Brazos Dwarf Crayfish (*Cambarellus texanus*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, April 2014
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1 Native Range and Status in the United States

Native Range

From Fetzner (2016):

"East of the Lavaca River and Bay to the Brazos River drainage system, Texas."

Status in the United States

From Alvarez et al. (2010):

"This species was first found in a ditch near Bay City in Matagorda County, Texas. It has since been found in the Colorado River, Fort Bend County, and Waller County. It is thought that the range is bound by the Lavaca River and Bay on the west, though the northward and eastward range limits are not known (Albaugh and Black 1973)."

"This species has been collected from 31 sites and is believed to be common at most sites (D. Johnson pers. comm. 2009)."

Means of Introductions in the United States

This species has not been reported as introduced outside of its native range in the United States.

Remarks

From NatureServe (2015):

"It is found only in Texas in a small range near the central Texas coast (Johnson and Johnson, 2008). It has a larger range than *Cambarellus ninae*, but does occur in an area that is experiencing urban growth; however populations appear stable and there is no evidence of decline."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2016):

"Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Protostomia
Superphylum Ecdysozoa
Phylum Arthropoda
Subphylum Crustacea
Class Malacostraca
Subclass Eumalacostraca
Superorder Eucarida
Order Decapoda
Suborder Pleocyemata
Infraorder Astacidea
Superfamily Astacoidea
Family Cambaridae
Subfamily Cambarellinae
Genus Cambarellus
Subgenus *Cambarellus* (*Pandicambarus*)
Species *Cambarellus texanus* Albaugh and Black, 1973"

"Current Standing: valid"

Size, Weight, and Age Range

From Albaugh and Black (1973):

"The largest specimen collected is a female; 11.8 mm in carapace length. The largest and smallest first form males have corresponding lengths of 10.1 and 6. 7 mm."

Environment
From Alvarez et al. (2010):

"Freshwater"

"During the summer it is known to burrow when some of its habitat becomes dry (S. Adams pers. comm. 2009)."

Climate/Range
From NatureServe (2015):

"Apparently tolerant of warmer waters […]"

Distribution Outside the United States
Native
This species is not native outside the United States.

Introduced
This species has not been reported as introduced outside the United States.

Means of Introduction Outside the United States
This species has not been reported as introduced outside the United States.

Short Description
From NatureServe (2015):

"Hooks on 2nd & 3rd pereiopods, subacute teminal elements reflected to about 45 degrees, pleopod arched throughout distal half. Rostrum usually lacking marginal spines."

From Albaugh and Black (1973):

"In overall appearance this crawfish is olivaceous, stippled with numerous dark chromatophores. The most conspicuous markings are those on the dorsal surface of the abdomen […] The carapace is olive dorsally with dense stippling and dark vermiculations; laterally it tends more toward brown, with an irregular mottled pattern; the lower third of the lateral surface is very light and lacks markings. The abdomen has a pale olive ground color, and there is a middorsal stripe lighter than the ground color and outlined by dense strippling. A dark band of moderate intensity runs the length of the abdomen at a level about midway between the dorsal dark markings and the edge of the teigites. There are no markings below this band. The chela and carpus have an irregular mottled pattern on the dorsomesial surface but lack conspicuous markings. The antennal scale is pigmented only near its center; uropods and telson lack conspicuous markings."

Biology

From Albaugh and Black (1973):

"First form males and ovigerous females were collected in March, June, September, October, and November. Collections have not been made in other months."

"Throughout much of its range, *Cambarellus texanus* has been collected together with *Procambarus acutus*, *P. clarkii*, *P. incilis*, and *Fallicambarus hedgpethi*. At two localities it was found with *Cambarellus shufeldti*, the range of which broadly overlaps with its own. East of the Brazos River it has been found in association with *C. puer* and *P. hinei*."

From NatureServe (2015):

"[…] prefers standing water of ditches in which there is emergent vegetation. Will burrow in dry periods. In Texas, it occurs in shallow waters with aquatic plant cover and underground cells into which individuals can take refuge during droughts or in dry summers (Johnson and Johnson, 2008)."

"Adult Food Habits: Detritivore
Immature Food Habits: Detritivore
Food Comments: No data; probably opportunistic, mostly detritus."

Human Uses

From Faulkes (2015):

"Crayfish species found in the pet trade of more than one country. […]		
Cambarellus texanus […]	Germany (Chucholl, [2013])	Yes
[…]	Czech Republic (Patoka *et al.*, [2014]; Patoka et al., [2015])	Yes

From Patoka et al. (2014):

"Wholesale availability: Very rare"

From NatureServe (2015):

"No known economic value to humans."

Diseases

No information available.

Threat to Humans

No information available.

3 Impacts of Introductions

From Patoka et al. (2014):

"… potential invasiveness (FI-ISK [Freshwater Invertebrate Invasiveness Scoring Kit] score) and risk category (FI-ISK category) […]
FI-ISK score: 3
FI-ISK category: Medium"

4 Global Distribution

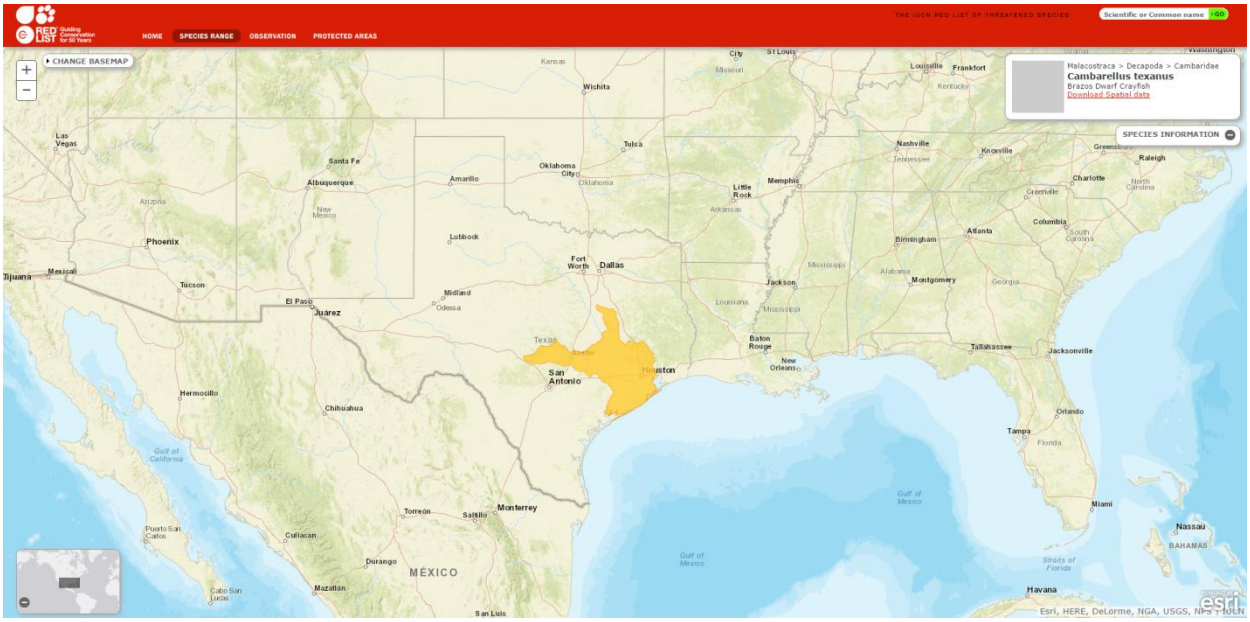

Figure 1. Map of known global distribution of *Cambarellus texanus* (Alvarez et al. 2014).

5 Distribution within the United States

Same as global distribution (see Section 4).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was high in eastern Texas and Georgia, and medium in the Mid-Atlantic, Ohio River Valley and Lower Mississippi River Valley. Low match was recorded for the rest of the United States. Climate6 score indicated that the Continental U.S. has a high climate match. The range of scores for a high climate match is 0.103 and greater; Climate6 score of *Cambarellus texanus* is 0.115.

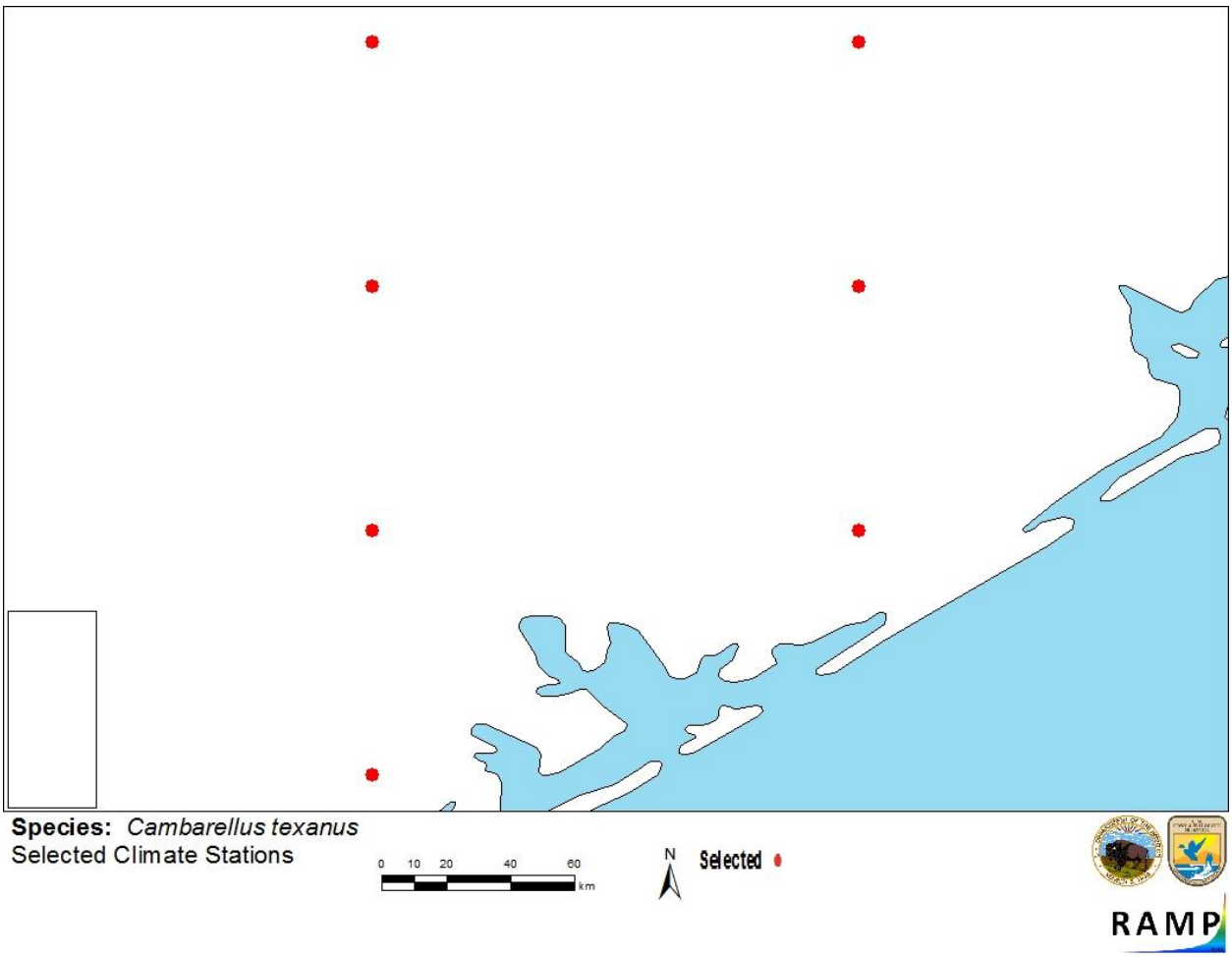

Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red) and non-source locations (gray) for *Cambarellus texanus* climate matching. Source locations in southeast Texas from GBIF (2016); Matagorda Bay is located in the bottom center of the figure.

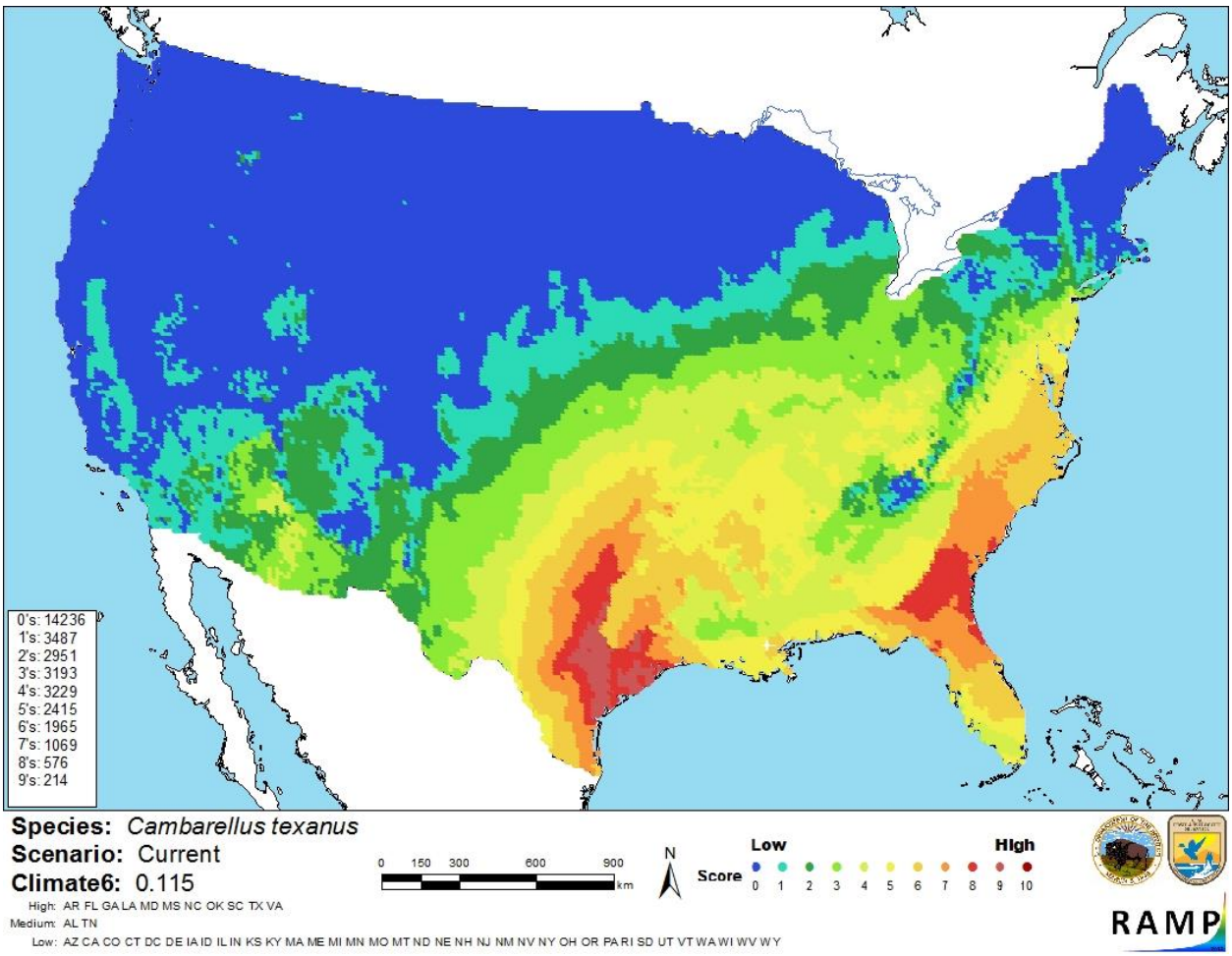

Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Cambarellus texanus* in the continental United States based on source locations reported by GBIF (2016). 0= Lowest match, 10=Highest match.

The "High", "Medium", and "Low" climate match categories are based on the following table:

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
0.000≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

7 Certainty of Assessment

Information on the biology and distribution of *Cambarellus texanus* is limited. No introductions of the species have been reported outside its native range, so no information is available on impacts of introductions. Certainty of this assessment is high.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Cambarellus texanus is a freshwater crayfish native to Texas. It inhabits ditches with standing water and emergent vegetation, and will burrow when the habitat becomes dry. The species is present but very rare in the aquarium trade in Germany and the Czech Republic, and not reported to be traded in the U.S. No introductions of this species have been reported outside its native range. Climate match with the contiguous United States is high, with highest match in Texas and Georgia. Overall risk posed by this species is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec.6): High**
- **Certainty of Assessment (Sec. 7): High**
- **Overall Risk Assessment Category: Uncertain**

9 References

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.

Albaugh, D. W., and J. B. Black. 1973. A new crawfish of the genus *Cambarellus* from Texas, with new Texas distributional records for the genus (Decapoda, Astacidae). The Southwestern Naturalist 18(2):177-185.

Alvarez, F., M. López-Mejía, and C. Pedraza Lara. 2010. *Cambarellus texanus*. The IUCN Red List of Threatened Species 2010: e.T153628A4522305. Available: http://www.iucnredlist.org/details/153628/0. (October 2016).

Faulkes, Z. 2015. The global trade in crayfish as pets. Crustacean Research 44:75-92.

Fetzner, J. W., Jr. 2016. *Cambarellus (Pandicambarus) texanus* Albaugh & Black, 1973. The crayfish and lobster taxonomy browser. Carnegie Museum of Natural History, Pittsburgh, Pennsylvania. Available: http://iz.carnegiemnh.org/crayfish/NewAstacidea/species.asp?g=Cambarellus&s=texanus&ssp=. (October 2016).

GBIF (Global Biodiversity Information Facility). 2016. GBIF backbone taxonomy: *Cambarellus texanus* Albaugh & Black, 1973. Global Biodiversity Information Facility, Copenhagen. Available: http://www.gbif.org/species/2227435. (October 2016).

ITIS (Integrated Taxonomic Information System). 2016. *Cambarellus texanus* Albaugh and Black, 1973. Integrated Taxonomic Information System, Reston, Virginia. Available: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=97626#null. (October 2016).

NatureServe. 2015. *Cambarellus texanus* – Albaugh and Black, 1973. NatureServe Explorer: an online encyclopedia of life [web application], version 7.1. NatureServe, Arlington, Virginia. Available: http://explorer.natureserve.org/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=120564&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=120564&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=120564. (October 2016).

Patoka, J., L. Kalous, and O. Kopecký. 2014. Risk assessment of the crayfish pet trade based on data from the Czech Republic. Biological Invasions 16:2489-2494.

Sanders, S., C. Castiglione, and M. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.

10 References Quoted But Not Accessed

Note: The following references are cited within quoted text within this ERSS, but were not accessed for its preparation. They are included here to provide the reader with more information.

Chucholl, C. 2013. Invaders for sale: trade and determinants of introduction of ornamental freshwater crayfish. Biological Invasions 15:125-141.

Johnson, S. K., and N. K. Johnson. 2008. Texas crawdads. Crawdad Club Designs, College Station, Texas.

Patoka, J., L. Kalous, and O. Kopecký. 2015. Imports of ornamental crayfish: the first decade from the Czech Republic's perspective. Knowledge and Management of Aquatic Ecosystems 416:04.