U.S. Fish & Wildlife Service

Midget Crayfish (*Faxonius nana*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, April 2014
Revised, December 2017
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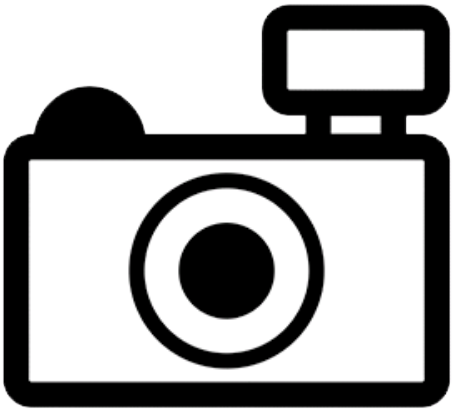

No Photo Available

1 Native Range, and Status in the United States

Native Range

From Bergey and Taylor (2010):

"This species is found in the Neosho River basin in Arkansas and eastern Oklahoma, USA (Williams 1952). In 2005, it was found in the Illinois River (Bergey *et al*. 2005), and into the White River drainage in Arkansas (C. Taylor, pers. comm. 2009). This species distribution is not currently regarded as being severely fragmented (C. Taylor pers comm. 2010)."

Status in the United States

From NatureServe (2017):

"Inhabits clear gravelly streams of the Arkansas River drainage in northwest Arkansas and northeast Oklahoma (Williams, 1954). This small crayfish occurs in the Neosho (Hobbs, 1989) and Illinois River watersheds in Oklahoma […]. The species is also found in Arkansas and is unranked in Arkansas. It is found in both tributary streams and in the Illinois River mainstem, often in numbers."

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 Crandall and De Grave (2017):

"The surface-dwelling taxa now excluded from *Orconectes* sensu stricto are herein placed in the resurrected genus *Faxonius* Ortmann, 1905, the oldest available name previously considered to be a synonym of *Orconectes* Cope, 1872."

From NatureServe (2017):

"Hayes (1973) reported what he interpreted to be intergrade populations between *O. nana* and *O. macrus* in Delaware and Ottawa counties, Oklahoma, but in his recent revision of the genus, Fitzpatrick (1987) maintained specific status for these crayfishes which were first separated by Hobbs (1972). Recently a mtDNA study by Dillman et al. (2010) supported full species status for both species."

From Morehouse and Tobler (2013):

"In Oklahoma, *O. nana* closely resembles *O. macrus* and *O. meeki brevis*."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Crandall and De Grave (2017):

"The surface-dwelling taxa now excluded from *Orconectes* sensu stricto are herein placed in the resurrected genus *Faxonius* Ortmann, 1905, the oldest available name previously considered to be a synonym of *Orconectes* Cope, 1872."

From ITIS (2017):

"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 Cambarinae
Genus *Orconectes*
Subgenus *Orconectes* (*Procericambarus*)
Species *Orconectes nana* A.B. Williams, 1952"

Size, Weight, and Age Range

From Morehouse and Tobler (2013):

"Adults rarely exceed 60 mm in total length."

Environment

From NatureServe (2017):

"Freshwater."

Distribution Outside the United States

Native

The native range of this species does not extend outside of the United States.

Introduced

No introductions of this species into natural habitats have been reported.

According to Faulkes (2015), *Orconectes nana* is found in the pet trade in Germany (Churcholl 2013) and in the Czech Republic (Patoka et al. 2014; Patoka et al. 2015).

According to Patoka et al. (2014), *O. nana* is available in the pet trade in the Czech Republic. Its wholesale availability is reported as "very rare."

Means of Introduction Outside the United States

No introductions of this species into natural habitats have been reported.

Short Description

From Morehouse and Tobler (2013):

"The carapace is nearly equal in length to the abdomen. The rostrum is narrow with a well-developed trough-like depression. Chelae are short but broad and look oversized relative to body size. In form I males, gonopods have two long, slender, and slightly curved processes that reach the base of the second pair of pereiopods. In females, the annulus ventralis has a deep fossa (Williams, 1952)."

"The background color is uniform olive-tan to brown without any colorful markings. The

cheeks exhibit a yellowish spot with a reddish edge. There is a dark brown to black saddle at the conjunction of the carapace and abdomen […]. The ventral side is light yellow to white."

Biology

From Bergey and Taylor (2010):

"This species is found in clear, flowing permanent streams with substrates consisting of limestone gravel and cobbles (Williams 1952)."

"Williams (1952) found 113 specimens of this species at certain sites. In addition, it has been found to be locally common in suitable habitat (C. Taylor pers. comm. 2009)."

From Morehouse and Tobler (2013):

"It usually digs under large rocks or digs short tunnels under smaller gravel and is a tertiary burrower."

Human Uses

According to Faulkes (2015), *O. nana* is present in the pet trade in Germany and the Czech Republic, but not in the United States, Brazil, Ireland, the United Kingdom, the Netherlands, Greece, Slovakia, Turkey, or Singapore.

According to Patoka et al. (2014), the wholesale availability of *O. nana* in the Czech Republic is reported as "very rare."

Diseases

No OIE reportable diseases have been documented for this species.

Threat to Humans

No information reported for this species.

3 Impacts of Introductions

According to Patoka et al. (2014), *O. nana* has a potential invasiveness (FI-ISK score) of 15 and a risk category (FI-ISK category) of Medium for the Czech Republic. The abbreviation "FI-ISK" stands for the Freshwater Invertebrate Invasiveness Scoring Kit. Non-indigenous crayfish traded in the Czech Republic ranged in FI-ISK score from 3 (lowest) to 27 (highest), and were classified into risk categories of Medium and High.

4 Global Distribution

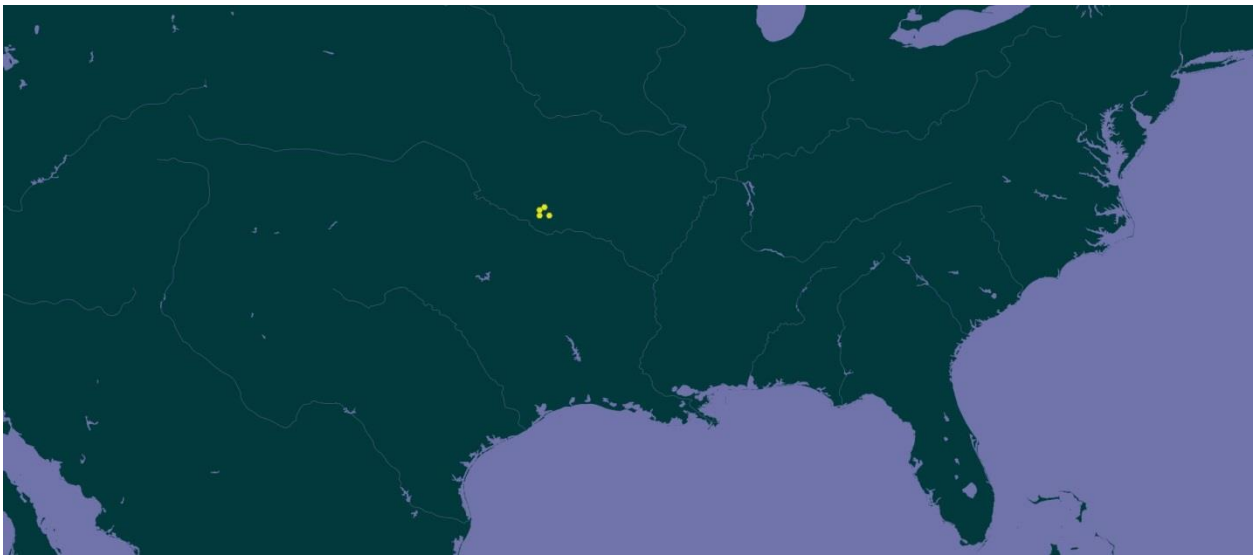

Figure 1. Map of known global distribution of *Faxonius nana*, reported from Arkansas and Oklahoma, United States. Map from GBIF Secretariat (2017).

5 Distribution Within the United States

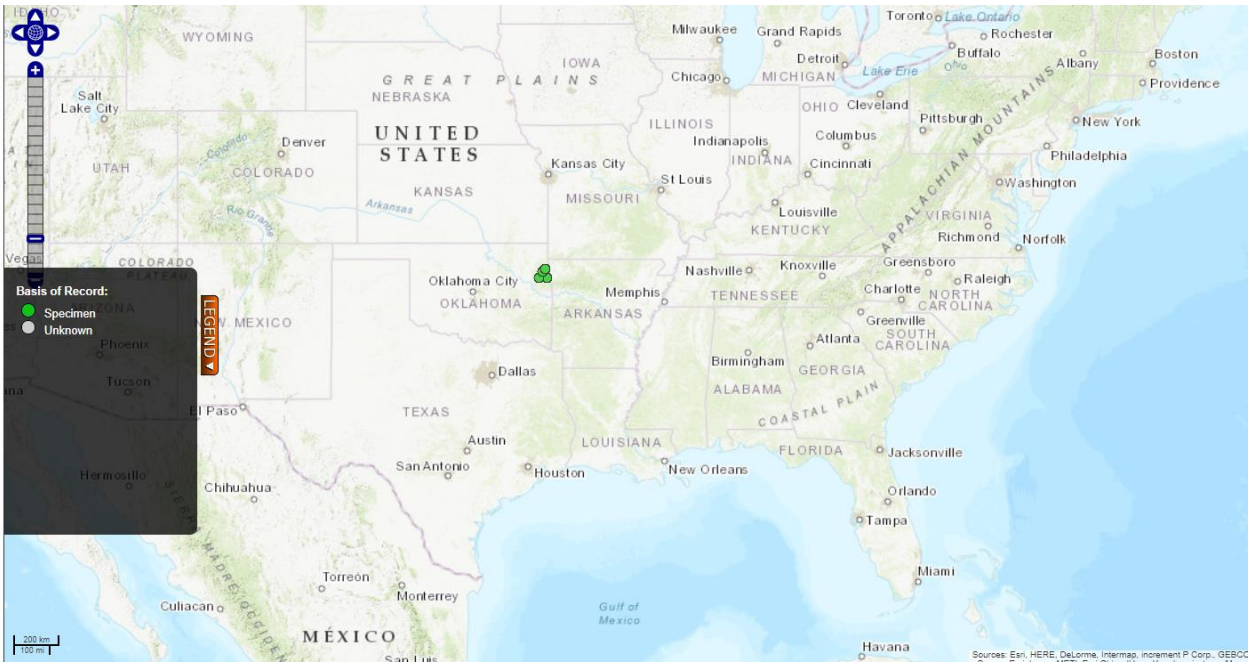

Figure 2. Known distribution of *Faxonius nana* in the United States. Map from BISON (2017).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean distance) was high in Arkansas, Oklahoma, southwestern Missouri, and portions of the Mid-Atlantic and Midwest. Medium matches occurred in the lower Great Lakes, Northeast, Southeast, and the coastal plains from South Carolina to Pennsylvania. Low matches occurred in the western United States, New England, and the southernmost part of Florida. Climate 6 score indicated an overall high climate match for the contiguous U.S. Scores of 0.103 or greater are classified as high match; Climate 6 score for *Faxonius nana* is 0.176.

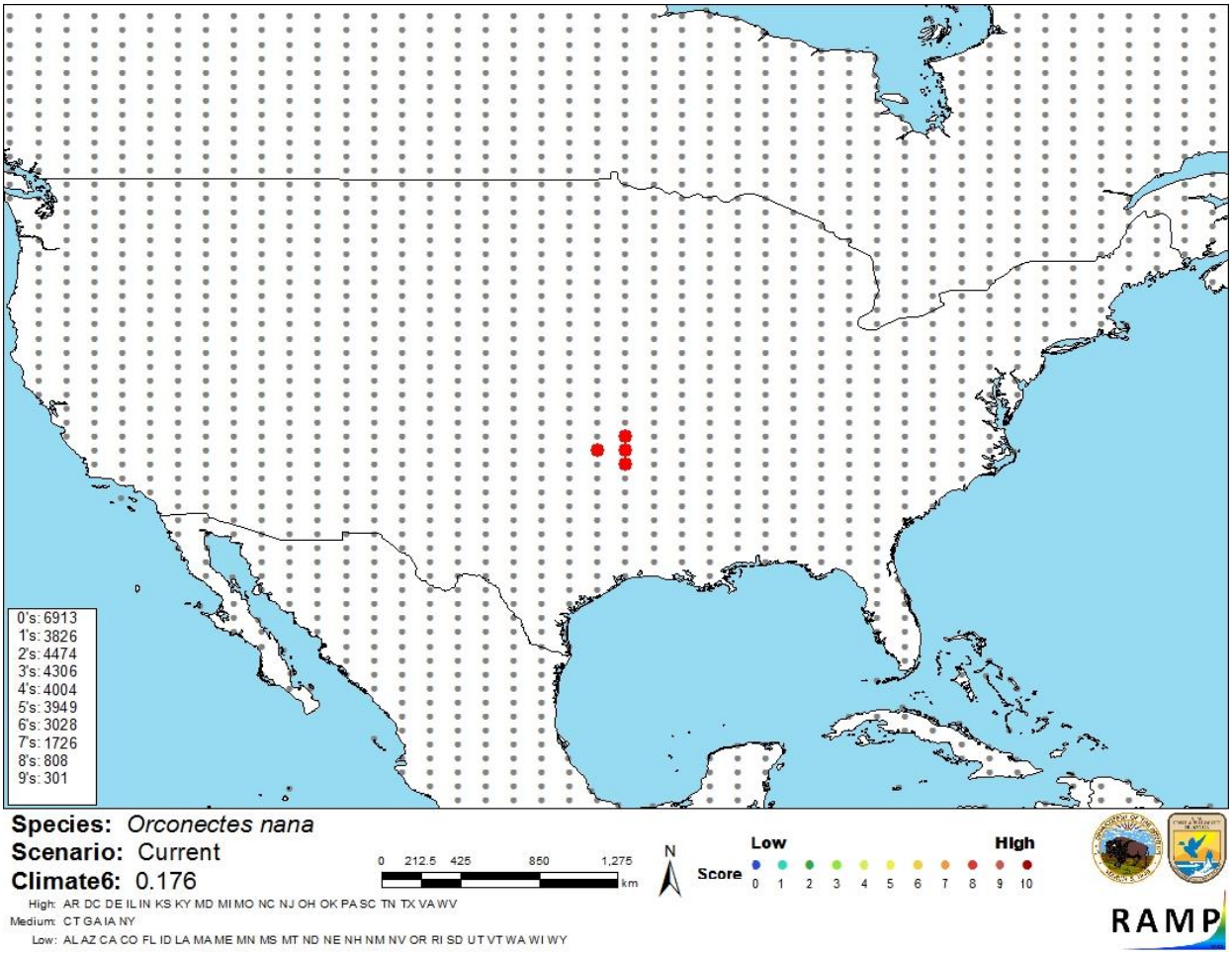

Figure 3. RAMP (Sanders et al. 2014) source map showing weather stations in the United States selected as source locations (red) and non-source locations (gray) for *Faxonius nana* climate matching. Source locations from GBIF Secretariat (2017).

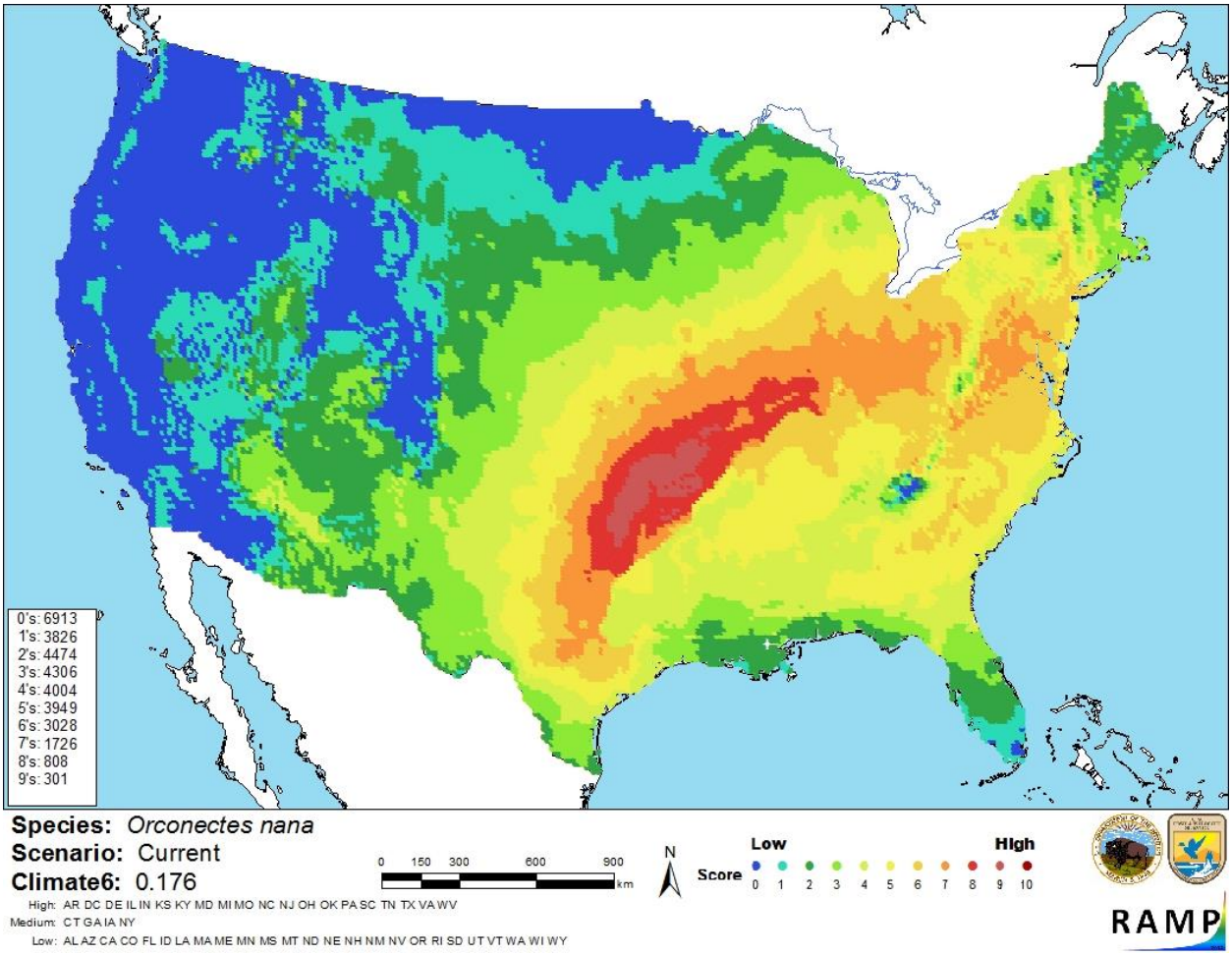

Figure 4. Map of RAMP (Sanders et al. 2014) climate matches for *Faxonius nana* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0= Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

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 this species is available. *F. nana* is reported as available on the market for trade in Germany and the Czech Republic; however, little scientific information is available on the impacts of introductions, and what is available is speculative rather than documentation of realized impacts. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Continental United States

Faxonius nana is a freshwater crayfish native to the Neosho River basin in Arkansas and eastern Oklahoma. It is reported to be available on the market for wholesale trade in Germany and the Czech Republic. In the Czech Republic it has a potential invasiveness (FI-ISK score) of 15 and a risk category (FI-ISK Category) of Medium. Data on impacts of introductions are lacking. Absence of this research makes the certainty of this assessment low. Climate match with the United States is high. 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): Low**
- **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.

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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.

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