

**Small's Milkpea
(*Galactia smallii*)**

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



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

5-YEAR REVIEW

Small's milkpea / *Galactia 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 Small's milkpea 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 Small's milkpea. 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, Marilyn Knight, Mark Salvato 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). Trends in threats are continuing at the same level or increasing due to lack of prescribed burns. Lack of fire is a significant threat. Surveys were not conducted over the past year and the overall population trend is not known on public sites where plants are known to occur. The overall species' status is declining.

3. Recovery achieved: 1 (0 to 25 percent 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:

Five-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 Small's milkpea.
Recovery Status Summary: 1994
Final Recovery Plan: 1999
Recovery Data Call: 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009

7. Species' Recovery Priority Number at start of review (48 FR 43098): 5c (high degree of threat, low recovery potential, some conflict with development or construction projects)

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

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 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? 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. Small's milkpea 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 pine rocklands to support Small's milkpea.

Seven of the known sites where Small's milkpea occurs on public lands are protected from development, with an additional site targeted for conservation. The County is 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: Small's milkpea is endemic to the pine rocklands of Miami-Dade County. O'Brien (1998) located the species on 10 sites. In 2002, Fairchild Tropical Botanic Garden (FTBG) reported that this species occurred on fewer than 12 sites located in a 6.5-mile area (Bradley and Possley 2002). The total population at that time was estimated to be less than 10,000 plants and ranged from 3 to 1,000 individuals per site, with only 2 sites that contained over 1,000 plants (Bradley and Possley 2002).

Results of a project to map extant pine rockland habitat indicate that the plants remain on 7 public and 15 private sites (The Institute for Regional Conservation [IRC] 2006, Bradley, 2010a). Miami-Dade County owns six of the public sites, purchased for conservation purposes, and is working to restore and manage these lands through their Environmentally Endangered Lands (EEL) program. The remaining public site is owned by the County's Board of Education (Bradley, 2010b) and is, therefore, subject to future development. However, the EEL program is currently attempting to acquire this site (Guerra 2010).

In 2009, a large population containing as many 100,000 individuals was documented on an additional public property (County owned) adjacent to the Homestead Air Reserve Base (HARB) (Bradley 2009). Although HARB is seeking to develop these lands, they are also coordinating with the Service and IRC to retain and manage the plant at this site. Also in 2009, an additional small population was discovered on the private Palms Woodlawn Cemetery along Old Dixie Highway in Homestead (Bradley, 2010b).

Small's milkpea does not have an established monitoring program, and there is limited knowledge about the species' demographic features and trends. Small's milkpea is a perennial legume and, therefore, probably experiences little annual variation in population size (Fisher 2000, Bradley and Possley 2002). This species does not experience seasonal dieback and is thought to be long-lived, as most of the plants used in a pollination study survived over a period of 5 years (Bradley and Possley 2002). Flowering occurs throughout the year but most abundantly during the dry season. Because most flowers do not produce fruit, it may be self-incompatible (Bradley and Possley 2002). Once pollinated, seeds take several months to mature and often germinate in response to fire. Annual variability in flowering, seed production, seed viability, and establishment requirements are unknown (Bradley and Possley 2002). FTBG is conducting propagation trials in order to expand the *ex situ* collection of this species. Because of the small size of seeds, seed storage has been difficult (Maschinski 2005 in litt.).

b. Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding): Genetics studies have not been conducted.

c. Taxonomic classification or changes in nomenclature: Small's milkpea is similar in appearance to hairy milkpea (*G. floridana*) and pineland milkpea (*G. pinetorum*) but differs from these species in the degree of pubescence on its leaves and stems. Bradley and Possley (2002) suggested that genetics studies might be useful in determining the relationship of Small's milkpea to other species, as earlier studies have focused largely on morphological differences.

The Integrated Taxonomic Information System (2010) was checked while conducting this review, and no changes to nomenclature or taxonomic classification were noted.

d. Spatial distribution, trends in spatial distribution, or historic range (e.g., corrections to the historical range, change in distribution of the species' within its historic range): The historic range of Small's milkpea is not well known. When this species was listed, it was known from two sites near Homestead in Miami-Dade County. In a study of distribution and habitat preference of two plant genera native to south Florida pine rocklands, Small's milkpea was found in the Redland region (southern Homestead) and a few sites at the southern end of the Biscayne region (northern Homestead) (O'Brien 1998). The distribution of this species is correlated with soil depth and color in Redland pine rocklands. Small's milkpea appears to prefer calcareous soils with less quartz sands, but not at low elevations, and does not occur in pine forests off of the limestone rock ridge (O'Brien 1998). As elevation decreases southward along the Miami Rock Ridge, so does quartz sand (Bradley and Possley 2002). Preferred soils are mapped as Cardsound Rock outcrop complex and are porous and well-drained (Bradley and Possley 2002). The elevation where the plants occur generally ranges from 2 to 3 meters with a smooth slope from 0 to 2 percent (Bradley and Possley 2002).

The distribution of this plant is fragmented. One study noted that several sites had large numbers of plants distributed throughout each site with no well-defined population clusters (Fisher 2000). In 2002, this species occurred in less than 12 fragmented sites located along a 6.5-mile portion of the Miami Rock Ridge (Bradley and Possley 2002). The most current assessment of natural forested communities in Miami-Dade County recorded the species on eight public sites (IRC 2006, Bradley 2009, Bradley, 2010a). Because this species has no apparent mechanism for long-distance dispersal of seeds, it is presumed that these fragmented populations are relicts of larger populations prior to fragmentation (O'Brien 1998). Not much is known about how fragmentation has impacted the population dynamics of the species, but most likely populations have become isolated and more imperiled (O'Brien 2006 in litt.)

e. Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem): Less than 2 percent of the original acreage of pine rockland habitat remains (Bradley and Possley 2002). Most of that habitat occurs in small, isolated stands in an urban landscape that are difficult to protect and manage. Many of the fragments are overgrown and in need of restoration. Seven of the known sites where Small's milkpea occurs on public lands are protected from development, with an additional site targeted for conservation. These sites have been purchased by Miami-Dade County for conservation purposes and are being managed to prevent habitat degradation and potential loss of plants. The County is working to restore and manage these lands. Privately owned sites remain at risk of being developed and management remains a concern.

Small's milkpea prefers open sun and little shade and can be threatened by shading from hardwoods and displacement by invasive exotic species in the absence of periodic fires. Disturbance, such as prescribed fire, is a necessary management tool to maintain suitable habitat for the species (Bradley and Possley 2002). Habitat degradation on these sites continues to be a moderate threat because vegetation restoration and management programs depend upon availability of resources.

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 prepare site-specific restoration and management plans, develop and initiate active restoration of privately owned pine rocklands, build a network of cooperative landowners and contract crews to conduct restoration on private properties, and train landowners in specific rockland restoration and management techniques. Restoration activities will include exotic plant control, reintroduction of fire, and possibly captive rearing 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: FTBG is conducting research on habitat management in pine rockland vegetation on a property owned by the U.S. Coast Guard in the Richmond area of Miami. The major concern regarding habitat management is removal of understory vegetation, both exotic and native. These studies are designed to examine the impacts of various restoration techniques on pine rockland vegetative structure to help determine whether these management options can provide a cost-effective alternative to burning. The impacts of these techniques on the abundance of rare plant species were also assessed, and although not reported for Small's milkpea, it was determined that thinning treatments did not affect abundance of the endangered tiny polygala (*Polygala smallii*). The abundance and diversity of native species in the understory increased within the first year after treatment in thinned areas with no concurrent increase in abundance of exotic species (Maschinski et al. 2003, 2005). However, some scientists are

concerned that habitat manipulations such as these used in lieu of fire will not produce the same ecological effects, such as nutrient cycling and the population dynamics of shrubs and herbaceous plants resulting from fire (O'Brien 2006 in litt.). O'Brien (2006) stated the importance of variability in the fire regime, and noted that increased diversity and population levels of herbaceous plants are correlated with more frequent fires in similar types of habitat.

2. Five-Factor Analysis

a. Present or threatened destruction, modification or curtailment of its

habitat or range: Small's milkpea is endemic to pine rockland habitat where it is most often found growing at higher elevations with well-drained quartz sands (O'Brien 1998, Bradley and Possley 2002). Remaining Small's milkpea populations occur entirely within a narrow region of pine rockland fragments in Miami-Dade County (DERM 1993, O'Brien 1998, Bradley and Possley 2002, Maschinski 2005 in litt., IRC 2006). Continued habitat loss and fragmentation threaten the existence of Small's milkpea, and less than 2 percent of the original acreage of pine rockland habitat remains (Bradley and Possley 2002).

Populations on private sites remain threatened with destruction or habitat modification due to improper or lack of management. At least five natural populations have been destroyed by urban development (Bradley and Possley 2002, Maschinski 2005 in litt.). Modification of pine rockland habitat on protected lands is also of concern (Maschinski et al. 2008). Therefore, we conclude that habitat loss, degradation, and fragmentation for Small's milkpea is and will continue to be a threat.

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 Small's milkpea. 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 Small's milkpea at this time.

c. Disease or predation: There is no recent information on this subject. Disease and predation are not known threats to Small's milkpea.

d. Inadequacy of existing regulatory mechanisms: The Florida Department of Agriculture and Consumer Services designated Small's milkpea 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 Natural Forest Communities (NFC) program established by Miami-Dade County encourages but does not require private landowners to protect forested lands. Existing Federal regulations prohibit the removal or destruction of listed plant species on public lands. However, such

regulations afford no protection to listed plants on private lands. The Endangered Species Act only protects populations from disturbances 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. We conclude that inadequacies in existing regulatory mechanisms pose a threat to Small's milkpea at present.

e. Other natural or manmade factors affecting its continued existence: Fire suppression and invasion by exotic plant species continue to threaten Small's milkpea. 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, makes 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). Invasive natal grass (*Rhynchelytrum repens* (Willd.) C.E. Hubb) suppresses native grass cover 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.

Pine rockland habitat is maintained by relatively frequent fires, which maintain the understory woody plants at shrub height (Snyder et al. 1990, Carlson et al. 1993, Bergh and Wisby 1996, Liu et al. 2005a, 2005b). In the absence of fire, a thick duff layer may develop on the limestone substrates on which endemic pine rockland forbs inhabit, and hardwoods eventually invade and shade out understory species like Small's milkpea (Snyder et al. 1990). Fire suppression reduces the size of the areas that burn, and habitat fragmentation prevents fire from moving across the landscape. Accordingly, in the absence of fire, pine rockland communities tend toward becoming tropical hardwood hammock communities. In many areas, pine rockland communities have been succeeded by tropical hardwood hammock flora.

Fundamental questions about fire ecology in pine rocklands are how frequently they should burn and during what season. Snyder et al. (1990) inferred the historic fire regimes on the Florida mainland by examining the time it takes for the herbaceous layer to be excluded from an area by shading (maximum time between fire) and the point where enough fuel is available to carry a fire (minimum time since fires). The minimum fire regime found was 2 to 3 years, and the maximum was 15 years (Snyder et al. 1990). This wide range in fire

frequencies would result in different forest structures and dynamics. Liu (2003) conducted detailed demographic studies of Big Pine partridge pea (*Chamaecrista lineata keyensis*) (an endemic pine rockland plant in the Florida Keys [Monroe County]), and how it relates to fire. Liu (2003) suggested that a fire frequency of 7 years would create the lowest extinction probability for Big Pine partridge pea, and that a fire regime with a wide range of burning seasons may be essential for that and the other endemic herbs of the lower Keys. Liu (2003) indicated that fire frequency intervals of less than 7 years may be detrimental, and frequencies of 10 or more years will result in population decline, as in the case of the pea.

Prescribed fire has been utilized at publicly owned sites, with the participation of the Florida Division of Forestry. However, prescribed burns in pine rockland habitat have slowed since 2000 due to the lack of resources and need to be made a priority (Klein 2006 in litt). Vegetation restoration and management programs are costly, and the availability of funding is never assured; therefore, habitat modification (from inadequate, or the total lack of, management) on protected lands remains a threat. At present, fire suppression may be one of the greatest threats to Small's milkpea.

The species' limited distribution renders it vulnerable to random natural events, such as drought. The small area, few occurrences, and limited distribution of Small's milkpea render it susceptible to extinction risks associated with stochastic demographic, genetic, and environmental events. Further reduction of population size would likely enhance threats associated with genetic and demographic stochasticity.

- D. Synthesis** – Even though the majority of Small's milkpea populations occur on public lands, they are fragmented and habitat degradation continues to affect extant populations. Most of the habitat occurs in small, isolated stands that are difficult to protect and manage. Its limited distribution renders the Small's milkpea vulnerable to random natural or human-induced affects, including fire suppression and invasion by exotic species. The most recent survey of pine rocklands indicates that plants remain on eight public sites (Bradley and Possley 2002, Maschinski 2005 in litt., IRC 2006, Bradley 2009, Bradley, 2010a). There is no record of the number of private sites on which the plants remain. In terms of the numbers of populations, the long-term and ongoing trend is declining. Although some demographic information is available, additional long-term research will be necessary to develop accurate population models.

There is an ongoing effort to conduct prescribed burns at the publicly owned sites. Management of these small 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. This species continues to meet the definition of endangered under the Act.

III. RESULTS

A. Recommended Classification:

No change is needed

IV. RECOMMENDATIONS FOR FUTURE ACTIONS

- The recovery plan should be updated to provide criteria for downlisting and delisting.
- Monitoring of the habitat restoration project conducted by FTBG requires ongoing monitoring of Small's milkpea.
- Habitat restoration approaches based on FTBG research and habitat restoration projects carried out by Miami-Dade County and IRC need to be implemented at all pineland sites with Small's milkpea in Miami-Dade County.
- Potential habitat should be surveyed if landowners will allow access, and conservation agreements/implementation of management recommendations should be pursued and, or, land should be acquired.
- Partnerships should be promoted 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.
- Additional demographic research should be conducted, population sizes should be assessed, and microhabitat changes should be tracked. Specifically, life history studies should examine age-specific and drought-related mortality for refining survival estimates and seed propagation and germination for securing accurate recruitment estimates. Additional census data on tagged populations will be necessary to develop more accurate population models. Close monitoring, especially of high density populations, such as the one recently discovered on HARB, will be needed to document and assess population declines or increases and examine growth and establishment rates. Reproductive biology should be evaluated to determine annual variability in flowering, seed production, seed viability, and establishment requirements.
- Work should be expanded on *ex situ* propagation and seed banks.
- Herbarium voucher specimens of this and other *Galactia* species should be collected and archived, and systematic studies (including both morphology and genetics) should be conducted to determine the relationships within and between *Galactia* species, specifically the relationship of Small's milkpea to hairy milkpea and pineland milkpea.
- Reintroduction feasibility studies should be conducted and potential recipient sites identified once more is known about the current and historic range of the species as well as the genetic structure of the population.
- Small populations should be augmented in protected areas using appropriate genetic techniques.
- Exotic species removal should be continued, and prescribed burns in pine rockland habitat should be reinstated or continued.

- A concerted effort should be made to ensure that prescribed fire is used on public sites containing Small's milkpea (Klein 2006 in litt.)
- Research on the effects of growing season burns versus non-growing season burns on flowering, seed set, and establishment should be conducted.
- Variability in the fire regime, including both seasonality and the fire return interval, should be considered and applied to management of the species and its habitat.

V. REFERENCES

- Bergh, C., and J. Wisby. 1996. Fire history of lower Keys pine rocklands. The Nature Conservancy, Florida Keys Initiative. Key West, Florida.
- Bradley, K. A. 2009. Assessment of Rare Plant Species and Pine Rockland Habitat at Proposed U.S. Army Special Operations Command South Headquarters Adjacent to the U.S. Air Reserve Base, Homestead, Florida. Final Report to the U.S. Army Corps of Engineers, Mobile, Alabama.
- Bradley, K. A. 2010a. Email to Mark Salvato. Assistant Director. Institute for Regional Conservation. Miami, Florida. March 29, 2010.
- Bradley, K. A. 2010b. Email to Mark Salvato. Assistant Director. Institute for Regional Conservation. Miami, Florida. March 30, 2010.
- Bradley, K., and J. Possley. 2002. Conservation Action Plan for *Galactia smallii*. In Maschinski, J., M.Q.N. Fellows, J. Fisher, C. Lane, M. Fidelibus, S. Wright, P. Anderson, G. Guala, J. Pipoly, and J. Possley. Conservation of south Florida endangered and threatened flora: Final Report to the Endangered Plant Advisory Council, FDACS Contract #006466. Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, Florida.
- Carlson, P.C., G.W. Tanner, J.M. Wood, and S.R. Humphrey. 1993. Fire in Key deer habitat improves browse, prevents succession, and preserves endemic herbs. *Journal of Wildlife Management* 57(4):914-928.
- Guerra, C. 2010. Email to Mark Salvato. Program Director. Endangered Environmental Lands Program. Miami, Florida. April 1, 2010.
- Fisher, J.B. 2000. Demography of pine rockland endangered plant taxa in Miami-Dade County. Final report for contract # 4743 to the Florida Plant Conservation Program, Florida Department of Agriculture and Consumer Services, Gainesville, Florida.
- The Institute for Regional Conservation. 2006. Plant lists of Natural Forest Communities in Miami-Dade County, exclusive of Everglades National Park. Prepared in cooperation with U.S. Fish and Wildlife Service, Vero Beach, Florida. Project funded under a Memorandum of Agreement between Miami-Dade County and the U.S. Fish and

Wildlife Service.

Integrated Taxonomic Information System. 2010. *Galactia smallii* H. J. Rogers ex Herndon; Taxonomic Serial Number 195914. <http://www.itis.gov>. [Accessed March 24, 2010].

Klein, J. 2006. Peer review comments to U.S. Fish and Wildlife Service, Vero Beach, Florida. December 12.

Liu, H. 2003. Population viability analyses of *Chamaecrista keyensis* (Leguminosae: Caesalpinioideae), a narrowly endemic herb of the lower Florida Keys: effects of seasonal timing of fires and the urban-wildland interface. Doctoral dissertation. Florida International University. Miami, Florida.

Liu, H., E. Menges, and P.F. Quintana-Ascencio. 2005a. Population viability analysis of *Chamaecrista keyensis*: effects of fire season and frequency. *Ecological Applications* 15(1):210-221.

Liu, H., E. Menges, J. Snyder, S. Koptur, and M. Ross. 2005b. Effect of fire intensity on vital rates of an endemic herb of the Florida Keys, USA. *Natural Areas Journal* 25(1): 71-76.

Maschinski, J. 2005. Personal communication. Letter from Joyce Maschinski, Fairchild Tropical Botanic Garden to Cindy Schulz, U.S. Fish and Wildlife Service, Vero Beach, Florida. Status updates for *Galactia smallii*, *Chamaesyce deltoidea* ssp. *deltoidea*, *Polygala smallii*, *Amorpha crenulata*, and *Jacquemontia reclinata*.

Maschinski, J., S.J. Wright, K.S. Wendelberger, H. Thornton, and A. Muir (ed.). 2003. Conservation of south Florida endangered and threatened flora. Final Report to Florida Department of Agriculture and Consumer Services, Gainesville, FL. Contract #007182 to Fairchild Tropical Garden.

Maschinski, J., S.J. Wright, K.S. Wendelberger, J. Possley, and J. Fisher. 2005. Conservation of south Florida endangered and threatened flora: 2004-2005. Final Report to Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, Florida. Contract #009064 to Fairchild Tropical Botanic Garden.

Maschinski, J., S.J. Wright, J. Possley, J. Goodsman, J. Roncal, V. Pence, D. Walters, S. Lewis, and N. Spencer. 2008. Conservation of south Florida endangered and threatened flora: 2007-2008. Program at Fairchild Tropical Garden. Final Report to Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL. Contract #012863 to Fairchild Tropical Botanic Garden.

Miami-Dade County Department of Environmental Resource Management. 1993. Endangered plants of Dade County's pine rocklands. Technical Report 93-5. Unpublished report prepared for the U.S. Fish and Wildlife Service, Jacksonville, Florida.

- O'Brien, J. J. 1998. The distribution and habitat preferences of rare *Galactia* species (Fabaceae) and *Chamaesyce deltoidea* subspecies (Euphorbiaceae) native to southern Florida pine rockland. *Natural Areas Journal* 18:208-222.
- O'Brien, J. J. 2006. Peer review comments to U.S. Fish and Wildlife Service, Vero Beach, Florida. December 5.
- Possley, J. and J. Maschinski. 2006. Competitive effects of the invasive grass *Rhynchelytrum repens* (Willd.) C.E. Hubb. on pine rockland vegetation. *Natural Areas Journal* 26:391-395.
- Snyder, J.R., A. Herndon, and W.B. Robertson, Jr. 1990. South Florida rocklands. Pages 230-277 in R.L. Myers and J.J. Ewel, eds. *Ecosystems of Florida*. University of Central Florida Press, Orlando, Florida.
- U.S. Fish and Wildlife Service. 1999. South Florida Multi-Species Recovery Plan. Atlanta, Georgia.

**U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of
Small's milkpea (*Galactia smallii*)**

Current Classification: Endangered
Recommendation resulting from the 5-Year Review

X No change is needed

Review Conducted By Mark Salvato and Marilyn Knight

FIELD OFFICE APPROVAL:

for
Lead Field Supervisor, Fish and Wildlife Service

Approve  Date 7/15/10

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 6-24-10

APPENDIX A: Summary of peer review for the 5-year review of Small's milkpea (*Galactia smallii*)

A. Peer Review Method: Recommendations for peer reviewers were solicited from Florida Department of Environmental Protection and Miami-Dade Department of Environmental Resources Management. Additionally, peer reviewers were selected by the Service. Four peer reviewers were asked to participate in this review. Individual responses were requested and received from each of the peer reviewers, including J. Klein (DERM) and J.J. O'Brien.

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 confirmation that our review provided sound interpretation of available data, our literature review was thorough, our interpretation of the current population distribution and status of the species was accurate, our risk assessment was adequate, and we identified important additional data needs and knowledge gaps for the species. It was also reported that populations are declining at some county sites to the point of near-site extinction. Additional comments noted: (1) that fragmentation has further imperiled the species by isolating populations, (2) that existing regulatory mechanisms may not be adequate to protect the species, (3) that a concerted effort should be made to ensure that prescribed fire is used on public sites, and (4) that variability in the fire regime, including both seasonality and the fire return interval, should be considered and applied to management of the species and its habitat.

Other comments regarding fire management included: (1) there is a need to maintain appropriate fire regimes in urban habitat fragments, (2) habitat manipulations used in lieu of fire may not be sufficient to accomplish the same ecological goals as burning, (3) variability in fire regime must be considered and applied to management, (4) a lack of resources have slowed the progress of prescribed burning since 2000, and (5) that higher diversity and larger populations of herbaceous plants are correlated with more frequent fires in similar habitats.

D. Response to Peer Review: The Service was in agreement with all comments and concerns received from peer reviewers. Comments were incorporated 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

November 1, 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 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.