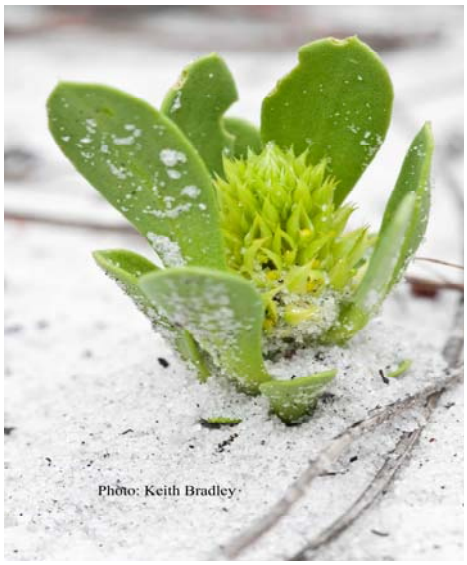
Tiny Polygala
(Polygala smallii)

5-Year Review:
Summary and Evaluation



U.S. Fish and Wildlife Service
Southeast Region
South Florida Ecological Services Office
Vero Beach, Florida

5-YEAR REVIEW
Tiny polygala/*Polygala smallii*

I. GENERAL INFORMATION

A. Methodology used to complete the review: This review is based on monitoring reports, surveys, and other scientific and management information, augmented by conversations and comments from biologists familiar with the species. The review was conducted by the lead recovery biologist for tiny polygala with the South Florida Ecological Services Office. Literature and documents on file at the South Florida Ecological Services Office were used for this review. All recommendations resulting from this review are a result of thoroughly reviewing the best available information on the plant, tiny polygala. Public notice of this review was given in the *Federal Register* and a 60-day comment period was opened. Comments and suggestions regarding the review were received from peer reviews from outside the Service (see Appendix A). No part of the review was contracted to an outside party.

B. Reviewers
Lead Region: Southeast Region, Kelly Bibb, 404-679-7132

Lead Field Office: South Florida Ecological Services Office, Mark Salvato, Marilyn Knight, 772-562-3909

C. Background

1. Federal Register Notice citation announcing initiation of this review: June 21, 2005. 70 FR 35689.

2. Species status: Declining (2009 Recovery Data Call). Surveys have not been conducted over the past year (2009), but population trends are presumed to be similar to 2008. Lack of fire is a significant threat and this threat has increased while trends in other threats have continued at the same level. Accordingly, the overall species status is declining.

3. Recovery achieved: 2 (26-50% recovery objectives achieved)

4. Listing history
Original Listing
FR notice: 50 FR 29345
Date listed: July 18, 1985
Entity listed: Species
Classification: Endangered

5. Associated rulemakings: Not applicable

6. Review History:

5-year review November 6, 1991 (56 FR 56882), in this review, different species were simultaneously evaluated with no species-specific, in-depth assessment of the five factors, threats, etc. as they pertained to the different species' recovery. 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 tiny polygala.
Recovery Status Summary: September 28, 1994
Final Recovery Plan: 1999
Recovery Data Call: 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 and 2009

7. Species' Recovery Priority Number at start of review (48 FR 43098): 5c (a monotypic genus with a high degree of threat and low recovery potential that is in conflict with construction or other development projects or other forms of economic activity).

8. Recovery Plan
Name of plan: South Florida Multi-Species Recovery Plan (MSRP)
Date issued: May 18, 1999
Dates of previous plans: October 7, 1988 Recovery plan for five pine rockland plant species

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 Endangered Species Act (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 a DPS to only vertebrate species of fish or wildlife. Because the species under review is a plant and the DPS policy is not applicable, the application of the DPS policy to the species listing is not addressed further in this review.

B. Recovery Criteria

1. Does the species have a final, approved recovery plan containing objective, measurable criteria? No. There are no recovery criteria specified in the recovery plan for downlisting or delisting. There are criteria for preventing extinction and stabilizing the population. Tiny polygala may be considered stabilized when existing populations, within the historic range, are self-sustaining and are adequately protected from further habitat loss, degradation, exotic plant invasion, and fire suppression. These sites must also be managed to maintain habitat to support tiny polygala. Monitoring programs should demonstrate that populations of tiny polygala on these sites support sufficient population sizes, are distributed throughout the historic range, and are sexually or vegetatively reproducing at sufficient rates to maintain the population.

Seven of the eight known sites where tiny polygala occurs are on public lands and are protected from development; the additional private site is also managed for conservation. The counties are working to restore and manage these lands utilizing prescribed fire and exotic plant removal.

C. Updated Information and Current Species Status

1. Biology and Habitat

a. Abundance, population trends (e.g., increasing, decreasing, stable), demographic features (e.g., age structure, sex ratio, family size, birth rate, age at mortality, mortality rate), or demographic trends: The species is currently known to occur on eight sites within Miami-Dade, Palm Beach, Martin, and St. Lucie Counties (Woodmansee et al. 2007, Maschinski 2010, Florida Natural Area Inventory [FNAI] 2010). The overall number of plants is estimated at approximately 11,000, with the majority of these occurring on a single site in Miami-Dade County (Maschinski 2010). Because seeds may remain dormant in the soil until fire disturbs the site, abundance and population trends for this species are difficult to assess. Plants typically appear, flower, and then disappear until the next fire or other suitable disturbance. Seed germination experiments have been conducted in the field, but few demographic studies have been initiated (Wendelberger and Frances 2004). The life span of this plant is short, averaging only 180 days (Koptur et al. 1998). Woodmansee et al. (2007) indicate that tiny polygala occurrences appear to be cyclic, suggesting that historical occurrences, if given appropriate management, may reappear. Current knowledge of this species' life history is presented in the Conservation Action Plan (Wendelberger and Frances 2004).

b. Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding): Because sites in Miami-Dade, Palm Beach, and Martin Counties are fragmented, seed dispersal is unlikely and sites are genetically isolated. Considering the short generation time of tiny polygala, Wendelberger and Frances (2004) believe that the species may experience low genetic diversity due to genetic drift.

c. Taxonomic classification or changes in nomenclature: None. The Integrated Taxonomic Information System (ITIS 2010) was checked while conducting this review.

d. Spatial distribution, trends in spatial distribution (e.g., increasingly fragmented, increased numbers of corridors), or historic range (e.g., corrections to the historical range, change in distribution of the species' within its historic range): When tiny polygala was listed, it was known from sandy pine rockland and Florida scrub vegetation in Miami-Dade and Broward Counties (the Miami and Fort Lauderdale metro areas, respectively). A survey of 56 sites between Broward and Indian River Counties extended its

known range into northern Palm Beach and south-central Martin Counties, but only at a few sites (Bradley and Gann 1995).

After the MSRP was prepared, Bradley et al. (1999) conducted an endangered plant survey in Florida scrub vegetation in Martin, St. Lucie, and Indian River Counties, covering 25 properties. They found no new sites containing tiny polygala. Surveys for rare plants in Brevard County did not find tiny polygala (Kennedy 2003a, 2003b, 2004), although this was not a target species and it may have been missed.

The distribution of this plant remains fragmented. A total of eight sites occur in Miami-Dade, Palm Beach, St. Lucie, and Martin Counties, with the highest density of sites located in southern Miami-Dade County (Wendelberger and Frances 2004, Woodmansee et al. 2007, Maschinski et al. 2008, Maschinski 2010, FNAI 2010). Clusters of sites are separated by an average of 38 miles.

During 2008, Fairchild Tropical Botanic Garden (FTBG) conducted surveys for the species at all known sites within Miami-Dade County (Maschinski et al. 2008, Maschinski 2010). These surveys indicated that tiny polygala is currently known only from four sites within Miami-Dade County. These include the publicly owned Miami Metrozoo and adjacent U.S. Coast Guard property, both located within the 2,100-acre Richmond pinelands (Maschinski et al. 2008, Maschinski 2010). The Coast Guard site contains the largest population of plants, which was estimated at over 10,000 plants during a 2008 survey (Maschinski et al. 2008, Maschinski 2010). The species was also reported from the Deering Estate at Cutler (441 acres) and the Pine Shore Pineland Preserve (Pine Shore Park) (8 acres) (Maschinski 2005 in litt, Maschinski et al. 2008, Maschinski 2010, FNAI 2010). This survey failed to locate the plant at two previously documented sites, the County owned Ludlam pineland and the adjoining Florida Power and Light Company easement (Maschinski 2005 in litt., Institute for Regional Conservation [IRC] 2006, Maschinski et al. 2008, Maschinski 2010, FNAI 2010), suggesting the species may be extirpated from these sites. The survey also did not report finding the species at former sites on University of Miami and Air Force lands, both occurring within the Richmond pinelands (Maschinski et al. 2008, Maschinski 2010). However, Woodmansee et al. (2007) indicate that tiny polygala occurrences appear to be cyclic, suggesting that historical occurrences, if given appropriate management, may reappear.

The IRC project to map natural forest communities in Miami-Dade County and to provide a plant list for each site, did not find any new localities for tiny polygala (IRC 2006). The project's emphasis was on mapping natural forest communities rather than status surveys for individual species, so potential sites could have been missed.

In Broward County, tiny polygala was known to occur only at one site, the 16.5-acre Gopher Tortoise Preserve at Fort Lauderdale Executive Airport, managed by the City of Fort Lauderdale (FNAI 2010, Maschinski 2010). This site was surveyed in 2002 and no plants were found (Possley 2006 in litt.), but it is presumed that seeds remain in dormancy. However, Woodmansee et al. (2007) also failed to locate the plant at this site during 2006 surveys and suggested that drought conditions, exotic plants, and lack of fire may have hindered this population. The nearly adjoining Cypress Creek Scrub Preserve (8 acres), also managed by the City (FNAI 2010), has not been surveyed for tiny polygala (Possley 2006 in litt., Maschinski 2006 in litt.), but plants may occur there.

Palm Beach County's Department of Environmental Resources Management (Walesky 2005 in litt.) reports that tiny polygala is found in two locations in the County. Walesky (2005 in litt.) indicates all of the locations are characterized by open patches of white sand with a ground water table that is relatively near the surface." At Jupiter Ridge Natural Area (269 acres), which had 100 plants when discovered by Gann in 1994, there were 12 plants in 2004 and 86 in August 2005. County biologists attribute the increased population in 2005 to the opening up of the site's dry hammock (hardwood forest) from hurricane activity and above-normal spring and summer rainfall (Walesky 2005 in litt., Woodmansee et al. 2007). Further surveys by Woodmansee et al. (2007) found smaller densities in 2006 and noted the species abundance at the site fluctuates dramatically from year to year. Tiny polygala was also discovered at Limestone Creek Natural Area in 2002. A survey conducted in July 2003 recorded 13 plants (Walesky 2005 in litt.). Since 2006, the number of plants recorded at this site has ranged from 3 to 60, with 26 encountered during April 2010 (Woodmansee et al. 2007, Shearer 2010). Walesky (2005 in litt.) indicated the County's oceanfront Diamondhead/Radnor Future Park Site (154 acres), discovered in 2001, maintained a population of about 50 plants. However, further surveys at this site determined that the plants reported from this site were candyroot (*Polygala nana*), the closest congener of tiny polygala (Woodmansee et al. 2007, Bradley 2010).

In southern Martin County, tiny polygala is known to occur in Jonathan Dickinson State Park (JDSP) (17,314 acres). Surveys of the site conducted from 2000 to 2008 have recorded varying numbers of plants (Woodmansee et al. 2007, FNAI 2010). Woodmansee et al. (2007) indicated that while the species appears to be in decline at JDSP, it is expected that plant numbers will increase in the long run, provided fires are administered. In St. Lucie County, the species was determined to occur at the privately owned Lynn University, based on a specimen collected in 1984 (Bradley and Gann 1995). Woodmansee et al. (2007) located 14 plants at this site in 2006, further noting that the site had recently been burned and that exotics were being managed. Bradley and Gann (1995) documented the species at the Lynngate portion of

Savanna Preserve State Park, also in St. Lucie County. However, Woodmansee et al. (2007) reported no plants during a 2006 survey and indicated that fire suppression over time was the most likely cause for the plants' disappearance from this site.

There have been no new finds of tiny polygala since 1995, despite surveys of possible scrub sites (Bradley and Gann 1995, Bradley et al. 1999, Woodmansee et al. 2007, Maschinski et al. 2008, FNAI 2010), as well as a project to map the pinelands of Miami-Dade County (IRC 2006). The species is currently known from four sites in Miami-Dade County (Maschinski et al. 2008, Maschinski 2010), two sites in Palm Beach County, and single occurrences in Martin and St. Lucie Counties (Bradley and Gann 1995, Walesky 2005, Woodmansee et al. 2007, FNAI 2010). Seven of eight known occurrences are on publicly owned lands and all the sites are currently being managed for conservation of tiny polygala.

e. Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem): The distribution of habitat where tiny polygala occurs remains fragmented. Eight sites occur within Miami-Dade, Palm Beach, St. Lucie, and Martin Counties, with the highest density of sites located in southern Miami-Dade County (Wendelberger and Frances 2004). Clusters of sites are separated by an average of 38 miles. Disturbance, such as prescribed fire, is a necessary management tool to maintain suitable habitat for the species. Managers of conservation lands are aware of the value of prescribed fire and have conducted fires, making use of information on the response of this species to fire and other land management techniques developed by FTBG (Maschinski et al. 2005). Experimental research by FTBG has benefited a county owned site and demonstrated that the species can thrive after prescribed fires (Maschinski et al. 2008). Scrub inhabited by tiny polygala requires long fire-return intervals, and hurricanes in 2004 and 2005 (Frances, Jeanne, and Wilma) likely provided sufficient disturbance for several years (Walesky 2005 in litt., Woodmansee et al. 2007). Additionally, thinning of the pine canopy may be needed at some sites where seedlings were densely planted following Hurricane Andrew (Gann 2006 in litt.).

In 2010 the IRC initiated a long-term project to restore and manage privately owned fragments of pine rockland habitat in Miami-Dade County, with the objective of increasing conservation benefits to listed species. IRC intends to: (1) prepare site-specific restoration and management plans, (2) develop and initiate active restoration of privately owned pine rocklands, (3) build a network of cooperative landowners, (4) contract crews to conduct restoration on private properties, and (5) train landowners in specific rockland restoration and management techniques. Restoration activities will include exotic plant control, reintroduction of fire, and possibly propagation and reintroduction of

listed plants. Over the duration of the project, up to 700 acres of privately owned pine rocklands may be restored within Miami-Dade County.

f. Other: Tiny polygala produces a seed bank that persists within the soil for at least 2 years (Kennedy 1998). Kennedy (1998) found that *ex situ* seeds germinated within 3 weeks, and 80-100 percent of older, buried seeds germinated regardless of seasonal photoperiod (Koptur et al. 1998). Seeds buried to a depth of 1 cm for over 2 years had a high viability rate, suggesting that seeds may persist for 10 years or more when slightly buried (Kennedy 2006 in litt.) It is, therefore, important to manage not only for above-ground plants, but for the conservation of the seed bank. Seedling emergence peaks from September-November, but a few seedlings emerge from May-June. Koptur et al. (1998) suggested that fire is a requirement for seed germination, because fresh seeds collected from the wild exhibited a 50 percent greater germination rate following soaking in a smoke extract. Fellows (2002) repeated the experiment. Initial germination rates of seeds treated with smoke extract averaged a rate that was 4.3 days faster than non-smoke treated seeds. Total percent germination was similar. Because treatment of tiny polygala seeds with smoke extract acts to synchronize and speed up germination rates, smoke extracts might aid in horticultural production of even-aged propagules (Fellows 2002). Although the average life span of the species is 180 days, 9 percent of plants live more than 1 year. Thus, "the persistent soil seed bank in an obligate seeder, such as [tiny polygala] is important for regenerating populations after disturbances, and preventing local extinctions. [Tiny polygala] is a short-lived species with no ability to resprout and endemic to a disturbance-prone region." (Kennedy 1998). FTBG has conducted studies at the U.S. Coast Guard station in the Richmond area of Miami to examine the impacts of thinning, duff removal, and soil disturbance on vegetation structure, including rare plants, within pine rockland habitat. During the first 6 years post-treatment, thinned areas showed an increase in abundance and diversity of native species in the understory, with no increase in exotics (Maschinski et al. 2003, 2005). However, while many rare plants responded positively to these thinning treatments, there was no increase in tiny polygala abundance (Maschinski et al 2008). In addition, Maschinski et al. (2008) found that exotic abundance has increased at the study site, suggesting that the benefits of thinning treatment may not persist over time.

2. Five-Factor Analysis

a. Present or threatened destruction, modification or curtailment of its habitat or range: Tiny polygala is endemic to Florida where it occurs on well-drained environments with abundant sunlight, such as pine rockland, scrub, sandhill, and open coastal spoil (Bradley & Gann 1995, Wendelberger and Frances 2004). The species is currently known from eight sites within Miami-Dade, Palm Beach, St. Lucie, and Martin Counties, with the highest

density of populations located in southern Miami-Dade County (Wendelberger and Frances 2004, Woodmansee et al. 2007, Maschinski 2010). Seven of the known populations occur on publicly owned lands and are managed for conservation. Although the one known site on private lands (Lynn University) is currently being managed for conservation, other populations that may occur on private lands remain threatened with destruction due to development or habitat modification due to improper or lack of management.

One site where the plants were recorded in the Richmond Complex was thought to be slated for development by the University of Miami (Maschinski 2005). However, the University plans to manage the pine rockland portions where tiny polygala or its habitat is present, and development is not being proposed in portions designated as Natural Forest Community (NFC) where suitable habitat is present (Krauss 2006 in litt.). The Department of Defense has requested that a fence be installed in the NFC on University property for national security purposes, and the University is working with the Army to minimize any potential impacts by locating the fence away from the tiny polygala population. Additionally, the proposed expansion of the Metrozoo would involve development on the zoo property that may impact pine rockland habitat and tiny polygala and could include acquisition of the U.S. Coast Guard property which also has high quality pine rockland and tiny polygala. However, Miami-Dade County is working with FTBG to survey the species at the site and has indicated it will construct the proposed water park in areas with existing concrete or areas otherwise not occupied by the plant (Maguire 2010).

b. Overutilization for commercial, recreational, scientific, or educational purposes: There is no evidence to suggest that overutilization for commercial or educational purposes are threats to tiny polygala. Recreational activity may pose a threat on remaining private and public sites, but we have no specific information as to whether it is actually occurring. Therefore, we conclude that overutilization for commercial, recreational, scientific, or educational purposes does not pose a threat to tiny polygala at this time.

c. Disease or predation: Not applicable. There is no recent information on this subject. Disease and predation are not known threats to tiny polygala.

d. Inadequacy of existing regulatory mechanisms: Generally, managing agencies have limited regulatory tools to protect plants. The Act provides protection for tiny polygala and its habitat through section 7 (interagency cooperation). Existing Federal regulations prohibit the removal or destruction of listed plant species on Federal lands or when a 'Federal nexus' is involved for other lands, meaning any action that is authorized (e.g. permitted), funded or carried out by a Federal agency. The Florida Department of Agriculture and Consumer Services designated tiny polygala as endangered under Chapter

5B-40, Florida Administrative Code. This law regulates the taking, transport, and sale of listed plants. This law does not prohibit private property owners from destroying listed plants nor does it require them to manage habitats to maintain populations. The NFC program established by Miami-Dade County encourages but does not require private landowners to protect forested lands. We conclude that inadequacies in existing regulatory mechanisms pose a threat to tiny polygala at present.

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

Fire suppression and invasion by exotic plant species continue to threaten tiny polygala. Management of pine rocklands in Miami-Dade County is problematic because most of the remaining habitat occurs in small, fragmented areas surrounded by residential or disturbed areas. These environments are often a source of exotic plants. The small size of the pine rockland fragments, in particular the high perimeter to area ratio, make it easier for exotics to invade (Service 1999). Exotic plants have detrimental impacts on pine rocklands. At least 277 taxa of exotic plants are now known from pine rocklands in south Florida (Service 1999). The invasive natal grass, *Rhynchelytrum repens* (Willd.) C.E. Hubb, suppresses native grasscover and threatens pine rockland forests (Possley and Maschinski 2006). According to these authors, it is likely that this grass does not create the natural structural mosaic of flammable material necessary for proper fire conditions.

Miami-Dade County has worked to remove or control exotic plants on publicly owned pinelands since the 1990s. The Nature Conservancy and others have made efforts to slow the rate of exotic plant invasions by encouraging neighbors of natural areas to landscape their properties with non-invasive species.

Exotic pest plants appear to be controllable at sites with tiny polygala, although JDSP has problems with Old World climbing fern (*Lygodium microphyllum*) and downy rose myrtle (*Rhodomyrtus tomentosa*). Both have the potential to overrun habitat, but both may prefer wetter habitats than those occupied by tiny polygala. Downy rose myrtle has been present in the Park since at least 1997 (specimen Loran Anderson 17495 with Steve Mortellaro, Florida State University herbarium). Pest plants at JDSP constitute a potential rather than imminent threat to tiny polygala.

Based on the low number of individuals and populations in existence, extremely hot or fires conducted in the wrong season and catastrophic events such as hurricanes may negatively affect tiny polygala, either from storm damage or post-storm damage. Debris dumping in wooded areas was a problem after Hurricanes Andrew in 1992 and Wilma in 2005 in Miami-Dade County. However, Woodmansee et al. (2007) indicated that no illegal dumping was observed at sites surveyed in other counties. Hurricanes Katrina

and Wilma of 2005 did not cause significant conservation problems, based on information from biologists at FTBG and Miami-Dade County and reports by IRC (Hodges et al. 2006, Woodmansee et al, 2007). Hurricanes may alternatively also provide beneficial effects to the species through soil disturbance which stimulates the germination of dormant seeds previously buried 1 cm or more below the soil surface (Kennedy 1998).

D. Synthesis - Tiny polygala is currently known to occur in small populations located on tracts of suitable pineland or scrub vegetation, mostly within publicly owned lands. Its limited distribution renders tiny polygala vulnerable to random natural or human-induced effects, including fire suppression and invasive exotic species. The most recent surveys for the species indicate that plants remain on eight sites, seven of which are publicly owned; all are managed for conservation (Woodmansee et al. 2007, Maschinski et al. 2008, Maschinski 2010, FNAI 2010). There is no record of the number of private sites on which the plants remain. In terms of the numbers of sites, the long-term and ongoing trend is declining. Even the largest preserve where the species occurs, JDSP, is an island of natural vegetation surrounded by development. The eight known sites require active management, including exotic pest plant control, thinning of overgrown vegetation, and/or prescribed fire. Although the number of extant sites has remained relatively stable since the MSRP was approved, none can be considered entirely secure, and some are subject to encroachment or possibly even development. However, at one site, the Miami Metrozoo, there has been a considerable effort to consider the conservation of the species with future development plans (McGuire 2010).

Several remaining sites might not be able to support viable populations of tiny polygala, even if better management practices can be developed and implemented. Privately owned sites remain at risk of being developed. Hurricanes or other catastrophic events pose a potential threat to these small populations, either from storm damage or post-storm damage, such as debris dumping.

There is an ongoing effort to conduct prescribed burns at the publicly owned sites. Management of these preserves is difficult because exotic plants are present within and near the properties. Habitat degradation on these sites continues to be a moderate threat because vegetation restoration and management programs are costly and depend upon availability of funding. Remaining sites are fragmented, seed dispersal is unlikely, and therefore, due to this reduced drift, the species may experience low genetic diversity. This species continues to meet the definition of endangered under the Act.

III. RESULTS

A. Recommended Classification:

__X__ **No change is needed**

IV. RECOMMENDATIONS FOR FUTURE ACTIONS –

- Implement habitat restoration based on FTBG research and the habitat restoration projects carried out by Miami-Dade County and IRC at all pineland sites with tiny polygala in Miami-Dade County.
- Survey potential habitat on privately owned sites if landowners will allow access.
- If additional sites with tiny polygala are discovered, pursue conservation agreements and, or acquire land. Implement appropriate management for habitat restoration, particularly on sites with former tiny polygala populations. Any opportunities for purchase of properties with tiny polygala or better management under conservation easement should be acted on.
- Promote partnerships to share information, conduct collaborative research on pine rockland habitat conservation, and provide land managers and the interested public with information about the ecosystem, threats, recovery actions, and associated rare biota.
- Conduct additional demographic research including population assessments and tracking of habitat changes through time. Monitoring should assess population declines or increases and examine growth and establishment rates.
- Conduct genetic studies to examine diversity among sites which may be declining due to isolation and reduced genetic drift.
- Conduct research to evaluate reproductive biology.
- Continue exotic species removal and prescribed burns.
- Management research would be useful, particularly to examine the effects of growing season burns versus non-growing season burns on flowering, seed set, and establishment.
- Studies are required to examine the cyclic occurrence of tiny polygala and determine if select fire-return intervals can return the species to historic locations.
- The recovery plan should be revised based on new information and to develop recovery criteria.

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U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Tiny Polygala (*Polygala smallii*)

Current Classification: Endangered

Recommendation resulting from the 5-Year Review

_X__ **No change is needed**

Review Conducted By Marilyn Knight, and Mark Salvato

FIELD OFFICE APPROVAL:

FV

Lead Field Supervisor, Fish and Wildlife Service

Approve _____ Date 6/7/10

The lead Field Office must ensure that other offices within the range of the species have been provided adequate opportunity to review and comment prior to the review's completion. The lead field office should document this coordination in the agency record.

REGIONAL OFFICE APPROVAL:

The Regional Director or the Assistant Regional Director, if authority has been delegated to the Assistant Regional Director, must sign all 5-year reviews.

Acting
Lead Regional Director, Fish and Wildlife Service

Approve _____ Date 6-3-10

APPENDIX A: Summary of peer review for the 5-year review of tiny polygala (*Polygala smallii*)

A. Peer Review Method: Recommendations for peer reviewers were obtained from Palm Beach County Department of Environmental Resources Management and Miami-Dade County Environmentally Endangered Lands Program. Additionally, peer reviewers were selected by the Service. Four peer reviewers and one unofficial reviewer were asked to participate in this review (S. Kennedy, Florida International University; G. Gann, Institute for Regional Conservation; P. Krauss). Individual responses were received from each of the peer reviewers.

B. Peer Review Charge: See attached guidance.

C. Summary of Peer Review Comments/Report: Peer review comments were substantial and provided insights that were beneficial in conducting this review. Comments and concerns covered a variety of topics including additional information regarding the potential development on the University of Miami property, the need for thinning of the pine canopy at some sites, potential reintroduction opportunities, clarification that the number of individuals referred to the number of above-ground plants, the addition of another citation for plant surveys, the identification of the largest population, the mixing of the species with its closest congener in Jonathan Dickinson State Park, seed dormancy and the effects of soil disturbance on germination, the importance of managing for the conservation of the seed bank in addition to managing for above-ground plants, the effects of extremely hot or wrong-season fires on plants, and the need for population models or data to support the statement regarding the lack of viability of populations. Additional comments provided confirmation that our review provided sound interpretation of available data, our literature review was thorough, our interpretation of the current population distribution and general status of the species was accurate, our risk assessment was adequate, and we identified important additional data needs for the species.

D. Response to Peer Review: The Service was in agreement with comments and concerns received from peer reviewers; however, population viability models or data were not available to support the statement regarding the lack of viability of populations. This statement was based upon the small sizes of existing populations and the small total number of existing above-ground plants, as explained in the text. All other comments were incorporated as appropriate into the 5-year review.

Guidance for Peer Reviewers of Five-Year Status Reviews

U.S. Fish and Wildlife Service, South Florida Ecological Services Office
June 7, 2006

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 Cindy Schulz, Endangered Species Supervisor, South Florida Ecological Services Office, at 772-562-3909, extension 305, email: Cindy_Schulz@fws.gov.