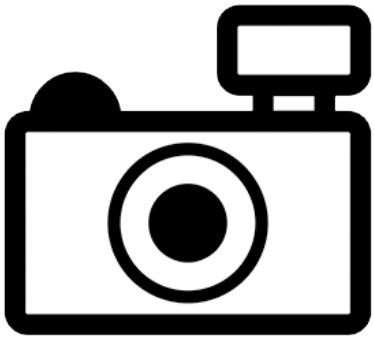
Slender Yabby (*Cherax dispar*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, August 2011
Revised, September 2012 and November 2017
Web Version, 5/9/2018



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1 Native Range and Status in the United States

Native Range

From Austin (2010):

"This [crayfish] species is found from Brisbane to Maryborough in Queensland, Australia. It is also found on the sand islands off the coast of southeast Queensland, including North Stradbroke Island (Bywater et al. 2008) and Fraser Island. This species is reported to be widespread in the permanent small streams of southeastern Queensland ([Riek] 1969)."

Status in the United States

This species has not been reported as introduced or established in the United States. There is no indication that this species is in trade in the United States.

From FFWCC (2017):

"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. Very limited exceptions may be made by permit from the Executive Director […] [The list of prohibited nonnative species includes] *Cherax dispar*"

From Washington Department of Fish & Wildlife (2017):

"(1) 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 list of prohibited aquatic animal species includes] Family Parastacidae: Crayfish: All genera except *Engaeus*, and except the species *Cherax quadricarninatus* [*sic*], *Cherax papuanus*, and *Cherax tenuimanus*."

Means of Introductions to 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 GBIF Secretariat (2017):

"Kingdom	Animalia
Phylum	Arthropoda
Class	Malacostraca
Order	Decapoda
Family	Parastacidae
Genus	*Cherax* Erichson, 1846
Species	*Cherax dispar* Riek, 1951
	Immediate Children
Subspecies	*Cherax dispar* subsp. *crassus* Riek, 1951
Subspecies	*Cherax dispar* subsp. *dispar*
Subspecies	*Cherax dispar* subsp. *elongatus* Riek, 1951"

"SPECIES | ACCEPTED"

Size, Weight, and Age Range

From Riek (1951):

"Length of holotype male, 75 mm., length of allotype female, 65 mm."

"Described from a series of two thousand specimens ranging in size up to 82 mm. body length […]"

Environment

From Austin (2010):

"Freshwater"

Climate/Range
No information available.

Distribution Outside the United States
Native
From Austin (2010):

"This species is found from Brisbane to Maryborough in Queensland, Australia. It is also found on the sand islands off the coast of southeast Queensland, including North Stradbroke Island (Bywater et al. 2008) and Fraser Island. This species is reported to be widespread in the permanent small streams of southeastern Queensland ([Riek] 1969)."

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 Riek (1951):

"Areola wide, two and one-half to three times as long as broad; great chelae seventy-five to eighty per cent. [*sic*] of the body length ; eyes large, almost equal in diameter to the width of the rostrum at its base."

"Light greenish-grey tending to blue on the abdomen, under surface almost colourless; great chelae blue on the upper surface, lighter in colour on the under surface. The chelae become blue only with maturity. Very young specimens (10 mm.) may be reddish and not bluish as is general."

"The chelae of the immature male resemble those of the female in relative length."

Biology
From Riek (1951):

"Specimens of *dispar*, sp. nov., of south-eastern Queensland prefer the lower reaches of creeks where there is an abundant growth of freshwater plants."

"[…] females of only 50 mm. have been collected with eggs."

"It is not uncommon among specimens of the Australian Parastacidae to find intersexes with either three or four genital apertures. When three are present they are almost invariably two male

and one female. In only one Australian specimen have I seen one male and two female apertures (in a specimen of *Cherax dispar*)."

From Austin (2010):

"This species inhabits swamps and creeks. Furthermore, it is reported to be highly territorial and aggressive (Wilson et al. 2007)."

From Seebacher and Wilson (2007):

"[…] the species displays high levels of aggression and engages in agonistic behaviour using their enlarged chelae to hold on to and dislodge their opponents (Wilson et al. 2007)."

Human Uses

No information available.

Diseases

From Cannon and Jennings (1987):

"The occurrence and nutritional relationships of a suite of four ectosymbiotes from the freshwater crayfishes, *C*[*herax*] *dispar* and *C*[*herax*] *punctatus* in Queensland have been studied. The suite comprises the temnocephalid flatworms *Temnocephala minor* and *Craspedella spenceri*, the rhabdocoel flatworm *Didymorchis cherapsis* and the polychaete *Stratiodrilus novaehollandiae*. Occurrence of all four symbiotes appears to be independent of host species, host size and the presence of other members of the suite. As crayfish become scarcer in cooler, drier weather, worm numbers per host decline. The largest ectosymbiote, *T. minor*, lives on the external body surface and appears to be more susceptible to dry conditions than do the other symbiotes from within the branchial chamber. This species has no nutritional relationships with the other three species and uses its host primarily as a feeding platform from which it captures annelids and small arthropods; there is some evidence of supplementary opportunistic ectocommensalism. *S. novaehollandiae* feeds on the microflora of the branchial chamber; its eggs may be eaten by *C. spenceri* but this species feeds predominantly on co-symbiotic protozoa. *D. cherapsis*, in contrast, feeds mainly on the eggs and has small crustaceans as its secondary food resource."

From Longshaw (2011):

"1.6. Digenea […]
Digenea occur in most tissues within crayfish although this is dependent on the genus and species of digenean under investigation. […]
1.6.7. Family Microphallidae […]
Microphallus minutus has been recorded in *Cherax dispar* and *C. destructor* from Australia (Shimazu and Pearson, 1991).
1.6.8. Family Opecoelidae
Utilising the prosobranch snail *Posticobia brazieri* as the first intermediate host, *Opecoelus variabilis* infects the Australian crayfish *C. depressus* and *C. dispar* and other freshwater

crustaceans. Following ingestion of infected crayfish, the parasite develops into adults in the intestine of at least 17 species of freshwater fish (Cribb, 1985). No disease in crayfish has been reported for this species."

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

Threat to Humans

No information available.

3 Impacts of Introductions

No introductions of this species have been reported. The Florida Fish and Wildlife Conservation Commission (FFWCC 2017) and the Washington Department of Fish and Wildlife (2017) have listed the crayfish *C. dispar* as a prohibited species.

4 Global Distribution

Figure 1. Known global distribution of *Cherax dispar*, reported from eastern Australia. Map from GBIF (2017).

5 Distribution within the United States

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

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was highest in the southeastern United States, particularly in peninsular Florida and coastal Texas. The climate match was medium in other parts of Texas, parts of the Southwest, along the Gulf Coast, and along the Atlantic Coast as far north as southern New Jersey. Climate match was low from the upper Midwest westward and in northern New England. Climate6 score indicated that the contiguous U.S. has a medium match overall. The range of scores classified as medium climate match is between 0.005 and 0.103; Climate6 score for *Cherax dispar* was 0.028.

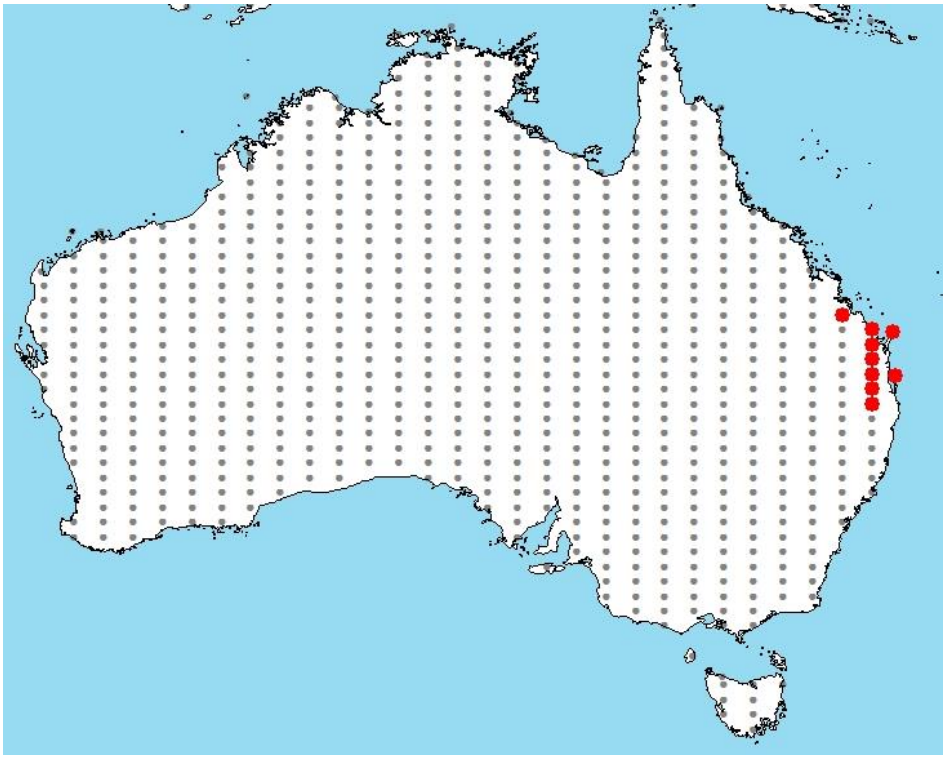

Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations in Australia selected as source locations (red) and non-source locations (gray) for *Cherax dispar* climate matching. Source locations from GBIF Secretariat (2017).

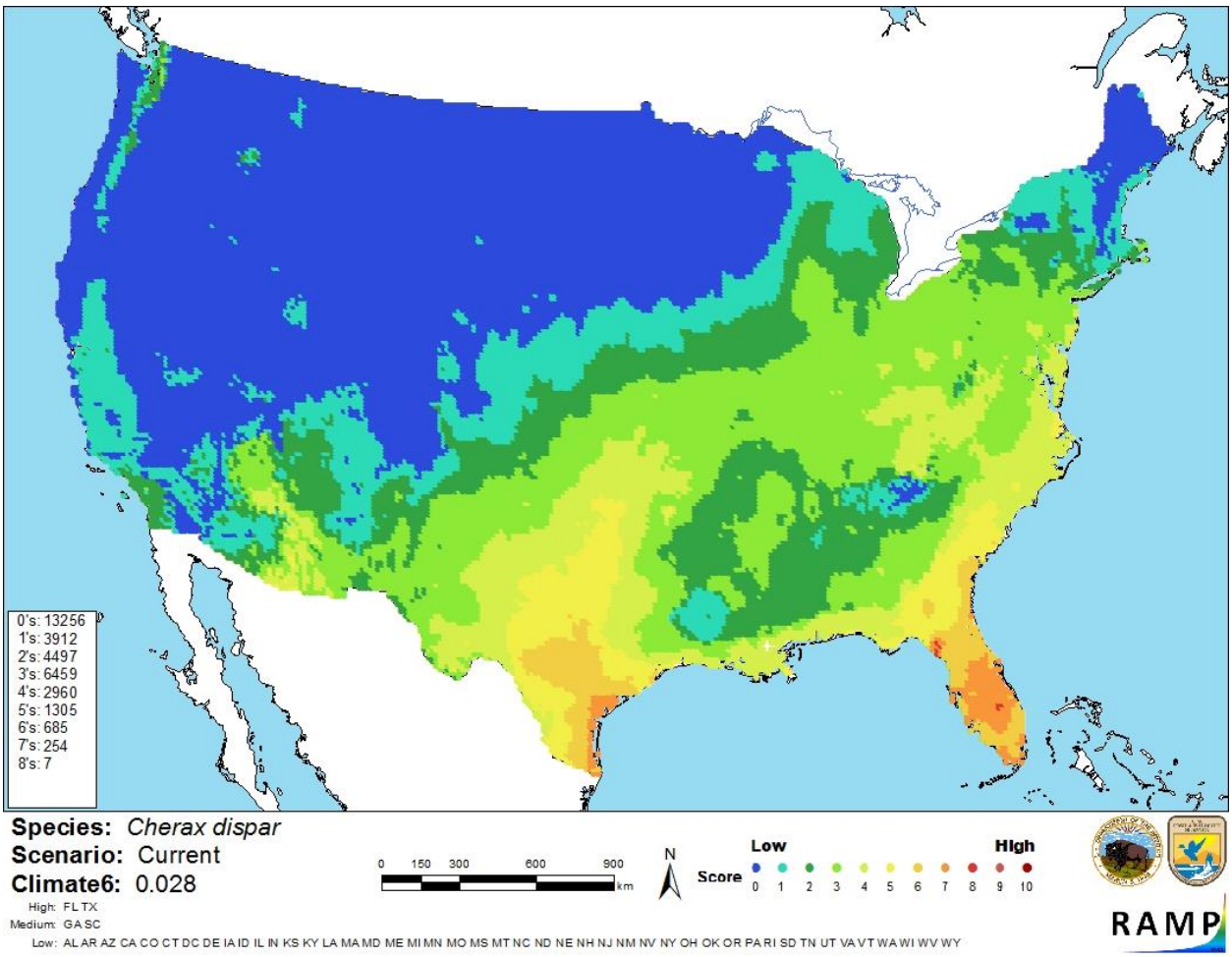

Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Cherax dispar* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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 dispar*. No introductions of this species have been reported so any impacts of introduction of this species remain unknown. Because of this, certainty of the assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Cherax dispar is a crayfish native to southern Queensland, Australia. It is common in small streams, and is reported to be territorial and aggressive. No introductions of *C. dispar* have been reported, so no impacts of introductions are yet known. Along with other *Cherax* species, *C. dispar* is listed as a prohibited species in multiple U.S. states. Climate match to the contiguous U.S. is medium overall, with the highest matches occurring in Florida and Texas. Overall risk posed by *C. dispar* is uncertain given the lack of information on impacts of introduction.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Medium**
- **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.

Austin, C.M. 2010. Cherax dispar. The IUCN Red List of Threatened Species 2010: e.T153619A4521306. Available: http://dx.doi.org/10.2305/IUCN.UK.2010-3.RLTS.T153619A4521306.en. (November 2017).

Cannon, L. R. G., and J. B. Jennings. 1987. Occurrence and nutritional relationships of 4 ectosymbiotes of the freshwater crayfishes *Cherax dispar* Riek and *Cherax punctatus* Clark (Crustacea, Decapoda) in Queensland. Australian Journal of Marine and Freshwater Research 38(3):419-427.

FFWCC (Florida Fish and Wildlife Conservation Commission). 2017. Prohibited species list. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida. Available: http://myfwc.com/wildlifehabitats/nonnatives/regulations/prohibited/. (November 2017).

GBIF Secretariat. 2017. GBIF backbone taxonomy: *Cherax dispar* Riek, 1951. Global Biodiversity Information System, Copenhagen. Available: https://www.gbif.org/species/4648612. (November 2017).

Longshaw, M. 2011. Diseases of crayfish: a review. Journal of Invertebrate Pathology 106:54-70.

Riek, E. F. 1951. The freshwater crayfish (family Parastacidae) of Queensland. Records of the Australian Museum 22(4):368-388.

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

Seebacher, F., and R. S. Wilson. 2007. Individual recognition in crayfish (*Cherax dispar*): the roles of strength and experience in deciding aggressive encounters. Biology Letters 3(5):471-474.

Washington Department of Fish and Wildlife. 2017. WAC 220-12-090 classification - nonnative aquatic animal species. Washington Department of Fish and Wildlife, Olympia, Washington. Available: http://wdfw.wa.gov/ais/wac.html. (November 2017).

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.

Bywater, C. L., M. J. Angilletta Jr., and R. S. Wilson. 2008. Weapon size is a reliable indicator of strength and social dominance in female slender crayfish (*Cherax dispar*). Functional Ecology 22:311-316.

Cribb, T. H. 1985. The life cycle and biology of *Opecoelus variabilis* sp. nov. (Digenea: Opecoelidae). Australian Journal of Zoology 33:715-728.

Riek, E. F. 1969. The Australian freshwater crayfish (Crustacea: Decapoda: Parastacidae), with definitions of new species. Australian Journal of Zoology 17:855-918.

Wilson, R. S., M. J. Angilletta Jr., R. S. James, C. Navas, and F. Seebacher. 2007. Dishonest signals of strength in male slender crayfish (*Cherax dispar*) during agonistic encounters. The American Naturalist 170(2):284-291.