Barcoo Grunter (*Scortum barcoo*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, July 2017
Revised, January 2018, June 2018
Web Version, 6/14/2018

Photo: Morgan Grant (2016). Licensed under Creative Commons (CC BY-NC 4.0). Available: https://www.inaturalist.org/photos/5351879. (January 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

"Oceania: Endemic to Australia."

From Eschmeyer et al. (2018):

"Distribution: Australia."

Status in the United States

This species has not been reported as introduced or established in the United States. No evidence was found to suggest that this species is in trade in the United States.

Means of Introductions in the United States

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

Remarks

Eschmeyer et al. (2018) and Froese and Pauly (2017) both list *Therapon barcoo* as a synonym for *Scortum barcoo*. This name was also used in literature searches for impacts of the species.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

"Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Acanthopterygii
Order Perciformes
Suborder Percoidei
Family Terapontidae
Genus *Scortum*
Species *Scortum barcoo* (McCulloch and Waite, 1917)"

"Taxonomic Status: Valid"

Size, Weight, and Age Range

From Froese and Pauly (2017):

"Max length : 35.0 cm SL male/unsexed; [Allen et al. 2002]; common length : 25.0 cm SL male/unsexed; [Allen et al. 2002]"

Environment

From Froese and Pauly (2017):

"Freshwater; benthopelagic […] Adults occur in lentic and lotic freshwater [Paxton et al. 1989]."

"[…] 10°C - 30°C [Baensch and Riehl 1985; assumed to represent recommended aquarium water temperatures]. Tolerant of water temperatures to 40°C [Allen et al. 2002]."

From Eschmeyer et al. (2018):

"Habitat: freshwater."

Climate/Range

From Froese and Pauly (2017):

"Temperate; […]"

Distribution Outside the United States

Native

From Froese and Pauly (2017):

"Oceania: Endemic to Australia."

Introduced

From Liu et al. (2013):

"After the introduction of *Scortum barcoo* into China, the farming of this fish has reached a certain scale that is rapidly increasing (Chen et al. 2011)."

Lintermans (2004) lists *S. barcoo* as a species that has been translocated within Australia. No more location details are available.

From Koehn and MacKenzie (2004):

"The recent arrival into Victoria of the Barcoo grunter (*Scortum barcoo* McCulloch & Waite), native to Lake Eyre and catchments in Queensland and the Northern Territory, gives cause for concern (Koehn 2002)."

Means of Introduction Outside the United States

Introduction of *S. barcoo* in China appears to be for aquaculture purposes, with no location reports or information documented for introductions in nature.

From Halwart et al. (2007):

"[In China] the species farmed in cages expanded to include […] barcoo grunter (*Scortum barcoo*)."

From Lintermans (2004):

"Aquaculture/recreational fishing"

Short Description
From Queensland Department of Agriculture and Fisheries (2012):

"Medium to large size grunter species characterized by a heavily built body and a small head. Colour usually brownish-black and fins usually darker than the body. Body usually with black irregular blotches."

Biology
From Froese and Pauly (2017):

"Omnivorous species [Paxton et al. 1989]. Feed on fishes, crustaceans, insects and molluscs. Presumed to breed opportunistically during flood events [Allen et al. 2002]. Eggs are guarded and fanned by the male parent [Breder and Rosen 1966]."

Human Uses
From Liu et al. (2013):

"It was widely cultured for its rapid growth, strong resistance to disease and delicious meat."

Diseases
There are no known OIE reportable diseases for this species.

From Liu et al. (2013):

"To increase the production of barcoo grunter, high density recirculation systems are now being introduced in Guangdong Province, China, to intensive production. […] In October 2012, a serious disease outbreak, resulting in high mortality, occurred at the study farm following the introduction of fry (weighing from 20 to 40 g). The diseased fish included fry and adult fish (weighing from 100 to 300 g), and the mortality ranged from 5% to 10%. The moribund fish all displayed similar signs: ocular abnormalities including opacity, haemorrhage, exophthalmia as well as reddening, haemorrhage and ulceration on the surface of the tail. We subsequently isolated and identified *S*[*treptococcus*] *agalactiae* as the epizootic pathogen of this intensive fish farm. To the best of our knowledge, this is the first report of *S. agalactiae* infection of barcoo grunter and of the associated morbidity and mortality caused by this pathogen."

Threat to Humans
From Froese and Pauly (2017):

"Harmless"

3 Impacts of Introductions
No information available.

4 Global Distribution

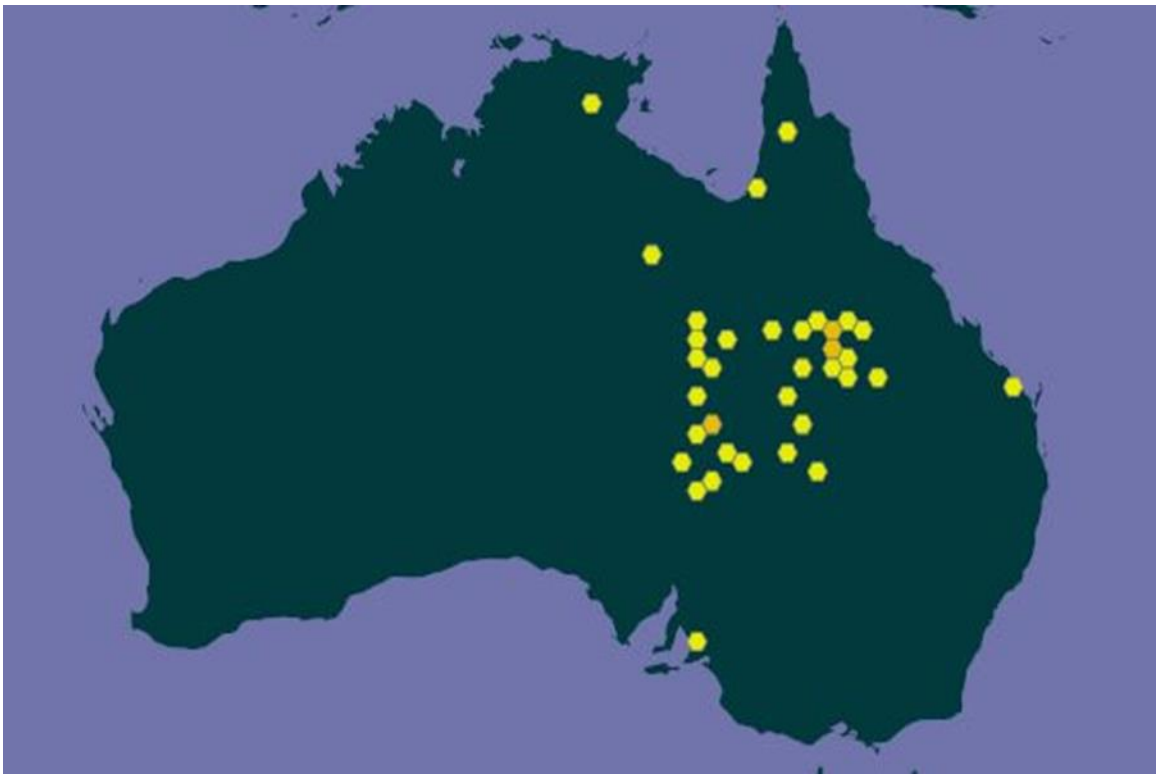

Figure 1. Map of known global distribution of *Scortum barcoo*, reported from Australia. Map from GBIF Secretariat (2017). The furthest north locations in Queensland and the Northern Territory were excluded from the climate matching analysis because GBIF Secretariat (2017) reported issues with the coordinate accuracy. The furthest south location in South Australia was excluded from the climate matching analysis because the notes on the location indicated that the single specimen collected may not represent an established population (GBIF Secretariat 2017).

5 Distribution Within the United States

No introductions of this species have been reported within the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2018; 16 climate variables; Euclidean Distance) was high in Texas, Arizona, and peninsular Florida. Medium match occurred in northern Florida, southern Georgia, the southern Great Plains, much of the remainder of the Southwest. Low match covered the rest of the contiguous United States. Climate 6 match indicated that the contiguous U.S. has a medium climate match. The range for a medium climate match is between 0.005 and 0.103; Climate 6 match of *Scortum barcoo* is 0.087.

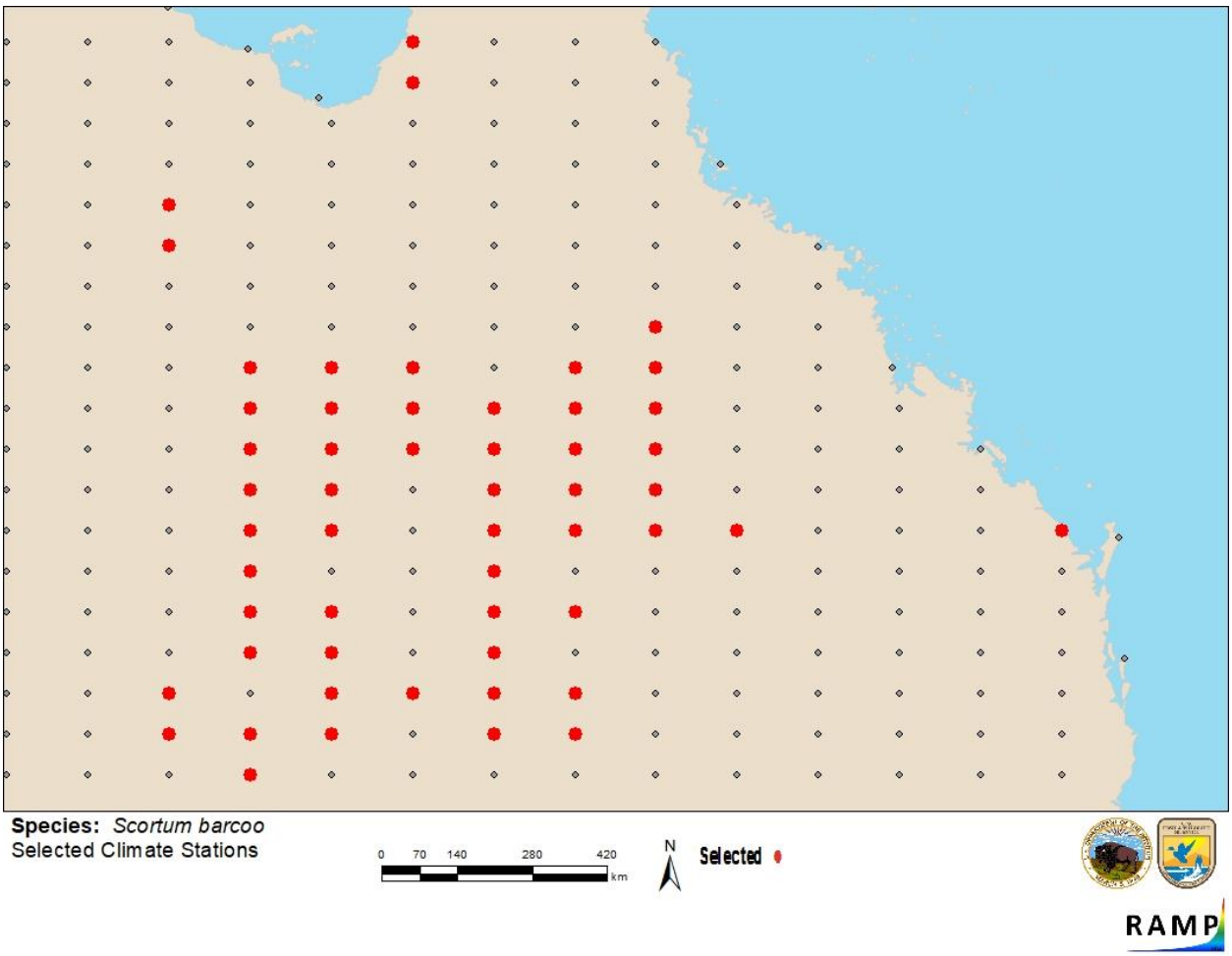

Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations in northeastern Australia selected as source locations (red) and non-source locations (gray) for *Scortum barcoo* climate matching. Source locations from GBIF Secretariat (2017).

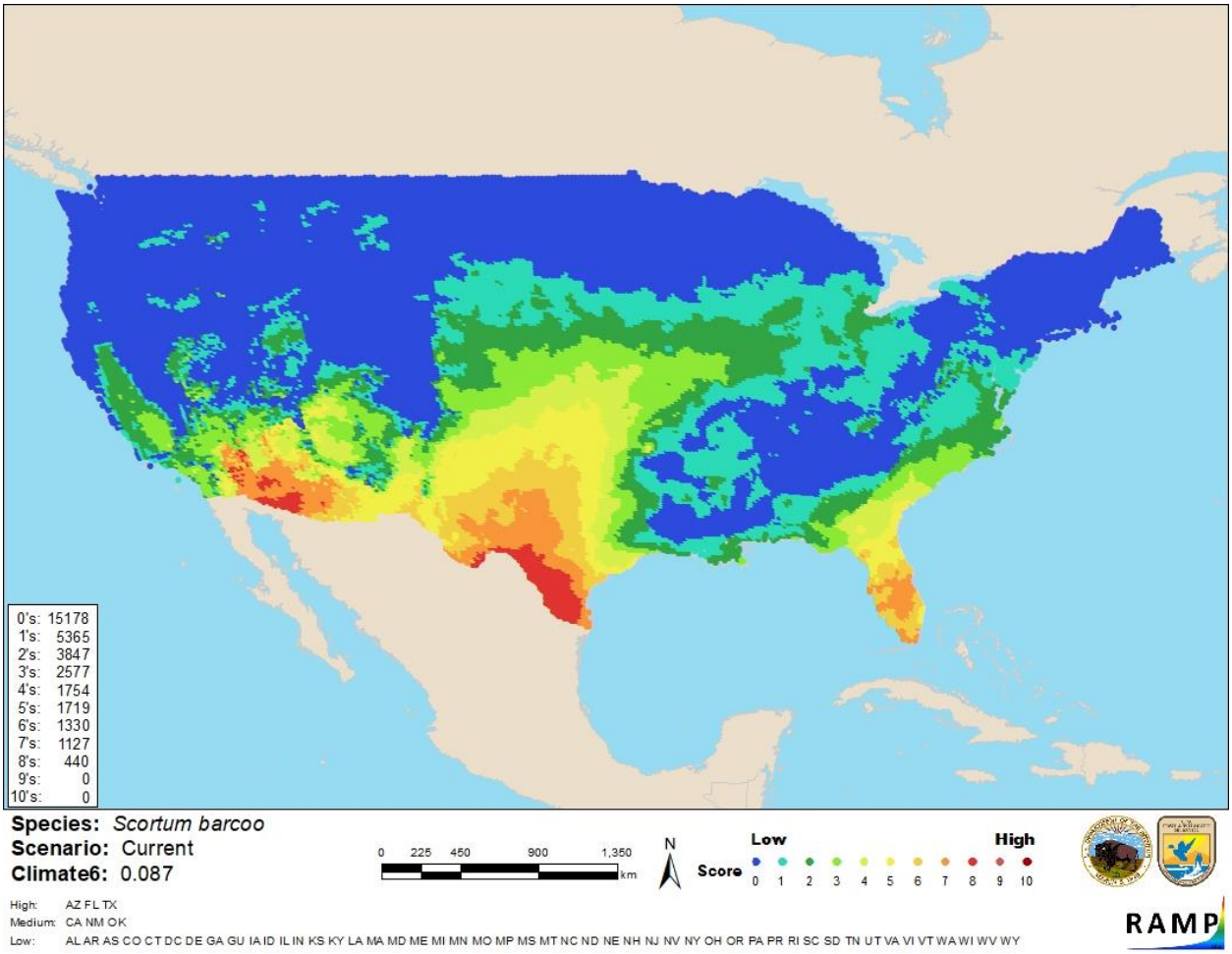

Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *S. barcoo* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

7 Certainty of Assessment

S. barcoo is a valid species; however scientific knowledge of impacts from introductions of the species is unknown. The species has been introduced in China for aquaculture and to parts of Australia outside the native range for aquaculture and recreational fishing. More information is needed to evaluate the potential and actual impacts of introducing the species outside its native range. The certainty of assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Scortum barcoo is a freshwater fish species native to Australia. *S. barcoo* adults occur in lentic and lotic freshwater systems. They inhabit turbid water of large rivers and waterholes. The species is tolerant of water temperatures to 40°C. It is omnivorous and feeds on fishes, crustaceans, insects and mollusks. It is presumed to breed opportunistically during flood events. *S. barcoo* was reported as introduced from Australia to China in 2001 within aquaculture facilities within the country. Translocations within Australia have also occurred, but very little information is available on these events or their results. More information is needed to evaluate the potential and actual impacts the species would have in introduced areas. Climate match within the contiguous United States is medium, with Texas, Arizona, and parts of Florida representing high match areas. More information is needed to fully understand the impacts from introductions of this species. Absence of this research makes the certainty of this assessment low. Overall risk posed by this species is uncertain at this time.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information: Host of parasitic infestation *Streptococcus agalactiae***
- **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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Koehn, J. D., and R. F. MacKenzie. 2004. Priority management actions for alien freshwater fish species in Australia. New Zealand Journal of Marine and Freshwater Research 38(3):457-472.

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Sanders, S., C. Castiglione, and M. Hoff. 2018. Risk Assessment Mapping Program: RAMP, version 3.1. 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.

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Breder, C. M., and D. E. Rosen. 1966. Modes of reproduction in fishes. T. F. H. Publications, Neptune City, New Jersey.

Chen K. C., L. S. Ma, Y. Shi, J. Zhao, and X. P. Zhu. 2011. Genetic diversity analysis of cultured populations of jade perch (*Scortum barcoo*) in China using AFLP markers. Journal of Agricultural Science and Technology 4: 455–461.

Koehn, J. 2002. Freshwater invaders in Victoria. Under Control—Pest Plant and Animal News 22(December 2002):12-14.

Paxton, J. R., D. F. Hoese, G. R. Allen, and J. E. Hanley. 1989. Pisces. Petromyzontidae to Carangidae. Zoological Catalogue of Australia, volume 7. Australian Government Publishing Service, Canberra, Australia.