFG.

Of the five listing factors, habitat loss and degradation (Factor A) and fire suppression and invasive species (Factor E) are the main threats to *D. cornutissima*. Factors B, C, and D are not considered threats at this time.

D. Synthesis

Four sites of *D. cornutissima* are known to occur (CFG, I-75 right-of-way, Marion Oaks subdivision, and Ocala Waterway Estates subdivision) in Marion County, Florida. Proper management of *D. cornutissima* at the CFG, the only protected site, could provide long-term benefits to this species. However, regular monitoring of this species should occur at all of the known sites. Two of the *D.*

cornutissima sites (Marion Oaks and Ocala Waterway Estates subdivisions) occur on private property and are susceptible to habitat degradation and destruction due to land use changes. Historic areas where this species was found (near Rainbow Lakes Estates in Marion County, along State Road 200 near the Bahia Oaks development in Marion County, and south of Marion Oaks along a powerline in Sumter County) and other adjacent protected lands should be surveyed to determine if this species is present.

D. cornutissima is affected by invasive species, such as cogon grass, as well as fire suppression in the sand pine scrub communities in which it occurs. Impacts from these threats are not well understood, but cogon grass has been documented encroaching into areas occupied with *D. cornutissima* and decreasing the amount of suitable habitat along the I-75 right-of-way and CFG. FDOT is actively working on eradicating cogon grass along the I-75 right-of-way. CFG is also eradicating cogon grass when it appears on their property.

In summary, *D. cornutissima* continues to be threatened by habitat loss and degradation. New information suggests that fire suppression and encroachment from exotics, such as cogon grass, also adversely impact this species. Since only one site (CFG) is assured of long-term protection, this species remains in danger of extinction throughout all or a significant portion of its range. Recovery criteria for this species to be considered for reclassification to threatened (10 separate, self-sustaining populations) has not been met.

III. RESULTS

- A. **Recommended Classification:** No change is needed.
- B. **New Recovery Priority Number:** No change is needed.

IV. RECOMMENDATIONS FOR FUTURE ACTIONS

1. Revise the current recovery plan to include more objective and measurable recovery criteria that are related to reducing and/or eliminating threats to *D. cornutissima* as well as updated information on the species distribution, biology, and management needs.
2. Support further research on:
 - a. The effects of prescribed burning and other management tools on *D. cornutissima*. Continue working with public land managers to increase management efforts to benefit *D. cornutissima* on their sites.

- b. Additional life history needs. Additional information is needed on how cogon grass and other invasive plants affect *D. cornutissima* plants and what the effects of the herbicides used to eradicate cogon grass have on this species.
 - c. The most appropriate methodology to germinate seeds, grow seedlings, and successfully out-plant seedlings to native habitat.
 - d. The various pollinators (e.g., Hymenoptera and Lepidoptera), as well as how different ant species assist with seed dispersal.
3. Encourage non-Federal agencies to protect and manage habitat under the Partners for Fish and Wildlife Program.
 4. Complete a rangewide survey to find all known and potential sites occupied by *D. cornutissima* and determine population size. Current distribution information is needed to determine where plants currently exist and to prioritize recovery actions.
 5. Consider reintroduction and monitoring of *D. cornutissima* on additional publicly owned lands with suitable habitat. Reintroduction of *D. cornutissima* could help to increase the number of populations on protected sites and augment populations where needed.

V. REFERENCES

- Florida Department of Environmental Protection. 2007. Marjorie Harris Carr Cross Florida Greenway Management Plan. Office of Greenways and Trails, Tallahassee, Florida.
- Florida Game and Fresh Water Fish Commission. 1976. Cross Florida Barge Canal Restudy Report: Wildlife Study. Prepared for Department of the Army, Jacksonville District, Corps of Engineers, Jacksonville, Florida.
- Herring, B.J. 2005. Rare plant survey of the Marjorie Harris Carr Cross Florida Greenway-Year 2. Unpublished report submitted to the Office of Greenways and Trails. Florida Natural Areas Inventory, Tallahassee, Florida .
- Integrated Taxonomic Information System (ITIS). 2008. <http://www.itis.gov>. Checked February 19, 2008.
- Johnson, A.F. 1988. Report on a survey for *Dicerandra cornutissima* on Canal Authority Lands in Marion County, Florida. Unpublished report submitted to the Canal Authority of Florida. Florida Natural Areas Inventory, Tallahassee, Florida.
- Knight, G.R., S.R. Telford, and P.M. Sheridan. 1991. Biological inventory of the Cross Florida Greenbelt State Recreation and Conservation Area-Survey for occurrences

of rare plants and animals and exemplary natural communities. Florida Natural Areas Inventory, Tallahassee, Florida.

McDonald, D.B. and J.L. Hamrick. 1996. Genetic variation in some plants of Florida scrub. *American Journal of Botany* 83:21-27.

Menges, E.S. 1992. Habitat preferences and response to disturbance for *Dicerandra frutescens*, a Lake Wales Ridge (Florida) endemic plant. *Bulletin of the Torrey Botanical Club* 119(3):308-313.

U.S. Fish and Wildlife Service. 1987. Recovery Plan for Three Florida Mints. Atlanta, Georgia.

Weekley, C. 2006. Jewels of the Ridge. *Palmetto* 24:4-7.

Wunderlin, R.P. 1984. Status report on *Dicerandra cornutissima* Huck. Unpublished report prepared for U.S. Fish and Wildlife Service, Jacksonville, Florida. 30pp.

U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Longspurred mint (*Dicerandra cornutissima*)

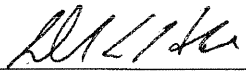
Current Classification: Endangered

Recommendation resulting from the 5-Year Review: No change

Review Conducted By: Annie Dziergowski

FIELD OFFICE APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

Approve  Date 9/9/08
David L. Hankla

REGIONAL OFFICE APPROVAL:

for
Lead Regional Director, Fish and Wildlife Service

Approve  Date 9/10/08

APPENDIX

Summary of peer review for the 5-year review of Longspurred mint (*Dicerandra cornutissima*)

A. Peer Review Method: See B. below.

B. Peer Review Charge: On February 28, 2008, the following letter and Guidance for Peer Reviewers of Five-Year Status Reviews were sent via e-mail to potential reviewers requesting comments on the 5-year review. Requests were sent to Brenda Herring (Florida Natural Areas Inventory), Ann Johnson (Florida Natural Areas Inventory), Adele Mills (FDEP Office of Greenway and Trails), Steve Tonjes (FDOT), Dr. Eric Menges (Archbold Biological Station), and Dr. Dennis Hardin (Florida Division of Forestry, Plant Conservation),

*We request your assistance in serving as a peer reviewer of the U.S. Fish and Wildlife Service (Service) 5-year status review of the endangered longspurred mint (*Dicerandra cornutissima*). The 5-year review is required by section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 et seq.). A 5-year review is a periodic process conducted to ensure the listing classification of a species as threatened or endangered on the Federal List of Endangered and Threatened Wildlife and Plants is accurate. The initiation of the 5-year review for the longspurred mint was announced in the Federal Register on April 26, 2007, and the public comment period closed on June 26, 2007. No public comments were received on the notice for this species.*

The enclosed draft of the status review has been prepared by the Service pursuant to the Act. In keeping with Service directives for maintaining a high level of scientific integrity in the official documents our agency produces, we are seeking your assistance as a peer reviewer for this draft. Guidance for peer reviewers is enclosed with this letter. If you are able to assist us, we request your comments be received in this office on or before March 14, 2008. Please send your comments to Annie Dziergowski at the address on this letter. You may fax your comments to Annie Dziergowski at (904)232-2404 or send comments by e-mail to Annie_Dziergowski@fws.gov.

We appreciate your assistance in helping to ensure our decisions continue to be based on the best available science. If you have any questions or need additional information, please contact Annie Dziergowski at (904)232-2580 extension 116. Thank you for your assistance.

Sincerely yours,

*David L. Hankla
Field Supervisor*

Enclosures

Guidance for Peer Reviewers of Five-Year Status Reviews
U.S. Fish and Wildlife Service, Jacksonville Ecological Services Field Office

July 5, 2007

As a peer reviewer, you are asked to adhere to the following guidance to ensure your review complies with Service policy.

Peer reviewers should:

- 1. Review all materials provided by the Service.*
- 2. Identify, review, and provide other relevant data apparently not used by the Service.*
- 3. Not provide recommendations on the Endangered Species Act (ESA) classification (e.g., endangered, threatened) of the species.*
- 4. Provide written comments on:*
 - Validity of any models, data, or analyses used or relied on in the review.*
 - Adequacy of the data (e.g., are the data sufficient to support the biological conclusions reached). If data are inadequate, identify additional data or studies that are needed to adequately justify biological conclusions.*
 - Oversights, omissions, and inconsistencies.*
 - Reasonableness of judgments made from the scientific evidence.*
 - Scientific uncertainties by ensuring that they are clearly identified and characterized, and that potential implications of uncertainties for the technical conclusions drawn are clear.*
 - Strengths and limitation of the overall product.*
- 5. Keep in mind the requirement that we must use the best available scientific data in determining the species' status. This does not mean we must have statistically significant data on population trends or data from all known populations.*

All peer reviews and comments will be public documents, and portions may be incorporated verbatim into our final decision document with appropriate credit given to the author of the review.

Questions regarding this guidance, the peer review process, or other aspects of the Service's recovery planning process should be referred to Annie Dziergowski, U.S. Fish and Wildlife Service, at 904-731-3089 email: annie_dziergowski@fws.gov.

C. Summary of Peer Review Comments/Report

A summary of peer review comments is provided below. The complete set of comments is available at the Jacksonville, Ecological Services Field Office, U.S. Fish and Wildlife Service, 7915 Baymeadows Way, Suite 200, Jacksonville, Florida 32256-7517.

The Service accepted all minor edits from peer reviewers. Overall reviewers felt the draft document adequately characterizes the known information on the status of and threats to the listed populations. The following discussion is limited to where there was disagreement or additional information was provided.

Brenda Herring, Florida Natural Areas Inventory, Tallahassee, Florida: Ms. Herring provided updated information on the distribution and number of individuals of this species based on her 2005-2008 surveys of CFG and the I-75 right-of-way. Numerous minor edits were suggested.

Ann Johnson, Florida Natural Areas Inventory, Tallahassee, Florida: Ms. Johnson provided additional information as to the historic occurrences that have been recorded within her organization. She also provided information on recent research regarding the effects of prescribed fire on related species. Numerous minor edits were suggested.

Adele Mills, Florida Department of Environmental Protection, Florida Greenways and Trails, Cross Florida Greenway, Ocala, Florida: Ms. Mills provided updated information as to the history of the CFG and current management activities occurring at this site. Numerous minor edits were suggested.

Steve Tonjes, Florida Department of Transportation, Deland, Florida: Mr. Tonjes provided clarification on historic events that have affected this species along I-75 right-of-ways. He also updated the current information in the status review on the past reintroduction effort that was conducted on *D. cornutissima*. Numerous minor edits were suggested.

D. Response to Peer Review:

Brenda Herring, Florida Natural Areas Inventory, Tallahassee, Florida: All comments provided by Ms. Herring were incorporated. We also included all information on the recent surveys she had conducted.

Ann Johnson, Florida Natural Areas Inventory, Tallahassee, Florida: All comments provided by Ms. Johnson were incorporated. We included her information on the historic occurrences as well as the information provided on the recent research relating to prescribed burning and related species.

Adele Mills, Florida Department of Environmental Protection, Florida Greenways and Trails, Cross Florida Greenway, Ocala, Florida: All comments provided by Ms. Mills were incorporated. We included the information she provided on the current management activities being conducted.

Steve Tonjes, Florida Department of Transportation, Deland, Florida: All comments provided by Mr. Tonjes were incorporated. We included the information he provided on the reintroduction project that took place along the I-75 right-of-way.