

**U.S. FISH AND WILDLIFE SERVICE  
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM**

SCIENTIFIC NAME: Arabis georgiana Harper

COMMON NAME: Georgia rockcress

LEAD REGION: 4

INFORMATION CURRENT AS OF: March 2009

STATUS/ACTION:

☐ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status

☐ New candidate

☒ Continuing candidate

☐ Non-petitioned

☒ Petitioned - Date petition received: May 11, 2004

☐ 90-day positive - FR date:

☐ 12-month warranted but precluded - FR date:

☐ Did the petition request a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:

a. Is listing warranted (if yes, see summary of threats below)? yes

b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? yes

c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded. We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions (including candidate species with lower LPNs). During the past 12 months, almost our entire national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, meeting statutory deadlines for petition findings or listing determinations, emergency listing evaluations and determinations, and essential litigation-related, administrative, and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (<http://endangered.fws.gov/>).

☐ Listing priority change

Former LP: ☐

New LP: \_\_\_\_

Date when the species first became a Candidate (as currently defined): October 1, 1999

\_\_\_\_ Candidate removal: Former LP: \_\_\_\_

\_\_\_\_ A - Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

\_\_\_\_ U - Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

\_\_\_\_ F - Range is no longer a U.S. territory.

\_\_\_\_ I - Insufficient information exists on biological vulnerability and threats to support listing.

\_\_\_\_ M - Taxon mistakenly included in past notice of review.

\_\_\_\_ N - Taxon may not meet the Act's definition of "species."

\_\_\_\_ X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering Plants - Brassicaceae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Alabama, Georgia

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:

Alabama (Bibb, Dallas, Elmore, Monroe, Russell, Sumter, Wilcox counties); Georgia (Clay, Chattahoochee, Floyd, Gordon, Harris, Muscogee counties)

LAND OWNERSHIP: Two populations are located on federal lands with one population on the Fort Benning Military Reservation in Chattahoochee County, GA/Russell County, AL; and one on Fort Toulouse/Jackson Park National Historical Site in Elmore County, AL). A third population in Wilcox County, AL may be under a Corps of Engineers easement area. One population in Georgia (Harris/Muscogee counties) is located on buffer lands of the Georgia Power Company (Moffett 2007, p. 4). All other populations are on private land, including two on property owned by The Nature Conservancy (Bibb County, AL; Floyd County, GA), and one owned by the University of West Alabama (Sumter County).

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LEAD FIELD OFFICE CONTACT: Jackson, Mississippi Field Office, Cary Norquist, 601/321-1128, cary\_norquist@fws.gov

#### BIOLOGICAL INFORMATION:

##### Species Description/Taxonomy

Georgia rockcress is a perennial herb up to 90 centimeters (cm) (35 inches (in.)) tall. The basal leaves are oblanceolate, rounded at the apex, toothed on the margins, 4 to 8 cm (2 to 3 in.) long, and with or without long, tapered petioles. The basal leaves usually persist through the fruiting season and have green lower surfaces. The stem leaves are alternate, lanceolate to narrowly elliptic, 1 to 5 cm (0.4 to 2.0 in.) long, and somewhat clasping around the stems. The upper

surfaces of the stem leaves have stiff, branched hairs when young and are smoothish when mature. All leaves tend to be finely hairy. The flowers are borne in a terminal inflorescence that is somewhat loosely branched. There are four, white petals which measure 6 to 10 millimeters (mm) (0.2 to 0.4 in.) long. The fruit stands erect as a slender (1 mm or 0.04 in. wide), relatively long (5 to 7 cm or 2 to 3 in.) pod that splits in two, leaving behind a thin, papery, lengthwise partition. Seeds are brownish, oblong, about 2 mm (0.1 in.) long, and are borne in single rows on each side of the partition. Flowering occurs from March to April, with fruiting beginning in May and into early July (Allison 1995, p. 4; Patrick *et al.* 1995, p.2).

Arabis georgiana was first collected in 1841 by Boykin from the vicinity of the Chattahoochee River in Georgia. Several other collections of this species were made in the late 1800s; however, Harper was the first to document its distinctiveness, after seeing it in fruit in 1901 on the bank of the Chattahoochee River in Stewart County, Georgia. Harper later described it as a distinct species in 1903 (Allison 1995, p. 4). The Georgia rockcress was maintained as a distinct species in Hopkins's 1937 monograph of Arabis in the eastern U.S. (Allison 1995, p. 3). In 2003, most of the North American species of Arabis were transferred to the genus Boechera, however, Arabis georgiana was not one of the species transferred (Al-Shehbaz 2003, p. 381).

#### Habitat

Arabis georgiana grows in a variety of dry situations, including shallow soil accumulations on rocky bluffs, ecotones of gently sloping rock outcrops, and in sandy loam along eroding riverbanks. It is occasionally found in adjacent mesic woods, but it will not persist in heavily shaded conditions. This species is adapted to high or moderately high light intensities and occurs on soils which are circumneutral to slightly basic (Allison 1995, p. 7; Patrick *et al.* 1995, p. 2).

#### Life History

There is little information on the life history of this species. Moffett (*in litt.* 2005) reports that plants germinate easily from seed and reseed readily in a garden environment.

#### Current and Historical Range

Populations of Arabis georgiana are known from the Coastal Plain, Piedmont, and Ridge and Valley physiographic provinces of Alabama and Georgia. Currently 17 populations are documented to occur across Alabama and Georgia with 11 of these solely in Alabama; 5 solely in Georgia; and 1 population extending into both states. Of these 17 populations, 9 are in the Ridge and Valley region with 6 of these in Alabama (all in Bibb County) and 3 in Georgia (Floyd and Gordon counties). The Piedmont region supports 1 population, which occurs in Harris/Muscogee counties, Georgia. The remaining 7 populations occur in the Coastal Plain region including one which extends into both states (Russell County, AL/ Chattahoochee County, GA); 5 in Alabama (Dallas, Elmore, Wilcox, Monroe and Sumter counties); and one in Clay County, Georgia (Allison 1995, p. 13-14; Allison 1999, 1-7; Moffett *in litt.* 2005; Moffett 2007, p. 1; Schotz *in litt.* 2007, 2009). A historical location from Stewart County, Georgia, has not been relocated despite repeated searches, including a recent attempt in 2005 (Moffett 2007, p. 1).

#### Population Status/Estimates

Arabis georgiana is rare throughout its range. Extensive searches have been conducted for this species throughout the Coastal Plain, Piedmont, and Ridge and Valley physiographic provinces in Alabama and Georgia (Allison 1995, p. 1-31; Allison 1999, p. 1-7). Allison (1995, p. 18-31) surveyed 205 sites over nine counties in Georgia and discovered only four new populations (a 2 percent success rate).

During surveys, Allison (1999, p. 1-7) found that populations of this species typically have a limited number of individuals restricted over a small area. Of the nine known localities in Georgia, Allison (1995, p. 18-28) reported that six sites consisted of only 3 to 25 plants, and the remaining three sites had 51 to 63 individuals. However, a more recent visit by Moffett (2007, p. 8) to the six Georgia populations, resulted in counts of 5 or fewer plants at one population; 30 to 50 plants at two populations; 150 plants at one population; and two populations with 800 to 1000 plants. Moffett (2007, p. 1-2) indicates that the overall status of the three populations in the Ridge and Valley ecoregion (Floyd and Gordon counties, Georgia) is poor, as these populations tend to be small, and are declining in size and vigor. The largest population in Georgia is the multi-site Goat Rock Dam complex in the Piedmont province (Harris/Muscogee counties) with approximately 1000 flowering stems at last census (Moffett 2007, p. 2). Fort Benning also supports a vigorous population with an estimated 1000 plants (Moffett 2007, p. 2).

In Alabama, the larger populations are primarily in the Ridge and Valley physiographic region of Alabama, particularly in Bibb County. Allison (1999, p. 2-4) originally documented this species at 18 sites (representing 7 populations) in Bibb County. However, one of these Bibb County populations was not relocated during surveys in 2001 (Allison pers. comm. 2002) and plants were not seen at several other sites in this area during visits by the Alabama Natural Heritage Program in 2004. Population estimates of the Alabama sites from the late 1990s by Allison (1999, 1-7) are as follows: three of the six Bibb County populations had 5 to 20 plants, and the remaining Bibb County populations had 50, 83, and 180 plants; the three Coastal Plain Alabama populations had population sizes of 12, 24, and 51 plants. The recently discovered Sumter, Dallas, and Monroe county sites had 15, 30, and 160 plants, respectively (Schotz in litt. 2007, 2009).

#### THREATS:

##### A. The present or threatened destruction, modification, or curtailment of its habitat or range.

Currently, habitat degradation, more than its outright destruction, is the most serious threat to this species' continued existence. Most of the Coastal Plain rivers surveyed by Allison (1995, p. 11) were considered unsuitable for Arabis georgiana because their banks had been disturbed to the point where there was no remaining vegetative buffer. Recent habitat degradations (i.e. vegetation denuded and replaced by hard-packed exposed mineral soil) have resulted at several Georgia sites in association with residential development and campsites atop the bluffs (Moffett 2007, p. 3-4). Disturbance, associated with timber harvesting, road building, and grazing in areas where the plant exists has created favorable conditions for the invasion of exotic weeds in this species' habitat (see Factor E).

One population of Arabis georgiana in Floyd County, Georgia, appears to be a surviving remnant of a once larger population. The primary habitat at this locality has been extensively quarried (Allison 1995, p. 10). It is likely that other populations on rocky bluffs, in the Piedmont and Ridge and Valley provinces, were destroyed by quarrying or impoundments. A recently located population in Monroe County, Alabama is adjacent to an area that was once quarried (Schotz in litt. 2007). Rock bluffs along rivers have also been favored sites for hydropower dam construction. The construction of a dam in Harris County, Georgia, destroyed a portion of suitable habitat for a population of Arabis georgiana and the current population there may also represent a remnant of a once much larger population (Allison 1995, p. 10).

B. Overutilization for commercial, recreational, scientific, or educational purposes.

Overutilization is not known to pose a threat to this species.

C. Disease or predation.

Limited browsing of plants has been noted in Georgia (Allison 1995, p. 10; Moffett 2007, p. 3). However, disease and predation are not thought to be a significant threat to this species.

D. The inadequacy of existing regulatory mechanisms.

Arabis georgiana is listed as Threatened by the State of Georgia (Patrick et al. 1995). This State listing provides legal standing under the Georgia Wildflower Preservation Act of 1973. Georgia law prohibits the removal of this species from public land and regulates the taking and sale of plants from private land. This law also triggers the GEPA (Georgia Environmental Protection Act) process in the event of potential impact to a population by state activities on state-owned land (Moffett 2007, p. 3); however, the greater problem of habitat destruction and degradation is not addressed by this law. Arabis georgiana is considered endangered in Alabama but that state has no protective legislation for plants.

Only two populations are known to occur on Federal land: one population (two sites) on the Fort Benning Military Reservation in Chattahoochee County, Georgia, and Russell County, Alabama, and one population on Fort Toulouse/Jackson Park National Historic Site in Elmore County, Alabama. Fort Benning is aware of the two sites on their property and protection is provided for these areas (Mark Thornton, Fort Benning Military Reservation, pers. comm. 2004). Protection measures at Fort Toulouse are unknown at this time. The Sumter County, Alabama population is owned and managed by the University of West Alabama and is under no apparent threat. All sites are in need of active management to combat invasive plants (see Factor E.).

E. Other natural or manmade factors affecting its continued existence.

The primary threat to Arabis georgiana is the ongoing degradation of its habitat and the subsequent invasion of exotic species. Disturbance of most of the species' known sites has provided opportunities for the invasion of aggressive, non-native weeds, especially Japanese honeysuckle (Lonicera japonica). Arabis georgiana is not a strong competitor and is usually found in areas where growth of other plants is restrained due to the shallowness of the soils or

the pioneer status of the site (e.g., eroding riverbanks) (Allison 1995, p. 8). However, non-native species are effectively invading these riverbank sites and the long-term survival of the five riverbank populations in the Coastal Plain province is questionable (Allison 1995, p. 11). This species is only able to avoid competition with non-native species where the soil is limited (e.g., rocky bluffs).

Competition from non-native species, exacerbated by adjacent land use changes, likely contributed to the loss of the population at the type locality in Stewart County, Georgia (Allison 1995, p. 28) and possibly to one of the Bibb County, Alabama, populations and several other sites in this general area (Allison pers. comm. 2002), Alabama Natural Heritage Program 2004, p. 2). Additional populations are currently being negatively affected by competition with non-native plants. According to Moffett (2007, p. 3), most of the sites in Georgia are being impacted by the presence of invasive plant species, primarily Japanese honeysuckle (Lonicera japonica), Chinese privet (Ligustrum sinense), and Nepalese browntop (Eulalia viminea). Japanese honeysuckle was observed growing on individual plants of Arabis georgiana at three sites visited by Allison in 1995. At a fourth site, plants growing in a mat of Nepalese browntop declined in number from 17 individuals to a single plant (Allison 1995, p. 19). Allison (1995, p. 18-28; Allison in litt 1999) considered four other populations to be imminently threatened by the nearby presence of non-native plants. Thus, approximately 40 percent of the populations visited by Allison in 1995 were reportedly threatened by non-native species.

Populations of Arabis georgiana are healthiest in areas receiving full or partial sunlight. This species seems to be able to tolerate moderate shading, but exists primarily as vegetative rosettes in heavily shaded areas (Moffett 2007, p. 4). Those populations occurring in forested areas will decline as the forest canopy closes. Allison (1999) attributed the decline of a population in Bibb County, Alabama, to canopy closure. In addition, the small number of individuals at the majority of the sites makes these populations vulnerable to local extinctions from unfavorable habitat conditions such as extreme shading.

One of the populations in Georgia is confined to a roadside right-of-way and is currently threatened by roadside maintenance such as mowing and herbicides (Hodges in litt. 2005).

#### CONSERVATION MEASURES PLANNED OR IMPLEMENTED

The Service funded a status survey on this species throughout its range in the mid-1990s. The Service's Candidate Conservation Program provided limited funding in 2002 to initiate conservation measures for this species including gathering landowner information, development of site management plans for selected populations on public lands and implementation of non-native plant control. In Alabama, preliminary site visits were conducted in 2002, draft management plans were developed, and exotic removal was initiated at two sites (Alabama Natural Heritage Program 2004, p. 2). In 2003 land ownership information was updated for the Alabama sites. Most of the Alabama sites were visited in the summer of 2004. Revisits to these sites are planned for 2008 -2009. The Georgia sites were visited in 2005 and 2006 (Moffett in litt. 2005; 2007, p. 1-7). An updated status report on the Georgia populations was completed in 2007.

In December of 2008, the Georgia Plant Conservation Alliance augmented the population at the Georgia Power Goat Rock Dam site by outplanting 103 Georgia rockcress plants, grown previously from seed collected at this site (Elmore in litt. 2009). Intensive monitoring is planned for this population in Spring of 2009 (Elmore in litt. 2009). Prescribed burning was implemented at this site in 2004 to aid in invasive species removal. Additional management will be needed to control the regrowth of invasives at this site (Elmore in litt. 2009).

#### SUMMARY OF THREATS:

Habitat degradation and the subsequent invasion of exotic species, more than outright habitat destruction, is the most serious threat to this species' continued existence. Disturbance, associated with timber harvesting, road building, and grazing has created favorable conditions for the invasion of exotic weeds, especially Japanese honeysuckle (*Lonicera japonica*), in this species' habitat. A large number of populations are currently or potentially threatened by the presence of exotics. Populations near roadsides are threatened by roadside maintenance practices, particularly herbicides. We find that this species is warranted for listing throughout all its range, and, therefore, find that it is unnecessary to analyze whether it is threatened or endangered in a significant portion of its range.

#### RECOMMENDED CONSERVATION MEASURES:

Continue annual visits to populations, as feasible. Thoroughly survey habitat on public lands to document any new locations of the species; work with landowners, the state, and conservation agencies to develop protection/management plans for all sites, beginning with those located on public land; and implement management on all sites. Obtain additional funding to support surveys and continuation of restoration efforts on sites.

#### LISTING PRIORITY

| THREAT                     |                 |                       |            |
|----------------------------|-----------------|-----------------------|------------|
| Magnitude                  | Immediacy       | Taxonomy              | Priority   |
| High                       | Imminent        | Monotypic genus       | 1          |
|                            |                 | Species               | 2          |
|                            |                 | Subspecies/population | 3          |
|                            | Non-imminent    | Monotypic genus       | 4          |
|                            |                 | Species               | 5          |
|                            |                 | Subspecies/population | 6          |
| <b>Moderate<br/>to Low</b> | <b>Imminent</b> | Monotypic genus       | 7          |
|                            |                 | Species               | <b>8**</b> |
|                            |                 | Subspecies/population | 9          |
|                            | Non-imminent    | Monotypic genus       | 10         |
|                            |                 | Species               | 11         |
|                            |                 | Subspecies/population | 12         |

Rationale for listing priority number:

**Magnitude:** The magnitude of threat is not considered high. The species is not considered highly vulnerable as there are 17 populations scattered over 13 counties in the states of Alabama and Georgia and four of these are protected from outright destruction.

**Imminence:** The primary threat today consists of competition from exotics which is currently affecting at least 8 of the Alabama populations and almost all of the 6 Georgia populations. Though this is considered a gradual threat, the threat is ongoing, thus imminent.

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted? No. This species is not in imminent danger of becoming extinct. There are 16 populations over two states and several populations are secure. The major threat to this species is from exotics which is gradual.

**DESCRIPTION OF MONITORING:** Species experts, botanists with the state conservation programs, and affected Service field offices were sent copies of the most recent candidate form and asked to provide any new information on this species. Those contacted were as follows: Dr. Mincy Moffett, Georgia Department of Natural Resources (GADNR); Al Schotz of the Alabama Natural Heritage Program; the Service's Daphne, AL and Athens, GA field offices; Dr. Michele Elmore of The Nature Conservancy; and Dr. Wayne Barger of the Alabama Heritage Program in the State Lands Division/Alabama Department of Conservation and Natural Resources.

Selected Alabama sites were last visited in 2004 or 2006; however, the Alabama Natural Heritage Program plans to visit all these sites by end of 2009. The Georgia sites were all visited and monitored in 2005 or in 2006 (Moffett 2007, p. 1-7) utilizing funds from the Candidate Conservation Program. Funding obtained from Candidate Conservation Program has not been adequate to support annual monitoring or restoration efforts on a regular basis.

#### COORDINATION WITH STATES

Information from Alabama and Georgia has been incorporated into this latest species assessment.

This species is not listed in Alabama's State Wildlife Action conservation plan, as is the situation for any plant species (Alabama Department of Conservation and Natural Resources 2005). Georgia lists the Georgia rockcress as a "high priority species" in their State Wildlife Action Plan (Georgia Department of Natural Resources 2005).

#### LITERATURE CITED:

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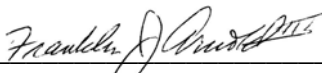


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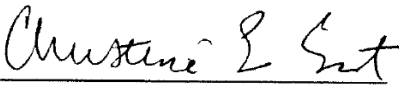
Schotz, A. 2009. Email to Cary Norquist, Alabama Natural Heritage Program. Montgomery, Alabama. February 12, 2009.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve:

  
for Regional Director, Fish and Wildlife Service

May 20, 2009  
Date

  
**Acting**  
Director, Fish and Wildlife Service

Concur:

Date October 29, 2009

Do not concur:

\_\_\_\_\_  
Director, Fish and Wildlife Service

\_\_\_\_\_  
Date

Director's Remarks:

Date of annual review: April, 2009

Conducted by: Jackson, MS Field Office