

Scrub Buckwheat
(*Eriogonum longifolium* var. *gnaphalifolium*)

Status Review:
Summary and Evaluation



Photo Todd Mecklenborg USFWS

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

July 2023

STATUS REVIEW
Scrub Buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*)

GENERAL INFORMATION

Current Classification: Threatened

Lead Field Office: Florida Ecological Services Field Office (FESFO), Todd Mecklenborg
727-892-4104

Reviewers:

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

FESFO, Vivian Negron-Ortiz (850) 348-3503

Date of original listing: April 27, 1993 (52 FR 25746)

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 scrub buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*) to inform this status review.

We announced initiation of this review in the Federal Register on May 13, 2022 (87 FR 29364) with a 60-day comment period. We did not receive any public comments related to this species during the comment period. The primary sources of information used in this analysis were the 1993 final listing rule (52 FR 25746), the *Recovery Plan for Nineteen Florida Scrub and High Pineland Plant Species* (1996), *South Florida Multi-Species Recovery Plan* (1999), previous 5-year reviews, research project reports, peer reviewed scientific publications, unpublished field observations, and personal communications. This review was completed by the Service's FESFO, Gainesville, Florida. All literature and documents used for this review are on file. All recommendations resulting from this review are the result of thoroughly evaluating the best available information on *E. longifolium* var. *gnaphalifolium*.

FR Notice citation announcing the species is under active review: May 13, 2022 (87 FR 29364)

Species' Recovery Priority Number at start of 5-year review ([48 FR 43098](#)): 15. The "15" indicates a subspecies with a low degree of threat and high recovery potential.

Review History: Previous 5-year reviews were completed in 2008 and 2018. Both of the reviews recommended no change in status.

REVIEW ANALYSIS

Listed Entity

Taxonomy and Nomenclature

The species was listed in 1993 under the Act as a variety (subspecies) - *Eriogonum longifolium* Nuttall, var. *gnaphalifolium* Gandoger. - scrub buckwheat. This taxonomic status is currently accepted as valid by the Integrated Taxonomic Information System (2023). The Atlas of Florida Plants (Wunderlin et al. 2003) also recognizes the entity as a variety.

Recent molecular barcoding, achene morphology, and life history research (Floden 2022) suggests a distinct species *Eriogonum floridanum* Small. The Flora of the Southeastern United States (Weakley and the Southern Flora Team 2022) agrees with this updated nomenclature.

Although the Service recognizes that there is suggested new taxonomic information related to the species, this information is relatively new and has not had time to undergo thorough review by the field of experts or supported by additional research. At this time, the remainder of the review will address the entity as it was listed under the Act. The Service will review these taxonomic changes again as additional science becomes available.

Distinct Population Segment (DPS)

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

Recovery Criteria

Recovery Plans

Eriogonum longifolium var. *gnaphalifolium* is included in the following Recovery Plans:

- Recovery Plan for Nineteen Florida Scrub and High Pineland Plant Species, June 20, 1996,
- South Florida Multi-Species Recovery Plan (identifies recovery contributions for the South Florida Ecological Service's Field Office area of responsibility), May 18, 1999. This plan identifies objectives for the species but does not define recovery criteria.

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](#)).

Recovery Plan for Nineteen Florida Scrub and High Pineland Plant Species

The nineteen species recovery plan's Executive Summary has criteria that states "Generally, a species can be considered recovered, and delisted when about 20 distinct, viable populations are protected at more than five separate, secure properties representing the range of the species (more sites for widely distributed species to assure representation throughout their geographic ranges)." The plan's criteria specifically for *E. longifolium* var. *gnaphalifolium* are somewhat vague. (1) "Complete planned land acquisitions; protect at least one more site in Lake and/or Pasco counties (one site is protected in Pasco). (2) Demographic monitoring in conjunction with habitat manipulation (prescribed fire or other measures) appears essential, so monitoring is needed for at least five years."

The complete planned land acquisition is not precise on how many total properties and acreages would be required to achieve this metric. The following properties are listed in this plan as protected in the historic distribution: Ocala National Forest, Lake Arbuckle State Preserve, Lake Wales Ridge State Forest - Arbuckle Tract and Walk-in-the-Water Tract, Catfish Creek State Preserve, Lake Apthorpe Preserve, and The Nature Conservancy's Tiger Creek (Marion, Polk, and Highlands counties). According to Florida Natural Inventory's (FNAI) database and University of South Florida's Institute of Systematic Botany Plant Atlas of Florida, *E. longifolium* var. *gnaphalifolium* does not occur in Pasco County. This plan is also not specific as to how many populations where monitoring is required.

Criterion 1, regarding specific land acquisition has been met and has actually surpassed the initial goal stated in the recovery plan on the number of secure conservation lands and total acreages throughout the species range.

Criterion 2, pertaining to demographic monitoring (population viability and habitat management) has not been achieved. The lack of monitoring and actual surveys of existing populations has not been adequate to discern viability or to predict trends for the vast majority of these populations.

Biology and Habitat Summary

Biology

Eriogonum longifolium var. *gnaphalifolium* is a long-lived herbaceous perennial plant. It is non-clonal with a deep taproot and one to three above-ground stems up to 1 m (3.3 ft) tall, but upwards of 10 stems have been observed in vigorous specimens, especially post-fire. It has a basal rosette of leaves that are 15 to 20 cm (6 to 8 in) long, narrow, and white-woolly on the underside. The stem leaves are smaller than the basal rosette leaves. The stem terminates in a multi-branched inflorescence, with each branch ending in a cup-shaped involucre that holds a cluster of 15 to 20 small flowers. The involucre is silvery, silky-pubescent, and the flowers are green with yellow center and pink anthers. Flowers are small with the petals averaging 6 to 8 mm (roughly quarter of an inch) and have six linear sepals (Service 1999, ABS 2002).

Although little information on the reproduction of this species is available, plants in the Ocala National Forest have been observed with immature flower stalks between April and mid-July and bloom from May to mid-October. The species does not appear to have a long-term persistent seed bank. Flowering is stimulated by fire, but also occurs without fire (Service 1999).

Habitat and Distribution

Eriogonum longifolium var. *gnaphalifolium* occurs in high pine (sandhill), mixed scrub, and in turkey oak barrens habitats from Marion County southward to Highlands County (Christman 1988). In agreement with Christman, the northern range limits – according to the Florida Natural Areas Inventory’s (FNAI) 2022 Element of Occurrence Records (EO) database – for *E. longifolium* var. *gnaphalifolium* are in Ocala National Forest and in areas of mixed scrub and sandhill south of Ocala in Marion County. The Atlas of Florida Plants (Wunderlin et al. 2003) indicates the species has been vouchered in Putnam County. Proceeding south from Marion County, the species has been verified (FNAI) in Sumter, Lake, Orange, Seminole, Polk, Osceola, and Highlands counties (Figure 1).

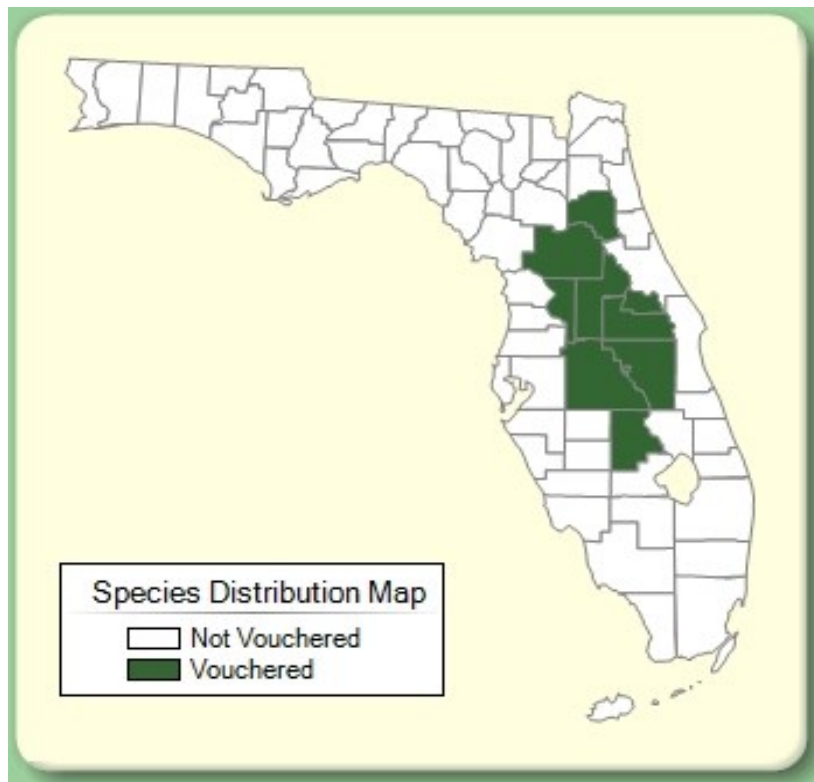


Figure 1. *Eriogonum longifolium* var. *gnaphalifolium* counties of occurrences.
Reprinted from Atlas of Florida Plants, Institute for Systematic Botany

The original species listing in 1993 (52 FR 25746) and recovery plans (1996, 1999) noted previously indicate “possible” occurrences in Hillsborough and Pasco counties. These may have been misidentifications. Since no further details are available to identify specific lands

where these occurrences may have occurred nor reported EO's or vouchered specimens, these counties are not included in this analysis.

A total of 93 *E. longifolium* var. *gnaphalifolium* EO records have been reported to FNAI since 1961. Based on FNAI's most recent EO database (2022), there are 67 extant populations with over two-thirds occurring on conservation lands (46). The locations of the 46 conservation land populations are depicted in Figure 2.

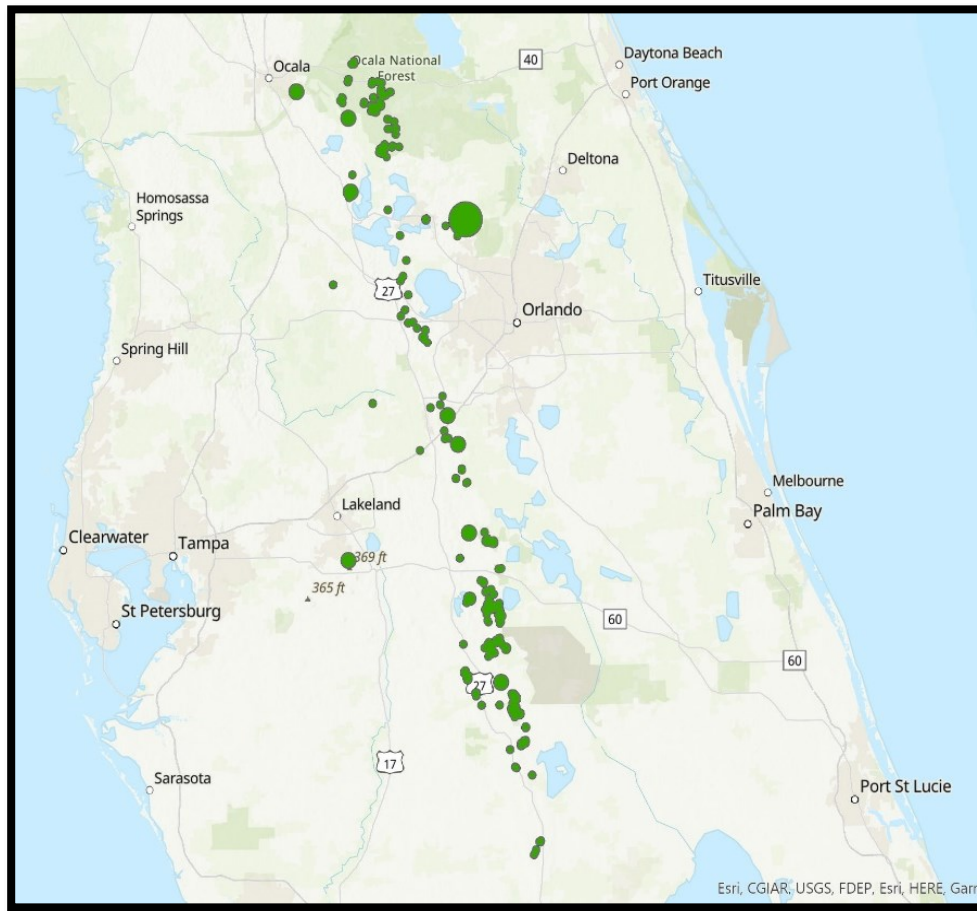


Figure 2. Distribution of extant *Eriogonum longifolium* var. *gnaphalifolium* populations (Element Occurrences).

Forty-six EO's are on conservation lands that are located in six counties with the most resilient and number of population occurrences in Marion (Ocala National Forest), Polk and Highlands counties (Table 1). Also included in Table 1 are the estimated number of plants from their last observation and a viability ranking. The vast majority of the *E. longifolium* var. *gnaphalifolium* populations have not been surveyed in greater than a decade so these population estimates may not be an accurate reflection of current status. Many of the records suggest a declining trend; however, if active management has occurred on these lands in recent years – specifically prescribed fire – the resiliency of these populations may have increased. The lack of recent surveys hinders an accurate determination of population trends or true status.

Table 1. *Eriogonum longifolium* var. *gnaphalifolium* populations on managed conservation lands, county of occurrence, observation date, and viability ranking. (A = Excellent, B = Good, C = Fair, D = Poor, E = Extant or a combination of rankings)

CONSERVATION LAND	COUNTY	LAST OBSERVED	NUMBER OF PLANTS	RANKING
Ocala National Forest (#35)	Marion	1992	11	D
Ocala National Forest (#36)	Marion	06/24/2009	7	D
Ocala National Forest (#37)	Marion	06/24/2009	17	D
Ocala National Forest (#38)	Marion	06/22/2009	156	BC
Ocala National Forest (#42)	Marion	06/22/2009	10	D
Ocala National Forest (#43)	Marion	04/11/2016	200+	B
Ocala National Forest (#48)	Marion	06/23/2009	~ 50	C
Ocala National Forest (#52)	Marion	05/07/2014	?	B
Ocala National Forest (#54)	Marion	04/11/2016	27	B
Ocala National Forest (#56)	Marion	07/06/2009	68+	BC
Ocala National Forest (#57)	Marion	07/06/2009	20	BC
Ocala National Forest (#59)	Marion	07/08/2009	1	D
Ocala National Forest (#62)	Marion	07/08/2009	5	D
Ocala National Forest (#70)	Marion	08/07/2014	1000+	A
Ocala National Forest (#108)	Marion	06/23/2009	?	D
Ocala National Forest (#123)	Marion	06/25/2009	36	C
Ocala National Forest (#125)	Marion	07/08/2009	20+	C
Ocala National Forest (#132)	Marion	05/07/2014	2	BC
Lake Griffin State Park (#67)	Lake	02/16/2009	50	B
Scrub Point Preserve (#77)	Lake	04/10/2012	1	CD
Wolf Branch Sink Preserve (#129)	Lake	07/26/2010	1	D
Sandhill Preserve (#131)	Orange	04/09/2013	2	E
Crooked Lake Sandhill (#2)	Polk	07/02/2010	86	B
Livingston Creek Scrub (#9)	Polk	10/27/2015	74	BC
Tiger Creek Preserve (#15)	Polk	07/27/2010	9	C
Tiger Creek Preserve (#16)	Polk	07/27/2010	30	C
Tiger Creek Preserve (#17)	Polk	04/19/2012	3	C
Tiger Creek Preserve (#21)	Polk	05/08/2017	200+	AC
Horse Creek Scrub (#22)	Polk	07/30/2010	200+	B
Walk-in-the-Water (#95)	Polk	09/25/2009	5	CD
Walk-in-the-Water (#97)	Polk	03/01/2017	50+	AB
Hesperides Tract (#98)	Polk	04/11/2005	5	BC
Snell Creek Scrub (#100)	Polk	07/26/2010	10	CD
Arbuckle Tract (#103)	Polk	03/29/2017	1000+	A
Arbuckle Tract (#104)	Polk	03/28/2017	41	C
Catfish Creek State Park (#113)	Polk	07/26/2010	100+	BC
Serenoa Preserve (#130)	Polk	08/00/2010	10+	C
Green Swamp Osprey unit (#134)	Polk	05/04/2004	10	E
Bok Tower Gardens Preserve (#135)	Polk	06/08/2016	22	C
Walk-in-the-Water (#136)	Polk	06/25/2013	1	C
Lake Davenport (#31)	Osceola	02/06/1998	65	B
Flamingo Villas (#23)	Highlands	07/29/2010	61	AB
Carter Creek Tract (#71)	Highlands	10/13/2021	450+	A
Archbold Biological Station (#92)	Highlands	07/28/2010	~ 400	A
Henscratch Road / Jack Creek (#102)	Highlands	07/29/2010	~ 200	B
Archbold Biological Station (#107)	Highlands	07/28/2010	44	C

The populations in Table 1 occur on 22 secure conservation lands. Analyzing this data suggests Ocala National Forest is a stronghold in the northern portion of the species' range. There are 18 documented populations ranging from a handful of plants to areas that support hundreds of plants including a population of well over 1,000 plus individuals (EO #70). All but one of the viability rankings are not scored as excellent (A) as many of them occur in areas of timber management and the harvest activities and age of rough prior to harvest (canopy closure) often have negative effects on the populations. There are areas in the forest in non-timber management areas where plants most likely persist; however, many of these areas have not been surveyed for this species or do not have current data.

In the central portion of the species range, a number of conservation lands in close proximity to each other also support population ranging from several hundred to over a 1,000 individual plants in each of their populations. Tiger Creek Preserve, Horse Creek Scrub, Walk-in-the-Water, Arbuckle Tract, and Catfish Creek State Park support very robust populations with all of these conservation lands having active habitat management occurring providing optimal conditions for the species to flourish.

The southern portion of the species range, Carter Creek Tract, Archbold Biological Station, and Henscratch Road/Jack Creek conservation lands have active habitat management plans providing suitable conditions that comprise large populations. These three sites support over 1,000 plants with high population viability rankings.

Overall, there are over 20 populations that have the potential to have long-term viability. Monitoring data is lacking for the majority of these populations precluding an accurate assessment at this point. Additional surveys of these conservation lands and increasing the monitoring of the populations listed in Table 1 are necessary for future species evaluations and reviews.

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, including: Factor A: the present or threatened destruction, modification, or curtailment of its habitat or range; Factor B: overutilization for commercial, recreational, scientific, or educational purposes; Factor C: disease or predation; Factor D: the inadequacy of existing regulatory mechanisms; Factor E: other natural or manmade factors affecting its continued existence. A summary of this assessment is detailed below.

Factor A. Habitat destruction, modification, and degradation remains the greatest threat to roughly one-third of the *E. longifolium* var. *gnaphalifolium* populations on private lands (21). The remaining two-thirds (46) of the populations that occur on conservation lands are secure from habitat destruction, although habitat modification and degradation are an ongoing threat to some of these populations.

Habitat modification occurs in areas of timber production within the Ocala National Forest. Not all *E. longifolium* var. *gnaphalifolium* populations on Ocala National Forest occur in the timber management areas. The timber management areas are predominantly monocultures of sand pine (*Pinus clausa*) periodically harvested. Typically these are clear-cut and then seeded or planted. Depending on the level of soil disturbance, the *E. longifolium* var. *gnaphalifolium*

seed bank can persist to repopulated the habitat. From the lack of prescribed fire management and the eventual canopy closure over time from the sand pine, the habitat degrades to suboptimal conditions.

Populations on conservation lands doesn't always preclude habitat degradation. Ownership of the conservation lands where *E. longifolium* var. *gnaphalifolium* populations currently persist include local, State, and Federal government agencies as well as private entities (i.e. not for profit research institutes and conservation easements). This array of various ownerships results in different management priorities, budgeting, staffing, equipment availabilities, and expertise. Not having information regarding the type and frequency of habitat management on all of these lands in different ownerships precludes the ability to accurately determine the habitat conditions or population trends. Coupled with these unknowns, the absence of a monitoring protocol for *E. longifolium* var. *gnaphalifolium* populations compounds the uncertainty as to whether degradation is occurring and to what degree it is adversely affecting species population viability.

Factor B. Has not been identified as a threat to the species.

Factor C. Has not been identified as a threat to the species.

Factor D. Generally, managing agencies have limited regulatory tools. 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. The Act does not provide protection for plants on non-federal lands unless it is in violation of state law.

Eriogonum longifolium var. *gnaphalifolium* is also listed at the state-level by Florida Department of Agriculture and Consumer Services as State endangered (5B-40.0055 Regulated Plant Index), which is not reliant on Act protections. The State listing does not provide any direct habitat protection. Additionally, Title 62D-2.013 of the Florida Administrative Code prohibits the removal, destruction, or damage of plants from Florida Department of Environmental Protection, Division of Recreation and Park properties. This regulation provides protection for the populations that occur on state park lands but does rely on public adherence to the Code since monitoring is limited.

Existing regulatory mechanisms do not adequately prevent the development of sites with listed species, as several private properties with the species have been developed. These protections also do not ensure adequate maintenance of habitats as has been seen to impact populations even when they are on public lands. Currently, there are no existing regulatory measures that reduce the threat of loss/reduction of populations from removal/destruction of plants on private lands or decline of habitat conditions because of lack of habitat maintenance, such as prescribed fire, both on private and public lands. Therefore, existing regulatory mechanisms are inadequate to protect this species.

Factor E. The Service is not aware of any climate change information specific to the habits or habitat of *E. longifolium* var. *gnaphalifolium* that would indicate what potential effects climate change and increasing temperatures and rainfall, or extended drought conditions may have on this species. The National Climate Assessment (Melillo et al. 2014) reports that the average precipitation has decreased in central Florida since 1900; however, heavy downpours are increasing in frequency and intensity since 1970. Future projected precipitation changes in seasonality for central Florida indicate 0 to +10% in winter, 0 to -10% in spring, -10 to -20% in summer, and +10 to +20% in fall will occur. Statewide annual rainfall is projected to increase from 0 to +20% by 2100. Sea level rise resulting from a warming climate and hotter water temperatures will not directly affect this species since it occurs on ancient, relict beach dunes in noncoastal areas. However, sea level rise in the range of 0.3-1.2 m (1-4 ft) by 2100, is expected to impact coastal Florida (Runkle et al., 2022). Although this will not directly impact the species, this may change the influence of land use and population growth to the central portion of the state where this species does occur.

Consecutive dry days are expected to increase 10 to 20% for most of Florida. Predictions of increased drought frequency, intensity, and duration could result in plant losses due to prolonged drought conditions. However, this plant and other xeric habitat species are relatively drought-resistant, but seasonality changes may affect seedling recruitment and general phenology of the species. The Service has no evidence that climate changes observed to date have had any adverse impact on the species, or its habitat nor is there information suggesting that the species, will not be able adapt to predicted changes in drought conditions.

Synthesis

Scrub buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*) is a long-lived herbaceous perennial plant up to 1 m (3.3 ft) in height. It has a basal rosette of leaves with smaller stem leaves than the basal rosette leaves. The stem terminates in a multi-branched inflorescence with a cluster of 15 to 20 small flowers. The flowers are green with yellow center and pink anthers. Flowers are small with the petals averaging 6 to 8 mm (roughly quarter of an inch) and have six linear sepals. It occurs in high pine (sandhill), mixed scrub, and in turkey oak barren habitats in nine central peninsular Florida counties. There are 67 extant populations with 46 occurring on 22 secure conservation lands in six counties. Twenty populations have the potential to have long-term viability; however, monitoring data is lacking for the majority of these populations precluding an accurate assessment at this point. Additional surveys of these conservation land populations and increasing the monitoring and demography knowledge are necessary for future species evaluations and reviews. Habitat destruction, modification, and degradation (Factor A) remains the greatest threat to roughly one-third of the populations on private lands. The remaining two-thirds of the populations that occur on conservation lands are secure from habitat destruction, although habitat modification and degradation are an ongoing threat to some of these populations because of limited management to maintain appropriate habitat, such as prescribed fire. Factors A and E (climate change) threats remain ongoing. Because of the continued threats, *E. longifolium* var. *gnaphalifolium* continues to meet the definition of a threatened species.

RECOMMENDED FUTURE ACTIVITIES

- Conduct surveys on all conservation lands where the species is known to occur. Surveys should include locations of plants, estimate number of individuals, and general habitat conditions (i.e. recent habitat management, time since fire). Current survey information for populations are critical for future evaluations.
- Establish a standardized monitoring protocol for consistency among populations and conservation lands.

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RESULTS / SIGNATURES

U.S. Fish and Wildlife Service
Status Review of *Eriogonum longifolium* var. *gnaphalifolium*

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:

Acting Division Manager, Florida Ecological Services Field Office, Fish and Wildlife Service

Approve _____

* Since 2014, Field Supervisors in the Region have been delegated authority to approve 5-year reviews that do not recommend a status change. In the Florida Ecological Services Field Office, the Classification and Recovery Division Manager has delegated authority to approve 5-year reviews that do not recommend a status change.