

CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Fallicambarus gordonii

COMMON NAME: Camp Shelby burrowing crayfish

LEAD REGION: 4

INFORMATION CURRENT AS OF: January 2003

STATUS/ACTION (Check all that apply):

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: ____

90-day positive - FR date: ____

12-month warranted but precluded - FR date: ____

Is the petition requesting a reclassification of a listed species?

Listing priority change

Former LP: ____

New LP: ____

Latest date species first became a Candidate: _____

Candidate removal: Former LP: ____ (Check only one reason)

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

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

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: Crustacean - Cambaridae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Mississippi

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:

Mississippi

LEAD REGION CONTACT (Name, phone number): Rick Gooch, 404/679-7124

LEAD FIELD OFFICE CONTACT (Office, name, phone number): Jackson, Mississippi Field Office, Paul Hartfield, 601/321-1125.

BIOLOGICAL INFORMATION (Briefly describe habitat, historic vs. current range, historic vs. current population estimates (# populations, #individuals/population), etc.):

Species Description

The Camp Shelby burrowing crayfish (CSBC) is a small burrowing crayfish less than 30 millimeters (1.5 inches) in length that was described in 1987 from southeast Mississippi (Fitzpatrick 1987). It is distinguished from closely related species by a broader rostrum, characters of the chela, and characters of the male and female sexual organs.

Taxonomy

CSBC was described as Fallicambarus gordonii in 1987 by J.P. Fitzpatrick, Jr.. It has been recognized since that time as a valid taxonomic species.

Habitat

Originally CSBC were only found in pitcher plant bogs and this was believed to be the natural limit of its range. Welch (2002) sampled across habitat types and found CSBC in pitcher plant bogs, pitcher plant savannas (areas with higher pine density), and mixed palustrine wetlands that did not have pitcher plants, however, densities of burrows in the pitcher plant savannas and mixed palustrine wetlands were lower than in the pitcher plant bogs. Eversole and Welch (2001) collected a CSBC from a roadside ditch where pitcher plants were observed but is not typical pitcher plant bog habitat. While CSBC are not limited to open pitcher plant bogs, populations within this type of habitat are more robust.

Observations on the distribution of the species suggest that CSBC may be dependent on the maintenance of open-bog habitat for survival. CSBC populations found in pitcher plant savannas and mixed palustrine wetlands may be relict populations of pitcher plant bogs that have succeeded to later forest stages. Therefore, conditions where pitcher plants thrive are considered optimal for CSBC.

Historical Range/Distribution

When described, the species was known from eight locations, all in the Desoto National Forest (Pascagoula River drainage) in Perry County, Mississippi.

Current Range/Distribution

CSBC appears to have a small, naturally limited range which is typical of most species of Fallicambarus (Johnston and Figiel 1997). Extensive crayfish surveys of wetlands in southern Mississippi and Alabama have documented the CSBC only from a localized portion of the Leaf River watershed in central Perry County, Mississippi, within the Desoto National Forest. All of this area is currently under lease to the Mississippi Army National Guard=s (MSANG) Camp Shelby for troop and tank training grounds.

Surveys for CSBC have been conducted by Fitzpatrick (1991), Johnston and Figiel (1995), Leonard et al. (1999), Eversole and Welch (2001), and Welch (2002). A few other researchers have also made collections of this species (MS Natural Heritage Program Database). Currently CSBC have been found at 54 locations. CSBC have only been found within DeSoto National Forest and most sites are within the Camp Shelby Training Site. Early surveys suggested that CSBC were limited to a small area in the upper reaches of the Cypress Creek watershed (Fitzpatrick 1991). However, more recent surveys located a few populations of CSBC in the

Beaumont Creek drainages of the Pascagoula River watershed (Eversole and Welch 2001). Welch (2002) developed a predictive model of occurrence for CSBC, applied it in the upper and lower Cypress Creek watersheds, and increased the number of known populations in the upper Cypress Creek watershed.

Population Estimates/Status

CSBC may be locally common in the small pitcher plant bogs where they occur, however, there has only been one attempt to quantify populations. Johnston and Figiel (1997) found that counting burrows in pitcher plant bogs was an inappropriate method to census CSBC populations. Excavating burrows, their catch per unit effort (total number of crawfish captured/total number of burrows examined) ranged from 0.02 to 0.17.

The CSBC is a short-lived (2 to 3 years) burrowing crayfish that estivates during dry summer months and is active during late fall, winter, and spring (Johnson and Figiel 1997). Reproductively active males (Form I) are found throughout this activity period. Females bearing eggs have only been collected during late fall and early winter. Egg numbers range from 7 to 25 per female. Juveniles are present during most of the year, but are more frequently collected in the late spring. Burrows consist of a shallow oval chamber with one to four openings. Concentrations of burrows are found only in pitcher plant bogs.

THREATS (Describe threats in terms of the five factors in section 4 of the ESA providing specific, substantive information. If this is a removal of a species from candidate status or a change in listing priority, explain reasons for change):

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

The CSBC is believed to be naturally limited in range. It is found only within pitcher plant wetlands on U.S. Forest Service (USFS) lands leased by the Mississippi Army National Guard's (NG) Camp Shelby for troop and tank training grounds. All pitcher plant wetlands combined comprise less than 500 acres of Camp Shelby's 135,000 acres, and the crayfish has been associated with only a few of these (M. Duran, Mississippi Department of Wildlife, Fisheries, and Parks, Hattiesburg, MS, *in litt.* 1999).

The CSBC is vulnerable to activities that would directly destroy its burrows, compact the soil, or alter the hydrology of its flat pine woodland wetland habitat. The primary activities occurring in areas surrounding CSBC habitat include silvicultural activities by the USFS and tank and troop maneuvers by the NG. Silvicultural activities that could harm the species include canopy removal and dessication, soil compaction and rutting from heavy equipment operation, and toxic runoff from pesticide and herbicide applications. NG troop and tank maneuvers within crayfish habitat can kill or entomb animals, compact the soil, and/or affect hydrology through rutting.

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

CSBCs are not utilized for commercial or recreational purposes. Their cryptic habits protect them from overzealous scientific collection.

C. Disease or predation.

Diseases affecting the CSBC are unknown. Although a number of vertebrate predators are known to prey on crayfish, natural predation does not appear to be a threat.

D. The inadequacy of existing regulatory mechanisms.

The species is not currently considered under other environmental laws and regulations.

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

All Terrain Vehicle (ATV) use is high in the area where the CSBC occurs. ATV trails have been observed through pitcher plant bogs inhabited by CSBC. ATV use in these areas may result in direct mortality to CSBC.

FOR RECYCLED PETITIONS:

- a. Is listing still warranted? ____
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? ____
- c. Is a proposal to list the species as threatened or endangered in preparation? ____
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded.

LAND OWNERSHIP (Estimate proportion Federal/state/local government/private, identify non-private owners):

All known habitat for the species occurs on U.S. Forest Service lands leased by Mississippi Army National Guard.

PRELISTING (Describe status of conservation agreements or other conservation activities):

The Forest Service and National Guard are aware of the locations inhabited by the CSBC and its vulnerability to their activities. Surveys and life history studies have been conducted. The Mississippi Natural Heritage Program and The Nature Conservancy have been monitoring the species and its habitat in cooperation with the National Guard and Forest Service.

The Forest Service and National Guard have been cooperative in working with the State to avoid impacts. The National Guard has requested Mississippi Field Office assistance in developing and entering into a Candidate Conservation Agreement that will reduce or remove all known significant threats to the CSBC. A draft CCA has been developed.

REFERENCES (Identify primary sources of information (e.g., status reports, petitions, journal publications, unpublished data from species experts) using formal citation format):

Eversole, A. G. and S. M. Welch. 2001. *Fallicambarus (Creaserinus) gordonii* (The Camp Shelby Burrowing Crayfish). Final report submitted to the Camp Shelby Field Office, The Nature Conservancy.

Fitzpatrick, J.P. 1987. Fallicambarus burrisi and E. gordonii, two new burrowing crayfishes associated with pitcher plant bogs in Mississippi and Alabama. Proceedings of the Biological Society of Washington 100:433-446.

Fitzpatrick, J.P. 1991. Status survey report Camp Shelby crayfish. Report to U.S. Army Corps of Engineers, Champaign, Illinois. Pp. 1-14.

Johnston, C.E. and C. Figiel. 1997. Microhabitat parameters and life-history characteristics of Fallicambarus gordonii Fitzpatrick, a crayfish associated with pitcher-plant bogs in southern Mississippi. Journal of Crustacean Biology 17(4):687-691.

Leonard, S. W., J. H. Moore, and C. M. Duran. 1999. Mississippi Military Department, Biological Inventory, Camp Shelby, 1994-1999. Final report submitted to the Mississippi Army National Guard.

Welch, S. M. 2002. GIS based models of Camp Shelby Burrowing Crayfish (*Fallicambarus gordonii*) distributions in the Cypress Creek Watershed of the Camp Shelby Training Site, MS. Final report submitted to the Camp Shelby Field Office, The Nature Conservancy.

LISTING PRIORITY (place * after number)

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
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11*
		Subspecies/population	12

Rationale for listing priority number:

Magnitude: Individual threats are low, however they are compounded by the small range and specialized habitat of the species.

Imminence: Threats are insidious. Additionally, the Service is currently engaged with the largest landowner (Camp Shelby) regarding the development of a Candidate Conservation Agreement in order to address management issues surrounding the species and its habitat.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Linda Kelsey March 14, 2003
Acting Regional Director, Fish and Wildlife Service Date

Concur: _____ Date _____
Director, Fish and Wildlife Service

Do not concur: _____ Date _____
Director, Fish and Wildlife Service

Director's Remarks:

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Date of annual review: February 2003

Conducted by: Paul Hartfield - Jackson, Mississippi FO

Comments:

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