

Gilgie (*Cherax quinquecarinatus*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, November 2011

Revised, September 2012 and April 2018

Web Version, 5/21/2018



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1 Native Range and Status in the United States

Native Range

From Austin (2010):

“This species is endemic to south-west coastal areas of Western Australia. It ranges from Perth to the Denmark region (C.M. Austin pers. comm. 2008).”

Status in the United States

This species has not been reported as introduced or established in the United States.

The Florida Fish and Wildlife Conservation Commission (2018) has listed the crayfish *Cherax quinquecarinatus* as a prohibited species. Prohibited nonnative species “are considered to be dangerous to the ecology and/or the health and welfare of the people of Florida. These species are not allowed to be personally possessed or used for commercial activities.”

From Washington Department of Fish & Wildlife (2018):

“Prohibited aquatic animal species. RCW 77.12.020

These species are considered by the commission to have a high risk of becoming an invasive species and may not be possessed, imported, purchased, sold, propagated, transported, or released into state waters except as provided in RCW 77.15.253. [...] The following species are classified as prohibited animal species: [...] Family Parastacidae: Crayfish: All genera except *Engaeus*, and except the species *Cherax quadricarinatus* [sic], *Cherax papuanus*, and *Cherax tenuimanus*.”

Means of Introduction into the United States

This species has not been reported as introduced or established in the United States.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From WoRMS (2018):

“Biota > Animalia (Kingdom) > Arthropoda (Phylum) > Crustacea (Subphylum) > Multicrustacea (Superclass) > Malacostraca (Class) > Eumalacostraca (Subclass) > Eucarida (Superorder) > Decapoda (Order) > Pleocyemata (Suborder) > Astacidea (Infraorder) > Parastacoidea (Superfamily) > Parastacidae (Family) > *Cherax* (Genus) > *Cherax quinquecarinatus* (Species)”

“Status accepted”

Size, Weight, and Age Range

From Beatty et al. (2005):

“The lengths at which 50% of females attained sexual maturity (L_{50}) was 18.8 mm OCL [orbital carapace length] and the male L_{50} was 24.5 mm OCL [...] The lengths at which 95% of females and males attained maturity (L_{95}) were 24.9 and 33.9 mm OCL [...] respectively [...] The smallest mature female and male captured measured 16 and 18 mm OCL [...], respectively.”

From Austin (2010):

“Generation Length (years): 4-5”

From Department of Fisheries (2011):

“Most gilgies are small, but may reach 130 mm in total length.”

Environment

From Beatty et al. (2005):

“The water temperatures in Bull Creek [where *C. quinquecarinatus* were collected] fell from a maximum of 24.2°C in January to 17.8°C in September [...] During the study period, conductivity of the stream did not exceed 661.3 μScm^{-1} , and pH ranged 6.6–7.4. Sudden increases in water levels were only experienced in Bull Creek during and immediately following (up to 24 h) rainfall events.”

From Austin (2010):

“It is most commonly seen in freshwater systems with a high flow velocity and dissolved oxygen concentration (WRM 2005).”

Climate/Range

No information available.

Distribution Outside the United States

Native

From Austin (2010):

“This species is endemic to south-west coastal areas of Western Australia. It ranges from Perth to the Denmark region (C.M. Austin pers. comm. 2008).”

Introduced

No introductions of this species have been reported.

Means of Introduction Outside the United States

No introductions of this species have been reported.

Short Description

From Department of Fisheries (2011):

“Gilgies [...] have five keels along the head, like marron, but only have two pairs of small spines on the rostrum. Gilgies do not have any spines on the telson. Gilgie chelipeds are narrower than those of koonacs or yabbies. [...] Gilgies range in colour from a black-brown to a light brown colour, and often have speckled patterns on their chelipeds (claws).”

Biology

From Austin (2010):

“This species is widespread and abundant throughout much of its range (C.M. Austin pers. comm. 2008). It is the most abundant crayfish species in the Blackwood River and associated tributaries (Morgan and Beatty 2005).”

“This species constructs burrows and uses in-stream structures such as rocks for shelter.”

From Beatty et al. (2005):

“*C. quinquecarinatus*, which has a propensity to burrow, occupies the widest range of habitats of any of its congeners in the region (Austin and Knott, 1996). These include permanent rivers, lakes, and streams, and naturally ephemeral habitats inundated for only 5–7 months of the year (Riek, 1967; Austin and Knott, 1996; Morgan et al., 1998, 2000).”

“The majority of *C. quinquecarinatus* [...] first spawned at the end of their second year of life. The potential (ovarian) and pleopodal fecundities of *C. quinquecarinatus* were relatively low compared to other freshwater crayfish species of similar size, being 81.7 ($\pm$ 5.93 S.E.) and 77.1 ($\pm$ 13.76 S.E.), respectively. *Cherax quinquecarinatus* underwent an extended spawning period, from late winter to late summer (i.e., August to February), with three spawning events facilitated by short brood and rapid gonadal recovery periods, traits consistent with other crayfish species able to exist in temporary environments.”

Human Uses

From Beatty et al. (2005):

“Its relatively large size, wide distribution, and occurrence in a wide range of habitats (where it is often locally abundant) have resulted in it being targeted by recreational fishers and forming an important component of the traditional diet of local Aboriginals (Meagher, 1974). Currently, there is no closed season and no minimum size limits on this species. The only fishery regulation pertaining to this species is a mixed bag limit of 4L of any other species aside from *C. cainii*.”

No OIE-reportable diseases have been documented for this species.

Diseases

From Longshaw (2011):

“*Vavraia parastacida* [a microsporidian fungus] has been reported from *Cherax tenuimanus*, *C. albidus*, *Cherax quinquecarinatus* and *C. quadricarinatus* (Langdon, 1991a, 1991b; Langdon and Thorne, 1992). Infected animals apparently have a bluish colouration, particularly lateral and ventral to the tail. Similar to *Thelohania* sp. reported by Herbert (1987), infected animals are sluggish with limited tail-flick response.”

Threat to Humans

No information available.

3 Impacts of Introductions

No information available. No introductions of this species have been reported.

The Florida Fish and Wildlife Conservation Commission (2018) and the Washington Department of Fish and Wildlife (2018) have listed this species as a prohibited species.

4 Global Distribution



Figure 1. Reported global distribution of *Cherax quinquecarinatus*, showing occurrences in southwestern Australia. Map from GBIF Secretariat (2017).

5 Distribution within the United States

This species has not been recorded in the U.S.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) for *Cherax quinquecarinatus* is low for most of the contiguous United States. The highest climate match was found in southern California, with much of California showing high match. Medium match was found along the U.S.-Mexico border and in parts of the Pacific Northwest. Climate6 score indicated that the contiguous U.S. has a medium climate match overall at 0.025. The range of scores indicating a medium climate match is between 0.005 and 0.103.

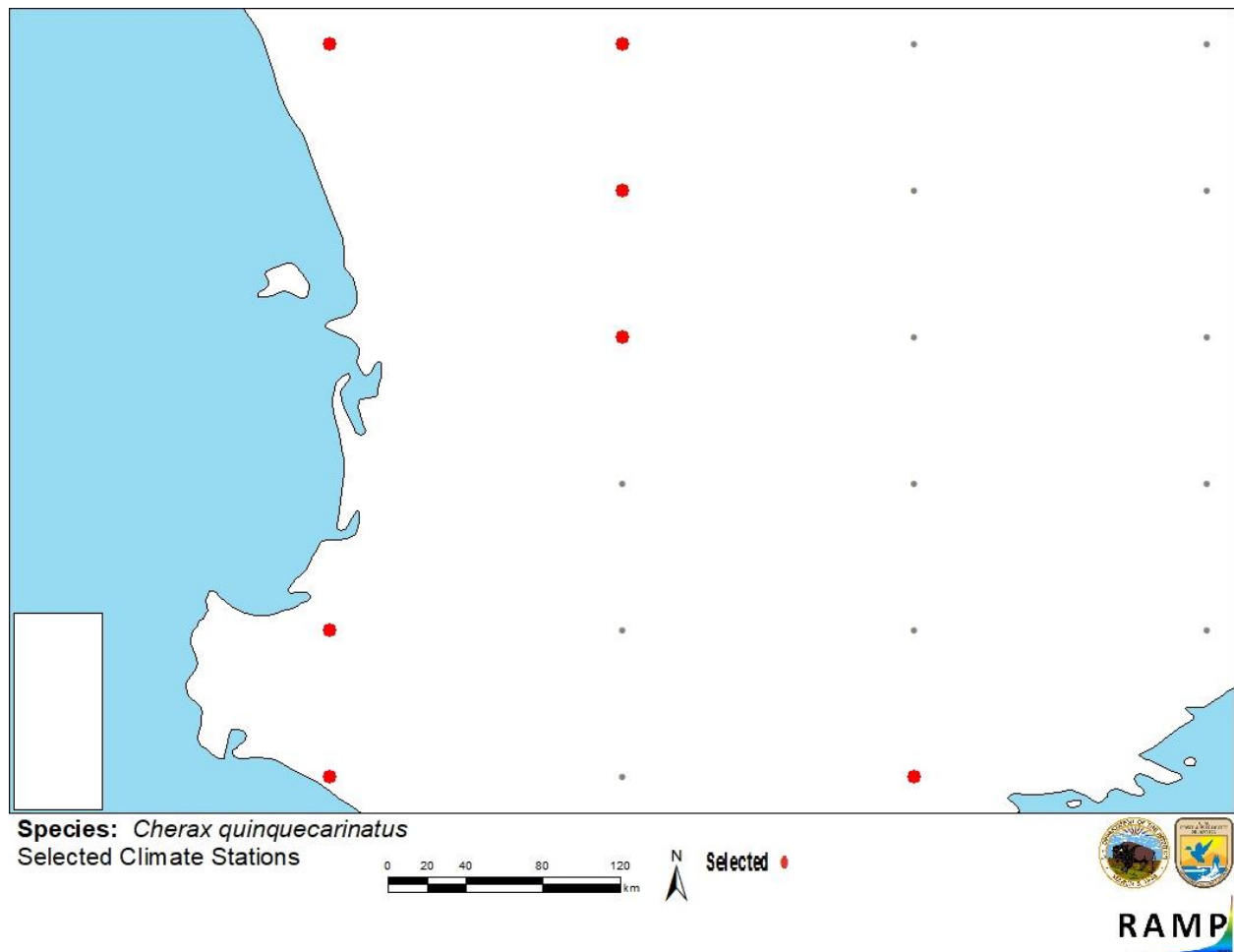


Figure 2. RAMP (Sanders et al. 2014) source map of southwestern Australia showing weather stations selected as source locations (red) and non-source locations (gray) for *Cherax quinquecarinatus* climate matching. Source locations from GBIF Secretariat (2017).

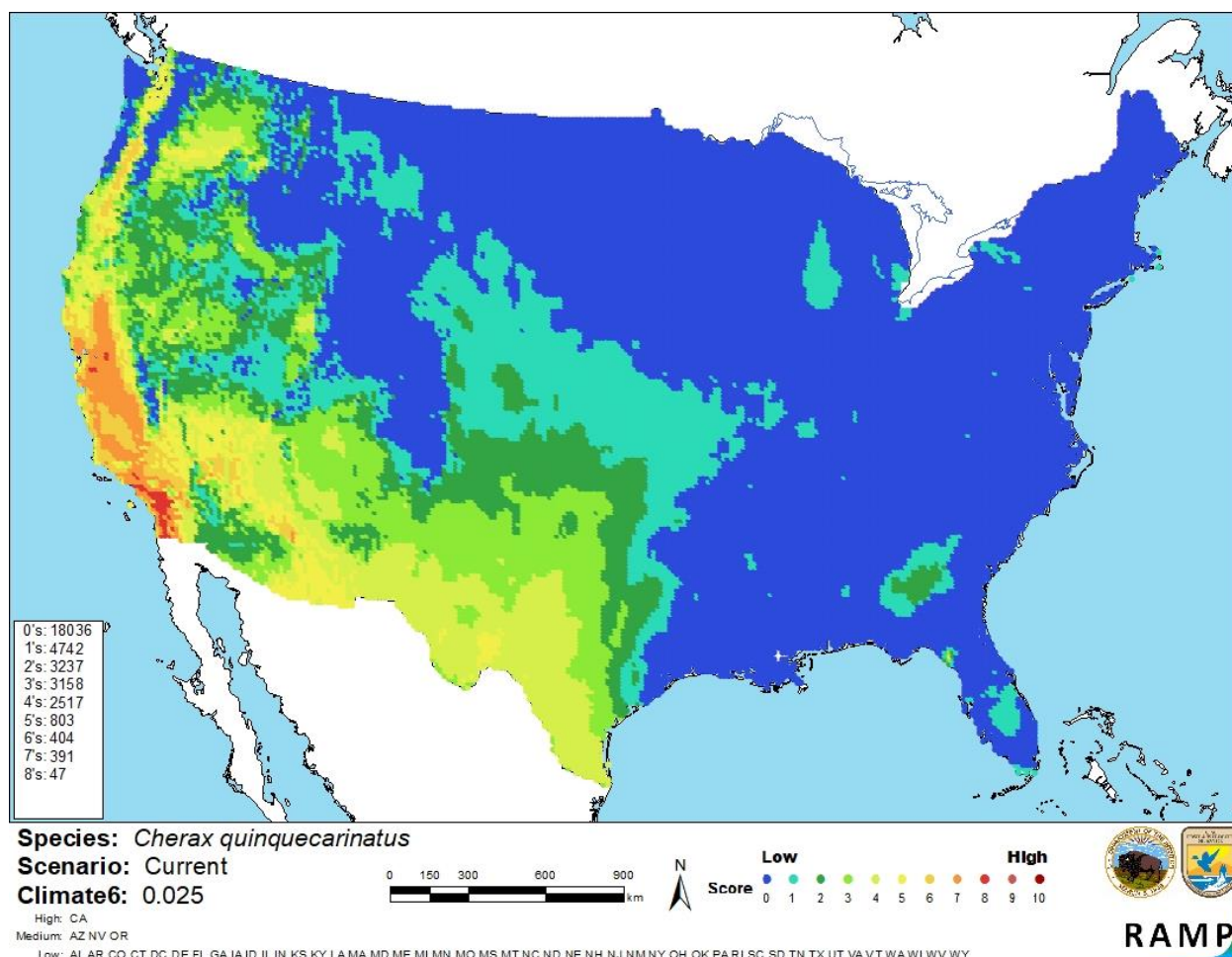


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Cherax quinquecarinatus* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

Information is available on the biology, ecology, and distribution of *Cherax quinquecarinatus*. However, no information is available on impacts of introduction because no introductions have been reported. Certainty of this assessment is low because of the lack of knowledge on potential impacts.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Cherax quinquecarinatus is a crayfish native to southwestern Australia. Climate match to the contiguous U.S. is medium, with high match occurring in southern California. *C. quinquecarinatus* is a target for both recreational and Aboriginal subsistence fishing but has not been reported as traded or introduced outside its native range. Due to the perceived risk to the ecology and people of their respective states, the states of Florida and Washington have prohibited the import, transport, and possession of nearly all *Cherax* crayfish, including *C. quinquecarinatus*, with few exceptions. However, without a species-specific scientific study documenting harm or a lack thereof in an environment where *C. quinquecarinatus* has been introduced, the overall risk assessment category for this species remains Uncertain.

Assessment Elements

- **History of Invasiveness: Uncertain**
- **Climate Match: Medium**
- **Certainty of Assessment: 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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Herbert, B. 1987. Notes on diseases and epibionts of *Cherax quadricarinatus* and *C. tenuimanus* (Decapoda: Parastacidae). *Aquaculture* 64:165-173.

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