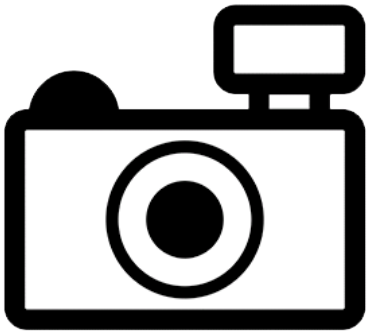
Orange-Fingered Yabby (*Cherax depressus*)

Ecological Risk Screening Summary

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



No Photo Available

1 Native Range and Status in the United States

Native Range

From Fetzner (2017):

"Australian Region-Australia: Queensland (NE coastal)"

From Riek (1951):

"Mt. Coot-tha, Brisbane; Northbrook Creek, Brisbane Valley; Pullenvale; Eidsvold (Burnett River); Bundaberg; Gin Gin; Watalgan (M. Ward); Gladstone; Dunk Island; Cardwell; Herbert River; Cairns; Kuranda."

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 depressus*(Orange-fingered crayfish)"

From Washington Department of Fish and Wildlife (2017):

"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 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 depressus* Riek, 1951"

"SPECIES | ACCEPTED"

Size, Weight, and Age Range

From Queensland Museum (2017):

"Length to 90 mm."

Environment

From Fetzner (2017):

"[…] freshwater. Ephemeral waters including acidic swamps […]"

Climate/Range

No information available.

Distribution Outside the United States

Native

From Fetzner (2017):

"Australian Region-Australia: Queensland (NE coastal)"

From Riek (1951):

"Mt. Coot-tha, Brisbane; Northbrook Creek, Brisbane Valley; Pullenvale; Eidsvold (Burnett River); Bundaberg; Gin Gin; Watalgan (M. Ward); Gladstone; Dunk Island; Cardwell; Herbert River; Cairns; Kuranda."

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 Queensland Museum (2017):

"Rostrum short, triangular, and lacking well-developed spines. Claws broad; underside of palms lack hairs near base of fixed fingers. Fingertips are characteristically orange. Body brown or bluish-green."

Biology

From Queensland Museum (2017):

"Adults are typically semi-aquatic in gullies, temporary pools and shallow creeks with limited flow. Burrows near waterline. Also common in farm dams."

From Moreton Bay Regional Council (no date):

"In South East Queensland *Cherax depressus* occurs in almost every body of fresh water from headwater creeks to large rivers, and man-made dams to natural water holes and wetlands. Yabbies are well adapted to drought, which they may outlast for years. As the ground dries up they burrow, following the falling water table, seal the burrow entrance with an earthen plug, and remain dormant in a small, moist chamber deep in the bottom of the creek or swamp."

"Yabbies are opportunistic, omnivorous scavengers, feeding mainly on decaying leaves and other plant detritus, but also on animal matter, they find while browsing on the bottom of streams or dams. *Cherax* species are most active at night and feed under low light conditions. Knowledge is limited on specific feeding habits of *Cherax depressus*."

"Mating of Yabbies is generally triggered by ambient factors such as the water's oxygen content and temperature. *Cherax* species display a certain brood care in that females use their tail flap, folded under the body, as a "brood chamber" to protect the eggs. After hatching, the larvae move to the swimmerets under their mother's abdomen, which she constantly moves supplying a current of aerated water to the larvae. Once the larvae have absorbed their yolk sacs, they detach themselves and commence a free-living mode of life. Knowledge is limited on the breeding biology of the species *Cherax depressus*."

Human Uses

No information available.

Diseases

From Hurry et al. (2014):

"*Temnosewellia* is a genus of flatworms, members of which live in commensal relationships with host freshwater crustaceans. […] *Temnosewellia albata* is the only known ectosymbiont associated with *E*[*uastacus*] *robertsi*. […] Even though *T. albata* are considered host-specific to *E. robertsi*, a single worm has been reported from a crayfish of the *Cherax depressus* complex sensu Riek, 1951, sampled at a site >500 km from the current habitat of *E. robertsi* (Sewell, Cannon & Blair, 2006). However, this identification has not been confirmed by further collection or molecular analyses."

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

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 (FFWCC 2017) and the Washington Department of Fish and Wildlife (2017) have listed the crayfish *Cherax depressus* as a prohibited species.

4 Global Distribution

Figure 1. Known global distribution of *Cherax depressus*, reported from eastern Australia. Map from GBIF Secretariat (2017). The point reported in western Queensland was not included in the climate matching analysis because the verbal description of the point did not match the coordinates. The point reported in the Coral Sea was not included in the climate matching analysis because the species lives in freshwater only.

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 high in Florida and southern Texas. Medium matches extended along coastlines in the Southeast as well as into the Southwest. Much of the northern contiguous U.S. showed low climate matches. Climate6 score indicated that the contiguous U.S. has a medium climate match overall. The range of scores classified as medium match is between 0.005 and 0.103; Climate6 score for *Cherax depressus* was 0.063.

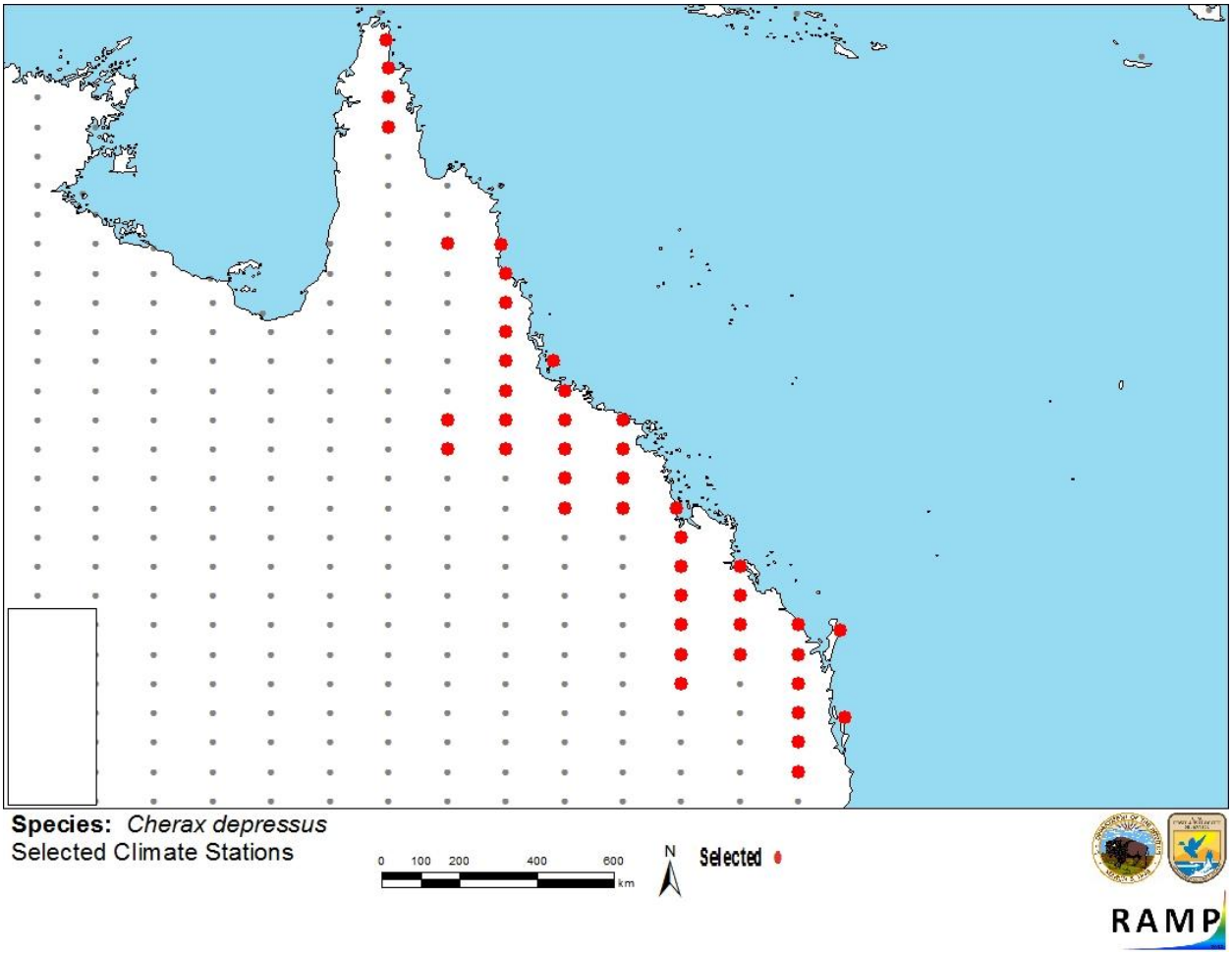


Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations in northeast Australia selected as source locations (red) and non-source locations (gray) for *Cherax depressus* climate matching. Source locations from GBIF Secretariat (2017).

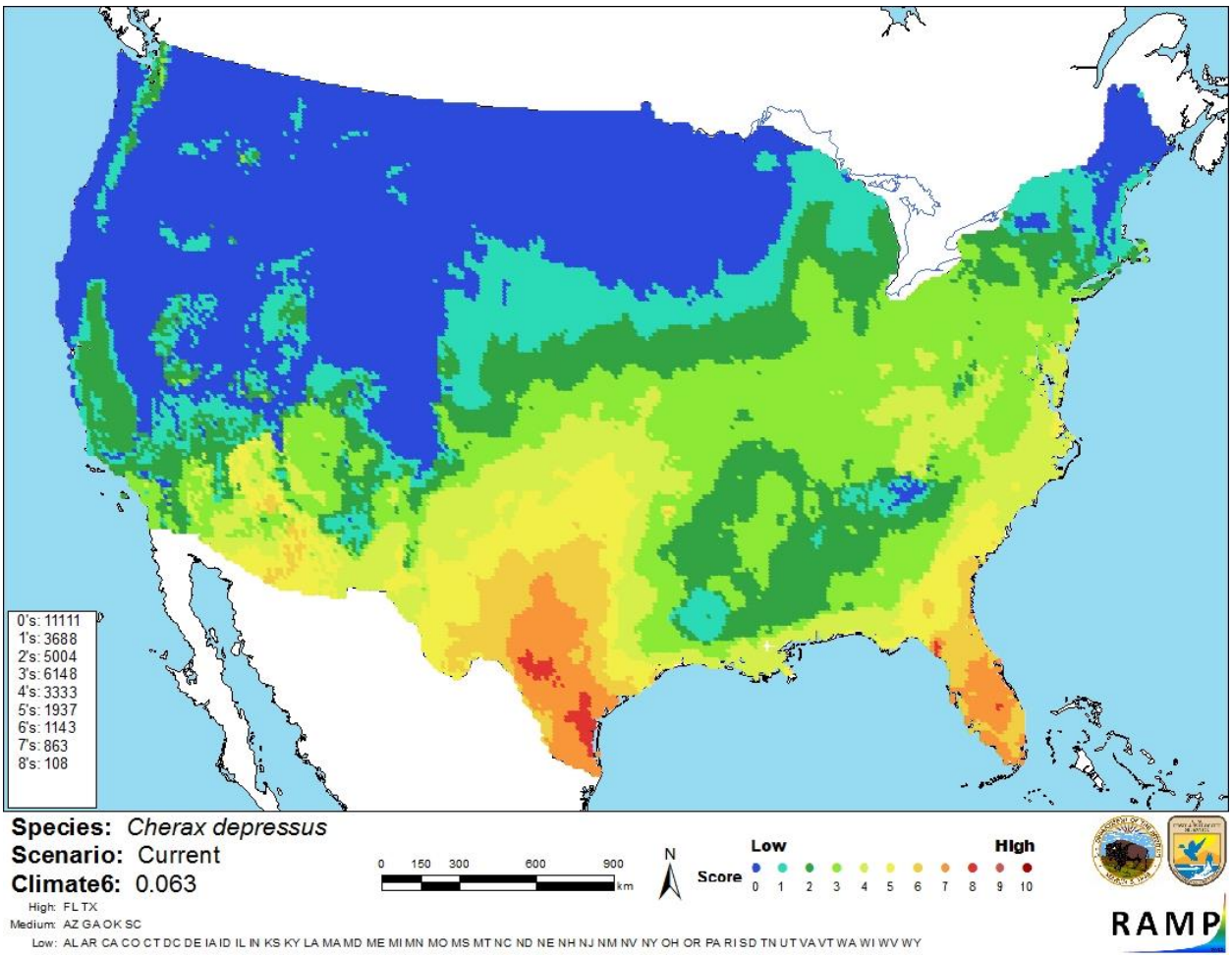


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *Cherax depressus* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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

Some information was available on the biology, ecology, and distribution of *Cherax depressus*, but little information came from peer-reviewed literature. No information was available on the impacts of introduction of *C. depressus* because no introductions have been reported. Without the ability to learn from past introductions, certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Cherax depressus is a common crayfish in many freshwater habitats of coastal northeastern Queensland, Australia. The history of invasiveness for this species is uncertain because no introductions have been reported. The Florida Fish and Wildlife Conservation Commission and the Washington Department of Fish and Wildlife have listed the crayfish *Cherax depressus* as a prohibited species. Climate match to the contiguous U.S. indicates a medium match overall, with Florida and Texas having the highest matches. Overall risk assessment of *Cherax depressus* to the contiguous U.S. is uncertain.

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.

Fetzner, J. W. 2017. *Cherax depressus* Riek, 1951. *In* The crayfish & lobster taxonomy browser. Available: http://iz.carnegiemnh.org/crayfish/NewAstacidea/species.asp?g=Cherax&s=depressus&ssp=. (November 2017).

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 depressus* Riek, 1951. Global Biodiversity Information Facility, Copenhagen. Available: https://www.gbif.org/species/4648607. (November 2017).

Hurry, C. R., D. J. Schmidt, M. Ponniah, G. Carini, D. Blair, and J. M. Hughes. 2014. Shared phylogeographic patterns between the ectocommensal flatworm *Temnosewellia albata* and its host, the endangered freshwater crayfish *Euastacus robertsi*. PeerJ 2:e552.

Moreton Bay Regional Council. No date. Orange-fingered yabby *Cherax depressus*. Available: https://www.moretonbay.qld.gov.au/uploadedFiles/common/forms/environment/orange-fingered-yabby-fact-sheet.pdf. (November 2017).

Queensland Museum. 2017. Orange-fingered yabby. Queensland Museum, Brisbane, Australia. Available:

http://www.qm.qld.gov.au/Find+out+about/Animals+of+Queensland/Crustaceans/Common+freshwater+and+terrestrial+crustaceans/Orange-fingered+Yabby#.WgIqkfmnGUk. (November 2017).

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.

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.

Sewell, K. B., L. R. G. Cannon, and D. Blair. 2006. A review of *Temnohaswellia* and *Temnosewellia* (Platyhelminthes: Temnocephalida: Temnocephalidae), ectosymbionts from Australian crayfish *Euastacus* (parastacidae). Memoirs of the Queensland Museum 52:199-279.