# Brooksville Bellflower (*Campanula robinsiae*)

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


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

# 5-YEAR REVIEW
# Brooksville bellflower/*Campanula robinsiae*

## I. GENERAL INFORMATION

**A. Methodology used to complete the review:** In conducting this 5-year review, we relied on available information pertaining to historic and current distributions, life history, and habitat of this species. The Service's lead recovery biologist for this species conducted the review. Our sources include the final rule listing this species under the Endangered Species Act (Act); the recovery plan; peer reviewed scientific publications; unpublished field observations by the U.S. Fish and Wildlife Service (Service), State, and other experienced biologists; unpublished survey reports; and notes and communications from other qualified biologists. The public notice for this review was published on April 9, 2009, with a 60-day public comment period. Peer review comments were received from three individuals, representatives from the Florida Department of Agriculture and Consumer Services (FDACS), Florida Department of Environmental Protection (FDEP), and Bok Tower Gardens (BTG) (see Appendix A).

**B. Reviewers**

**Lead Region - Southeast Region:** Kelly Bibb, 404-679-7132

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

**C. Background**

**1. Federal Register Notice citation announcing initiation of this review:** 74 FR 16230, April 9, 2009

**2. Species status:** Declining (2009 Recovery Data Call). Population surveys by Bok Tower Gardens (BTG) in 2008 and 2009 located Brooksville bellflowers at several locations, including Burns Prairie pond (formerly owned by the U.S. Department of Agriculture (USDA) and now managed by Florida Fish and Wildlife Conservation Commission), Hillsborough River State Park, and on private land (Young site). This species was originally found on the north slope of Chinsegut Hill (USDA property known as the Subtropical Agricultural Research Station (STARS) but is no longer found there. At the Young site, a private pasture pond, the population has increased into the thousands due to proper conditions for germination. Seeds have been collected by BTG at this site. However, this site is susceptible to destruction for a housing development. The population at Burns Prairie has substantially decreased likely due to low rainfall levels in 2008 and 2009, with no individuals found in either year. Due to the past few years of drought, the pond margin adjacent to the

previously occupied area has become overgrown with grasses and appears to be transitioning into a dry prairie. However, 2010 surveys have found that the population at Burns Prairie has increased because of the reestablished suitable habitat; however, at the Young site the occupied area has become unsuitable due to the lack of mowing and becoming overgrown with grasses. The only secure populations occur at Hillsborough River State Park and the USDA Burns Prairie site. *Campanula robinsiae* was only found at two of three historic sites in 2009; however, the numbers of individuals have increased in 2010 due to a wet winter season.

**3. Recovery achieved:** 1 (0-25% recovery objectives achieved)

**4. Listing history:**

Original Listing
FR notice: 54 FR 31190
Date listed: July 27, 1989
Entity listed: Species
Classification: Endangered

**5. Associated rulemakings:** None.

**6. Review History:**

A previous 5-year review for this species was noticed on November 6, l991 (56 FR 56882). In this review, many species were simultaneously evaluated with no in-depth assessment of the Act's five threat factors as they pertained to the individual species. The notices summarily listed these species and stated that no changes in the designation of these species were warranted at that time. In particular, no changes were proposed for the status of the species in this review.

Final Recovery Plan - 1994

Recovery Data Call – 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, and 1998.

**7. Species' Recovery Priority Number at start of review (48 FR 43098):** 8. The "8" indicates a moderate degree of threat and high recovery potential.

**8. Recovery Plan:**

**Name of plan:** Recovery Plan for Brooksville Bellflower and Cooley's Water-Willow
**Date issued:** June 20, 1994

## II. REVIEW ANALYSIS

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

**1. Is the species under review listed as a DPS?** No. The Act defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate wildlife. This definition limits listing of a DPS to only vertebrate species of fish and wildlife. Because the species under review is a plant, the DPS policy is not applicable.

### B. Recovery Criteria

**1. Does the species have a final, approved recovery plan containing objective, measurable criteria?** Yes.

**2. Adequacy of recovery criteria.**

**a. Do the recovery criteria reflect the best available and most up-to-date information on the biology of the species and its habitat?** No. New information on this species has been collected since the recovery plan was written in 1994. As a result, the recovery goals and criteria should be revised to address the recovery actions needed to reduce threats to this species.

**b. Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and is there no new information to consider regarding existing or new threats)?** Yes. Factor A (present or threatened destruction, modification, or curtailment of its habitat or range) was identified as the primary threat affecting the species when the recovery criteria were developed.

**3. List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information**. **For threats-related recovery criteria, please note which of the 5 listing factors are addressed by that criterion. If any of the 5-listing factors are not relevant to this species, please note that here.**

The recovery criteria identified for *Campanula robinsiae* in the 1994 recovery plan for the species are as follows:

*To develop objective, measurable criteria, we need to better understand the distributions of these plants and the Brooksville bellflower's annual*

*growth cycle. It may be possible to conserve the Brooksville bellflower on sites that are presently government-owned. Delisting of both species should become feasible as habitat is protected and new populations are (re)established.*

*Plausible criteria for recovery might include securing at least 10 viable and self sustaining populations of Brooksville bellflower in pond margin habitats, consisting of approximately 10,000 individuals during prolific years. Population viability at recovery levels must be demonstrated for 10 consecutive years.*

Of the five listing factors, habitat loss from development due to urbanization and habitat alteration has resulted in poor water quality and low water levels resulting in the loss of populations. There are only four, possibly five, sites that are currently occupied by this species: one site at Burns Prairie (Florida Fish and Wildlife Conservation Commission Wildlife Management Area) where plants were not found during 2008 and 2009 surveys, but were located during 2010 surveys, one site on privately owned land known as the Young site, and three sites at Hillsborough River State Park. Only four of these sites, at Burns Prairie in Hernando County and Hillsborough River State Park in Hillsborough County, meet the recovery criteria of being protected. This species was originally found on the north slope of Chinsegut Hill (USDA property known as the Subtropical Agricultural Research Station (STARS)), but is no longer found there. Factors B, C, D, and E have not been documented as threats at this time.

## C. Updated Information and Current Species Status

### 1. Biology and Habitat

**a. Abundance, population trends, demographic features, or demographic trends:** *Campanula robinsiae* was originally found in 1924 at Chinsegut Hill in Hernando County. It was not until 1983 that this species was found at Burns Prairie and on privately owned land (Young site) in Hernando County. The 1983 surveys documented plants at all three sites, although habitat conditions at Chinsegut Hill were poor and extreme trampling by cattle resulted in a low number of plants. Additional surveys of the Young and Burns Prairie sites has occurred over the years (1995-1998 and again from 2007-2010). In 2006, a biologist with the Florida Department of Environmental Protection (FDEP) at Hillsborough River State Park in Hillsborough County found two sites with *C. robinsiae* (Gandy, FDEP, personal communication, 2009). A third site was found at Hillsborough River State Park in 2009.

Since *C. robinsiae* was originally found in 1924, the abundance of this species has fluctuated greatly due to many factors including an increase in water levels and drought (Wunderlin et al. 1980). Germination appears to be affected by the changes in water levels. At Burns Prairie, Williams (1998) found that after a period of high rainfall that caused water levels to rise in the ponds, a large number of flowering plants were present the following growing season when waters had receded. It was determined that water levels from rainfall rather than time of year may be a critical factor controlling germination (Williams 1998). Seeds may remain dormant for long periods until high levels of cumulative rainfall could affect germination and the annual life cycle (Landry 1996). From 2001-2009, a decrease in the number of plants was documented by BTG at the Burns Prairie site, which is likely the result of drought conditions that have caused water levels to drop and habitat conditions to change (Peterson 2007). In 2010, surveys found an increase in the number of seedlings at the Burns Prairie site, likely the result of heavy winter rainfall.

During the 1983 survey at the Chinsegut Hill site, only a few plants were found. Surveys were conducted from 1996-1998, but no plants were located. A large live oak that had provided shade and kept the soils most, which is needed for germination, had died. This also allowed grasses and other groundcover to encroach and possibly outcompete *C. robinsiae* (Laundry 1997).

Burns Prairie also saw fluctuations in numbers between 2002 and 2007 due to the changing water levels and rainfall amounts (Peterson 2007). During a very high rainfall period in 2002-2003, only 265 plants were located during the entire growing season (February through May). In 2004 and 2005, lower than normal rainfall resulted in thousands (2,556 and 2,403, respectively) of *C. robinsiae* being found. However the drought conditions in 2007 resulted in a significant drop in numbers to 47. By 2008 and 2009, no plants were found. Three years (2007-2009) of drought conditions has resulted in the pond succeeding into a dry prairie and the area where *C. robinsiae* occurred is now covered in grasses, small oaks, and cactuses (Campbell, BTG, personal communication, 2009). Future rainfall could recreate proper habitat conditions needed for germination. In March 2010, BTG surveyed Burns Prairie and found 2,300 seedlings after heavy winter rainfall reestablished suitable habitat following two years of drought.

*C. robinsiae* was first located at two sites in Hillsborough River State Park in 2006 on the edge of an enhanced wetland, which was historically a cattle pasture (Gandy, FDEP, personal communication, 2009). Surveys conducted in 2007 found 92 plants at the first site and 264 plants at the second site. The plants were found along the zone just below the seasonal high water line. In 2008, 189 and 858 plants were found at the two sites. However, in 2009, as a result of drought conditions, no plants were found at the first site and 57 plants were found at the second site. It is likely the water levels were too low for germination. An additional site was found in 2009 along a mowed firebreak that holds water most of the year. Since this species was located at Hillsborough River State Park, plants at all three sites have produced flowers. BTG has been able to collect seed for future germination and population studies. Surveys were attempted in March 2010 but water levels at the pond margins were too high to find any plants. Additional surveys are scheduled for 2010 once water levels recede.

This species has also been documented on privately owned land north of Chinsegut Hill. This site has had several owners and is currently referred to as the Young site which is planned for a housing development. In 2008, BTG was given permission to survey and collect seed to protect the genetic diversity of this site. BTG has collected thousands of *C. robinsiae* seeds from 2008-2010. In 2008 and 2009, BTG surveyed the Young site. The proper conditions required for germination were present in both years, and approximately 499,800 plants were found in 2008 and 95,616 plants were found in 2009 (Campbell, BTG, personal communication, 2009). A site visit in March 2010 found thousands of seedlings; however, the habitat has become unsuitable due to the lack of mowing along the pond margin where high grasses are growing. The rest of the pond margin is being heavily mowed and few seedlings were found under the heavy grass clippings. BTG is performing transplantation trials at the BTG greenhouses this year in hopes of having some Young site plants mature to reproductive stage for seed production. These seeds or plants may be used for reintroduction at another location in Hillsborough or Hernando Counties.

**b. Genetics, genetic variation, or trends in genetic variation:** No new genetic information is available for this species.

**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, or historic range:** This species was first collected on the north slope of Chinsegut Hill in 1924 and documented again in 1958 in the same area (Wunderlin et al. 1980). All historically known sites of *C. robinsiae* occurred within approximately 2-3 square miles centered on Chinsegut Hill, which is located 5 miles north of Brooksville, in Hernando County, Florida (Laundry 1997). Additional surveys in 1983 found this species at two additional sites in Hernando County, Burns Prairie and on private property known as the Young site both within the Chinsegut Hill area. Only the Burns Prairie site is on conservation lands. The Young site has been sold and there are plans for a housing development with homes already being built. In 2006, *C. robinsiae* was found outside the known historic range at two sites in Hillsborough River State Park in Hillsborough County. Another site was found at the State Park in 2009 (Peterson 2007; Gandy, FDEP, personal communication, 2009). Additional surveys are needed throughout Hernando and Hillsborough Counties in areas where suitable habitat may be present.

**e.** **Habitat or ecosystem conditions:** *Campanula robinsiae* was originally found in a seepage area on the north facing slope of Chinsegut Hill surrounded by pasture used for animal husbandry. It has since been found within an oak/palm hydric hammock along the edge of an elongated maidencane (*Panicum hemitomom*) marsh at Burns Prairie (Laundry 1996). Typically this species is found along the margins of ponds and marshes with fluctuating water levels and moist seepage areas, both surrounded by pastures. *C. robinsiae* is associated with other wetland plants, such as mosquito fern (*Azolla carolinaiana*), hair sedge (*Bulbostylis* spp.), coinwort (*Centella asiatica*), button snakeroot (*Eryngium* spp.), pennywort (*Hydrocotyle* spp.), rush (*Juncus* spp.), pimpernel (*Anagallis minima*), pearlwort (*Sagina decumbens*), and maidencane (*Panicum hemitomom*) (USFWS 1994).

The *C. robinsiae* found at the north slope of Chinsegut Hill were near a dying live oak (*Quercus virginiana*) and a young China berry (*Melia azedarach*). The understory was consistent with the wetland plants mentioned above. However, surveys conducted in 1996-1997 found that since the live oak has died, the proper soil conditions are no longer present for

germination, which has resulted in grasses and other ground cover encroaching and outcompeting *C. robinsiae* (Landry 1997).

At Burns Prairie, this species was found near cabbage palm (*Sabal palmetto*), live oak (*Quercus virginiana*), black gum (*Nyssa sylvatica*), and water oak (*Quercus nigra*). The understory was composed of similar wetland species with the exception of water hyacinth (*Eichhornis crassipes*). Several years of drought (2007-2009) resulted in low to no water present in the pond, which appeared to be succeeding into a dry prairie with small oak trees and cactuses (Campbell, BTG, personal communication, 2009). However, following heavy rainfall during the 2009/2010 winter period, suitable habitat has returned and water is present in the pond (Peterson, BTG, personal communication, 2010).

On the privately owned Young site, the habitat was also documented in the margins of a small pond located within a cattle pasture. The margins of the pond and pasture had widely scattered live oaks (*Quercus virginiana*) and were not very forested (Landry 1996). Although drought had affected conditions at other sites, surveys conducted in 2008 and 2009 found the proper soil conditions for optimal germination resulting in a significant number of plants (Campbell, BTG, personal communication, 2009). Surveys conducted in March 2010 documented high grasses, very thick leaf/grass litter, and slash pine growing in the areas where seedlings were found. The rest of the pond margin was heavily mowed (Peterson, BTG, personal communication, 2010).

Two of the three sites of *C. robinsiae* found at Hillsborough River State Park are along the edges of an enhanced wetland that was historically a cattle pasture. The plants appear to occupy the zone just below the seasonal high water line of the wetland edges. Both wetlands were herbaceous with woody edges. Other species found at these two sites were dwarf St. Johns-wart (*Hypericum mutilum*), stiff marsh bedstraw (*Galium tinctorium*), day-flower (*Commelina diffusa*), erect day-flower (*Commelina erecta*), Carolina cranesbill (*Geranium carolinianum*), false hop sedge (*Carex lupuliformis*), Florida pellitory-of-the-wall (*Parientaria floridana*), creeping woodsorrel (*Oxalis corniculata*), bald cypress (*Taxodium distichum*), soft rush (*Juncus effuses*), and prairie iris (*Iris hexagona*) (Gandy, FDEP, personal communication, 2009). A third site was found along a mowed firebreak that bisects a dome. This firebreak holds water most of the year. Other

species found in this area were similar to the other two sites but also included common buttonbush (*Cephalanthes occidental*), *Eupatorium* sp., Long's sedge (*Carex longii*), *Polygonum* sp., and *Pseudognaphalium* sp.

It is unknown if there are any management activities that will benefit this species. However, invasive nonnative species such as skunk vine (*Paedena foetida*) and air potato (*Dioscorea bulbifera*) form dense ground cover that excludes native plants such as *C. robinsiae* (Landry 1996). Bermuda grass (*Cynodon dactylon*) also has been found to be a problem at the original *C. robinsiae* site at Hillsborough River State Park. The presence of the grass at the wetland edge is ephemeral relative to the water levels, but the cover of the grass in the dry months has increased every year that monitoring has been conducted (Gandy, FDEP, personal communication, 2009). Control of these invasive nonnative species is needed before they spread into areas occupied by *C. robinsiae*. Also, providing an overstory canopy will create shading that will reduce the light intensity and allow the soils to remain moist, which may provide suitable conditions for germination.

**f**. **Other:** No new information.

**2. Five-Factor Analysis**

**a. Present or threatened destruction, modification or curtailment of its habitat or range:** Habitat destruction remains the greatest threat to *C. robinsiae*. The loss of ponds and wet prairies to residential and agricultural development was the primary threat impacting the species and resulting in the need for its listing under the Act (USFWS 1994). Other threats that impact its habitat, such as trampling from cattle, poor water quality from storm water runoff, and the lack of mowing or maintaining grasses in areas where they are encroaching on *C. robinsiae* habitat, have negatively affected this species throughout its range. At the time of listing in 1989, *C. robinsiae* was only known to occur on two sites in Hernando County (Landry 1996). It is unknown how much occupied habitat for this species has been lost to development since a complete survey of the historic range has not been completed. Since the species' listing, *C. robinsiae* has been located on additional conservation lands at Hillsborough River State Park in Hillsborough County. Although habitat loss has been reduced, there are still private lands and conservation lands throughout the species' range that could be lost due to habitat destruction or degradation.

All the sites where this species has been found were at sometime used as cattle pasture. At Chinsegut Hill, it is thought that trampling or eating by the cattle may have impacted the plants there. However, further research is needed to determine the effect of cattle on this species at the other sites. Hillsborough River State Park no longer has cattle on their property.

Water levels and water quality may also impact *C. robinsiae*. Changes in the land use around areas supporting *C. robinsiae* to housing developments could affect the quality of runoff into areas where this species occurs. Runoff from developed areas may be contaminated by pet products, fertilizers, and herbicides. Nutrient loading from poor water quality may increase invasive exotic species such as water hyacinth (*Eichhornis crassipes*) or *Lemna* sp. that will outcompete and eliminate *C. robinsiae* at these sites.

**b.** **Overutilization for commercial, recreational, scientific, or educational purposes:** Not known as a threat at the time of listing or at present, although *C. robinsiae* could be vulnerable to overcollecting or vandalism due to its limited range. However, four of the sites where the species is known or believed to occur are protected and impacts should be minimal.

**c.** **Disease or predation:** Not known as a threat at the time of listing or at present.

**d.** **Inadequacy of existing regulatory mechanisms:** The Florida Administrative Code 5B-40 (Preservation of Native Flora in Florida) provides the Florida Department of Agriculture and Consumer Services with limited authority to protect these plants (primarily from the standpoint of illegal harvest) on state and private lands. *C. robinsiae* is located on State conservation lands in Hernando and Hillsborough Counties.

One site where *C. robinsiae* has been found occurs on private land in Hernando County that is being planned for a housing development. BTG is working with the landowner to collect seed to maintain genetic diversity.

In the absence of protections provided under the Act, we believe existing regulatory mechanisms as described above would be adequate to protect this species.

**e. Other natural or manmade factors affecting its continued existence:** Not known as a threat at the time of listing. New information suggests that drought conditions adversely impact this species, but further research and monitoring needs to be conducted to determine if this is a factor affecting this species and to what level.

Of the five listing factors, habitat loss and degradation (Factor A) is the only known threat to *C. robinsiae*. Factors B, C, D, and E are not considered threats at this time.

## D. Synthesis

The current recovery criteria for *C. robinsiae* are objective and measurable and all currently known threats are addressed by the recovery criteria. However, the recovery goals and criteria should be revised to better address the recovery actions needed to reduce threats to this species. In addition, the recovery plan should be revised to include more updated information about the species and its management needs.

*C. robinsiae* is only known to occur at four, possibly five, sites in Hernando and Hillsborough Counties; four of these five sites are located on protected lands (Burns Prairie and Hillsborough River State Park) and one site on private lands known as the Young Site. Although surveys of these sites have occurred regularly over the past 5 years, additional information is needed on the distribution of this species throughout its historic range. No plants were located during surveys conducted at Chinsegut Hill from 1996-1997 and at Burns Prairie from 2008-2009, most likely due to changes in habitat conditions. However, in 2010 seedlings were found at Burns Prairie due to heavy winter rainfall reestablishing suitable habitat. The recently documented occurrence of the species at three sites in Hillsborough River State Park, which is well outside the species' known historic range, leads us to believe that further surveys should be conducted to determine if the species is located in other suitable areas in Hillsborough County. 2010 surveys will be conducted at Hillborough River State Park when suitable habitat conditions are present. The privately owned Young site where *C. robinsiae* is found is susceptible to habitat degradation and destruction due to land use changes already planned for this site. BTG is collecting seeds from this site, as well as the others, to maintain the genetic diversity of this species. The 2010 survey found unsuitable habitat conditions with heavy grasses and thick leaf/grass liter out competing *C. robinsiae*. Transplantation of the seedlings is being conducted at BTG to maintain this population.

Although many of the sites where *C. robinsiae* are found either have cattle or historically had cattle, the impacts from trampling or grazing have only been documented at Chinsegut Hill. The cattle may be responsible for some of the

habitat degradation, making it unsuitable for this species. More information is needed to determine if cattle have a detrimental effect on this species.

*C. robinsiae* has been affected by fluctuating water levels and rainfall, as well as water quality issues due to runoff from adjacent developed areas. Several drought years haves caused a decrease in water levels in the ponds margins and surrounding wet prairies that this species is found near and relies on for germination. Surveys conducted from 2007 to 2009 at Burns Prairie indicated that the pond was succeeding to a dry prairie due to drought. Although *C. robinsiae* had not been documented at the Burns Prairie site during the 2007-2009 surveys, subsequent wet winter conditions have reestablished suitable habitat at Burns Prairie and surveys conducted in March 2010 found 2,300 seedlings. Drought conditions at Hillsborough River State Park have also led to a decrease in the number of plants found there. Water levels are thought to be too low for germination to occur. However, a wet 2009/2010 winter led to water levels being too high to conduct surveys in March 2010. Additional surveys are scheduled for 2010 once water levels recede. Runoff from surrounding developments is resulting in nutrient loading in some areas, which may increase the presence of invasive exotic species that outcompete *C. robinsiae*.

In summary, *C. robinsiae* continues to be threatened by habitat destruction and degradation. New information suggests that drought conditions adversely impact this species as well. Loss of habitat due to development will likely be occurring at the Young site, which is being planned for a housing development. Four sites are in long-term protection, but 10 viable and self-sustaining populations are needed to meet the recovery criteria for reclassification to threatened. Although this plant is only known to occur at four, possibly five, sites in Hernando and Hillsborough Counties, the recent documentation of this species in Hillsborough County makes us believe that a more thorough survey could locate more plants. This species remains in danger of extinction throughout all or a significant portion of its range.

## III. RESULTS

**A. Recommended Classification:** No change is needed.

**B. New Recovery Priority Number:** No change is needed.

## IV. RECOMMENDATIONS FOR FUTURE ACTIONS

1. Revise the current recovery plan to include updated objective and measurable recovery criteria for reclassifying this species to threatened status and delisting that are related to reducing the threats identified in the recovery plan, as well as updated information on the species distribution and biology.

2. Support further research on:

    a. Effects of cattle grazing on this species.

    b. Life history needs.

    c. Microhabitat requirements of this species.

    d. Effect of severe changes in temperatures (freezing) on germination.

    e. Drought and fluctuating water levels and their effect on germination.

    f. Transplant experiments, long-term seed viability trials, and optimizing germination protocols.

3. Continue working with public land managers to increase management efforts to benefit *C. robinsiae* on their sites.

4. Continue conducting surveys at known sites of occurrence and expand surveys to other suitable areas in Hillsborough and Hernando Counties to provide distribution information needed to determine where plants currently exist and to prioritize recovery actions such as reintroductions at suitable sites.

## V. REFERENCES


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Peterson, C. 2007. Endangered and threatened native flora conservation grants program. Historic Bok Sanctuary's Final report to the Florida Plant Conservation Program of the Florida Department of Agriculture and Consumer Services. Contract 011298.

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Williams, M.J. 1998. 1998 search for *Campanula robinsiae* at Burns Prairie site, Hernando County, Florida. Final Report for Florida Natural Areas Inventory, Tallahassee, Florida.

Wunderlin, R., D. Richardson, and B. Hansen. 1980. *Campanula robinsiae*. Status report prepared for U.S. Fish and Wildlife Service. Atlanta, Georgia.

U.S. FISH AND WILDLIFE SERVICE

**5-YEAR REVIEW of Brooksville bellflower (*Campanula robinsiae*)**

**Current Classification:** Endangered

**Recommendation resulting from the 5-Year Review:** No change

**Review Conducted By:** Annie Dziergowski

**FIELD OFFICE APPROVAL:**

**Lead Field Supervisor, Fish and Wildlife Service**

Approve _____ Date 5/10/10
David L. Hankla

**REGIONAL OFFICE APPROVAL:**

Acting
**Lead Regional Director, Fish and Wildlife Service**

Approve _____ Date 5-10-10

## APPENDIX

### Summary of peer review for the 5-year review of Brooksville bellflower (*Campanula robinsiae*)

**A. Peer Review Method:** See B. below.

**B. Peer Review Charge:** On February 1, 2010, the following letter and Guidance for Peer Reviewers of Five-Year Status Reviews were sent via e-mail to potential reviewers requesting comments on the 5-year review. Requests were sent to Michael Jenkins (Florida Division of Forestry), Cheryl Peterson (Bok Tower Gardens), Amy Jenkins (Florida Natural Areas Inventory), and Elizabeth Gandy (Florida Department of Environmental Protection).

*We request your assistance in serving as a peer reviewer of the U.S. Fish and Wildlife Service (Service) 5-year status review of the endangered Brooksville bellflower (Campanula robinsiae). The 5-year review is required by section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 et seq.). A 5-year review is a periodic process conducted to ensure the listing classification of a species as threatened or endangered on the Federal List of Endangered and Threatened Wildlife and Plants is accurate. The initiation of the 5-year review for the Brooksville bellflower was announced in the Federal Register on April 9, 2009, and the public comment period closed on June 8, 2009. Several comments were received on the notice for this species.*

*The enclosed draft of the status review has been prepared by the Service pursuant to the Act. In keeping with Service directives for maintaining a high level of scientific integrity in the official documents our agency produces, we are seeking your assistance as a peer reviewer for this draft. Guidance for peer reviewers is enclosed with this letter. If you are able to assist us, we request your comments be received in this office on or before March 5, 2010. Please send your comments to Annie Dziergowski at the address on this letter. You may fax your comments to Annie Dziergowski at (904)731-3045 or send comments by e-mail to Annie_Dziergowski@fws.gov.*

*We appreciate your assistance in helping to ensure our decisions continue to be based on the best available science. If you have any questions or need additional information, please contact Annie Dziergowski at (904)731-3089. Thank you for your assistance.*

*Sincerely yours,*

*David L. Hankla*
*Field Supervisor*

*Enclosures*

## *Guidance for Peer Reviewers of Five-Year Status Reviews*

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

*July 5, 2007*

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

*Peer reviewers should:*

1. *Review all materials provided by the Service.*

2. *Identify, review, and provide other relevant data apparently not used by the Service.*

3. *Not provide recommendations on the Endangered Species Act (ESA) classification (e.g., endangered, threatened) of the species.*

4. *Provide written comments on:*
   - *Validity of any models, data, or analyses used or relied on in the review.*
   - *Adequacy of the data (e.g., are the data sufficient to support the biological conclusions reached). If data are inadequate, identify additional data or studies that are needed to adequately justify biological conclusions.*
   - *Oversights, omissions, and inconsistencies.*
   - *Reasonableness of judgments made from the scientific evidence.*
   - *Scientific uncertainties by ensuring that they are clearly identified and characterized, and that potential implications of uncertainties for the technical conclusions drawn are clear.*
   - *Strengths and limitation of the overall product.*

5. *Keep in mind the requirement that we must use the best available scientific data in determining the species' status. This does not mean we must have statistically significant data on population trends or data from all known populations.*

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

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

## C. Summary of Peer Review Comments/Report

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

*Michael Jenkins, Florida Division of Forestry, Plant Conservation, Tallahassee, Florida:* Mr. Jenkins suggested minor edits.

*Elizabeth Gandy, Florida Department of Environmental Protection, Osprey, Florida:* Ms. Gandy provided an update on the number of occurrences that have been recorded at Hillsborough River State Park. She supported the need for additional surveys in both Hernando and Hillsborough Counties. She also added that more information is needed to control exotic species, such as Bahia grass and Bermuda grass, which may compete with *C. robinsiae*. Numerous minor edits were suggested.

*Cheryl Peterson, Bok Towers Gardens, Lake Placid, Florida:* Ms. Peterson provided updated information on surveys conducted in March 2010. She also added more recommendations on further research needs for this species. Numerous minor edits were suggested.

## D. Response to Peer Review:

The Service accepted all minor edits from peer reviewers. Overall reviewers felt the draft document adequately characterized the known information on the status and threats of the listed plant.

*Michael Jenkins, Florida Division of Forestry, Plant Conservation, Tallahassee, Florida:* All comments provided by Mr. Jenkins were incorporated.

*Ms. Elizabeth Gandy, Florida Department of Environmental Protection, Osprey, Florida:* All comments provided by Ms. Gandy were incorporated. The updates on occurrences and information on the need for exotic plant control were included.

*Cheryl Peterson, Bok Towers Gardens, Lake Placid, Florida:* All comments provided by Ms. Peterson were incorporated. We included the information she provided on recent surveys conducted at these sites. We also included recommendations on further research needs.