

FLORIDA DEPARTMENT OF TRANSPORTATION –
FLORIDA’S TURNPIKE ENTERPRISE
WESTERN BELTWAY PART C
Listed Plant Species Rescue

Florida Department of Transportation, Florida’s Turnpike Enterprise (Turnpike) oversees an approximate 450 mile system of limited – access toll highways. The system includes the Turnpike Mainline, the Homestead Extension of Florida’s Turnpike (SR 821), an 8-mile portion of the Bee Line Expressway (SR 528), the Sawgrass Expressway (SR 869), the Seminole Expressway (SR 417), the Veterans Expressway and Suncoast Parkway (SR 589), the 6-mile Southern Connector of the Central Florida Greenway (SR 417), the Polk Parkway (SR 570), and soon, an approximately 11-mile portion of the Western Beltway Part C (SR 429). Turnpike’s directive is to assist in meeting Florida’s total transportation needs by pursuing public and private sector partnerships to build Florida Intrastate Highway System projects and improve Turnpike access in urban areas, while improving service to patrons and protecting bondholders.

The Turnpike is a transportation leader in environmental stewardship. Turnpike’s systems of roads cross the state and many types of vegetated communities remain within and are adjacent to Turnpike right of way. During project development for both new roads and improvements to existing facilities, the Turnpike identifies the potential occurrence and conducts surveys for listed plant and animal species. Listed species have been designated by the state government – Florida Fish and Wildlife Conservation Commission (FFWCC) or Florida Department of Agriculture and Consumer Services (FDACS) as either endangered, threatened or species of special concern/commercially exploited, or by the federal government – U.S. Fish and Wildlife Service (USFWS) as either endangered or threatened. Turnpike’s development of new roadways and improvements utilizes an environmental protocol of avoidance of impacts to environmentally sensitive features such as listed plant and animal species, wetlands, and conservation lands, as well as socio-cultural features such as residences, churches, schools, and businesses to the greatest extent possible. If impacts are unavoidable then minimization of impacts is a priority. Minimization of impacts to listed plant species can be accomplished by establishing “no mow” native vegetation areas within the right of way, as well as providing research and conservation opportunities to the scientific community.

In order to achieve the greatest minimization of impacts possible to listed species, the Turnpike has worked with Historic Bok Sanctuary to provide research and conservation opportunities for listed plant species that will be impacted by construction of the future Western Beltway Part C roadway project in Orange and Osceola Counties. Historic Bok Sanctuary’s website describes the sanctuary as:

“one of 28 gardens that participate in the Center for Plant Conservation. Through an integrated conservation program of propagation, reintroduction, monitoring and management, the Sanctuary has helped to conserve 38 rare Central and North Florida plant species, part of the National Collection of endangered and threatened plants. Of this collection, 29 are federally listed and 35 are state listed as endangered or threatened native flora.” The Sanctuary has received a “grant from the State of Florida’s Division of Plant Industry. The State of Florida renewed a grant with Historic Bok Sanctuary to fund educational and conservation projects on the Endangered and Threatened Native Flora Conservation Grants Program. This is the second year Historic Bok Sanctuary has been awarded this grant. Affiliated with the national Center for Plant Conservation in St. Louis, MO, Historic Bok Sanctuary’s Endangered Plant Program was started 15 years ago and has partnered to conserve Florida’s rarest plant species. The program’s conservation efforts have been directed at rare plants in their natural habitats (“in-situ” conservation) as well as in Historic Bok Sanctuary’s nursery (“ex-situ” conservation.) The nursery has been able to grow most of central and north Florida’s globally endangered rare plant species – plants that grow in a few locations in Florida and no where else in the world.

The rare plant conservation growing beds have provided staff, and other Florida and Federal agencies, with research and educational opportunities, but public access to the nursery has been limited to tours by appointment only. Interest in seeing and learning about these rare plants has increased over the years as the public has become more aware of the environment in general and the uniqueness of Florida’s natural habitats.”

Historic Bok Sanctuary has developed a conservation program for the listed plant species observed within the right of way for the new Western Beltway Part C toll road southern section. The attached project description from Historic Bok Sanctuary details the conservation program.



October 1, 2003



Florida's Turnpike System

Turnpike Enterprise, Florida Department of Transportation



- Toll System Boundary
- Other Toll Facilities
- Other Toll Facilities Under Construction or Planned
- Future Turnpike System Facility
- Interstate Highway
- Other FHIS Highways

Source: Florida Department of Transportation (FDOT), United States Geological Survey

Produced by:
URS Corporation

Plant Rescue
Turnpike Extension
prepared by

Cheryl L. Peterson
Conservation Program Manager
Historic Bok Sanctuary

The Conservation Program at Historic Bok Sanctuary maintains an ex situ collection of numerous endangered plant species and has had success with previous rescues of listed plant species. For the upcoming Florida's Turnpike Enterprise Western Beltway Part "C" project, Historic Bok Sanctuary and individuals from UCF joined together in February for plant rescues from Turnpike property (Figs 1-2). In February 2004, four (4) individuals of Scrub buckwheat (*Eriogonum longifolium*), a federally listed (USFWS) threatened species and a state listed (FDACS) endangered species, as well as twelve (12) of the federally and state listed endangered Scrub Pigeon-wing (*Clitoria fragrans*) were transplanted from the site into collection beds at Historic Bok Sanctuary (Figs 3-4). After two months there is 100% survivorship.

In April 2004 a second plant rescue activity was conducted. Seventy-one (71) individuals of Britton's beargrass (*Nolina brittoniana*) a federal and state listed endangered species along with twenty (20) scrub buckwheat individuals and nine (9) garberia (*Garberia heterophylla*) a state listed threatened species were transplanted to Historic Bok Sanctuary. Florida bonamia (*Bonamia grandiflora*), a state listed as endangered species and federally listed as threatened species, previously identified in the area was searched for and not observed during the two transplanting events.

Historic Bok Sanctuary plans to continue plant rescues of listed plant species at the Turnpike Western Beltway project prior to construction commencement. The rescued plants will become part of the National Collection of the Center For Plant Conservation (CPC) housed at Historic Bok Sanctuary. The rescues aid in Florida's plant conservation efforts by allowing the genetic diversity of collected populations to persist for the species and providing plants to the National Collection to be used for purposes of research, education and as a buffer against extinction.

BRITTON'S BEARGRASS

Nolina brittoniana Nash

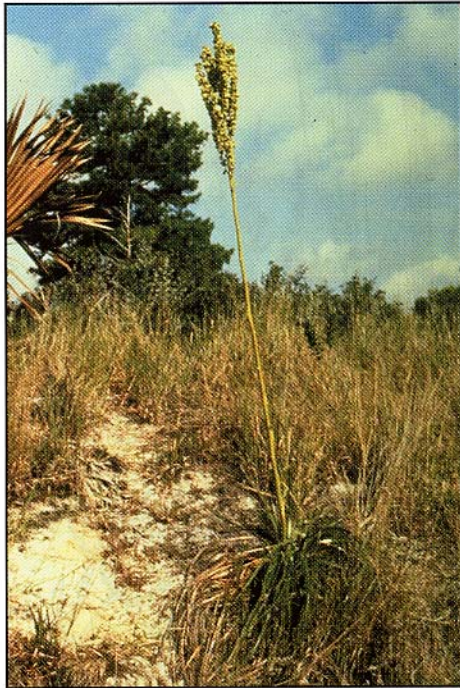
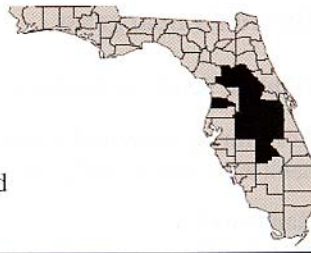
Synonyms: none

Family: Agavaceae (agave)

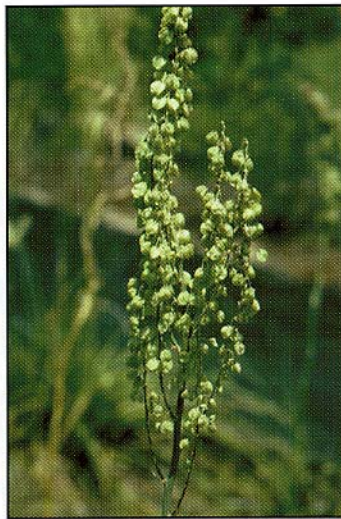
FNAI Ranks: G2/S2

Legal Status: US–Endangered FL–Endangered

Wetland Status: US–UPL FL–UPL



Bruce F. Hansen



Gary Knight

Field Description: Perennial **herb** with long, stiff **leaves** in a grass-like clump rising from a bulbous stem. **Young leaves** erect; **older leaves** up to 6 feet long and 0.5 inch wide, spreading on the ground. **Flowering stalk** 3 - 6 feet tall, topped by a large, showy cluster of small, white flowers. **Flowers** 6-parted, **male and female flowers** usually on separate plants. **Fruit** a papery, symmetrical, 3-lobed capsule, persisting through the summer.

Similar Species: Spanish bayonets (*Yucca* spp.) have large flowers and erect, fleshy leaves with spiny tips.

Related Rare Species: Florida beargrass (*Nolina atopocarpa*), state-threatened, is similar but has leaves less than 0.2 inch wide and usually less than 3 feet long; flowers greenish-white; fruit asymmetrically lobed. It is locally abundant in Panhandle and central FL flatwoods.

Britton's beargrass

Nolina brittoniana

Habitat: Scrub, sandhill, scrubby flatwoods, and xeric hammock.

Best Survey Season: Flowers March–May, but fruits, leaves, and growth habit are distinctive all year.

Range-wide

Distribution:

Endemic to central peninsular FL.

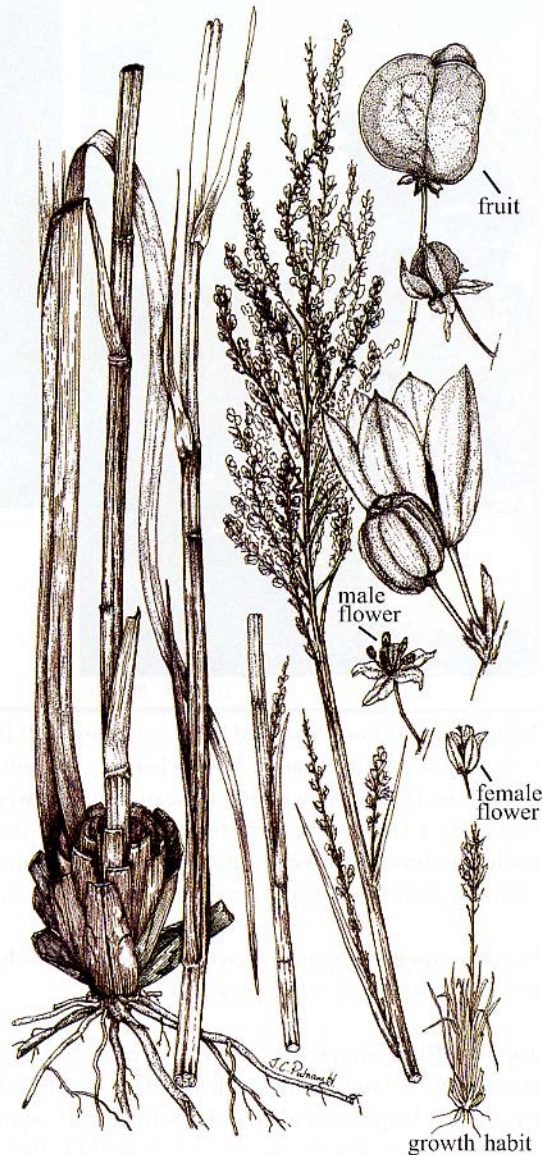
Conservation

Status: More than 90% of Britton's beargrass habitat has been lost to agriculture and development. About 100 populations remain, with half of these occurring on 10 conservation areas.

Protection & Management:

Apply prescribed fire to stimulate flowering and eliminate competition by shrubs and trees. Complete purchases of Lake Wales Ridge scrub sites.

References: Coile 2000, Kral 1983, Menges et al. 1996, TNC 1995, USFWS 1998, Ward 1979, Wunderlin 1998, Wunderlin and Hansen 2000a.



SCRUB BUCKWHEAT

Eriogonum longifolium Nutt.

var. *gnaphalifolium* Gand.

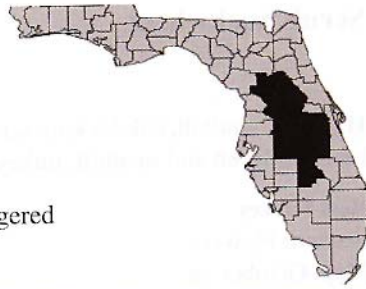
Synonym: *Eriogonum floridanum* Small

Family: Polygonaceae (buckwheat)

FNAI Ranks: G4T3/S3

Legal Status: US—Threatened FL—Endangered

Wetland Status: US—UPL FL—UPL



Gil Nelson

Gil Nelson

Field Description: Perennial herb with several erect stems up to 3 feet tall. Basal leaves 6 - 8 inches long, narrow, bronze-green above and wooly-white beneath, in rosettes; stem leaves similar to basal leaves, widely spaced, and alternate. Stems topped by loose clusters of smaller branches, each branch supporting 15 - 20 small, white, silky-hairy flowers held together in a cup-like structure (involucre), with flowers hanging below the rim of the cup.

Similar Species: Dog-tongue or wild buckwheat (*Eriogonum tomentosum*) is common in sandhill, scrub, and flatwoods; basal leaves have red midveins and leafstalks; stem leaves are in whorls and have broadly rounded tips.

Related Rare Species: Small's jointweed (*Polygonella myriophylla*) and Florida jointweed (*Polygonella basiramia*), also in the buckwheat family, are included in this guide.

Scrub buckwheat

Eriogonum longifolium var. *gnaphalifolium*

Habitat: Sandhill, oak-hickory scrub on yellow sands, high pineland between scrub and sandhill, turkey oak barrens.

Best Survey

Season: Flowers

May–October, or following fire.

Range: Endemic to central Florida.

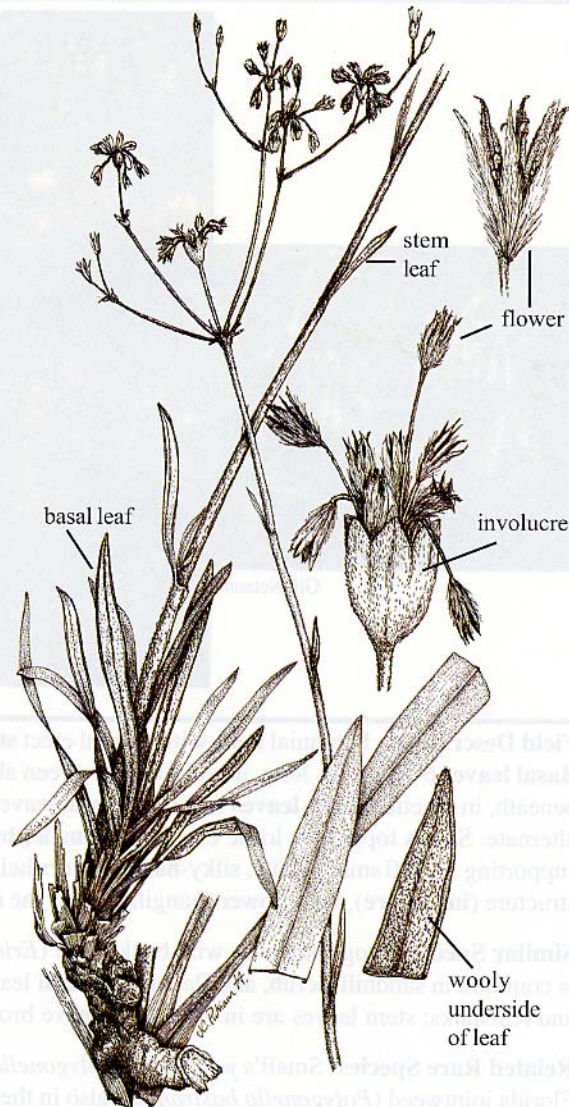
Conservation

Status: About half of 100 known populations are protected, many on Ocala National Forest.

Protection & Management:

Use prescribed fire to create openings in scrub and sandhill; prevent conversion of habitat to agriculture and pine plantations; purchase populations on private lands.

References: Coile 2000, Small 1933, USFWS 1998, Wunderlin 1998, Wunderlin and Hansen 2000a.



FLORIDA BONAMIA

Bonamia grandiflora (A.Gray) Hallier f.

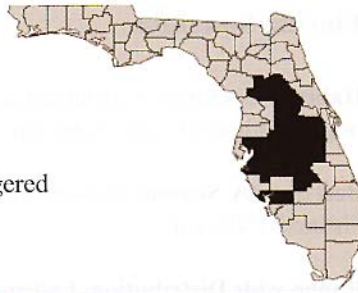
Synonym: *Breweria grandiflora* A. Gray

Family: Convolvulaceae (morning-glory)

FNAI Ranks: G3/S3

Legal Status: US—Threatened FL—Endangered

Wetland Status: US—UPL FL—UPL



Gil Nelson

Field Description: Perennial trailing **vine** with stout **stems** up to 3 feet long; **leaves** 1 - 2 inches long, grading into small bracts at the end of the stem; oval with pointed tips, entire margins, short, silky hairs, and very short leaf stalks. **Flowers** 3 - 4 inches long, solitary, with 5 lobes and 5 leathery, unequal sepals in two series. **Flowers** bright blue with a white throat in the morning but fading to pale blue by early afternoon when they close; somewhat resembles a common morning-glory.

Similar Species: Florida bonamia is the only member of this genus in Florida; it is distinguished from common morning-glories by its small, oval leaves with entire margins and shorter, trailing (rather than high-climbing) stems. Several species of dawnflower (*Stylisma* spp.), also in the morning-glory family, occur in scrub, sandhill, and dry hammocks. Dawnflowers have small white flowers, slender stems, and non-leathery sepals.

Related Rare Species: Scrub stylisma (*Stylisma abdita*), state-endangered, has small white flowers, short stems, and very small leaves. It occurs in scrub and dry pinelands in central and south FL.

Florida bonamia

Bonamia grandiflora

Habitat: Openings or disturbed areas in white sand scrub on central Florida ridges, with scrub oaks, sand pine, and lichens.

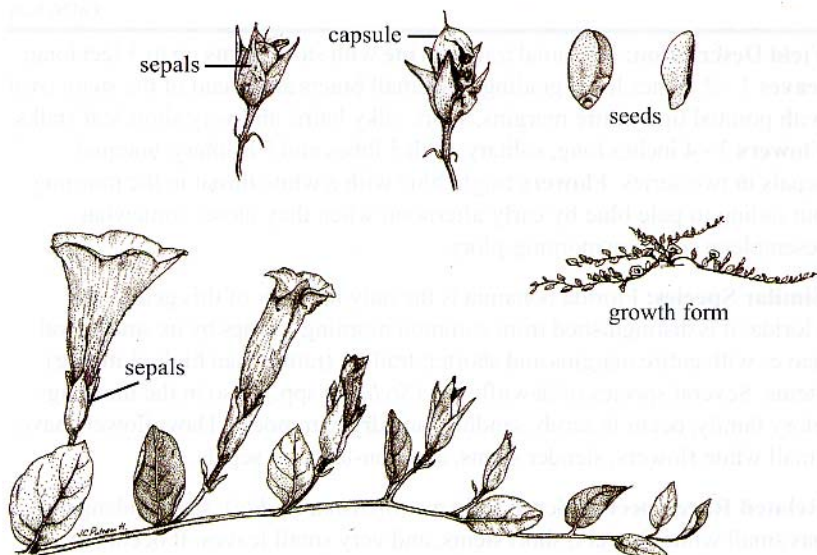
Best Survey Season: Flowers May–August, but leaves and vines are distinctive all year.

Range-wide Distribution: Endemic to central Florida scrub.

Conservation Status: Only 100 populations remain, of which about 35 are protected on 15 managed areas. It is most abundant in the Ocala National Forest. Florida bonamia habitat has been drastically reduced and fragmented by citrus groves, housing developments, and fire suppression.

Protection & Management: Apply periodic fires to stimulate flowering, seed set, and germination. Avoid soil disturbance and use of general herbicides in rights-of-way; control exotics such as cogongrass with grass-specific herbicides. Mow only during dormancy (fall-winter).

References: Christman and Judd 1990, Coile 2000, Hartnett and Richardson 1989, IRC 1999, Lee 1999, Small 1933, USFWS 1996, Ward 1979, Wunderlin 1998, Wunderlin and Hansen 2000a.



SCRUB PIGEON-WING

Clitoria fragrans Small

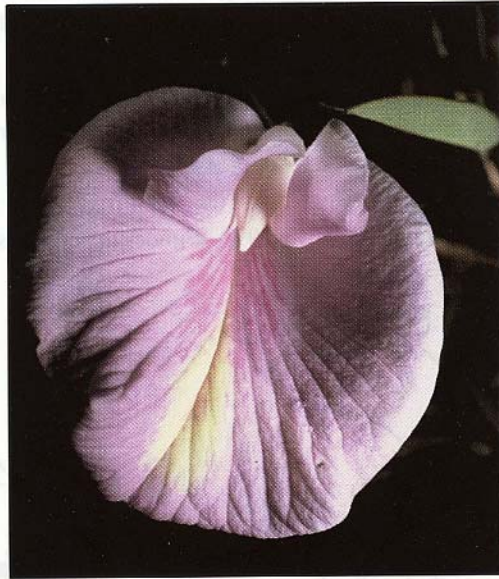
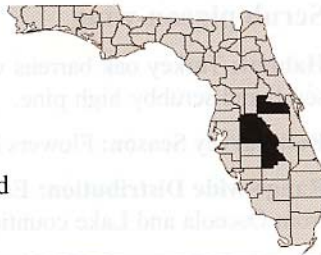
Synonym: *Martiusia fragrans* (Small) Small

Family: Fabaceae (pea)

FNAI Ranks: G3/S3

Legal Status: US–Threatened FL–Endangered

Wetland Status: US–UPL FL–UPL



Billy B. Boothe

Field Description: Perennial herb 6 - 20 inches tall, with erect, purplish, waxy stems. Leaves alternate, with 3 leathery leaflets, 0.8 to 2 inches long, narrowly oblong, leaflet tip rounded with a minute bristle, upper surface dark green with conspicuous veins, lower surface pale green and waxy. Flowers showy, fragrant; 2 short wing petals curve forward, almost covering 2 keel petals; banner petal almost 2 inches long, pink to lavender-blue with purplish veins and large white spot; flowers twisted on their stalks so that the banner petal is lowest. Fruit a pod, 1 - 2 inches long on 0.5 inch stalk, waxy, flattened, depressed between the seeds.

Similar Species: Pigeon-wing (*Clitoria mariana*) has similar flowers, but is a trailing vine with tendrils and oval or lance-shaped leaves.

Similar and Related Rare Species: See sand butterfly pea (*Centrosema arenicola*) in this guide.

Scrub pigeon-wing

Clitoria fragrans

Habitat: Turkey oak barrens with wire grass, bluejack and turkey oak; also scrub and scrubby high pine.

Best Survey Season: Flowers May–June.

Range-wide Distribution: Endemic to Lake Wales Ridge. Plants reported from Osceola and Lake counties have not been seen in decades.

Conservation Status: Scrub pigeon-wing is found at about 40 sites, 13 of which are protected. Private sites are threatened with agricultural and residential development.

Protection & Management: Apply prescribed fire to scrub and turkey oak barrens to create a mosaic of habitats. Purchase and protect private sites. Prevent vehicle access to sites.

References: Coile 2000, Fantz 1977, Isely 1990, Kral 1983, Small 1926c, USFWS 1998, Ward 1979, Wunderlin 1998, Wunderlin and Hansen 2000a.

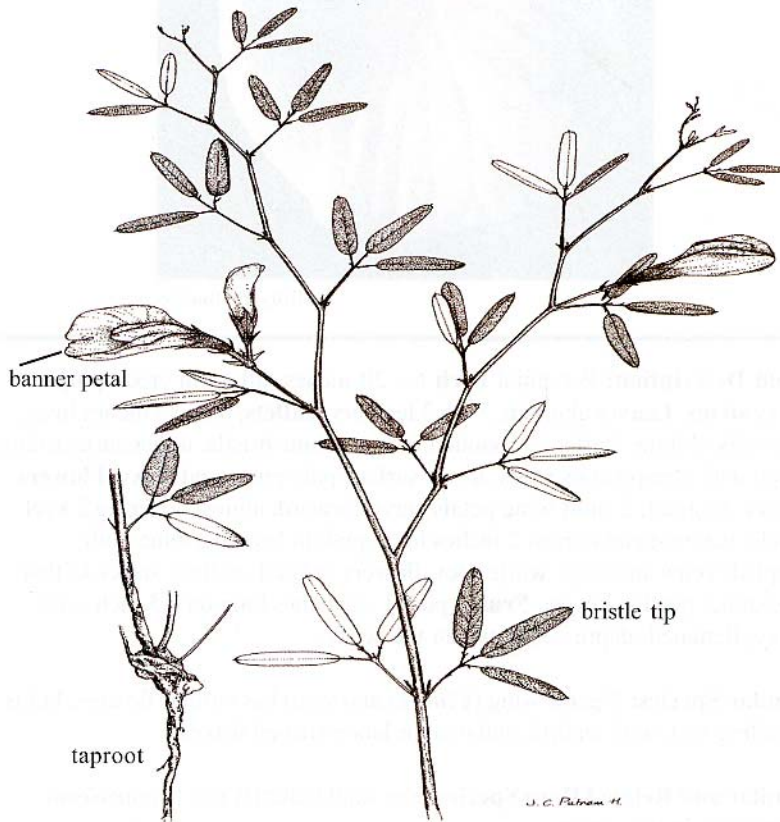




Figure 1. Excavation of Scrub Pigeon-Wing during plant rescue.



Figure 2. Scrub Pigeon Wing (*Clitoria fragrans*) rescue.



Figure 3. Rescued Scrub Buckwheat (*Eriogonum longifolium*) in National Collection Bed.



Figure 4. Rescued *Clitoria fragrans* in National Collection Bed.