Tri-state comprehensive study:

Alabama-Coosa-Tallapoosaand Apalachicola-Chattahoochee-Flint River Basins

Inventory for Endangered, Threatened and Candidate species

Unpublished Report Submitted to
U.S. Fish and Wildlife Service

by

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Agrimonia incisa Torr. & Gray — Rosaceae
incised groovebur — rose family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. *Federal* Register 58(188):51144-51190.

REASONS FOR CURRENT STATUS
This sandhill species is only local in occurrence because of the removal of much of the original longleaf pine associations.

DESCRIPTION
Agrimonia incisa is an herbaceous perennial. Stems are 5-10 dm tall, simple or few-branched, and arise singly or in small clumps from a compact caudex. Stems are terete, and hairy with three kinds of hairs: scattered-hirsute, incurved-puberulent, and strigose. Leaves are alternate, ascending or spreadmg, once-odd-pinnately compound, strongly stipulate, stipules being foliaceous. The lowermost leaves are mostly absent by flowering time, leaving only sheaths and stipules that are reduced toward the inflorescence. The larger blades are short-petiolate, pinnate, leaflets mostly opposite, up to 2 cm in length, all narrowly obovate or cuneiform, apically rounded or obtuse, serrate, and often with a small tuft of long stiff hairs on the narrowly acute teeth. Leaves are yellow-green on the upper surfaces, with paler lower surfaces that are sessile-glandular, scattered pubescent, and villose-tomentulose. Racemes are spikelike, simple, and terminal. The flowers are numerous, each pedicel subtended by a small, chaffy-scaly, few-toothed, strigose and ciliate bract. Flowers are perfect with a green broadly campanulate hypanthium, externally pebbled and rimmed with stiff, .fish-hook-likebristles. There are five, triangular-ovate, green sepals and five short-clawed, elliptic, pale yellow petals. The fruit is a pair of nutlets 2.0-2.5 mm in length encased in the hooked hypanthium capped by the green sepals which make a cone above the fruiting styles. Description adapted from Kral, 1983.

DISTRIBUTION
Sandy open woodlands in the Coastal Plain physiographic region of North Carolina south to northern Florida and west into southern Miissippi.

HABITAT
Terrestrial, forest/woodlands.
Agrimonia incisa is infrequent in sandy, usually upland woods in the Lower Coastal Plain physiographic region of Alabama (Kral, 1983). It occurs in longleaf pine-deciduous scrub oak associations in deep dryish sands or sandy loams. The canopy is usually open, but this species also occurs in the shade of stands of more mesic conditions such as beech-maple-magnolia associations. Herbaceous associates include those adapted to dry sandy sites and a regimen of fire.

OTHER BIOLOGICAL DATA
This species is a fire successional species, relying on fire to reduce competitive vegetation. It does not appear to readily move into mechanically disturbed sites. Plants flower in August and September.

Allium speculae Ownbey & Aase — Liliaceae
Little River Canyon onion — lily family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. *Federal Register* 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Restricted distribution, few known localities.

DESCRIPTION
Allium speculae belongs to the ***Allium canadense*** alliance, family Liliaceae, which comprises eleven North American species. This species arises from an ovoid bulb, often one of a cluster but without basal bulblets. The inner coats of the bulb are whitish, the outer grayish or brownish, usually enclosing a single bulb. Leaves are several per bulb, channeled, concave-convex in cross section, 1-2 mm wide, entire, shorter than the scape and green at anthesis. The scape is 2-3 dm tall, terete, and solitary. The spathe is membranaceous, attenuate, and breaks into three lanceolate, partially united, 1-nerved bracts upon anthesis. The umbel has 10-15 flowers, is erect, with slender pedicels, mostly 2-3 times the length of the perianth. Segments of perianth are 5-6 mm in length, elliptic, obtuse, involute at apex, pinkish, widely spreading, but not strongly reflexed. Stamens are slightly shorter than the perianth, ascending, filaments united into a ring at the base, anthers oblong. The ovary is turbinate with three lobes and six grooves. Each lobe has a pair of flattened horizontal processes which form a distinct crest. The style is linear, equal in length to the filaments, with a capitate stigma.

Allium speculae resembles the widespread A. ***canadense*** var. ***mobilense*** of the Gulf states. Differences from var. ***mobilense*** include prominently crested ovaries, mostly 1-nerved bracts, and its more widely spreading perianth segments. One other species, ***Allium cuthbertii***, has crested ovaries as well, but the crests are contorted, the perianth segments reflexed, and the bracts mostly 5-nerved.

DISTRIBUTION
The type locality for ***Allium speculae*** is on a sandstone outcrop at the northwest rim of Little River Canyon, about 1.3 miles from the northeast end of Little River Canyon Parkway, Lookout Mountain, southeast of Fort Payne, DeKalb county, Alabama. This species is also known from neighboring Cherokee county. Both counties occur in the Appalachian Plateau physiographic region.

HABITAT
Terrestrial, sand/barren.
This species was collected from its type locality on an expanse of flat sandstone surrounded by pine-oak-hickory woods. Plants were growing in black sandy soil with ***Schoenolirion croceum.***

Allium *speculae* Ownbey & Aase — **Liliaceae**
Little River Canyon onion — lily family

OTHER BIOLOGICAL DATA

In cultivation, the plants did not survive beyond the first year. Plants flower in April. There is no information regarding the life history of this species.

POTENTIAL THREATS

Disturbance or degradation of outcrop habitat resulting from heavy equipment or off-road vehicles, development, and dumping are potential threats to this species.

REFERENCES

Ownbey, M. and H.C. Aase. **1959.** *Allium* speculae, a new species of the Allium *canadense* alliance from Alabama. **Rhodora** 61:70-72.

Whetstone, R.D. **1988.** Status report on Allium speculae (Liaceae). Prepared for U.S. Fish and Wildlife Service, Jackson, Mississippi.41 p.

Amphianthus pusillus Torrey — Scrophulariaceae
granite pool sprite

SYNONYMS

LEGAL STATUS
Threatened species, U.S. Fish and Wildlife Service, 1988. *Federal Register* 55(35):6184-6229.

REASONS FOR CURRENT STATUS
Restricted distribution and habitat loss. ***Amphianthus*** is endemic to granite outcrops in the piedmont physiographic region of the southeastern United States. Granite outcrops are one of the unique habitat areas cited by Hardin (1977) as being an area of particular concern to rare plant conservation in the southeastern United States. Outcrops are fragile habitats subject to human disturbance. Destruction of habitat due to quarrying, dumping, vehicular traffic, and recreational impacts are serious threats to this species.

DESCRIPTION
Amphianthus is a monotypic genus in the family Scrophulariaceae, tribe Gratioleae (Pennell, 1935). The following description is adapted from Lunsford (1939). ***Amphianthus*** produces submerged and emerged leaves and has a short, basally-rooted stem. The submerged leaves are sessile, lanceolate, range from 0.7-1.3 mm in length, and occur as a basal rosette on the stem. The emerged leaves are ovate, vary from 3-6 mm in width, 5-8 mm in length, and occur in pairs at the tip of a thin scape. Scape length varies proportionately to the depth of water present in a depression, allowing the paired scape leaves to float on the surface. ***Amphianthus*** produces two types of flowers. Multiple basal flowers are borne on the base of the stem and remain chasmogamous unless exposed to air. Scape flowers are chasmogamous and occur at the terminus of the scape, subtended by the two floating bracts. The zygomorphic tubular infundibuliform corolla is 4-5 mm in length with a slightly bilabiate five-lobed limb. Basal flowers are identical in structure to scape flowers.

DISTRIBUTION
Amphianthus occurs from Chambers and Randolph counties, Alabama, and ranges eastward and northward to Lancaster and York counties, South Carolina in the Piedmont physiographic region. There are 57 extant populations, 50 occur in Georgia, 4 in Alabama, and 3 in South Carolina

HABITAT
Palustrine, open.
Amphianthus inhabits depressions formed by weathering of granitic outcrops. These depressions are surrounded by a rock rim that allows rainwater to collect to depths from 1 to 15 cm. Depressions of this kind contain a few centimeters of mineral soil and are described as "perched pools" because of their occurrence on higher portions of the outcrop (U.S. Fish and Wildlife, 1993). Pools are usually unshaded, and hold standing water from November through March, following adequate rain. Soil in these depressions is dry during summer months. The exact habitat parameters that delimit optimum habitat for ***Amphianthus*** have yet to be defined (Hilton, 1993).

Amphianthus pusillus Torrey — Scrophulariaceae
granite pool sprite

OTHER BIOLOGICAL DATA

Amphianthus requires high light intensities (Lammers, 1958); shading from surrounding vegetation may lead to this species' decline. Vehicular traffic through pools, and filling of depressions with debris also threats to the species. Plants begin flowering in February or March and continues until pools desiccate, usually around May or June.

POTENTIAL THREATS

Loss of the Alabama populations from human activities. Filling of pools with trash and debris, and vehicular traffic through pools lead to degradation of habitat for this specialized species. Any other management activity or land use (eg. quarrying, construction, flooding by impoundment, etc) that would lead to the direct or indirect destruction or degredation of the habitat, should be regarded as a potential threat.

REFERENCES

Hardin, J.W. 1977. The southeastern United States, p. 36-40. In: Extinction is forever. The New York Botanical Garden, Bronx, New York.

Hilton, J.L. 1993. Aspects of the ecology and life history of the granite pool sprite, *Amphianthus pusillus* Torrey (Scrophulariaceae). Unpublished M.S. thesis, Auburn University, Alabama. 53 p.

Lammers, W.T. 1958. A study of certain environmental and physiologic factors influencing the adaptation of three granite outcrop endemics: *Amphianthus pusillus* Torr., *Isoetes melanospora* Engelm., and *Diamorpha cymosa* (Nutt.) Britton. Ph.D. dissertation, Emory Univ., Atlanta, Georgia. 85 p.

Lunsford, D.E. 1939. Studies in the life cycle of *Amphianthus pusillus* Torrey. Unpublished M.S. thesis, Emory University, Georgia. 86 p.

Pennell, F.W. 1935. Scrophulariaceae of eastern temperate North America. Acad. Nat. Sci., Phila., Monog. 1. 650 p.

U.S. Fish and Wildlife Service. 1993. Recovery plan for three granite outcrop plants. Jackson, Mississippi. 41 p.

Apios priceana B.L. Robinson — **Fabaceae**
Sadie Prices's potato bean — bean family

SYNONYMS
Glycine priceana (Robinson) Britton

LEGAL STATUS
Threatened species, U.S. Fish and Wildlife Service, 1990. *Federal Register* 55:429-433.

REASONS FOR CURRENT STATUS
Small number of known populations, low level of sexual reproduction, and habitat manipulation. Clearcutting or heavy logging can eliminate populations of this species (US. Fish and Wildlife Service, 1989). The location of 11 populations on rights-of-way is also a threat; maintenance of these areas by herbicide use, mowing, and clearing of trees could damage or extirpate these populations (U.S. Fish and Wildlife Service, 1990). Selective logging may be beneficial to this species, because shading by canopy trees may result in reduced growth and reproduction (Medley, 1980).

DESCRIPTION
Apios priceana is a perennial herbaceous vine. Vines climb to 5 meters from a large thickened tuber. Leaves are alternate (20-30 cm in length) and pinnately compound with 5-9 leaflets. The leaflets are 4-10 cm in length, 2-5 cm in width, ovate or rounded at the base and on 3-5 mm hairy petioles. The upper leaflet surface is smooth, and the lower surface is pale and slightly hairy. Racemes are 5-9 cm in length, and occur in clusters of 2 and 3 in the axils of pale green, ovate, hairy, acuminate bracts, on pedicels 3-5 mm long. The corolla is typical of pea or bean, and is pale greenish-pink with deeper tints of maroon, and approximately 1 cm in length. The standard petal is bi-auriculate at the base, with a fleshy beak-like tip. The lateral or wing petals are shorter than the standard and oblong in shape, and the keel or bottom ridged petals are fleshy and upwardly curved. The pods are 12-15 cm in length, 1 cm wide, tapered at both ends, and contain approximately 10 seeds per pod.

Apios priceana can be distinguished by the similar *Apios americana* by the following characteristics: a large single tuber, relatively large, pink, fleshy flowers, and longer pods. Seedlings of *A. priceana* have unifoliate, opposite eophylls; with the third or fourth becoming bi- or trifoliate. *A. americana* has unifoliate alternate eophylls; none of the first five being trifoliate (Duke, 1983).

DISTRIBUTION
Apios priceana occurs in the Coastal Plain, Interior Low Plateaus and Appalachian Plateau physiographic provinces of the eastern United States. Since its discovery, 36 populations have been found in 22 counties of five states: Alabama, Illinois, Kentucky, Mississippi, and Tennessee (U.S. Fish and Wildlife Service, 1993). Twenty-five populations are extant and occur in 15 counties of four states: Alabama, Kentucky, Mississippi, and Tennessee (U.S. Fish and Wildlife Service, 1993). Populations in Alabama occur in Autauga, Madison, and Marshall counties.

Apios priceana B.L. Robinson — Fabaceae
Sadie Prices's potato bean — bean family

HABITAT

Terrestrial, forest/woodlands.
Rocky wooded slopes and floodplain edges under mixed hardwoods or in clearings within. This species occurs on well-drained loams either on old alluvium or over calcareous boulders (Kral, *1983).*

OTHER BIOLOGICAL DATA

The rarity of this plant is an indication that this species has a narrow ecological amplitude (Kral, *1983).* Research regarding *the* reproductive biology and genetic diversity of A. *priceana* are also relevant to the continued existence of this rare species. Price's potato bean flowers in June or July.

POTENTIAL THREATS

Damage by pests such as spider mites, powdery mildew virus, root-knot nematodes, and invasion by exotic species such as *Coronilla varia* have been cited as potential threats to this species (U.S. Fish and Wildlife Service, *1993).* Many populations occur in floodplains and alluvial soil types, therefore any changes in the water management of such an area would result in decreased habitat availability or the elimination of this species. Inundation of the habitat would extirpate populations.

REFERENCES

Duke, J.A. *1983.* Seedling variation in *Apios.* Phytologia 54:409-410.

Kral, *R. 1983.* A report on some rare, threatened or endangered forest-related vascular plants of the south, technical publication R8-TP 2. USDA Forest Service Atlanta, Georgia. 1:617-620.

Medley, M.E. *1980.* Status report on *Apios priceana.* Unpublished report produced under contract to the United States Fish and Wildlife Service, Atlanta, Georgia, 32 p.

U.S. Fish and Wildlife Service. *1993.* Recovery plan for Price's potato-bean *(Apios priceana).* Jackson, Mississippi. *45* p.

Arabis georgiana Harper
Georgia rock cress

Brassicaceae
mustard family

SYNONYMS

LEGAL STATUS
Candidate species (Category **2),** U.S. Fish and Wildlife Service, 1993, Notice of Review. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Rare throughout its restricted range.

DESCRIPTION
An erect, smooth to minutely hairy, biennial herb. Basal (rosette) leaves oblanceolate, coarsely toothed and 6-8 cm long. Stem leaves sessile, somewhat clasping, narrowly to broadly lanceolate, **and 3-9** cm long. Flowering stems sparingly-branched, smooth to minutely hairy, and 30-90 cm tall. Flowering stem is a loose raceme. The 4 petals are white, oblanceolate, and are 6-10 mm long by 1.5 mm wide. The fruit is an erect, linear pod, 6-7 mm long, with a single row of brown, narrowly winged seeds. **It** appears to be most closely related to ***Arabis patens*** and ***A. hirsuta,*** but differs from both in its longer pods. It also differs from ***A. patens*** in its erect pods, and the smooth stems and upper surface of the leaves.

DISTRIBUTION
Known only from Alabama and Georgia. In Alabama, ***Arabis georgiana*** has been reported from Bibb, Colbert, Elmore and Wilcox Counties.

HABITAT
Terrestrial; forest/woodlands.
Arabis georgiana occurs in partial to full shade along bluffs and riverbanks (rocky or alluvial) in hardwood forest. The substrate is often derived from a calcareous source such as limestone, dolomite or chalk.

OTHER BIOLOGICAL DATA
Flowering occurs in spring (April).

POTENTIAL THREATS
Disturbance associated with heavy logging or grazing of the bluffs and banks on which plants occur is likely to have a negative effect on this species due to resultant erosion. Any management activity or land use (eg. flooding by impoundment, clearcutting, construction, etc.) that would lead to the direct or indirect destruction or degradation of the habitat or population should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

REFERENCES
Al-Shehbaz, **I.A.** 1988. The genera of Arabideae (Cruciferae; Brassicaceae). ***Journal of the Arnold Arborehtm*** 69(2):**133.**

Harper, R.M. 1903. *Arabis georgiana*. *Torreya* 3:88.

Harper, R.M. 1906. Notes on the distribution of some Alabama plants. *Bulletin of the Torrey Botanical Club* 33:523-536.

Small, J.K. 1933. Manual of the Southeastern Flora. The University of North Carolina Press, Chapel Hill, North **Carolina.**

Aster chapmanii Torr. & Gray — Asteraceae
Chapman's aster — aster family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. *Federal Register* 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Regional endemic; restricted to northwestern Florida and southeastern Alabama. Sites are commonly converted for real estate development or for agriculture.

DESCRIPTION
Aster chapmanii is a herbaceous perennial arising from a stout rhizome. Plants are glabrous, 3-8 dm tall, with narrow, fleshy, mostly linear leaves. Leaves are slightly fleshy with only the midrib showing. Leaves are basally disposed, 10-30 cm in length, 2-7 cm wide, with the blade tapering into a long petiole. Cauline leaves are fairly numerous but reduced upward, and mostly linear and sessile. There are several heads in an open-corymbiform inflorescence on the terminus of slender-bracteate peduncular branches. The involucre is 7-9 mm high, with imbricate bracts not strongly green-tipped and often partly anthocyanic, ciliolate on the margins and/or puberulent on the back. Rays are purple or blue-lavender, number 8-21, and are 1-2 cm in length. Achenes are glabrous with fine pappus bristles that are somewhat yellowish. Description adapted from Cronquist, 1980.

DISTRIBUTION
Restricted to the Apalachicola Valley physiographic region of Florida and to the Lower Coastal Plain region of Alabama. This species occurs in three counties in Alabama: Geneva, Houston, and Mobile.

HABITAT
Palustrine, forested or open.
Wet savannas and swampy pinelands; in sandy peat.

OTHER BIOLOGICAL DATA
Chapman's aster flowers in September through November. Information on the natural history of this species is extremely lacking.

POTENTIAL THREATS
Changes in the hydrology of this species' habitat, either draining or flooding of savannas and pinelands would have adverse effects on Chapman's aster. Silvicultural practices would also be detrimental to this plant.

REFERENCES
Cronquist, A. 1980. Vascular flora of the southeastern United States, volume I, Asteraceae. The University of North Carolina Press, Chapel Hill, North Carolina. 261 p.

Aster georgianus Alexander — Asteraceae
Georgia aster — aster family

SYNONYMS
Aster patens Ait. var. *georgianus* (Alexander) Cronq.

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. *Federal Register* 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Most of the known populations for the Georgia aster are small, consisting of colonial stands of 10 to 100 stems; it is likely that these stems represent only a few genotypes at each site (Jones, 1992). This plant is probably a relict species of post oak-savanna communities that were once fire-maintained.

DESCRIPTION
Aster georgianus is a colonial perennial herb with single stems arising from a rhizome. Plants are scabrous with few branches. The basal leaves are narrowly spatulate; cauline leaves are ovate to lanceolate with slightly clasping bases. The involucral heads have 30-50 squarrose phyllaries that are whitish in color with green tips. Heads are 4-5 cm across the rays and solitary at the ends of branches or branchlets. Disc flowers are white with purplish lobes and number from 20-40. Rays are 14-24 mm in length, number 12-24, and are lavender-violet in color. Achenes are pale gray-brown, 2.5-4.0 mm in length with trichomes scattered on and between the ribs.

Aster georgianus can be distinguished from A. *patens* by its darker purple rays, and from A. *grandiflorus* by its white as opposed to yellow disc flowers.

DISTRIBUTION
Aster georgianus occurs in Alabama, Georgia, and North and South Carolina in the Appalachian Plateau, Blue Ridge, Coastal Plain, and Piedmont physiographic regions. In Alabama, this species is currently known from Bibb, Blount, and St. Clair counties. There are historic collections for Etowah, Shelby, Talladega, and Tuscaloosa counties.

HABITAT
Terrestrial, forest/woodlands, grasslands.
Dry open woods, roadsides, clear-cuts, and rights-of-way. Remnant species of post oak-savanna communities.

OTHER BIOLOGICAL DATA
Alan Weakley of North Carolina Heritage views this species as a relict species of post oak-savanna communities that were once fire-maintained. This species is adaptable to any upland, dry habitat with adequate light (Matthews, 1993). This species is also a good competitor with early successional species, but tends to decline when shaded by woody species. Plants can persist in open woods in a vegetative state, and spread by means of rhizomes (Matthews, 1993). Plants flower in early October to mid November.

Aster *georgianus* Alexander — Asteraceae
Georgia aster — aster family

POTENTIAL THREATS

Historically, this species was probably fire-maintained and will therefore be eliminated by excessive shading. Populations in Alabama occur in disturbed areas such as roadsides, clear-cuts, and powerline rights-of-way. Maintenance of roadsides and rights-of-way by mowing and herbicides could harm or eliminate this species as could land preparation activities for silvicultural practices. Inundation of sites by water impoundment would of course eliminate the species.

REFERENCES

Jones, R.L. 1992. Additional studies of Aster *georgianus*, A. patens, and A. *phlogifolius* (Asteraceae). SIDA 15(2):305-315.

Matthews, J.F. 1993. Status survey of Aster *georgianus* Alexander. Prepared for North Carolina Dept. of Agr. Plant Conservation Program. 27 p.

Brickellia cordifolia Ell. — Asteraceae
Flyr's nemesis — aster family

SYNONYMS
Coleosanthus cordifolius (Ell.) Kuntze

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. *Federal* Register 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Restricted to mature forests of upland hammocks. Eliminated by loss of habitat resulting from silvicultural practices.

DESCRIPTION
Brickellia cordifolia is a herbaceous perennial arising from a cylindrically thickened rhizome. Stems are solitary or few, erect or ascending, unbranched, terete, puberulent, and mostly 1.0-1.5 m tall. Leaves are cauline; the lower ones absent by flowering time. The largest leaves occur at midstem, are opposite on slender petioles, triangular in shape (6-10 cm long) with crenate-dentate margins. The upper leaf surface is dark green and smooth; the lower surface is puberulent and glandular. The inflorescence may be a single cyme or cluster of a few cymes. The heads are discoid, broadly top-shaped, 1.5-2.0 cm wide, with bracts in several loosely overlapping series. The outer bracts are shortest, the inner larger bracts are narrowly oblong, 6-8 mm long, strongly parallel-ribbed, with margins and backs with wooly hairs. The disc florets are many, tubular, whitish at the base and purplish at the tip. The corolla lobes are triangular and slightly spreading. Achenes are cylindrical or slightly compressed, 5 mm in length, strongly ribbed and brown. The pappus is formed of many, purple-brown, upwardly-barbellate bristles that project above the tips of the bracts. Description adapted from Kral, 1983.

DISTRIBUTION
Rich sandy loam soil of high hammocks in the Coastal Plain physiographic province of Georgia, south to peninsular Florida, and west into southern Alabama in the Upper Coastal Plain and the Red Hills areas. In Alabama this species is known from Conecuh, Butler, Henry, Lee, Macon and Tuscaloosa counties.

HABITAT
Terrestrial, forest/woodlands.
Well-drained fine sandy loams in mature forests of upland hammocks. The overstory is usually a mixture of pines such as *Pinus taeda*, and P. *glabra*, and hardwoods such as *Quercus virginiana*, Q. *phellos* (complex), *Fagus grandiflora*, and Magnolia *grandiflora*.

OTHER BIOLOGICAL DATA
This species flowers from August to October.

POTENTIAL THREATS
Heavy logging allows thick scrub-like growth in the understory which would out-compete Flyr's nemesis. Any

Brickellia cordifolia Ell. Asteraceae
Flyr's nemesis aster family

other management activity or land use (eg. clear-cutting, mechanical site preparation, construction, flooding by impoundment, etc) would eliminate this species.

REFERENCES

Kral, R. 1983. A report on some rare, threatened, or endangered forest-related vascular plants of the south, technical publication R8-TP 2. USDA Forest Service, Atlanta, Georgia. 2:1111-1114.

Bumelia thomei Cronq. — Sapotaceae
swamp buckthorn — buckthorn family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), US. Fish and Wildlife Service, 1993. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Restricted distribution; few known localities.

DESCRIPTION
Bumelia thomei is a spindly shrub that reaches 2.5 m in height on average, with few principal branches. Vigorous specimens may be more branched and reach heights of 6 m. Thorns, when present, are of variable lengths, up to 8 cm in the first year. Thorns in the second year usually bear several sessile spur-shoots each of which may produce one to several flowers. Thorns or stems of elongation branches are tawny to rusty pubescent at first, the hairs usually fall off leaving the thorns or twigs dark brown. The leaves taper basally to pubescent petioles (2-8 mm), and range from 1-7 cm in length and 0.5-2.5 cm in width. Leaf shape is oblanceolate but may vary from narrowly to broadly elliptic; apices are bluntly tapered to rounded, margins entire. The upper leaf surface is essentially glabrous, and the lower surface is moderately wooly-pubescent with grayish to tawny or rust-colored hairs. Berries are dull black, 8-10 mm long on slender petioles 6-8 mm long, with ovoid subtending calyx lobes.

DISTRIBUTION
Bumelia thomei occurs in the Coastal Plain physiographic region of southwestern Georgia, northern Florida, and southeastern Alabama. This species is known in Alabama from Houston county.

HABITAT
Swamp buckthorn occurs in woods bordering ponds and streams, presumably where some surface water stands seasonally.

OTHER BIOLOGICAL DATA

POTENTIAL THREATS
Bumelia thomei occurs in a wetland habitat subject to drainage, excessive removal of groundwater, and pollution. Any change in hydrology, whether from silvicultural practices or development would be detrimental to this rare shrub.

REFERENCES
Godfrey, R.K. 1988. Trees, shrubs, and woody vines of northern Florida and adjacent Georgia and Alabama. The University of Georgia Press, Athens, Georgia. 734 p.

Carex baltzellii Chapm. ex Dewey — Cyperaceae
Baltzell's sedge — sedge family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. Federal Register 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Extremely small range and narrow habitat preference. The habitat of this species is rapidly being destroyed by logging and development.

DESCRIPTION
Carex baltzellii is a perennial sedge that forms tufts from fibrous rhizomes. There are numerous pale green linear leaves up to 6 dm in length, 0.5-1.0 cm in width and somewhat tapering at the apex. Leaves overwinter and are pale or straw-colored at the base. Fertile shoots can be up to 30 cm tall, with shorter leaves, the outer-most is scale-like and pale brown in appearance. Spikes are erect or ascending, number 3-5, and are linear cylindrical (3-5 cm long). The terminal spike has the longest stalk, and has all male florets with overlapping obovate reddish brown bracts with a strong pale midnerve. Lateral spikes are entirely female or female below and male at the tip. Bracts of female florets also strongly overlap, obscuring all but the tips of the florets and are reddish brown. The covering of the female fruit is narrowly obovoid, 4 mm in length, finely hairy and ribbed, with a toothless beak. The ripe fruit or achene is dark brown and trigonous with a short stalk.

Superficially, Baltzell's sedge may be confused with *Carex* picta since they occur in the same range, but the latter species produces unisexual plants, has reddish-tinted bases, and lacks the strong spiny tip on the end of its bracts.

DISTRIBUTION
This rare sedge occurs in the Lower Coastal Plain physiographic region of northwestern Florida, southeastern Alabama and southwestern Georgia. In Alabama it is currently known from Calhoun, Dale, Geneva, and Houston counties. This plant is locally abundant; occurring in large or many clumps, but is not a common plant.

HABITAT
Terrestrial, forest/woodlands.
Moist, well-drained humified fine sands in steep ravines of beech-magnolia forests. This shade-loving species requires a dense overstory.

OTHER BIOLOGICAL DATA
Associated herbaceous species that occur in the same acidic sands as Baltzell's sedge are: *Hexastylis,* Trillium species, Uvularia, and Viola, together with an abundance of other species of Carer. Plants flower in April and fruit in May.

Carex baltzellii Chapm. ex Dewey — Cyperaceae
Baltzell's sedge — sedge family

POTENTIAL THREATS

The most important threat to Baltzell's sedge is loss of habitat as a result of silvicultural practices and development. This sedge has never been found in areas where logging has removed the dense overstory or where heavy grazing has occurred (Kral, 1983). Change in hydrology of the well-drained soil in these beech-magnolia ravines would also adversely affect this plant.

REFERENCES

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Kral, R. 1983. A report on some rare, threatened, or endangered forest-related vascular plants of the south, technical publication R8-TP2. USDA Forest Service, Atlanta, Georgia. 1:95-98.

Carex impressinervia Bryson
impressed-nerved sedge

Cyperaceae
sedge family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. *Federal Register* 58(188):51144-51190.

REASONS FOR CURRENT STATUS
This species is apparently very rare and local, only three extant populations are known. The most serious threat is logging, in particular clear-cutting (Naczi, 1991). Sediment from erosion caused by logging operations above slope could also harm this species, as would altering of water levels. Exotic plant species are an additional threat.

DESCRIPTION
Cam *impressinervia* is a densely cespitose perennial herb. The principal leaves (14-42 cm long, 2.0-3.6 mm wide) are slightly shorter than the flowering stem, with brownish fibrils of old leaf bases covering the base of the new leaf. Sheaths of leaves are very short, pale green, multicostate and smooth. Leaves are spreading to recurved with horseshoe-shaped projections at the base; the principal lateral blades being impressed-nerved, with elevated nerves beneath. Flowering spikes are linear and number 2-4. The terminal spike is male, pale green with a sheathless bract, on a costate-angled peduncle well above the female spike. Peduncles of female spikes have bracts with sheaths; are all lateral with few to many flowers, sometimes 1-2 male flowers terminally. The covering on the ovary is broadly fusiform with flat to slightly concave faces at the middle. At maturity, the fruit is impressed-nerved, brownish, with a slightly excurved beak. The achene is trigonous except for apex and base, ca. 2.5 mm in length, and papillose with faces slightly concave.

DISTRIBUTION
Carex impressinervia occurs in the Coastal Plain physiographic region in Alabama and Mississippi, and in the Piedmont region in North Carolina. There are three extant populations (three in Alabama and one in North Carolina), and two historic (both in Mississippi) populations. In Alabama, this species is currently known from Bibb and Chilton counties.

HABITAT
Terrestrial, forest/woodlands.
This sedge occurs in the interior of mesic deciduous forests with depauperate shrub and herb floras. It grows in acidic soils along small streams in sheltered ravines. It is most common high in the floodplain and low on the slopes at the transition between floodplain and slope.

OTHER BIOLOGICAL DATA
Carex impressinervia flowers in mid-March to mid-April and produces nutlets from mid-April to late May. Culms are erect during flowering, but begin to arch away from the center of the plant as nutlets are shed. Reproduction appears to be primarily sexual, but clumps increase size through branching of the short rhizomes as well. Clumps attain a maximum diameter of approximately 40 cm.

Carex impressinervia Bryson — Cyperaceae
impressed-nerved sedge — sedge family

POTENTIAL THREATS

Logging is an immediate threat to this species since sites just upslope from two of the three extant populations have been clear-cut (Naczi, 1991). Removal of the canopy would eliminate the habitat requirements of ***Carex impressinervia***. Invasion by aggressive exotic species such as ***Lonicera japonica*** is also a threat, and is present at the Chilton county site. Changes in water management would adversely affect this species, especially in that it occurs at the transition between the floodplain and slope. Raising or reducing the water level in these ravines would change the transition zone between floodplain and slope, thus eliminating this species.

REFERENCES

Bryson, C.T., R. Kral, and J.R. Manhart. 1987. A new species of *Carex* (Cyperaceae: section *Oligocarpae*) from the southeastern United States. Rhodora 89:357-363.

Naczi, R.F.C., and C.T. Bryson. 1990. Noteworthy records of *Carex* (Cyperaceae) from the Southeastern United States. Bartonia 56:49-58.

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Clematis socialis Kral.
Alabama leather flower

Ranunculaceae
buttercup family

SYNONYMS

LEGAL STATUS
Endangered species, U.S. Fish and Wildlife Service, 1986. *Federal* Register 51(187):34420-34422.

REASONS FOR CURRENT STATUS
Small number of known populations, low level of sexual reproduction, and habitat disturbance.

DESCRIPTION
Clematis *socialis* is a member of the Viorna section of Clematis, family Ranunculaceae. Distinctive features include its rhizomatous habit and formation of dense clones with erect stems reaching 0.2-0.3 meters in height. Leaves are variable, the lowermost leaves scale-like, oblong or triangular in shape and mostly under 1 cm in length. Median leaves are simple, elliptic-linear, 4-12 cm in length, 0.5-1.0 cm wide; upper leaves are 3 to 5 foliolate and shaped as in median leaves. Flowers are solitary at the termini of slender stems, urn to bell-shaped, 2-3 cm in length, and blue-violet in color. The fruits are aggregates of achenes which are densely pubescent and 2.5-3.0 cm in length. Achenes do not have feathered styles as do other members of this genus. Description adapted from Kral, 1982.

DISTRIBUTION
Clematis *socialis* occurs in the Ridge and Valley physiographic region of northeast Alabama. There are five known populations, three in St. Clair county, and two in Cherokee county.

HABITAT
Terrestrial, forest/woodlands and grasslands.
The specific vegetation type is unknown because populations occur in habitat altered from its natural condition. Populations are located in mesic flats near intermittent creeks where plants are rooted in silty-clay soils of the Conasauga Soil Series. These soils are circumneutral or slightly basic with a high hydroperiod. Plants occur in full sun or partial shade in a grass-sedge-rush community.

OTHER BIOLOGICAL DATA
Sexual reproduction of Clematis *socialis* is limited by a combination of pollinator abundance, resource availability at flowering time, and achene predation (Timmerman-Erskine, 1992). This species appears to be a poor competitor; populations are in need of active management due to shading and competition from more aggressive vegetation (U.S. Fish and Wildlife Service, 1989). Plants flower from late April into May.

POTENTIAL THREATS
All known populations exist on either highway or pipeline rights-of-way or privately owned land. Maintainance of rights-of-way poses a great threat to this species. Populations are also located in mesic flats near intermittent creeks. Changes in hydrology, either decrease or increase of water flow would damage or eliminate populations. Grazing by cattle will also eliminate this species.

Clematis socialis Kral.
Alabama leather flower

Ranunculaceae
buttercup family

REFERENCES

Kral, R. 1982. A new *Clematis* from northeastern Alabama. Rhodora 84:285-291.

Timmerman-Erskine, M. 1992. Reproductive ecology of *Clematis socialis*. Unpublished M.S. thesis, Auburn University, Alabama.

U.S. Fish and Wildlife Service. 1989. Alabama leather flower *(Clematis socialis)* recovery plan. Jackson, Mississippi. 21 p.

Croton alabamensis EA. Sm. ex Chapman — Euphorbiaceae
Alabama croton — spurge family

SYNONYMS

LEGAL STATUS
Candidate species (Category 2), U.S. Fish and Wildlife Service, 1993, Notice of Review. Federal Register 58(188):51144-51190.

REASONS FOR CURRENT STATUS
This species has a very restricted range.

DESCRIPTION
A semi-deciduous, **0.5-3.5** m tall, well-branched, monoecious shrub, often forming dense thickets. The leaves, branchlets and inflorescences have a distinctive, silvery sheen due to the vestiture of stelliform, peltate scales on their surfaces. The simple, semi-evergreen leaves with entire margins are 7 cm long and **3** cm wide, ovate to elliptic and strongly furrowed along the veins. The terminal, few to many-flowered racemes bear male flowers only, female flowers only or both together. The fruit is a capsule, **6-8** mm long, containing **3** (1-6) nearly oval seeds.

DISTRIBUTION
Confined to Bibb and Tuscaloosa Counties in central Alabama. Another variety, Croton *alabamensis* var *texensis*, has recently been discovered and described from the Edwards Plateau in Texas

HABITAT
Terrestrial; forest/woodlands.
Populations in Bibb County occur on Ordovician limestones and dolomites, while those in Tuscaloosa County occur on Pennsylvanian shale and sandstone. They may occur in full sun or in the understorey of oak-hickory-ash-red cedar woodland.

OTHER BIOLOGICAL DATA
Flowering begins in late February to early March, with peak flowering in mid-March. Flower buds for the following season are formed during May and June. Seeds are distributed by explosive dehiscence of the capsules by early June.

POTENTIAL THREATS
Since most populations are associated with calcareous rock outcrops, populations are vulnerable to degradation or loss due to quarrying of stone for road construction and other purposes. Any management activity or land use (eg. flooding by impoundment, clearcutting, construction, etc.) that would lead to the direct or indirect destruction or degradation of the habitat or population should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Mohr, C. 1901. Plant life of Alabama. *Contributions from the U.S. National Herbarium* VI.

Small, J.K. 1933. Manual of the Southeastern Flora. The University of North Carolina Press, Chapel Hill, North Carolina.

Cuscuta harperi Small — Cuscutaceae
Harper's dodder

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. *Federal Register* 58(188):51159.

REASONS FOR **CURRENT** STATUS
Restricted to specialized habitat in northern Alabama and central Georgia.
Cuscuta harperi occurs on sandstone outcrops in northern Alabama and central Georgia. The known number of populations is low; most in Alabama occur in the Little River Canyon area.

DESCRIPTION
Cuscuta harperi is a small annual parasitic vine that twines on other herbaceous species. This plant has slender leafless stems that are yellow or orange in color. Flowers are penta-, tetra-, or trimerous, 1 mm in length, and white in color. The calyx is shallow with broadly ovate, obtuse lobes. The corolla lobes are triangular-ovate, acute, approximately equal to the campanulate tube, and slightly fleshy. Stamens are shorter than the corolla lobes with anthers equal to the length of the filament. Stigmas are capitate, and the ovary globose-oval.

DISTRIBUTION
Cuscuta harperi is restricted to northern Alabama with a disjunct population historically located in Washington County, Georgia (McDaniel, 1981). There are a total of 12 populations in Alabama known from Cherokee, Etowah, DeKalb, Jackson, and Marion counties.

HABITAT
Terrestrial, sand/barren.
Cuscuta harperi occurs on sandstone outcrops in the Appalachian Mountain physiographic region of Alabama. Plants occur in full to partial sun in areas of relatively sparse vegetation. This species is most commonly associated with ***Bigelowia nuttallii,*** but is also parasitic on ***Liatris microcephala,*** and ***Hypericum gentianoides*** (McDaniel, 1981).

OTHER BIOLOGICAL DATA
Frequently associated species include: ***Bigelowia nuttallii, Bulbostylis ciliatifolia, Coreopsis pulchra, Crotonopsis elliptica, Cyperus granitophilus, Hypericum gentianoides, Liatris microcephala; Polygala curtisii, Pinus virginiana, Talinum mengesii.*** Harper's dodder flowers in September.

POTENTIAL THREATS
Present or threatened destruction or modification of habitat. Vehicular traffic could become a threat in the future. Inundation of sites would of course extirpate populations.

Cuscuta harperi Small — Cuscutaceae
Harper's dodder

REFERENCES

McDaniel, S. 1981. Status report on *Cuscuta harperi*. Unpublished report produced under contract for the U.S. Fish & Wildlife Service, Endangered Species Office, Region 4, Atlanta, Georgia. 19 p.

Hymenocallis coronaria (Le Conte) Kunth — Amaryllidaceae
shoals spider-lily — amaryllis family

SYNONYMS

LEGAL STATUS
Candidate species (Category 2), U.S. Fish and Wildlife Service, 1993, Notice of Review. *Federal Register* 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Limited distribution and destruction and degradation of habitat.

DESCRIPTION
A smooth, perennial herb to 1 m tall, arising from large (10 cm long and 8 cm wide), ovoid bulbs. The fleshy, bright green, strap-shaped leaves are basally disposed and up to 80 cm long and 5 cm wide. Each erect, pale green flowering stalk is 80-100 cm tall, and supports a headlike cluster of 3-5 flowers subtended by several papery bracts. The six perianth parts are white, linear, 8-9 cm long and 1 cm wide, with the segments connected by a white, cup-shaped corona from which the six, whitish filaments arise.

DISTRIBUTION
Hymettocallis coronaria occurs in Alabama, Georgia and South Carolina in rocky shoals in the Piedmont or along the boundary between the Coastal Plain and Piedmont physiographic regions. In Alabama, it has been recorded from Bibb, Coosa, Lee, Shelby, Tallapoosa and Tuscaloosa Counties in the Black Warrior, Cahaba, Coosa and Tallapoosa River systems. The species has been extirpated from the Black Warrior River in Tuscaloosa County.

HABITAT
Riverine; mainstream:riffle, tributary: riffle.
Hymenocallis coronaria is restricted to rocky riffles, bars, banks and shoals of swift, clear streams. The large bulbs are rooted in rock crevices or in muck-filled solution pockets in bedrock. Geological substrates include granite, shale, limestone and dolomite. Water depth varies from site to site and seasonally, and may be as much as 0.5 m at flowering. During flood events, plants may be covered under several meters of water. A species commonly found growing with *Hymenocallis coronaria* is waterwillow ***(Justicia americana).***

OTHER BIOLOGICAL DATA
Flowers from early May to mid-July, with peak flowering in Alabama occurring in late May. Honey bees, bumble bees and hummingbirds have been observed to visit flowers. The large, one-seeded fruits sink in water and become lodged in crevices in suitable habitat downstream from the parent plant. Asexual reproduction by formation of additional bulbs is common.

POTENTIAL THREATS
This species is particularly vulnerable to flooding of habitat due to impoundment and to diversion of water for upstream uses. Any management activity or land use (eg. siltation and loss of water quality due to strip-mining, construction, agriculture, clearcutting and dumping of sewage) that would lead to the direct or

indirect destruction or degradation of the habitat should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

REFERENCES

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McDaniel, S. 1981. Status report on ***Hymenocallis coronaria***. Unpublished report to U.S. Fish and Wildlife Service, Atlanta, Georgia.

Mohr, C. 1901. Plant life of Alabama. ***Contributions from the U.S. National Herbarium VI.***

Small, J.K. 1933. Manual of the Southeastern Flora. The University of North Carolina Press, Chapel Hill, North Carolina.

Jamesianthus alabamensis Blake & Sherff — Asteraceae
jamesianthus — aster family

SYNONYMS

LEGAL STATUS
Candidate species (Category 2), U.S. Fish and Wildlife Service, 1993, Notice of Review. Federal Register 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Until recently, this species was only known to have a very limited range across parts of two counties in north Alabama. Although additional populations have been discovered in a number of other counties in Alabama over the past 2 years, some of them are small and they are widely scattered.

DESCRIPTION
A rhizomatous, herbaceous perennial. The sparsely hairy stems are solitary and from 60-150 cm tall, with the opposite leaves arranged along the entire length of the stem. The leaves are nearly sessile, auriculate and clasping, 5-9 cm long and lanceolate to elliptic. Several yellow-flowered heads about 3 cm across terminate the stem branches. Both ray and disk flowers produce seed which is an oblong achene 3-4 mm long.

DISTRIBUTION
This species is endemic to Alabama and, until recently, was only known to have a very limited range across parts of Colbert and Franklin Counties in northwestern Alabama. Additional populations have been discovered over the past two years in Bibb, Calhoun, Cleburne and Winston Counties in the Appalachian Plateaus and Ridge and Valley physiographic provinces of Alabama.

HABITAT
Terrestrial; forest/woodlands.
This species occurs on wet gravelly or silty sands along streambanks, usually in the immediate vicinity of limestone, dolomite or shale. The dominant canopy trees of these small stream bottoms are usually various oaks (*Quercus* spp), gum (Nyssa), elms (*Ulmus* spp), sweetgum (*Liquidamabar styraciflua*) and cottonwood (*Populus*). *Plantago* cordata is a rare plant often associated with *J.* alabamensis.

OTHER BIOLOGICAL DATA
Plants flower in late summer and fall.

POTENTIAL THREATS
Mechanical disturbance associated with heavy logging of the slopes above the streams is likely to have a negative effect on this species due to resultant erosion and silt deposition, lowering of the water table or flooding. Any other management activity or land use (eg. stream channelization, flooding by impoundment, construction, quarrying, conversion to plantation forestry, etc) that would lead to the direct or indirect destruction or degradation of the habitat, should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or

habitat.

REFERENCES

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Leavenworthia exigua var ***lutea*** Rollins — Brassicaceae
pasture glade-cress — mustard family

SYNONYMS

LEGAL STATUS
Candidate species (Category 2), U.S. Fish and Wildlife Service, 1993, Notice of Review. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
This species is apparently a poor competitor. Some populations appear to be in decline due to encroachment of woody and herbaceous species into L. ***exigua*** var. ***lutea*** habitat. The reasons for this encroachment are not understood. Only a very few, mostly small, widely scattered populations of this species are known.

DESCRIPTION
A small annual herb approximately 4 to 8 cm tall, with leafless flowering stems arising from a basal rosette of highly dissected, pinnately lobed leaves. The 1.5 to 6 cm long leaves are smooth and have 3 to 6 pairs of lateral lobes and a larger terminal lobe. Each flower has four bright yellow spatulate petals (6 to 9 mm long and 3.0 to 4.5 mm wide), each with an orange base and a shallowly notched tip. The fruit is a very flattened, non-fleshy, oblong silique about 1 to 2 cm long, each containing from 4 to 10 rounded, flattened, winged seeds. The fruit is not hairy and is topped by the 1 to 3 mm long persistent style. The combination of small stature, yellow flowers, notched peals and lack of flower fragrance serve to distinguish this plant from other ***Leavenworthia*** species and varieties in the region.

DISTRIBUTION
L. ***exigua*** var ***lutea*** has been documented from the Tennessee Valley and Ridge and Valley physiographic provinces in north and north-central Alabama respectively and in the Interior Low Plateau (Central Basin) physiographic province in central Tennessee. In Alabama, it has been recorded from Bibb, Jackson, Jefferson, Marshall and St. Clair counties. There are eight known extant populations in Alabama, four in Bibb county, two in Jefferson county and two in Marshall county.

HABITAT
Terrestrial; grasslands, barren.
Plants are restricted to open, sunny areas where limestone or dolomite bedrock (usually of Ordovician age) occurs at or near the surface. More specifically, the plants are usually found in heavy, seasonally saturated clay soils near limestone or dolomite gravel or bedrock. Most sites are under heavy grazing pressure from cattle, and persist despite considerable trampling. At a few of the Alabama sites, the populations occur in the floodplains of creeks, and it is speculated that flooding may have originally provided the disturbance required to maintain the populations, by periodically scouring the rock outcrops.

OTHER BIOLOGICAL DATA
L. ***exigua*** var. ***lutea*** flowers in March.

POTENTIAL THREATS

Habitat alteration was identified in the status survey as by far the most serious threat to L. *exigua* var. *lutea.* Specific activities mentioned include commercial development, road widening and use of herbicides. At certain sites changes in the habitat have resulted in the encroachment of woody and herbaceous plants into areas occupied by L. *exigua* var. *lutea.* Since L. *exigua* var. *lutea* appears not to be an effective competitor, populations seem to be declining due to this natural competition. Any management activity or land use (eg. flooding by impoundment, clearcutting, construction, etc.) that would lead to the direct or indirect destruction or degradation of the habitat or population should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

REFERENCES

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Kral, R. 1983. A report on some rare, threatened, or endangered forest-related vascular plants of the South. Technical Publication R8-TP 2 1:502-503. U.S.D.A. Forest Service, Southern Region, Atlanta, GA.

Lindera melissifolia (Walt.) Blume — Lauraceae
pondberry — laurel family

SYNONYMS
Benzoin melissifolium Nees
Laurus melissaefolia Walt.
Laurus diospyroides Michx.

LEGAL STATUS
Listed as endangered on July 31, 1986. ***Federal Register*** 51:27495-27499.

REASONS FOR CURRENT STATUS
The species is known to occur in 19 scattered populations across the Southeastern United States. It is believed to have been extirpated in three states within its historic range.

DESCRIPTION
Lindera melissifolia is a deciduous, aromatic shrub with drooping foliage, and is 0.5 to 2 m tall. Plants are stoloniferous and grow in large clones. Leaves are membranaceous, oblong in shape, 5-16 cm in length, and 2-5 cm in width. Leaves are slightly to densely pubescent on the lower surface with conspicuous, pronounced venation. Leaves smell like sassafras when crushed. Plants are dioecious; flowers of both sexes are small and pale yellow. Mature fruits are elliptic-obovoid, 10-11.5 mm long, and 7-8 mm wide. Fruiting pedicels are persistent from the previous year and last until the time of anthesis.

DISTRIBUTION
There are 19 populations of ***Lindera melissifolia*** distributed ***in*** Arkansas, Georgia, Mississippi, Missouri, North Carolina, and South Carolina. This species is assumed extirpated from Alabama, Florida, and Louisiana. In Alabama, this species has not been observed since the 1839 and 1840 collections from Wilcox County.

HABITAT
Palustrine, forested.
Seasonally flooded wetlands. Sandy sinks, pond margins, and swampy depressions. In Missouri, Arkansas, and Mississippi, pondberry is associated with wet bottomland hardwood habitats. In the coastal sites of North and South Carolina, pondberry is associated with the margin of sinks, ponds, and depressions in the pinelands. Pondberry grows best under shaded conditions.

OTHER BIOLOGICAL DATA
Pondberry flowers in spring prior to leaf development, usually March, and fruits mature in October.

POTENTIAL THREATS
Alteration or destruction of this species' habitat threatens its continued existence. Land-clearing operations, drainage activities, or silvicultural practices are potential threats. Changing water levels will reduce plant vigor and may eliminate it from the site.

REFERENCES

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U.S. Fish and Wildlife Service. 1993. Recovery plan for pondberry (Lindera melissifolia). U.S. Fish and Widife Service, Atlanta, Georgia. 56 p.

Lobelia boykinii T. & G. Carnpanulaceae
Boykin's lobelia bluebell family

SYNONYMS

LEGALSTATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. *Federal Register* 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Restricted distribution; few known localities.

DESCRIPTION
Lobelia boykinii is a rhizomatous perennial 3-8 dm tall. Stems are hollow, unbranched or sparingly branched, and glabrous. Leaves are sessile, filiform, entire or indistinctly glandular-toothed, 5-25 cm long, 0.5 mm or less wide. The inflorescence is an open 10-25 flowered raceme 1-2 dm long. Petioles are slender, 1-2 cm long; flowers tend to be on one side of the stalk. The corolla is 10-13 mm long, two-lipped, the upper two lobes erect, the lower three usually spreading. The lower lip is usually bearded inside with two tubercles near the base. Petals are bright blue to violet with a white eye at the throat. Stamens number five, and are inserted at the base of the corolla, alternate with the corolla lobes, and protruding. The fruit is a hemispheric capsule, 2.5-4 mm wide, wider than long. Seeds are brown, irregularly turbiiate and rough tuberculate, and 0.4 mm long.

DISTRIBUTION
Lobelia boykinii occurs in the Coastal Plain physiographic region along the Atlantic Coastal Plain from southern New Jersey to northern Florida and eastern Alabama. This species is known from two counties in Alabama, DeKalb and Houston counties.

HABITAT
Boykin's lobelia occurs in wet ground or shallow water of vernal or intermittent ponds, wet savannas, swamps or bogs, or along the margins of cypress ponds.

OTHER BIOLOGICAL DATA
Flowering occurs from May to July; water levels may influence timing.

POTENTIAL THREATS
Development or change of the immediate or surrounding landscape resulting in change in hydrology would directly impact this species. Disturbances such as silvicultural practices, development, draining, or excavating would encourage competitive weed species. This species appears to require seasonal patterns of water levels; any disruption in this cycle would harm or eliminate the plant.

REFERENCES

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Lysimachia fraseri Duby — Primulaceae
Fraser's loosestrife — primrose family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Restricted distribution; few known localities.

DESCRIPTION

Lysimachia fraseri is an erect, herbaceous, rhizomatous perennial. Leaves are stipitate glandular, lanceolate in shape, occur in whorls of 3-5, and are 6-15 cm in length. The inflorescence is a leafy panicle 0.6-2.5 dm long. The calyx is densely stipitate-glandular with purple margins; the corolla is rotate, yellow, lobes are elliptic, and distally narrowed with one or more teeth. The fruit is a subglobose capsule, 3-5 mm long, with dark brown, finely alveolate seeds.

DISTRIBUTION
Lysimachia fraseri occurs in the Ridge and Valley physiographic region. This species is known from two counties in Alabama, Calhoun and Saint Clair counties.

HABITAT
Terrestrial, grasslands, forest/woodlands.
Fraser's loosestrife occurs in alluvial meadows, along streambanks, moist roadside banks and pastures.

OTHER BIOLOGICAL DATA
Flowering occurs from September to October.

POTENTIAL THREATS
Change in hydrology would adversely affect this species. Minor disturbance of surrounding areas would probably not be too detrimental since this plant occurs along roadsides, but intensive site preparation for development or silviculture would eliminate the plant.

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Marshallia mohrii Beadle & F.E. Boynton — Asteraceae
Mohr's Barbara's buttons — aster family

SYNONYMS

LEGAL STATUS
Threatened species, U.S. Fish and Wildlife Service, 1988. Federal Register 53(173):34698-347041.

REASONS FOR CURRENT STATUS
Rare over most of its limited range, and declining due to loss of habitat. Many of the populations are located along rights of way and are thus vulnerable to accidental destruction.

DESCRIPTION
An erect, herbaceous perennial which arises from a short, thickened rhizome. The alternate, narrowly to broadly elliptic leaves are usually basally disposed, with a gradual reduction in size upward. The leaves are mostly 8 to 20 cm long, smooth, firm-textured and three-nerved, with narrowly winged petioles, blunt, acute tips and smooth margins. The branched inflorescence supports several (2 to 10) heads, each approximately 2.5 cm across. The white to pale pink flowers are all discoid (tubular) with narrow, spreading lobes. The fruit is an oblong, ribbed achene about 0.4 mm long.

DISTRIBUTION
Marshallia mohrii has been recorded from a total of 8 counties in the Cumberland Plateau and Ridge and Valley physiographic regions of north Alabama (Bibb, Calhoun, Cherokee, Cullman, Etowah and Walker Counties) and northwest Georgia (Floyd and Walker Counties). No extant populations are known from Walker and Cullman Counties, Alabama and Walker County, Georgia. Most of the populations of M. *mohrii* in Alabama, including the largest and most natural ones, are scattered over an area of several square miles in Bibb County.

HABITAT
Terrestrial; forest/woodlands, grasslands, barren.
This species is found in open, moist, grass-sedge dominated areas in otherwise forested areas dominated by various oaks and pines. The soils are predominantly sandy clays which tend to be high in pH and organic matter and seasonally wet. Many populations occur in full sun or partial shade on soils of the Conasauga-Firestone Association. Common associates include *Asclepias* hirtella, A. *viridis*, *Helianthus angustifolius*, H. *mollis*, *Helenium autumnale*, *Lythrum alatum*, Ruellia caroliniensis and *Silphium terebinthinaceum*,

OTHER BIOLOGICAL DATA
Marshallia mohrii flowers from mid-May through June.

POTENTIAL THREATS
This species is vulnerable to destruction or modification of its habitat, since a large number of populations occur on or near roadside rights of way. Here plants are threatened by a wide variety of activities such as road widening, herbicide application, mowing and planting of aggressive competitors. Other threats include the conversion of habitat to pasture, cropland or pulpwood plantations, and the gradual encroachment of

woody species into the open habitat. Any management activity or land use (eg. flooding by impoundment, clearcutting, construction, etc.) that would lead to the direct or indirect destruction or degradation of the habitat or population should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

REFERENCES

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Matelea alabamensis (Vail) Woodson
Alabama milkvine

Asclepiadaceae
milkweed family

SYNONYMS
Vincetoxicum alabamense Vail
Cyclodon alabamense (Vail) Small

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. *Federal Register* 58(188):51144-51190.

REASONS FOR CURRENT STATUS

According to Kral, 1983, *Matelea alabamensis* is one of the rarest herbs in the southeastern U.S.. Historically, less than 10 localities have been reported for this species. At present, this species is found in only a few locations.

DESCRIPTION

Matelea alabamensis is a perennial, twining herbaceous vine with milky juice. There are 1 to 3 stems several meters long from a fibrous-rooted rhizome. Stems are simple or branched, terete, and pale green or tinged with maroon. Leaves are opposite, mostly 3-5 cm in length, the upper side somewhat concave and the lower side rounded. The leaf surface is yellow-green or maroon with a scattering of shorter eglandular and glandular hairs mixed with some sessile glands. The leaf blades are ovate to suborbicular, 5-10 cm in length, apically acute, margins entire, base cordate or auriculate, the upper surface deep yellow-green and slightly hirsute, the lower surface darker green and more copiously hirsute, especially along the veins. The inflorescence is an umbel, usually one per node from the upper nodes, subtended by a few small, lance-linear, minutely hirsute green bractlets. Flowers are bisexual, rotate, flat, and approximately 2.5 cm across the petals. There are 5 sepals joined at the base, lobes are triangular in shape, 3 mm in length, acute, and pale green. The corolla has 5 flat lobes, approximately 8-9 mm long, elliptical or narrowly ovate, tips narrowly rounded, with the surface greenish yellow reticulated with deeper green. The stamen and female parts (gynostegium) is surrounded at the base by a fleshy, orangish disc with 5 conical horns opposite the 5 calyx lobes forming a strongly erose fringe. The gynostegium is elevated 1 mm above the corolla and calyx, and is yellow-green, with a truncate apex 3 mm wide, and nearly covered by 5 broadly triangular, inflexed flaps of anther tissue. The stigma is peltate with 5 radial lines, and is most of the gynostegial head. The fruit is a yellowish-green follicle, ovoid with fleshy spines, 10 cm in length with numerous seeds. Seeds are flattish, brown and ovate with a white tuft of long thin hairs at the narrow end.

DISTRIBUTION
Matelea alabamensis occurs in the Coastal Plain physiographic region of southwestern Georgia, northwestern Florida, and southeastern Alabama. This species is known only historically in Alabama from Dale, Henry and Houston counties.

Matelea baldwyniana (Sweet) Woods — Asclepiadaceae
Baldwin's milkvine — milkweed family

SYNONYMS
Gonolobus baldwynianus Sweet
Odontostephana baldwyniana (Sweet) Alex.
Vincetoxicum baldwynianum (Sweet) Britt.

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Abundance is unknown; populations are rare and disjunct in Alabama and along the Apalachicola River in Florida.

DESCRIPTION
Matelea baldwyniana is a perennial, twining herbaceous vine with milky juice. Leaves are broadly ovate, hirsute, 8-14 cm in length, and cordate at the base. The inflorescence is an umbel with 10-20 flowers. The corolla is a dingy white with oblong to spatulate lobes 8-12 mm in length and 1.5-2.5 mm wide. The fruit is a yellowish-green follicle, ovoid with fleshy spines, 8 cm in length with numerous seeds. Seeds are flattish, brown and ovate (9 mm long) with a white tuft of long thin hairs at the narrow end.

DISTRIBUTION
Matelea baldwyniana occurs in the Red Hills Coastal Plain physiographic region of Alabama. It also occurs in Missouri, Arkansas, Oklahoma, and Florida. This species is known only historically in Alabama from Clarke and Wilcox counties.

HABITAT
Terrestrial, forest/woodlands.
Rocky soils of thickets and open woods.

OTHER BIOLOGICAL DATA
Flowers in April. Positive identification of this plant requires flower and fruit.

POTENTIAL THREATS
The abundance of ***Matelea baldwyniana*** is unknown. Loss of habitat caused by silvicultural practices and development are threats to this species. Populations are rare and disjunct in Alabama, and warrant further searching. Any change in land management or use (eg. stream channelization, site preparation, water impoundment, etc) that would lead to the direct or indirect destruction or degredation of the habitat should be regarded as a potential threat.

HABITAT

Terrestrial, forest/woodlands.

Plants occur on gentle east, south and west slopes in beech-magnolia-maple forest. The forest overstory may also contain oaks, cherry, gum, hickory, basswood, sweetgum and a scattering of short leaf or loblolly pine. The soil is a fine sandy loam, usually moist, never wet. The *Matelea* vines seem to occupy the edges of the deeper stands of forest or where the trees are well spaced, or where there has been some disturbance. As such disturbed areas are overgrown with returning woody vegetation, *Matelea* will stop flowering as shade increases, and finally become suppressed entirely.

OTHER BIOLOGICAL DATA

Positive identification of this plant requires flower and fruit. Because *Matelea* appears to lose vigor under increasing shade, careful selective logging that does not damage the understory or soil substrate may benefit this plant. Controlled light burning may also be advantageous. However, due to the extreme rarity of these plants, recommendations for their monitoring and management should come from an expert such as Dr. Donald Drapalik.

POTENTIAL THREATS

Matelea alabamensis has never been abundant, and very few populations remain. Loss of habitat caused by silvicultural practices and development are the most obvious threats to this rare species. Changes in the hydrology of the beech-magnolia-maple community would also eliminate this species.

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Myriophyllum laxum Shut. & Chap. — Haloragaceae
loose water milfoil — water milfoil family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. *Federal Register* 58:5144-51190.

REASONS FOR CURRENT STATUS
Restricted range; regional endemic to the southeastern Atlantic and Gulf Coastal Plains. There is inadequate data on extant populations, and threat of loss or damage to this species' aquatic habitat.

DESCRIPTION
Myriopltyllum laxum is an aquatic perennial with elongate, reddish stems. Submersed leaves occur in whorls of 4 or 5, or 2 or 3 at a node, sometimes alternate; leaves not markedly feathery. Flowers are minute with inconspicuous bracts on slender spikes. The lower bracts are comb-like, upwardly gradually becoming toothed, then entire and spatulate. Flowers are bisexual and staminate with translucent, pink petals that recurve at the time of flowering. Fruits are 1 mm in length, red, with smooth to warty surfaces.

DISTRIBUTION
Myriopltyllum laxum occurs in the Coastal Plain physiographic region of North Carolina, South Carolina, Georgia, Alabama and Florida. In Alabama, this species is currently known from Conecuh, Covington, Escambia, Mobile, and Washington counties.

HABITAT
Palustrine, lacustrine, and riverine.
Loose water milfoil occurs in shallow water of natural ponds and sinkhole ponds, lakes, impoundments and beaver ponds, blackwater streams, backwaters, sloughs, drainage ditches, and canals. Water is usually highly acidic.

OTHER BIOLOGICAL DATA
Flowering and fruiting occurs from mid-April and mid-May through August and into October, but in general this species does not produce fruits and flowers for extended periods of time.

POTENTIAL THREATS
Threats to this species include loss or change of habitat due to widely fluctuating water levels, draining, high nutrient inputs, herbicides, grazing by tame or feral waterfowl, and siltation. Natural ponds and sinks are threatened with direct drainage, excessive removal of groundwater, and by water pollution.

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Neviusia alabamensis A. Gray — Rosaceae
Alabama snow-wreath — rose family

SYNONYMS

LEGAL STATUS
Candidate species (Category 2), U.S. Fish and Wildlife Service, 1993, Notice of Review. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Limited number of widely scattered populations, little or no seed production at many sites and a lack of seedling recruitment in the wild.

DESCRIPTION
A 1-2 m tall, deciduous, thicket-forming shrub with numerous, slender, arching stems and short, lateral branches. The bright green, alternate leaves are 2.0-6.5 cm long and 1-4 cm wide. Despite the absence of petals, the plants are showy during flowering due to the masses of flowers, each flower being characterized by the numerous, white, spreading stamens.

DISTRIBUTION
Neviusia alabamensis has been recorded from Alabama, Arkansas, Georgia, Mississippi, Tennessee and Missouri. The Alabama sites are located in the Appalachian Plateaus, Interior Low Plateaus and Upper Gulf Coastal Plain physiographic regions in Blount, DeKalb, Jackson, Jefferson. Careful searches could result in the discovery of additional populations in other counties of the northern half of the state. All sites appear to be near the boundary of the Mississippi Embayment of the old Gulf Coastal Plain.

HABITAT
Terrestrial; forest/woodlands.
Forested bluffs, rock outcrops, talus slopes and streambanks on a variety of geological substrates including limestone, dolomite, sandstone and shale. Populations have been reported from a variety of aspects and soil types (residual, colluvial and alluvial), with site exposures ranging from open canopy to completely shaded, closed canopy. Forest types range from mixed oak-hickory-pine on upper portions of the slopes to mixed mesophytic forest lower down. Other rare plant associates at some Alabama sites are ***Croton alabamensis, Cheilanthes alabamensis*** and ***Sedum nevii.***

OTHER BIOLOGICAL DATA
Flowering occurs in April, with fruiting from May through June.

POTENTIAL THREATS
Heavy logging of the tree canopy is likely to have a negative effect on this species by either admitting too much light, stimulating the rapid growth of vigorous competitors such as Japanese honeysuckle, or by resultant erosion of the usually steep slopes. Any other management activity or land use (eg. flooding, construction, quarrying, etc.) that would lead to the direct or indirect destruction or degradation of the habitat should be regarded as a potential threat to the species. Existing regulatory mechanisms are

inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Pinguicula planifolia Chapm. — Lentibulariaceae
Chapman's butterwort — bladderwort family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Regional endemic; habitat directly threatened.

DESCRIPTION
Pinguicula ***planifolia*** is a carnivorous plant. Plants have a short stem bearing a compact rosette of leaves, the lowermost of which lie flat on the substrate. Leaves are entire, elliptic, dull green and slightly suffused with a dull purplish-red pigment. Glandular hairs, associated with a carnivorous function, occur on the upper leaf surfaces, the scapes, outer calyx surface, outer surface of the corolla, and on the ovulary. Flowers occur at the end of slender scapes (25 cm). The calyx is olive brown, the expanded corolla is violet to magenta in color (3 cm in diameter), and spurred. A hairy palate projects from just within the throat of the corolla tube with slender, yellow hairs with clublike tips. Hairs on the ridge of the corolla tube within and below the palate sessile and yellow to orange in color; hairs on the wall of the corolla tube white. Filaments pale to deep violet, anthers pale yellow, pollen white. Capsule ca. 5 mm in diameter, seed obpyramidal.

DISTRIBUTION
Pinguicula ***planifolia*** occurs in the Coastal Plain physiographic region in the Florida panhandle, westward to southeast Mississippi, and southern Alabama. This species is known from four counties in Alabama, Baldwin, Geneva, Houston, and Mobile counties.

HABITAT
Palustrine.
Chapman's butterwort occurs in shallow water in the margins of peat ponds, bogs, depressions in flat-woods, ditches, and drainage canals.

OTHER BIOLOGICAL DATA
Flowering occurs in March and April.

POTENTIAL THREATS
Any management activity or land use (eg. drainage of site, conversion to pine plantation, pasturage or row crops, fire suppression, etc) that would lead to the direct or indirect destruction or degradation of the habitat, should be regarded as a potential threat.

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Platanthera integrilabia (Correll) Luer — Orchidaceae
white fringeless orchid — orchid family

SYNONYMS
Habenaria *blephariglottis* **(Wid.)** Hook. var integrilabia Correll
Habenaria con-ellii Cronq.

LEGAL STATUS
Candidate species (Category 2), U.S. Fish and Wildlife Service, 1993, Notice of Review. Federal Register 58(188):51144-51190.

REASONS FOR CURRENT STATUS
There are only approximately 30 populations of this species rangewide, at least half of which are currently threatened by habitat destruction or modification. Most of the populations are small, and only about a dozen large, viable, easily protectable sites exist. Sexual and vegetative reproduction in this species appears to be limited. Collectors remain a threat to all populations.

DESCRIPTION
P. integrilabia is an erect, perennial herb often reaching a height of 60 cm, and originating from a single tuber. Plants typically have 2-3, long, narrow (20 cm long and **3** cm wide) leaves, the bases of which wrap loosely around the base of the stem. The upper leaves are substantially smaller. The white flowers are borne in a loose, elongate raceme at the top of the stem with 6-15 flowers per plant. The fruit is a tapering capsule some 15 mm long and **3** mm wide. The minute seeds are released when the fruit dries and cracks open.

DISTRIBUTION
This species has been reported from Alabama, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Virginia. In Alabama, Platanthera integrilabia is currently known from Calhoun, Jackson, Marion, Tuscaloosa and Winston counties, and was also historically known from Butler and Clay Counties.

HABITAT
Palustrine; forested.
P. integrilabia typically occurs in flat, swampy areas at the head of streams or on seepage slopes. It usually is found in partial shade under a deciduous tree and shrub canopy. Common woody associate species in Alabama include: Acer *rubrum*, *Nyssa* sylvatica, Liriodendron *tulipifera*, Viburnum nudum and Lyonia *ligustrina*. Common herbaceous species in Alabama include Osmunda cinnamomea , O. *regalis*, *Chasmanthium sessiliflorum*, *Sphagnum* sp. and *Thelypteris* noveboracensis.

OTHER BIOLOGICAL DATA
Flowering usually occurs from late June/July through early September, and fruits generally mature in October. There is some evidence to suggest that self-pollination may be important in this species, although the presence of strongly-scented, white flowers suggests at least some pollination activity by moths is likely.

POTENTIAL THREATS

Any management activity or land use (eg. flooding by impoundment, drainage, clearcutting, construction, etc.) that would lead to the direct or indirect destruction or degradation of the habitat or population should be regarded as a potential threat to the species. Overutilization for commercial or hobby purposes has been documented from several populations. Predation (for example, by deer) has been noted in some populations and there is some evidence to suggest that certain fungal diseases may weaken or kill plants. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Ptilimnium nodosum (Rose) Mathias
harperella

Apiaceae
parsley family

SYNONYMS

Harperella nododa Rose
H. fluviatilis Rose
H. vivipara Rose
Ptilimnium viviparum (Rose) Mathias
P. fluviatile (Rose) Mathias

LEGAL STATUS

Endangered species, U.S. Fish and Wildlife Service, 1988. *Federal Register*. 50:37978-37982.

REASONS FOR CURRENT STATUS

Low number of extant populations; ecologically fragile habitat.

DESCRIPTION

Ptilimnium nodosum is an annual herb that reaches heights of 0.15 to 1.0 meters, and has a faint scent of dill. Leaves are hollow, quill-like structures, variable in width, 3-4 dm long, gradually becoming shorter toward the apex of the stem. The inflorescence is a compound of compound umbels at the tips of axillary peduncles, and subtended by an involucre of bracts. The flowers are bisexual or unisexual, both perfect and male florets occur on the same umbel; male florets usually occur toward the center. There are five calyx lobes that are green or tinged with rose; petals also five, white, and somewhat fleshy. The fruit is broadly elliptical in outline; breaking into single-seeded units ca. 1.5-2.0 mm in length.

DISTRIBUTION

Ptilimnium nodosum occurs in the outer Coastal Plain, Piedmont, and Appalachian Plateau physiographic regions of Alabama, Arkansas, Georgia, South Carolina, North Carolina, West Virginia, and Maryland. In Alabama, populations occur in the Appalachian Plateau in Cherokee, DeKalb, and Tuscaloosa counties.

HABITAT

Riverine system.

Harperella occurs in two kinds of habitat: 1) wet bars, shoals, and seepy banks of fast-flowing streams; and 2) wet savannas, shallow pineland pools, and ditches.

OTHER BIOLOGICAL DATA

Plants from the two habitat types were originally described as separate species (Rose, 1911), but

morphological studies have since shown the species to be indistinguishable (Kral, 1981).

POTENTIAL THREATS

Harperella is potentially threatened by hydrological manipulations and by low water quality. It inhabits a dynamic and unstable habitat vulnerable to anthropogenic disturbances such as water impoundment or drainage, siltation, pollution, and shoreline development.

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Quercus boyntonii Beadle — Fagaceae
running post oak — beech family

SYNONYMS
Quercus stellata var. ***margaretta*** (Ashe) Sargent

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Regional endemic; few known populations.

DESCRIPTION
Quercus boyntonii is a shrub 1-5 m tall. Bark is grayish or brown, and broken into irregular appressed scales. Leaves are wedge-shaped, 5-9 cm long, with 3-7 small blunt lobes above the middle or near the apex; leaves have matted wooly pubescence on the lower surface. Acorns are sessile; the nut is oval and 12-15 cm long, the cap is turbinate and 9-12 mm wide.

DISTRIBUTION
Quercus boyntonii occurs in the Ridge and Valley physiographic region in Alabama, and the Appalachian Valley of Georgia. In Alabama, this tree species occurs in Blount, Etowah, Jefferson, Shelby, and St. Clair counties.

HABITAT
Terrestrial, forest/woodlands.
Cherty, limestone barrens; forms thickets on ridges.

OTHER BIOLOGICAL DATA

POTENTIAL THREATS
Change in land use is the most important potential threat to this tree species. Clear-cutting, or clearing for agriculture or urban development are potentially a threat. Inundation of rocky bluffs adjacent to a waterway would of course eliminate this terrestrial species.

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***Rhexia aristosa* Britt.** Melastomataceae
awned meadowbeauty

SYNONYMS

LEGAL STATUS
Candidate species (Category 2). U.S. Fish and Wildlife Service. 1993. Notice of Review. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Rare throughout its range and declining due to destruction and degradation of habitat.

DESCRIPTION
A branched, perennial herb arising from a fusiform tuber. The stem is 4-angled, the angles sometimes winged, 30-70 cm tall and smooth except for yellow hairs at the nodes. The leaves are sessile, linear to lanceolate, prominently 3-nerved, sparsely hairy, 2-3 cm long and 3-5 mm wide. The inflorescence is broad and more-or-less flat-topped with numerous glandular-hairy flowers. Petals purple to lavender, 1-2 cm long, asymmetrically obovate, each pointed at the tip. Fruit an urn-shaped capsule, 7-10 mm long, filled with numerous, small (0.4-0.7 mm), ridged seeds.

DISTRIBUTION
Rhexia aristosa has been found at scattered localities in Alabama, Delaware, Georgia, New Jersey, North Carolina and South Carolina. Populations local in occurrence. In Alabama, this species has been reported from Barbour and Choctaw Counties in the Coastal Plain.

HABITAT
Palustrine; forest/woodlands, emergent.
Rhexia aristosa occurs in moist to wet pine barrens, pond margins, bogs, savannas, flatwoods, seeps and ditches in the Atlantic and Gulf Coastal Plain regions.

OTHER BIOLOGICAL DATA
Flowers from July to early September. This species is dependent on regular fire to maintain healthy populations.

POTENTIAL THREATS
This species is particularly threatened by loss of habitat due to conversion to plantation forestry and other incompatible land uses. Any management activity or land use (eg. fire suppression, drainage, conversion of habitat to agriculture, suburban sprawl, etc.) that would lead to direct or indirect destruction or degradation of the habitat should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Rhexia salicifolia Kral & Bostick — Melastomataceae
panhandle meadowbeauty

SYNONYMS

LEGAL STATUS
Candidate species (Category 2). U.S. Fish and Wildlife Service. 1993. Notice of Review. ***Federal Register*** 58(188):51144-51190.

REASONS FOR **CURRENT** STATUS
Rare throughout its limited range, and declining due to destruction and degradation of habitat.

DESCRIPTION
A tuberous-rooted, simple to bushy-branched, glandular-hairy, perennial herb. Stems are 4-angled and winged, subwoody at the base, with flaking brown bark, to 20 cm tall. The opposite leaves are oriented vertically relative to the ground, and are nearly sessile, narrowly elliptic, 1.5-4.0 cm long and 1.0-15.0 mm wide. Flowers few to many in a cymose arrangement. The 4 petals broadly obovate, deep lavender-rose, Fruit an urn-shaped capsule, about 4-7 mm long, containing numerous, small (0.7 mm), ridged, snail-shaped seeds.

DISTRIBUTION
Known only from south Alabama and the Florida panhandle. In Alabama, *Rhexia salicifolia* has been recorded from Covington and Houston Counties.

HABITAT
Palustrine; emergent, open.
Open bottoms of cypress limesink ponds, sandy shores of limesink lakes, and Gulf Coast interdunal swales. Plants usually growing in full sun on exposed substrate and in association with a variety of other herbs, particularly grasses and sedges, and some shrubs (eg. ***Hypericum*** spp.), but do not compete well, and do not persist in shade of other herbaceous or woody species. The surrounding vegetation is usually longleaf pine-scrub oak forest or woodland.

OTHER BIOLOGICAL DATA
Flowering occurs from June until frost.

POTENTIAL THREATS
This species is particularly threatened by the development of habitat for recreational and residential purposes, and habitat degradation due to erosion and siltation associated with heavy disturbance of the immediately adjacent forest. Any management activity or land use (eg. mowing during flowering/fruiting, drainage, dredging, etc.) that would lead to direct or indirect destruction or degradation of the habitat should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Rhynchospora thomei Kral — Cyperaceae
Thorne beak rush — sedge family

SYNONYMS

LEGAL STATUS
Candidate species (Category 2). U.S. Fish and Wildlife Service. 1993. Notice of Review. ***Federal Register*** 58(188):54114-51190.

REASONS FOR CURRENT STATUS
Highly localized in occurrence to a few, widely scattered areas. Also loss of suitable habitat throughout its range.

DESCRIPTION
A densely tufted, mat-forming, smooth, perennial herb. Leaves ascending, at most 10-13 cm long and 0.2-0.3 mm wide. The slender flowering stem supports a cyme with a few to several spikelets. Each spikelet is 2-flowered, lance-ovoid to fusiform and 2.5-3.0 mm long. The fruit is an ellipsoid4 biconvex, pale brown achene about 1 mm long and with a minutely textured surface.

DISTRIBUTION
Reported from the Coastal Plain of Georgia and North Carolina, and the extreme southern end of the Ridge and Valley region in central Alabama.

HABITAT
Palustrine; emergent.
In Georgia, ***Rhynchospora thomei*** occurs along margins of limesink ponds and on moist limestone barrens, while in North Carolina the habitat is wet savannas. In Bibb County, Alabama, it occurs in full sun in seasonally wet seepages on dolomite glades.

OTHER BIOLOGICAL DATA
Flowers and fruits in summer (June).

POTENTIAL THREATS
Any management activity or land use (eg. construction, drainage, quarrying, flooding, flooding due to impoundment, etc.) that would lead to direct or indirect destruction or degradation of populations or the habitat should be regarded as a threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Rudbeckia heliopsidis Torr. & Gray — Asteraceae
sun-facing coneflower — daisy family

SYNONYMS
none

LEGAL STATUS
Candidate species (Category 2). U.S. Fish and Wildlife Service. 1993. Notice of Review. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Very rare throughout its range.

DESCRIPTION
A perennial herb with thick, woody rhizomes and branched, smooth or slightly hairy stems 60-120 cm tall. The basal rosette leaves are 6-15 cm long, ovate, with the petioles at least three times as long as the blades. The smaller stem leaves are arranged in an alternate arrangement up the stem, each of the uppermost ones subtending a flowering branch topped with several heads of flowers. Each head contains an outer ring of bright yellow ray flowers and a central cluster of reddish-brown disc flowers. The fruit is a black or brown, 4-angled achene..

DISTRIBUTION
Rudbeckia heliopsidis has been recorded from Alabama, Georgia, North Carolina, South Carolina and Virginia in a variety of physiographic provinces ranging from the Coastal Plain (NC, SC and VA) to the Appalachian Plateaus and Ridge and Valley (AL). It has been reported from DeKalb, Cherokee, Jackson, Monroe Counties. Reports also exist for this species from Lee and Macon Counties in the Piedmont and Coastal Plain respectively.

HABITAT
Terrestrial; forest/woodlands. Palustrine; forested.
R. ***heliopsidis*** appears to prefer moist to wet, acidic swales, seeps and streambanks in full sun to partial shade. In north Alabama, plants often occur in sandy, peaty sites in seeps around sandstone rock outcrops or in sandy, alluvium along streams.

OTHER BIOLOGICAL DATA
Flowering occurs in mid to late summer (late July through September), and fruits ripen in late summer to early fall.

POTENTIAL THREATS
Identified threats in Alabama are heavy grazing and drainage of the moist swales it inhabits. Any management activity or land use (eg. drainage, flooding by impoundment, construction, quarrying, etc.) that would lead to the direct or indirect destruction or degradation of the habitat should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Rudbeckia triloba L. var pinnatiloba Torr. & A. Gray — Asteraceae
pinnate-lobed black-eyed susan — aster family

SYNONYMS
Rudbeckia pinnatiloba (Torr. & A. Gray) Beadle

LEGAL STATUS
Candidate species (Category 2). U.S. Fish and Wildlife Service. 1993. Notice of Review. Federal Register 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Rudbeckia triloba var. pinnatiloba is known from only a very few localized areas (although it may be locally abundant).

DESCRIPTION
An erect, strongly hairy, annual herb to about 1 m tall. Stems few to many-branched, each branch supporting one or a few flower heads. The basal rosette leaves, which have usually withered by flowering time, are about 10 cm long, pinnately-lobed and hairy. The stem leaves are smaller, and alternately arranged along the length of the stem. The 8-10, orange-yellow ray flowers are 1.0-1.5 cm long and are arranged around the dark purple-brown disk flowers. The fruit is a broadly wedge-shaped achene, about 2 mm long.

DISTRIBUTION
Known from central Alabama, northwestern Florida (Coastal Plain) and western North Carolina (Blue Ridge). In Alabama, it has been reported from Autauga, Bibb, Dallas, Lowndes, Tallapoosa and Wilcox Counties. Populations in Alabama are known from the extreme southern end of the Ridge and Valley, the Piedmont, and the Black Belt and Chunnenuggee Hills of the Coastal Plain. The largest and healthiest populations appear to be in Bibb County.

HABITAT
Terrestrial; forest/woodlands, grasslands, barrens.
Rrtdbeckia triloba var. pinnatiloba occurs in full sun to partial shade in glades and other natural and artificial clearings on calcareous or basic substrates, and in open, calcareous woodland. In Florida, this plant is regarded as ruderal, ie. weedy and growing mainly in disturbed areas, and in some areas plants have spread onto road shoulders. Plants grow in basic, shallow, dry, well-drained soils derived from dolomite, limestone, marl or chalk. Common woody species in the surrounding forest include red cedar (*Juniperus virginiana*), calciphilic oaks (eg. Quercrts shumardii, Q. *muhlenbergii*, etc.), elms (*Ulmus* spp.), hickories (eg. *Carya* ovata, C. carolinae-septentnonalis), and other calciphiles such as Carolina buckthorn (*Rhamnus caroliniana)* and redbud (*Cercis* canadensis).

OTHER BIOLOGICAL DATA
Flowers from late July until frost. This species responds well to moderate disturbance, which allows more light to reach plants and provides exposed soil for seed germination sites.

POTENTIAL THREATS
Since this species is not unduly sensitive to some disturbance, certain management activities such as timber

removal and clearing of rights of way may actually benefit this species. As with other plants, however, any management activity or land use (eg. herbicide application, mowing during flowering, etc.) that would lead to direct or indirect destruction or degradation of the population or the habitat should be regarded as a threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Sagittaria secundifolia Kral
Kral's water plantain

Alismataceae
water plantain family

SYNONYMS

LEGAL STATUS
Threatened species, U.S. Fish and Wildlife Service, 1990. *Federal Register* 55(72):13907-13911.

REASONS FOR CURRENT STATUS
This species is extremely vulnerable due to its restricted range and to siltation of its habitat resulting from watershed disturbance for silvicultural, residential, agricultural, or mining purposes (U.S. Fish and Wildlife Service, 1991).

DESCRIPTION
Sagittaria secundifolia is a submersed to emersed aquatic perennial arising from a rigid rhizome up to 1 dm in length, with fibrous roots. This plant produces two leaf types, depending upon water depth and velocity. Leaves found in swift water are secund along the rhizome, with linear, rigid, sickle-shaped leaves 5-8 cm in length, and 2-5 mm in width. Leaves of still water are longer (10-30 cm) and more quill-like in appearance, with broad, pale sheaths. Scapes are erect and terete, flowering only toward the apex. Flowers are regular and unisexual. There are three yellow-green sepals that are triangular-ovate, 4-5 mm in length, and reflexed or spreading after anthesis. Petals are reduced or absent in female flowers. Petals of male flowers are white, three in number, and 1-1.5 cm in length. There are 9-12 stamens 1-1.3 cm long, basally green, white tomentulose with oblong yellowish anthers. Fruiting pedicels are erect or spreading with obovate-triangular, laterally compressed achenes 2 mm in length. The ventral edge of achenes is straight, the dorsal edge is narrowly rounded and triple-crested with crests irregularly undulate or coarsely toothed. The beak is lateral, spur-like, and 0.3 mm in length. Description adapted from Kral, 1982.

DISTRIBUTION
Sagittaria secundifolia occurs in shoals and pools of three tributaries in northern Alabama and Georgia. It has been collected from Little River, a tributary to the Coosa River, in DeKalb and Cherokee counties, Alabama and in Chattooga County, Georgia. It has also been located in Town Creek, a tributary to the Tennessee River, in DeKalb county, Alabama, and in the West Sipsey Fork, a tributary to the Black Warrior River, Winston county, Alabama. The Town Creek population is believed to have been extirpated due to siltation from disturbed slopes. These populations occur in the Appalachian Plateau physiographic region.

HABITAT
Riverine, tributary: riffle, run, pool, margin.
Sagittaria secundifolia is locally abundant along the upper undammed reaches of the Little River in Cherokee and DeKalb counties, Alabama (Kral, 1983). It occurs on frequently exposed shoals or in sands, gravels, and silts in quiet pools up to 1 meter in depth. Sphagnous seeps are frequent, the sunnier ones predominated by grass-sedge associations. Associated genera include: *Najas, Potomogeton, Myriophyllum, Carex, Ptilimnium, Lindemia, Rhynchospora, Scirpus, Agrostis, Xyris, Eriocaulon, Rhexia,* and *Sabatia*. *Sagittaria secundifolia* also occurs in narrow bottoms with steep bouldery canyons.

Sagittaria secundifolia Kral — Alismataceae
Kral's water plantain — water plantain family

OTHER BIOLOGICAL DATA

The hairy filaments of this species place it in the "graminea" complex of *Sagittaria*. Of this complex, in the southeastern United States, *S. secundifolia* has the longest and thickest rhizomes, similar only to S. *graminea* which has thick but short rhizomes. Flowering occurs from May into July and intermittently into the fall (Kral, 1982).

POTENTIAL THREATS

Water eutrophication from garbage dumping and leaking sewage may increase the amount of filamentous algae which clings to plants and blocks light. Recreational activity, including off-road vehicles may harm plants present in sites used as fords. Unstable impoundments (leaking dams) pose a threat to some populations. Changes in water management that would alter the hydrology of the system, such as impoundment of tributaries, would threaten all populations in the system.

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Sarracenia mbra ssp. ***alabamensis*** (Case & Case) Schnell — Sarraceniaceae
Alabama canebrake pitcher-plant — pitcher plant family

SYNONYMS
Sarracenia alabamensis Case & Case
Sarracenia alabamensis Case & Case ssp. ***alabamensis***
Sarracenia jonesii Wherry
Sarracenia mbra Walt.

LEGAL STATUS
Endangered species, U.S. Fish and Wildlife Service, 1979. ***Federal Register*** 54(46):10150-10154.

REASONS FOR **CURRENT** STATUS
Development of available habitat, fire suppression, and over-collecting.

DESCRIPTION
Sarracenia rubra ssp. ***alabamensis*** is a perennial, insectivorous herb arising from a rhizome. This species produces two types of pitchers, and occasionally some phyllodia. In the spring, pitchers are 0.8-5.0 dm long, erect, greenish, softly pubescent with a suberect, cordate hood; apex of pitcher and hood reddish-reticulate veiny. Late season pitchers largest, up to 6 dm long, somewhat winged ventrally, 3-7 cm broad at the orifice, hood ca. 3.5-6.6 cm wide, 7-10 cm long, slightly arching over the orifice, reddish-veiny, often whitish-areolate toward the apex. Flowers are solitary and nodding, with three recurved bracts; sepals ovate, to 2.2 cm broad, inwardly bent, reddish or greenish tinted with maroon; petals obovate, externally red, inner surfaces pale green. The style disk ca. 3.5-4 cm wide. The fruit is a globose capsule, 0.5-1.0 cm in diameter. Seeds 1.0-1.5 mm long.

DISTRIBUTION
Sarracenia mbra ssp. ***alabamensis*** occurs in the upper coastal plain physiographic region in Autauga, Chilton, and Elmore counties, Alabama.

HABITAT
Palustrine.
Sandhills seeps, sandy and gravelly bogs, and in swamps. Grows best in open areas where it is exposed to light.

OTHER BIOLOGICAL DATA
The Alabama canebrake pitcher plant originally occurred in sloping wet bogs and adjacent wet flatwoods in the central Alabama Fall Line Hills and the adjacent Piedmont. Historically, fire was an important factor in maintaining the openness of the habitat. Flowering occurs from late April to early June.

POTENTIAL THREATS
Any modification or disturbance to the habitat of this species (eg. pond building, agricultural development, herbicide use, drainage of site, etc.) is a potential threat to this rare species. Suppression of fire in existing population localities is also a threat because the encroachment of woody species, and\or aggressive exotics will eventually eliminate the Alabama canebrake pitcher plant.

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TRI-STATE COMPREHENSIVE STUDY
ALABAMA-COOSA-TALLAPOOSA-AM) APALACHICOLA-CHATTAHOOCHEE-FLINT
RIVER BASINS

Sarracenia leucophylla **Raf.** Sarraceniaceae
white-topped pitcher plant pitcher plant family

SYNONYMS
Sarracenia drummondii Croom

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Fragmentation of habitat, fire suppression, and over-collecting.

DESCRIPTION
Sarracenia leucophylla is a carnivorous herbaceous plant with variegated white and crimson pitchers. The pitchers are slender and erect, 75 cm in height on average but may exceed 90 cm. The tube of the pitcher is slim and green for most of its length, usually narrowly winged, and gradually widening from the base to the orifice. A short, erect hood curves over and well above the orifice, is ruffled on the edge, broadly rounded apically, and lined with white hairs on the inner surface. The upper portion of the tube and the hood are white with conspicuous green to red colored venation. Phyllodia are erect, 15-20 cm in length, and sword-like in shape. Flowers are maroon with a reddish style disc.

DISTRIBUTION
Sarracenia leucophylla occurs in the coastal plain physiographic region in Baldwin, Butler, Conecuh, Covington, Crenshaw, Escambia, Geneva, Mobile, Monroe, and Washington counties, Alabama.

HABITAT
Palustrine.
Bogs, wet pine savannas or flatwoods, boggy borders of branch bays and cypress depressions, boggy areas by small streams.

OTHER BIOLOGICAL DATA
In contrast to capsule dehiscence in other pitcher plant species, the white-topped pitcher plant exhibits capsule dehiscence from the base of the capsule instead of from the apex. This may prevent seeds from being caught in the adherent style disc upon seed releasal (Folkerts and Folkerts, 1989). The white-topped pitcher plant flowers in early March to late April.

POTENTIAL THREATS
Any modification or disturbance to the habitat of this species (eg. conversion to pine, agricultural development, herbicide use, drainage of site, stock pond creation, highway construction, etc.) is a potential threat to this rare species. Suppression of fire is also a threat because the encroachment of woody species, and\or aggressive exotics will eventually displace the pitcher plants.

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TRI-STATE COMPREHENSIVE STUDY
ALABAMA-COOSA-TALLAPOOSA-AND APALACHICOLA-CHATTAHOOCHEE-FLINT
RIVER BASINS

Sarracenia oreophila (Kearney) Wherry — Sarraceniaceae
green pitcher plant — pitcher plant family

SYNONYMS

LEGAL STATUS
Endangered species, U.S. Fish and Wildlife Service, 1979. ***Federal Register.***

REASONS FOR **CURRENT** STATUS
Restricted range; land use changes.

DESCRIPTION
Sarracenia oreophila is a perennial, insectivorous herb arising from a stout, horizontal rhizome. Two leaf types are produced: a non-pitcher type leaf that is mostly sickle-shaped and prostrate, 4-15 cm long, 1-2 cm wide; and a pitcher or tubular type leaf, that is upright and trumpet-shaped, and 7.5 dm in height. Pitcher leaves are externally yellow-green, with the major veins toward the orifice often times maroon in color. The lid is also green but with principal veins and the reticulate side veins maroon. Flowers are regular, nodding, subtended by three yellowish bracts with rounded tips. Sepals number 5, are 4-5 cm long, spreading then arching downward; yellow green in color, reddish at the bases. There are 5 clear yellow petals, ca. 5 cm long; stamens numerous; ovary superior, warty, nearly round, forming a peltate, yellow-green style disc. The fruit has 5 lobes, is nearly globose, warty, 1.5-2.0 cm wide; seeds numerous, ca. 2 mm long.

DISTRIBUTION
Sarracenia oreophila occurs in the Cumberland Plateau and the Ridge and Valley physiographic regions in northeast Alabama and in the Blue Ridge of Georgia. In Alabama, this species is known from Cherokee, DeKalb, Etowah, Jackson, and Marshall counties, and historically from Russell and Elmore counties.

HABITAT
Palustrine, forested.
Bogs, streambanks and seeps; mixed oak or pine flatwoods.

OTHER BIOLOGICAL DATA
The green pitcher plant is only one of three members of the genus ***Sarracenia*** with a geographical distribution outside the coastal plain. Flowering occurs from mid-April to early June.

POTENTIAL THREATS
The most important threat to this species is change in land use through the following practices: silviculture, agriculture, and urban expansion. Conversion of land to pine monocultures eliminates pitcher plants, as does drainage of wetlands, stream channelization, and conversion of wetlands to pasture. Herbicide and fertilizer run-off from adjacent areas also poses a threat. Inundation of streamside populations by impoundment would of course eliminate this species. Long-term recovery of this plant depends on the assurance of an adequate water table and prevention of habitat drainage (U.S. Fish and Wildlife Service, 1985).

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TRI-STATE COMPREHENSIVE STUDY
ALABAMA-COOSA-TALLAPOOSA-AND APALACHICOLA-CHATTAHOOCHEE-FLINT
RIVER BASINS

Sarracenia rubra ssp. ***wherryi*** (Case & Case) Schnell — Sarraceniaceae
Wherry's sweet pitcher plant — pitcher plant family

SYNONYMS
Sarracenia alabamensis ssp. ***whenyi*** Case & Case
Sarracenia rubra ssp. ***whenyi*** (Case & Case) Schnell

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. ***Federal Register*** 58(188):51144-51190.

REASONS **FOR CURRENT** STATUS
Development of available habitat, fire suppression, and over-collecting.

DESCRIPTION
Sarracenia rubra ssp. ***whenyi*** is a perennial, insectivorous herb arising from a rhizome. Leaves are of two types: 1) one a scale leaf, not visible above the soil surface, small, roughly triangular, and sheathing the rhizome; 2) the other leaf type is a pitcher between 10-33 cm in length. The pitcher has a wing running the length of the pitcher on the side opposite of the hood, which arches over the orifice. The pitcher is green in color, with a reddish cast above. Older pitchers in full sun are often quite red. Red, purple, or green veins are visible on the upper portion of the pitcher. Flowers are red, solitary at the end of scapes, and nodding. There are five outer sepals red or purple in color, and five petals red on the outside and yellowish on the inside. Fruits are brown and capsule-like. Seeds are tan, corrugated on the surface, and are 1.0-1.6 mm in length.

DISTRIBUTION
Sarracenia rubra ssp. ***whenyi*** occurs in the coastal plain physiographic region in Baldwin, Covington, Escambia, Monroe, and Washington counties, Alabama.

HABITAT
Palustrine.
Seepage or hillside bogs. These are areas where the soil is wet for much of the year because water continually seeps to the surface along a slope (Folkerts, 1992). This pitcher plant species does not occur in the wettest sites of a seepage bog, but occupies a somewhat drier microsite, and seems to have a narrow ecological amplitude regarding soil moisture (Folkerts, 1992).

OTHER BIOLOGICAL DATA
Wherry's sweet pitcher plant flowers in late March or April.

POTENTIAL THREATS
Any modification or disturbance to the habitat of this species (eg. agricultural development, herbicide use, drainage of site, conversion to pine, highway construction, etc.) is a potential threat to this rare species. Suppression of fire is also a threat because the encroachment of woody species, and\or aggressive exotics will eventually displace the pitcher plants. Since the habitat of this pitcher plant depends upon a constant seepage of water from a groundwater source, any manipulations of the water table are potentially threatening to this pitcher plant species.

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Sedum nevii A. Gray — Crassulaceae
Nevius' stonecrop — orpine family

SYNONYMS
Sedum beyrichianum Masters

LEGAL STATUS
Candidate species (Category 2), U.S. Fish and Wildlife Service, 1993, Notice of Review. Federal Register 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Limited global range and loss of habitat.

DESCRIPTION
A succulent, perennial herb with short (< 5 cm) sterile shoots, and taller (< 15 cm) flowering shoots. The smooth, succulent leaves are sessile, with those of the sterile shoots spatulate and flattened, and those of the flowering stems longer (1.0-1.5 cm), linear and almost terete (circular in cross-section). Each flowering shoot is topped with 4-5 spreading branches crowded with numerous white, star-like flowers. The fruit is a follicle.

DISTRIBUTION
Sedum nevii has been recorded from various interior upland physiographic regions in Alabama, Georgia (Piedmont), North Carolina (Blue Ridge) and Tennessee (Blue Ridge). In Alabama the species has been recorded from Bibb, Coosa, Talladega and Tuscaloosa Counties at the southern end of the Appalachian Plateaus and Ridge and Valley physiographic provinces.

HABITAT
Terrestrial; forested.
Sedum nevii occurs on moist, open to fairly heavily shaded bedrock outcrops or adjacent talus slopes of quartzite, shale, sandstone or limestone. Plants are rooted in crevices or pockets of soil on or near such outcrops, usually forming dense carpets intermixed with mosses. The tree canopy is usually dominated by hardwoods such as oaks (eg. *Quercus* alba, Q. *muhlenbergii*, Q. shumardii, Q. rubra and Q. *velutina*), elms, basswood, maples (Acer *rubrum* and *A.* sacchamm), and a few pines and red cedars.

OTHER BIOLOGICAL DATA
Flowering occurs in May and June.

POTENTIAL THREATS
Heavy logging of the tree canopy is likely to have a negative effect on this species by either drying out the habitat, admitting too much light, stimulating the rapid growth of vigorous competitors such as Japanese honeysuckle, or by resultant erosion of the usually steep slopes. Any other management activity or land use (eg. flooding, construction, quarrying) that would lead to the direct or indirect destruction or degradation of the habitat should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Silene ovata Pursh
ovate campion

Caryophyllaceae
carnation family

SYNONYMS

LEGALSTATUS
Candidate species (Category 2). U.S. Fish and Wildlife Service. 1993. Notice of Review. *Federal Register* 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Rare to uncommon throughout its range. Loss of habitat. Existing regulatory mechanisms provide inadequate protection since Alabama has no legal protection of rare plant populations or habitat. Much suitable habitat and several known populations has probably been lost to development and other factors.

DESCRIPTION
An erect, hairless, perennial 1.0-1.5 m tall, with 5-10 pairs of leaves arranged in an opposite fashion along the stem. The leaves are ovate, sessile and about 5-12 cm long and 2-5 cm wide. The numerous, white flowers are borne in loose clusters. Each flower is about 2 cm across, with five deeply cleft, 1.0-1.5 cm long petals and fringed sepals about 1 cm long. The fruit is a narrowly ovoid capsule 7-9 mm long.

DISTRIBUTION
Silene ovata is known from Alabama, Arkansas, Georgia, Kentucky, Mississippi, North Carolina, Tennessee and Virginia. In Alabama, this has been reported from Cullman, Dallas, Marengo and Montgomery Counties

HABITAT
Terrestrial; forest/woodlands.
In Virginia, *Silene ovata* occurs in sandy, humus-rich soil in open forest dominated by oaks. In Georgia, it has been found in mesic, deciduous forests, in high elevation oak forests and on calcareous barrens. In Alabama it has been found in hardwood-dominated forest on bluffs and ravines and in partial shade on a Black Belt clay bluff.

OTHER BIOLOGICAL DATA
Flowering occurs in mid to late summer (August).

POTENTIAL THREATS
Soil disturbance associated with heavy logging or grazing of the slopes on which plants occur is likely to have a negative effect on this species due to resultant erosion. Any management activity or land use (eg. flooding by impoundment, clearcutting, construction, quarrying, etc.) that would lead to the direct or indirect destruction of the habitat should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Silphium confertifolium Small — Asteraceae
southern rosinweed — aster family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Found only in three counties in Alabama.

DESCRIPTION
Silphium confertifolium is a course herbaceous perennial arising from a stout rhizome or caudex. Stems are usually single, arising from an overwintering rossette, up to 7 dm tall, but usually lower. Stems are terete and greenish tinted with red. Leaves mostly toward the base; largest here, broadly lanceolate or ovate, 7-20 cm long, and ciliate-scabrid. The upper leaf surface is smooth or with distant short sharp hairs; lower surface is pale, veiny, sometimes with a scattering of hairs along the midrib. Leaves occurring above the stem base are sharply reduced in size, opposite, elliptic or lanceolate, grading into distant pairs of small ovate bracts. The inflorescence is composed of a few to many heads in an open cyme. There are 8-10 fertile ray florets, oblong-linear in shape, ca. 1.5 cm long, and lemon yellow in color. The disc florets occur on a slightly elevated receptacle, mostly sterile, the corollas tubular with triangular lobes that are greenish-yellow in color. The fruit is a broadly ovate achene, ca. 6-7 mm long with lateral wings 1 mm or less broad. The wings terminate in 2 triangular teeth at the sides of the achene summit. The achene body is appressed, white-hairy on its inner concave face, otherwise smooth. Achenes are gray-brown when ripe.

DISTRIBUTION
Silphium confertifolium occurs in the Black Belt and Ridge and Valley regions of Alabama in Choctaw, St. Clair, and Sumpter counties.

HABITAT
Terrestrial.
Prairies and glades over chalk; heavy black clay earths that weather from calcareous rock.

OTHER BIOLOGICAL DATA
The southern rosinweed flowers from July to early September.

POTENTIAL **THREATS**
This species presently occurs in areas dotted with rock outcrops, which makes them unsuited for any row crops. It may have ranged into the deeper soils away from these outcrops, but these have been converted for agriculture. Areas such as these originally supported forbs and grasses which have been removed by the row crops. This original vegetation remains in remnant areas of soil with rock outcroppings, but these areas are heavily grazed by poor quality cattle or goats. In areas where both cattle and fire are excluded, trees are coming back in, displacing the prairie vegetation.

REFERENCES

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Small, J.K. 1903. Manual of the southeastern flora. Univ. N.C. Press, Chapel Hill. 1554 p.

Sium floridanum Small — Apiaceae
Florida water parsnip — parsley family

SYNONYMS
Sium cicutifolium Schrank
Sium suave Walt.

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. Federal Register 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Restricted distribution; alteration of habitat.

DESCRIPTION
Sium floridanum is a slender herbaceous perennial. Plants are strongly decumbent, the stem bent upward to a height of 3-9 dm from an elongate-rhizomatous base. Leaves are alternate, pinnately compound, leaflets 3-11, blades ovate, and finely appressed-serrate. The inflorescence is a compound umbel; flowers white with filiform rays, larger petals less than 1 mm long. The fruit is smooth, broadly oblong in shape, ca. 3 mm long, 2 mm wide, and sometimes curvate. The fruit breaks into single-seeded sections which are strongly 5-ribbed with persistent styles that are ca. 1 mm long.

DISTRIBUTION
Sium floridanum occurs in the Coastal Plain physiographic region in southwestern Georgia, northwestern Florida, and southeastern Alabama. This plant is known from Houston county, Alabama.

HABITAT
Palustrine.
Streams, swamps, bogs, and floodplain forests.

OTHER BIOLOGICAL DATA

POTENTIAL THREATS
Any management activity or land use (eg. stream channelization, flooding by impoundment, land development, clear-cutting, conversion to pine plantation, etc) that would lead to the direct or indirect destruction or degradation of this species' habitat should be regarded as a potential threat.

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Solanum carolinense L. var. *hirsutum* (Nutt.) Gray — Solanaceae
horse-nettle — nightshade family

SYNONYMS
Solanum hirsuta Nuttall

LEGAL STATUS
Candidate species (Category 2), U.S. Fish and Wildlife Service, 1993, Notice of Review. *Federal Register* 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Until very recently (1993), this plant had not been seen since the 1830s, and was thought to possibly be extinct. Previously only known from two collections in Georgia.

DESCRIPTION
Similar to *Solanum carolinense* L. var. *carolinense,* but differs by having long, shaggy pubescence over the entire plant. A perennial herb, usually to less than 20 cm tall, with long, shaggy hairs covering all stem and leaf surfaces. The few flowers are about 2-3 cm across and have 5 white petals which are reflexed to reveal the conspicuous, 6-11 mm long, yellow anthers.

DISTRIBUTION
This taxon has been found in Alabama and Georgia. It was last collected in Georgia in 1837. In Alabama, it is known from Bibb, Chilton and Coosa Counties, having been discovered by Jim Allison in 1993. The only historical records were from Columbus, Georgia and Milledgeville, Georgia.

HABITAT
Terrestrial; forested.
In Bibb County, Alabama, where most of the known populations are, plants occur in partial to full shade in open, rocky, calcareous woodland along or near the margins of dolomite glades.

OTHER BIOLOGICAL DATA
Flowers in August.

POTENTIAL THREATS
Any management activity or land use (eg. construction, quarrying, flooding due to impoundment, etc.) that would lead to direct or indirect destruction or degradation of populations or the habitat should be regarded as a threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

REFERENCES
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D'Arcy, W.G. 1974. *Solanum* and its close relatives in Florida. *Ann. Missouri Bot. Gard. 61:* 819-867.

Spigelia gentianoides Chapman ex A. DC. Loganiaceae
gentian pinkroot

SYNONYMS

LEGAL STATUS
Endangered species, U.S. Fish and Wildlife Service, Federal Register, November 26, 1990.

REASONS FOR CURRENT STATUS
In Florida, this poorly known species is believed to have always been rare, and is further endangered by deforestation and animal grazing. In the past, this and other Spigelia species were collected for medicinal purposes on a scale that led to significant reductions in plant populations.

DESCRIPTION
Spigelia gentianoides is a smoothish, herbaceous perennial approximately 10 to 30 cm tall at flowering. The opposite, sessile and clasping leaves are spread along the length of the stem. The leaves are mostly elliptic, narrowly ovate or lanceolate, 3 to 5 cm long, 1 to 2 cm wide, deep green on the upper surface and pale green on the lower surface. The few, erect, pale pink flowers (often with deeper pink stripes on the inside surface) are borne in succession on short, spikelike racemes. The 5, partially fused petals of the tubular flowers are about 2.5 to 3 cm long and are tardy to open fully at the tip. The fruit is a strongly bilobed capsule, surrounded by the 5, greenish, erect, persistent sepals.

DISTRIBUTION
Until recently, S. gentianoides was only known to still exist at two Gulf Coastal Plain localities, both in the Florida panhandle: one population of less than 100 plants at Three Rivers State Park in Jackson county, and one of less than 150 plants on land belonging to a paper company in Calhoun county. Historically, it was also recorded from adjacent Gadsden, Liberty and Washington counties. In 1992, several additional populations far larger than those in Florida were discovered by botanist Jim Allison in Bibb county, Alabama at the extreme southern end of the Ridge and Valley physiographic province, some 200 miles to the north of the Florida populations. Subsequent searches in suitable areas of Alabama have failed to locate any further populations.

HABITAT
Terrestrial; forest/woodlands, grasslands, barrens.
In Florida, the extant populations occur in oak-pine forests with moist or seasonally dry, sandy soil, which is topped with dark humus. The plants grow in light to heavy shade with an overstory dominated by loblolly pine (*Pinus* taeda), longleaf pine (P. *palustris*), water oak (Quercus *nigra*), oak (Q. *hemisphaerica*), southern red oak (Q. *falcata*) and black gum (Nyssa *sylvatica*), and a shrub layer dominated by dogwood (Comus *florida*) and ericaceous species such as Rhododendron *canescens* and Vaccinium spp. The populations in Bibb county, Alabama occur in and along the margins of open, herb-dominated glades on dolomitic limestone of Ordovician age. Here they grow in shallow, rocky soil in full to partial sun.

OTHER BIOLOGICAL DATA
S. *gentianoides* flowers in May and June in Florida and from April to August in Alabama. One of the

Florida populations has responded favorably to prescribed fire.

POTENTIAL THREATS

Threats identified for the Florida populations include habitat alteration or destruction due to deforestation and conversion to incompatible land uses such as agriculture and plantation forestry. Alabama populations are vulnerable to destruction of habitat due to quarrying of the calcareous parent rock under the glades. Any management activity or land use (eg. flooding by impoundment, clearcutting, construction, etc.) that would lead to the direct or indirect destruction or degradation of the habitat or population should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

REFERENCES

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U.S. Fish and Wildlife Service. Endangered & Threatened Species of the Southeastern United States, The Red Book. Region 4, Atlanta, Georgia.

Stylisma pickeringii (Torr. ex M.A. Curtis) A. Gray — Convolvulaceae
Pickering's morning-glory — morning-glory family

SYNONYMS
Bonamia pickeringii (Torr. ex M.A. Curtis) A. Gray
Breweria pickeringii (Torr. ex ***M A .*** Curtis) A. Gray
Breweria pickeringii var. ***caesariense*** (Fern. & Schub.)

LEGAL STATUS
Candidate species (Category 2). U.S. Fish and Wildlife Service. 1993. Notice of Review. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Much suitable habitat and several known populations have been lost to fire suppression, housing and other development, game food plot establishment and highway construction.

DESCRIPTION
A trailing perennial herb with nearly smooth to densely hairy, vine-like stems that radiate across the ground from the crown.

DISTRIBUTION
Stylisma pickeringii var. ***pickeringii*** has been documented from Alabama, Georgia, New Jersey, North Carolina and South Carolina. The majority of extant occurrences are in New Jersey and North Carolina. Alabama has only one known extant population in Autauga County, with another historic record from nearby.

HABITAT
Terrestrial; forest/woodlands, scrub/shrub.
Populations of this plant tend to occur on xeric, coarse, excessively rained sands, with little litter or competing vegetation. They generally occur in or near open, stunted oak-pine woodlands, such as ***Pinus palustris-Quercus laevis-Q. marilandica*** woodland or scrub in the Sandhills of Alabama, Georgia, South Carolina and North Carolina. Plants are generally found in full sun or partial shade. At some sites, plants occur in heavily disturbed, open areas, where the mechanical disturbance has served to reduce competition or in some way facilitate establishment of plants.

OTHER BIOLOGICAL DATA
Flowering generally occurs from late May to early August, and fruiting from June to late October.
Populations appear dependent on natural disturbances such as fire for maintenance of long-term vigor.

POTENTIAL THREATS
Specific threats to this species include destruction, modification or curtailment of its habitat or range by road construction, food plot establishment, commercial and housing development, trash dumping and fire suppression. In general, any management activity or land use that would lead to the direct or indirect destruction or degradation of populations or the habitat, should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate in that Alabama has no laws to protect rare plant populations or habitat.

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Tephrosia mohrii (Rydb.) Godfrey — Fabaceae
pineland hoary-pea — bean family

SYNONYMS
Cracca mohrii Rydb.

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Restricted range, loss of habitat.

DESCRIPTION
Tephrosia mohrii is a perennial herb from a deep branched taproot system. Stems are simple, average 2 dm in height, and have ribs and short pale hairs. Leaves are alternate, pinnately compound, with lance-linear stipules 3-5 mm long. Leaflets usually number 15-20 pairs or more on short stalks, are elliptic or oblong, 1-2 cm long, usually with a short mucro, margins entire, and the surface hairy with short stiff hairs. The inflorescence is an ovoid raceme with 1-2 flowers in an axil. The calyx is 5-toothed, the lobes broadly triangular and longer than the tube. The corolla is 1.5-2.0 cm long, showy, the standard petal is pale yellowish-green or cream, the side petals are lavender-rose; the keel is strongly bowed and yellowish-white with tints of rose. There are 10 stamens in 2 lengths, the anthers all alike. The fruit is linear-oblong, strongly flattened, 4-5 cm long, and hairy on the surface.

DISTRIBUTION
Tephrosia mohrii occurs in southern Georgia westward into southern Alabama and southward through northwestern Florida. In Alabama, this plant occurs in the Coastal Plain physiographic region in Covington, Dale, and Houston counties.

HABITAT
Terrestrial.
Longleaf pine-turkey oak sandridges.

OTHER BIOLOGICAL DATA
Plants flower from April into early June.

POTENTIAL THREATS
In Alabama, sandhill habitat has become rare due to silivicultural practices and development. Any drastic change in land management or land use (eg. conversion to pine plantation, urban development, etc) that destroys the habitat should be considered a threat. The pineland hoary-pea will readily seed into areas of disturbance, and was probably maintained through being part of fire disclimax in the longleaf pine belt.

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Thalictmm subrotundum Boivin
recliied meadowrue

Ranunculaceae
buttercup family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. ***Federal Register*** 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Historically rare; habitat destroyed or degraded.

DESCRIPTION
Thalictrum subrotundum is a lax, decumbent herb 1-2 m tall. Leaves are opposite and compound with cordate to obovate leaflets. Leaflets are 0.5-1.6 cm or less long, and 0.3-1.8 cm or less wide, membranous, pale, glabrous, apex entire or shallowly 2-3 lobed, margins slightly revolute. The inflorescence is a panicle. Sepals number 4-6 and are greenish-white; petals absent. Anthers are ca. 1 mm long; filaments flexuous, scarcely clavate distally, 2.5-3.5 mm long; stigmas 1-2 mm long. Fruits are achenes 3-3.5 mm long, 2-3 mm wide, slightly stipitate.

DISTRIBUTION
Thalictrum subrofundum is reported from provinces throughout Alabama, Florida, Georgia, Mississippi, and South Carolina. In Alabama, this plant is known from the Coastal Plain and Piedmont physiographic regions of Autauga and Clay counties.

HABITAT
Palustrine.
Swamp edges, streamsides, mesic ravine forests.

OTHER BIOLOGICAL DATA
This meadowrue flowers in the late spring, and summer.

POTENTIAL THREATS
Any management activity or land use (eg. stream channelization, flooding by impoundment, land development, clear-cutting, conversion to pine plantation, etc) that would lead to the direct or indirect destruction or degradation of this species' habitat should be regarded as a potential threat.

REFERENCES

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Trillium reliquum Freeman — Liliaceae
relict trillium — lily family

SYNONYMS

LEGAL STATUS
Endangered species, U.S. Fish and Wildlife Service, 1988. ***Federal Register.*** 53(64):10879-10884.

REASONS FOR CURRENT STATUS
Restricted range, and danger to most populations from human activities. The most serious destructive factor is construction associated with human population growth (Freeman, 1985). Urban growth and expansion, road and utility construction, timber practices, burning of woodlands, pasturage, and impoundment of streams all pose serious threats to this species. The exotic vines ***Lonicera japonica*** (Japanese honeysuckle), and ***Peuraria lobata*** (kudzu), are aggressive weedy species that may represent a serious threat to ***Trillium reliquum*** (Freeman, 1985).

DESCRIPTION
Trillium reliquum is an herbaceous perennial. Plants have tuberous rhizomes 3-4 dm in length, and decumbent, S-shaped stems with three elliptic, mottled bracts and a solitary, sessile, 3-merous flower at the apex. Flowers are greenish to brownish purple or occasionally pure yellow in color. The fruit is an oval-shaped berry-like capsule. This rare species is distinguished from other sessile-flowered *Trillium* by its S-curved stems, distinctively shaped anthers, and the color and shape of its leaves.

DISTRIBUTION
The historic distribution of this species is unknown. It is currently present in three states, Alabama, Georgia, and South Carolina. The Alabama populations occur in the Piedmont, Chunnenuggee and Red Hills physiographic regions in Bullock, Henry, and Lee counties.

HABITAT
Terrestrial, forest/woodland.
Trillium reliquum is typically found in undisturbed mature moist hardwood stands. This species grows on soils varying from rocky clays to alluvial sands; all soils exhibit a high organic matter content in the upper soil layer. The relict trillium also occurs in some disturbed areas such as power and sewer line rights-of-way, and can apparently become reestablished provided that maintenance activities do not include herbicides or other intensive disturbances (U.S. Fish and Wildlife Service, 1990).

OTHER BIOLOGICAL DATA
Flowers appear in early spring, and fruits mature in early summer.

POTENTIAL THREATS
Any management or land use (eg. stream channelization, clear-cutting, flooding by impoundment, urban expansion, etc) that would lead to the direct or indirect destruction or degradation of the habitat should be regarded as a potential threat.

Trillium reliquum Freeman — Liliaceae
relict trillium — lily family

REFERENCES

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Viburnum bracteatum Rehd. — Caprifoliaceae
limerock arrowwood — honeysuckle family

SYNONYMS

LEGAL STATUS
Candidate Species (Category 2), U.S. Fish and Wildlife Service, 1993. Federal Register 58(188):51144-51190.

REASONS FOR CURRENT STATUS
Destruction of habitat.

DESCRIPTION
Viburnum bracteatum is a deciduous shrub up to 3 m, with smooth tan to gray bark. Leaves are opposite, the petioles short (less than 2 cm), greenish or reddish-brown, with persistent stipules that are red-brown, linear, ciliate, and 3-10 mm long. The leaf blades are elliptic to broadly ovate, 6-12 cm long, sinuate-dentate, the upper surface smooth and dark green, the lower surface paler, pilose-hirsute along the pinnate veins, otherwise smooth. The inflorescence is an erect cyme at the end of peduncles 5-6 cm in length. Flowers are regular, bisexual, and bracteolate; the bracts are triangular, pale, and ca. 1.0-1.5 mm long. The corolla is rotate, ca. 8 mm wide, 5-lobed, ciliate, and externally sparsely puberulent. The fruit is a drupe, blue-black when ripe, oval in shape, ca. 1 cm long.

DISTRIBUTION
Viburnum bracteatum occurs along the Coosa River in northwestern Georgia and northeastern Alabama. In Alabama, this shrub is known from one site in Alabama, Etowah county, in the Appalachian physiographic region.

HABITAT
Terrestrial, forest/woodlands.
Mesic hardwoods forests on calcareous rocky bluffs, ledges, and cliffs along the Coosa River.

OTHER BIOLOGICAL DATA
Limerock arrowwood flowers in May.

POTENTIAL THREATS
The most important threat to this shrub species comes from quarrying of dolomitic limestone which destroys the habitat. The hardwood overstory of this shrub is merchantable timber; silvicultural practices are another potential threat, as is impoundment and subsequent flooding of habitat.

REFERENCES

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Xyris tennesseensis Kral
Tennessee yellow-eyed grass

Xyridaceae
yellow-eyed grass family

SYNONYMS

LEGAL STATUS
Endangered species, U.S. Fish and Wildlife Service, 1991. ***Federal Register*** 56(144):34151-34154.

REASONS FOR CURRENT STATUS
Much suitable habitat and several known populations have been lost to highway construction and conversion to incompatible land uses.

DESCRIPTION
Xyris tennesseensis is a smooth, herbaceous perennial which generally grows either singly or in small to large clumps. The bulbous bases are covered by an outer layer of small, dark scales and an inner layer of fleshy white to purplish scales. The leaves are all basal, overlap one another in the basal 1/8 to 1/3 of their length and are tinged pink, red or purplish basally. The bright green leaf blades are linear, slightly twisted 14 to 45 cm long and 0.5 to 1.0 cm wide. The unbranched flowering stems typically reach a length of 40 to 70 cm, each stem supporting a terminal, solitary, broadly ovoid spike from 1.0 to 1.5 cm long at maturity. The spike comprises numerous tightly overlapping bracts, each of which generally subtends a single flower. The rounded bracts are brown or tan with a greenish, ovate-triangular area on the outer surface. Only one or a few flowers are open at any time, this occurring in late morning, with the flowers withering by early afternoon. The three yellow petals are obovate, about 4.5 mm long, 3.0 mm wide with rounded, fringed tips and long-clawed bases. The flower bud is surrounded by the three sepals: a membranous inner sepal and a pair of reddish brown, curved, boat-shaped lateral sepals. The fruit is a thin walled, obovoid or ellipsoid capsule which splits open along the three.sutures. The numerous, small (0.5-0.6 mm), ellipsoidal seeds have a mealy surface marked with 18 to 20 fine, longitudinal lines.

DISTRIBUTION
Xyris tennesseensis has historically been recorded from a total of 15 sites in seven counties in Alabama, Georgia and Tennessee. The extant sites are clustered in several localized areas: northeast Alabama Calhoun County), northwest Georgia, central Alabama (Bibb County), northwest Alabama (Franklin County) and south-central Tennessee. In Alabama, the species is currently known from Bibb and Calhoun Counties in the Ridge and Valley physiographic province, and Franklin County in the Upper Coastal Plain near the boundary with the Highland Rim and Cumberland Plateau physiographic provinces.

HABITAT
Palustrine; emergent.
All sites are characterized by the presence of year-round moisture, open, sunny conditions and calcareous substrates. The sites range from seepage slopes and swales to the margins of small springfed streams and pools, with a bedrock of shale, limestone or dolomite.

OTHER BIOLOGICAL DATA
X. ***tennesseensis*** flowers from August through September.

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POTENTIAL THREATS

The principal threat is habitat destruction. In general, any management activity or land use (eg. drainage, flooding due to impoundment, etc.) that would lead to the direct or indirect destruction or degradation of populations or the habitat, should be regarded as a potential threat to the species. Existing regulatory mechanisms are inadequate since Alabama has no laws to protect rare plant populations or habitat.

REFERENCES

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