

**Recovery Plan for *Conradina etonia* (Etonia rosemary)**  
[https://ecos.fws.gov/docs/recovery\\_plan/940927c.pdf](https://ecos.fws.gov/docs/recovery_plan/940927c.pdf)

**Original Approved: September 27, 1994**  
**Original Prepared by: Southeast Region**

## **DRAFT AMENDMENT 1**

We have identified best available information that indicates the need to amend recovery criteria for *Conradina etonia* (Etonia rosemary) since the recovery plan was completed in 1994. In this proposed modification, we synthesize the adequacy of the existing recovery criteria, show amended recovery criteria, and the rationale supporting the proposed recovery plan modification. The proposed modification is shown as an addendum that supplements the recovery plan, superseding pages iii and six of the recovery plan. Recovery plans are a non-regulatory document that provide guidance on how best to help recover species.

**For**  
**U.S. Fish and Wildlife Service**  
**Southeast Region**  
**North Florida Field Office**  
**Jacksonville, Florida**

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## **METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT**

This proposed amendment to the recovery criteria was developed using the most recent and best available information for the species. This information was analyzed by U.S. Fish and Wildlife Service (Service) biologists and managers in the North Florida Ecological Services Field Office in order to develop the delisting criteria for Etonia rosemary.

## **ADEQUACY OF RECOVERY CRITERIA**

Section 4(f)(1)(B)(ii) of the Endangered Species Act (Act) requires that each recovery plan shall incorporate, to the maximum extent practicable, “objective, measurable criteria which, when met, would result in a determination...that the species be removed from the list.” Legal challenges to recovery plans (see *Fund for Animals v. Babbitt*, 903 F. Supp. 96 (D.D.C. 1995)) and a Government Accountability Audit (GAO 2006) also have affirmed the need to frame recovery criteria in terms of threats assessed under the five listing factors.

## **Recovery Criteria**

See previous version of downlisting criterion in recovery plan, pages iii and six.  
[https://ecos.fws.gov/docs/recovery\\_plan/940927c.pdf](https://ecos.fws.gov/docs/recovery_plan/940927c.pdf)

## **Synthesis**

Etonia rosemary is a narrow ranging endemic species found in Putnam County, Florida. At the time of listing in 1993, Etonia rosemary was only known to occur on two privately owned sites (USFWS 1993). Since listing, additional plants have been located and most known occupied habitat has been acquired by the State of Florida and is under management of the Florida Department of Agriculture and Consumer Services (FDACS) Florida Forest Service (FFS) at Etoniah Creek State Forest (ECSF). Resource management activities for ECSF including provisions for Etonia rosemary are included in the Ten-Year Resource Management Plan for the Etoniah Creek State Forest (FDACS 2015). Etonia rosemary is found in open areas of white sand scrub dominated by sand pine (*Pinus clausa*) and shrubby oaks (*Quercus spp.*) (USFWS 2018).

In 2001, biologists with the Florida Park Service discovered what was then thought to be an additional population of Etonia rosemary during plant and animal surveys of the Dunns Creek State Park (DCSP) property as it was being acquired by the State of Florida. Subsequent surveys on DCSP revealed plants occurring on six sites. With the assumption that these plants represented additional populations of Etonia rosemary, it was thought that the criteria for reclassification of Etonia rosemary from endangered to threatened had been met (USFWS 2007, p. 6). However, Edwards *et al* (2009) determined the DCSP plants are genetically divergent with distinct morphological characteristics that distinguish DCSP plants from *Conradina etonia* and all other species in the genus. The accepted taxonomy of the DCSP plants is *Conradina cygniflora* (Edwards 2009, ITIS 2018).

The historical extent and abundance of Etonia rosemary is unknown, at least in part, because it is recently discovered and described. Etonia rosemary was discovered in 1990 and described in 1991 by Kral *et al* (1991). At the time of listing, it was listed as an endangered species, primarily due to threats of habitat loss due to residential development (Factor A) and the limited number of populations and small number of plants within those populations (Factor E).

Acquisition of the parcels within the ECSF began in 1995. To date, approximately 8,600 acres have been protected through acquisition (FDACS 2015). The natural communities within ECSF include approximately 3,800 acres of xeric uplands.

Currently, two populations of Etonia rosemary are known to occur. The Big Scrub population is located entirely within the ECSF and the Subdivision population occurs within a matrix of private outparcels and public lands located in the central portion of the ECSF. While the Big Scrub population is protected and managed, the Subdivision population remains vulnerable to development and invasive species such as Japanese climbing fern (*Lygodium japonicum*). Additionally, the Subdivision plants may continue to suffer the deleterious effects of inadequate habitat management due to constraints associated with land management activities near residential areas.

The FFS manages most of the habitat known to support Etonia rosemary. Habitat management activities include timber harvesting, roller chopping, crooked wood harvesting, roadside and trail maintenance mowing, and the application of prescribed fire. While this species appears to prefer open sunny areas, it can persist in partial shade (USFWS 2018). Timber harvesting and other

mechanical manipulations are conducted within the ECSF. These treatments increase sunlight through the reduction of canopy coverages of sand pine and oaks and the creation of open areas where *Etonia rosemary* may expand. Disturbance from trail and road maintenance mowing also creates conditions that are favorable for *Etonia rosemary*. Crooked wood harvesting is a forest management activity that includes the harvest of rusty staggerbush (*Lyonia ferruginea*). Disturbance associated with clearing ingress/egress routes into harvest areas and the removal of rusty staggerbush creates conditions that are favorable to *Etonia rosemary*, which has been observed expanding into such areas on ECSF (USFWS 2018). In addition to these forest management activities, prescribed fire is used to manage habitat occupied by *Etonia rosemary*. Scrub communities are fire-dependent communities that persist with fire return frequencies ranging from 5 to 20 years (FNAI 2010). Additional research is needed to better understand the effects of fire on *Etonia rosemary*.

The FFS leads annual *Etonia rosemary* monitoring efforts each fall. To date, the censuses include stem counts without a basic knowledge of clonality extent or numbers of sexually reproducing plants. In 2005 and 2006, there was a 22% and 7% increase in the number of individual plants recorded respectively during survey efforts (USFWS 2007). At the time, the increase was attributed to favorable weather conditions and disturbance associated with crooked wood collection, though the latter may have only made existing plants more visible during survey efforts. Total stem counts recorded during annual survey efforts between 2007 and 2016 averaged 1,846 across all years with the highest stem count of 2,136 recorded in 2008. The lowest stem count was recorded in 2015 at 1,543 stems (Pederson 2016).

The current downlisting criterion (protect and manage five geographically distinct, self-sustaining populations) is adequate. While some of the threats to *Etonia rosemary* have been addressed via land acquisitions, ongoing data collection will help assess the effects of various management practices on *Etonia rosemary* survival.

## **AMENDED RECOVERY CRITERIA**

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be downlisted to threatened, or that the protections afforded by the Act are no longer necessary and the *Etonia rosemary* may be delisted. Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Downlisting is the reclassification of a species from an endangered species to a threatened species. The term “endangered species” means any species (species, sub-species, or DPS) which is in danger of extinction throughout all or a significant portion of its range. The term “threatened species” means any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Revisions to the Lists, including delisting or downlisting a species, must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is an endangered species or threatened species (or not) because of threats to the species. Section 4(b) of the Act requires that the determination be made “solely on the basis of the best scientific and commercial data available.”

Recovery criteria should help indicate when we would anticipate that an analysis of the species' status under section 4(a)(1) would result in a determination that the species is no longer an endangered species or threatened species. A decision to revise the status of or remove a species from the Federal Lists of Endangered and Threatened Wildlife and Plants, however, is ultimately based on an analysis of the best scientific and commercial data then available, regardless of whether that information differs from the recovery plan, which triggers rulemaking. When changing the status of a species, we first propose the action in the Federal Register to seek public comment and peer review, followed by a final decision announced in the Federal Register.

The current recovery plan only contains quantitative downlisting criterion and does not contain delisting recovery criteria. We provide delisting criteria for Etonia rosemary, as follows:

### **Delisting Recovery Criteria**

The Etonia rosemary may be considered for removal from the Federal List of Endangered and Threatened Plants (50 CFR 17.12) when:

1. In addition to the five (5) populations identified in the downlisting criteria, at least five (5) additional populations are established or discovered that exhibit stable or increasing trends as evidenced by natural recruitment, and multiple age classes
2. All ten (10) populations are located on lands protected via a conservation mechanism. (addresses Factors A and D).
3. Threats (e.g. inadequate management, invasive species) have been reduced and/or managed to a degree that Etonia rosemary will remain viable for the foreseeable future (addresses Factors A and D).

### **Justification**

Criterion 1: Populations that exhibit a stable or increasing trend, natural recruitment, and multiple age classes demonstrate that the population is secure and will be resilient to stochastic events (Factor A, D, and E). For the Etonia rosemary it is believed that a minimum of ten populations (five downlisting and five additional) exhibiting these traits are necessary to provide sufficient redundancy to ensure the species will no longer require protection under the Act.

Criterion 2: Threat abatement for Etonia rosemary will allow populations to become stable and contribute to the viability of the species (Factors A and D). Etonia rosemary persists in protected public conservation lands and adjacent private lands, though populations on and adjacent to private lands may not be adequately managed. Habitat management activities including the application of prescribed fire, mechanical treatments, and invasive species control will contribute to the conservation of the species into the foreseeable future.

### **Rationale for Recovery Criteria**

In 1993, the species was listed due to habitat destruction (Factor A) and other natural or manmade factors (Factor E). At that time, the two sites where the species was known to occur

were already subdivided or approved for residential development (Factor A). Additionally, the small size of the populations (Factor E) known at that time added to the threats faces by this species (USFWS 1993). Since the time of listing, Factor A has been addressed, in part, by the State of Florida through land acquisition of several parcels known to support *Etonia rosemary*. These parcels are incorporated into the ECSF and subsequently managed by the FFS. Additional plants have been located since listing. While most known occurrences of *Etonia rosemary* are on public conservation lands, some do occur on private lands. Annual surveys lead by ECSF focus primarily on monitoring known populations. It is unknown if *Etonia rosemary* occurs in surrounding areas, though potentially suitable habitat is present.

While horticultural collection is noted as a potential threat in the Center for Plant Conservation's plant profile database, (Maddox 2010) this has not been documented. Additionally, there are no known problems associated with disease or predation. For these reasons, factors B and C are not relevant to *Etonia rosemary*. Factor D is also not relevant to *Etonia rosemary* as The Florida Administrative Code 5B-40 (Preservation of Native Flora in Florida) provides FDACS with limited authority to protect these plants on state and private lands

Two *Etonia rosemary* populations are extant on the ECSF and immediately adjacent private lands within the *Etonia* Creek basin in northern Putnam County. Lands within the ECSF are protected and managed. Recovery actions, such as annual monitoring, habitat management, and habitat restoration, occur within the ECSF property. Establishing additional *Etonia rosemary* populations will provide increased redundancy and resiliency of the species in the event of a natural event such as hurricanes or catastrophic wildfires.

Recovery efforts will focus on increasing abundance and distribution of *Etonia rosemary* in areas in and around the ECSF where suitable habitat occurs (delisting criterion #1). Locations within the ECSF are managed for conservation; however, management in areas of potentially suitable habitat beyond the forest boundary varies across ownerships. Management in these areas includes utility corridor vegetation mowing, silvicultural activities, roadside maintenance, and in many areas, management activities are unknown. Habitat restoration may be required at select sites in order to be suitable to sustain populations of *Etonia rosemary*.

There is little data regarding the effectiveness of various habitat management techniques for *Etonia rosemary*. The FFS at ECSF actively manages approximately 3,800 acres of scrub and other xeric upland community types including areas where *Etonia rosemary* occurs. *Etonia rosemary* populations within ECSF and other conservation areas that retain suitable habitat, such as those discussed in delisting criterion #1, will need to be monitored and evaluated to ensure each population is included in an area management plan that considers development, fire management, mechanical vegetation management, and invasive species control to achieve delisting criteria #2.

With the predominant threat at the time of listing being habitat loss, conservation of areas occupied by *Etonia rosemary* is critical in providing for long-term protection and viability of the species. Criterion #1 addresses the need for conservation of *Etonia rosemary* populations on protected lands, which can be accomplished via public acquisition, conservation agreements, and partnerships with private landowners.

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