Blacktail Snapper (*Lutjanus fulvus*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, April 2011
Revised, July 2019
Web Version, 3/12/2020

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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2019):

"Indo-Pacific: East Africa to the Marquesas and Line islands, north to southern Japan, south to Australia [Anderson and Allen 2001]."

From Russell et al. (2016):

"Extant (resident)
American Samoa; Australia; Brunei Darussalam; China; Christmas Island; Cocos (Keeling) Islands; Comoros; Cook Islands; Djibouti; Egypt; Fiji; French Polynesia; Guam; India; Indonesia; Japan; Kenya; Kiribati; Madagascar; Malaysia; Maldives; Marshall Islands;

Mauritius; Micronesia, Federated States of ; Mozambique; Myanmar; Nauru; New Caledonia; Niue; Norfolk Island; Northern Mariana Islands; Oman; Palau; Papua New Guinea; Philippines; Réunion; Samoa; Seychelles; Singapore; Solomon Islands; Somalia; South Africa; Sri Lanka; Sudan; Taiwan, Province of China; Tanzania, United Republic of; Thailand; Tokelau; Tonga; Tuvalu; Vanuatu; Viet Nam; Wallis and Futuna; Yemen
Extant
British Indian Ocean Territory; Disputed Territory (Spratly Is., Paracel Is.); French Southern Territories (Mozambique Channel Is.); India (Andaman Is., Nicobar Is.); Kiribati (Phoenix Is., Kiribati Line Is., Gilbert Is.); Korea, Republic of; Mayotte; Timor-Leste; United States Minor Outlying Islands (Wake Is., US Line Is., Howland-Baker Is.)"

Status in the United States

From Fuller and Schofield (2019):

"The blacktail snapper has been stocked in Pearl Harbor and marine waters off the island of Oahu where it has spread to all the islands (Maciolek 1984; Bishop Museum 2000). It has been collected in the Kaloko-Honokohau National Historic Park and the Puukohola Heiau National Historic Site on the big island of Hawaii (Tilmant 1999)."

"Established throughout the Hawaiian archipelago; however, not abundant."

Means of Introductions in the United States

From Fuller and Schofield (2019):

"Stocked by the Hawaiian Division of Fish and Game in the 1950s."

Remarks

Lutjanus fulvus has been intentionally stocked within the United States by State fishery managers to achieve fishery management objectives. State fish and wildlife management agencies are responsible for balancing multiple fish and wildlife management objectives. The potential for a species to become invasive is now one important consideration when balancing multiple management objectives and advancing sound, science-based management of fish and wildlife and their habitat in the public interest.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Fricke et al. (2019):

"**Current status:** Valid as *Lutjanus fulvus* (Forster 1801)."

From ITIS (2019):

Kingdom Animalia
  Subkingdom Bilateria

Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Acanthopterygii
Order Perciformes
Suborder Percoidei
Family Lutjanidae
Subfamily Lutjaninae
Genus *Lutjanus*
Species *Lutjanus fulvus* (Forster in Bloch and Schneider, 1801)

Size, Weight, and Age Range

From Froese and Pauly (2019):

"Maturity: L_m 22.5 […]
Max length: 40.0 cm TL male/unsexed; [Allen 1985]; common length : 25.0 cm TL male/unsexed; [Sommer et al. 1996]; max. reported age: 34 years [Shimose and Nanami 2014]"

Environment

From Froese and Pauly (2019):

"Marine; freshwater; brackish; reef-associated; depth range 1 - 75 m [Lieske and Myers 1994]. […] 20°C - 28°C; […]"

Climate/Range

From Froese and Pauly (2019):

"Tropical; […] 34°N - 34°S, 28°E - 134°W [Allen 1985]"

Distribution Outside the United States

Native

From Froese and Pauly (2019):

"Indo-Pacific: East Africa to the Marquesas and Line islands, north to southern Japan, south to Australia [Anderson and Allen 2001]."

From Russell et al. (2016):

"Extant (resident)
American Samoa; Australia; Brunei Darussalam; China; Christmas Island; Cocos (Keeling) Islands; Comoros; Cook Islands; Djibouti; Egypt; Fiji; French Polynesia; Guam; India; Indonesia; Japan; Kenya; Kiribati; Madagascar; Malaysia; Maldives; Marshall Islands;

Mauritius; Micronesia, Federated States of ; Mozambique; Myanmar; Nauru; New Caledonia; Niue; Norfolk Island; Northern Mariana Islands; Oman; Palau; Papua New Guinea; Philippines; Réunion; Samoa; Seychelles; Singapore; Solomon Islands; Somalia; South Africa; Sri Lanka; Sudan; Taiwan, Province of China; Tanzania, United Republic of; Thailand; Tokelau; Tonga; Tuvalu; Vanuatu; Viet Nam; Wallis and Futuna; Yemen
Extant
British Indian Ocean Territory; Disputed Territory (Spratly Is., Paracel Is.); French Southern Territories (Mozambique Channel Is.); India (Andaman Is., Nicobar Is.); Kiribati (Phoenix Is., Kiribati Line Is., Gilbert Is.); Korea, Republic of; Mayotte; Timor-Leste; United States Minor Outlying Islands (Wake Is., US Line Is., Howland-Baker Is.)"

Introduced
From Froese and Pauly (2019):

"Records from the Red Sea and Persian Gulf are outside distributional range [Russell et al 2016]."

Froese and Pauly (2019) lists *Lutjanus fulvus* occurrences as questionable in the following countries: Egypt, Eritrea, Sudan, Jordan, and Saudi Arabia. No further information on the introduction of this species in these countries could be found, therefore they will not represent an introduced population.

Means of Introduction Outside the United States
No information on means of introduction was found for the potential introductions outside of the United States.

Short Description
From Froese and Pauly (2019):

"Dorsal spines (total): 10; Dorsal soft rays (total): 13-14; Anal spines: 3; Anal soft rays: 8. Dorsal profile of head steeply sloped. Preorbital bone about equal in width to eye diameter. Preopercular notch and knob well developed. Scale rows on back rising obliquely above lateral line. Generally tan or brownish to pale yellow-white. Scales with brownish to yellow margins. The caudal and dorsal fins are blackish with narrow white margins; the anal pectoral and pelvic fins are yellow. Striped when young [Kuiter and Tonozuka 2001]. Body depth 2.3-2.8 in SL [Allen and Erdmann 2012]."

From Fuller and Schofield (2019):

"White to yellow body with a black caudal fin. Pectoral, pelvic, and anal fins are yellow."

Biology

From Froese and Pauly (2019):

"Adults inhabit lagoon and semi-protected seaward reefs [Lieske and Myers 1994]. They prefer sheltered areas with deep holes or large boulders [Myers 1999]. Benthopelagic [Mundy 2005]. Solitary or in loose aggregations [Allen and Erdmann 2012]. Juveniles sometimes found in shallow mangrove swamps and the lower parts of freshwater streams. Adults feed at night on fishes, shrimps, crabs, holothurians and cephalopods [Sommer et al. 1996]."

From Fuller and Schofield (2019):

"Inhabits warmwater coral reefs and mangrove areas."

Human Uses

From Froese and Pauly (2019):

"Fisheries: commercial; gamefish: yes; aquarium: commercial"

From Russell et al. (2016):

"This species is commonly seen in markets in some parts of its range, usually fresh (Anderson and Allen 2001), and is a preferred target of gill netting and handlining fishers in Kiribati (Ram-Didesi 2011) and other localities within its range. It is a commercial species in the Ryukyu Islands, Japan (Shimose and Nanami 2014)."

Diseases

No OIE-reportable diseases (OIE 2019) were found to be associated with *Lutjanus fulvus*.

According to Poelen et al. (2014), *L. fulvus* has the following parasites: *Euryhaliotrema fatuum, E. spirotubiforum, E. chrysotaeniae, E. johni, Haliotrematoides patellacirrus, Haliotrema anguiformis, Lutianicola haifonensis, Amplicaecum orissai, Siphoderina brevicaecum, S. provitellosa, Hamacreadium mutabile,* and *Acanthocolpus lutijanusi,* and is also a host of *Spirocamallanus istiblenni,*

Threat to Humans

From Froese and Pauly (2019):

"Reports of ciguatera poisoning [Halstead et al 1990]"

From Russell et al. (2016):

"this [sic] species sometimes causes ciguatera poisoning, particularly in the Pacific portion of its range (Anderson and Allen 2001)."

3 Impacts of Introductions

Fuller and Schofield (2019) reported that *Lutjanus fulvus* is established throughout the Hawaiian archipelago, but not abundant. No impacts of introduction have been reported.

4 Global Distribution

Figure 1. Known global distribution of *Lutjanus fulvus*. Map from GBIF Secretariat (2019). Localities in Trinidad and Tobago (South America), and Washington (United States) could not be verified as established locations. These locations will not be used as source locations in the climate match.

5 Distribution Within the United States

Figure 2. Known distribution of *Lutjanus fulvus* in the United States. Map from Fuller and Schofield (2019). Yellow, green, and blue dots represent concentrations of observations on all the main islands of Hawaii.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Lutjanus fulvus* in the United States was generally very low in the western United States. Areas of medium and high match were found mainly in the eastern and central states. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.050, medium (scores greater than 0.005, but less than 0.103 are classified as medium). A majority of the States had low individual Climate 6 scores. Florida, Missouri, North Carolina, Oklahoma, South Carolina, and Texas all had high individual Climate 6 scores, while Arkansas, Arizona, California, Georgia, Kansas, and Virginia had medium individual Climate 6 scores. The climate match presented here is valid only for freshwater and brackish environments and not marine environments.

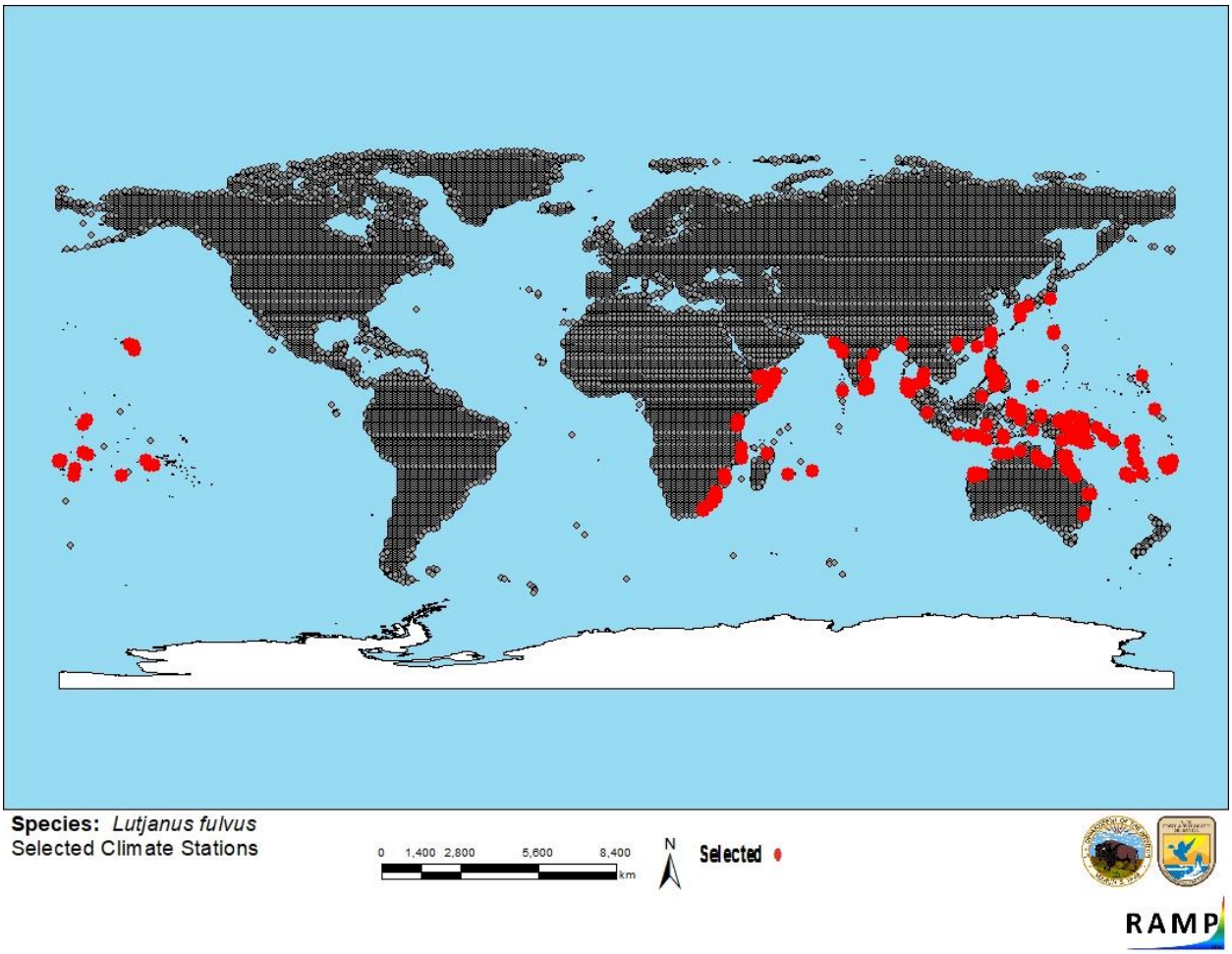

Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations throughout the coastal regions of Indo-Pacific, East Africa, and Australia, selected as source locations (red) and non-source locations (gray) for *Lutjanus fulvus* climate matching. Source locations from GBIF Secretariat (2019). Source locations were selected to be within 100km of known observations of the species and do not represent actual observation locations. RAMP climate matching analysis is not valid for marine waters, therefore no marine occurrences were used to select source points in the climate matching analysis (Sanders et al. 2018).

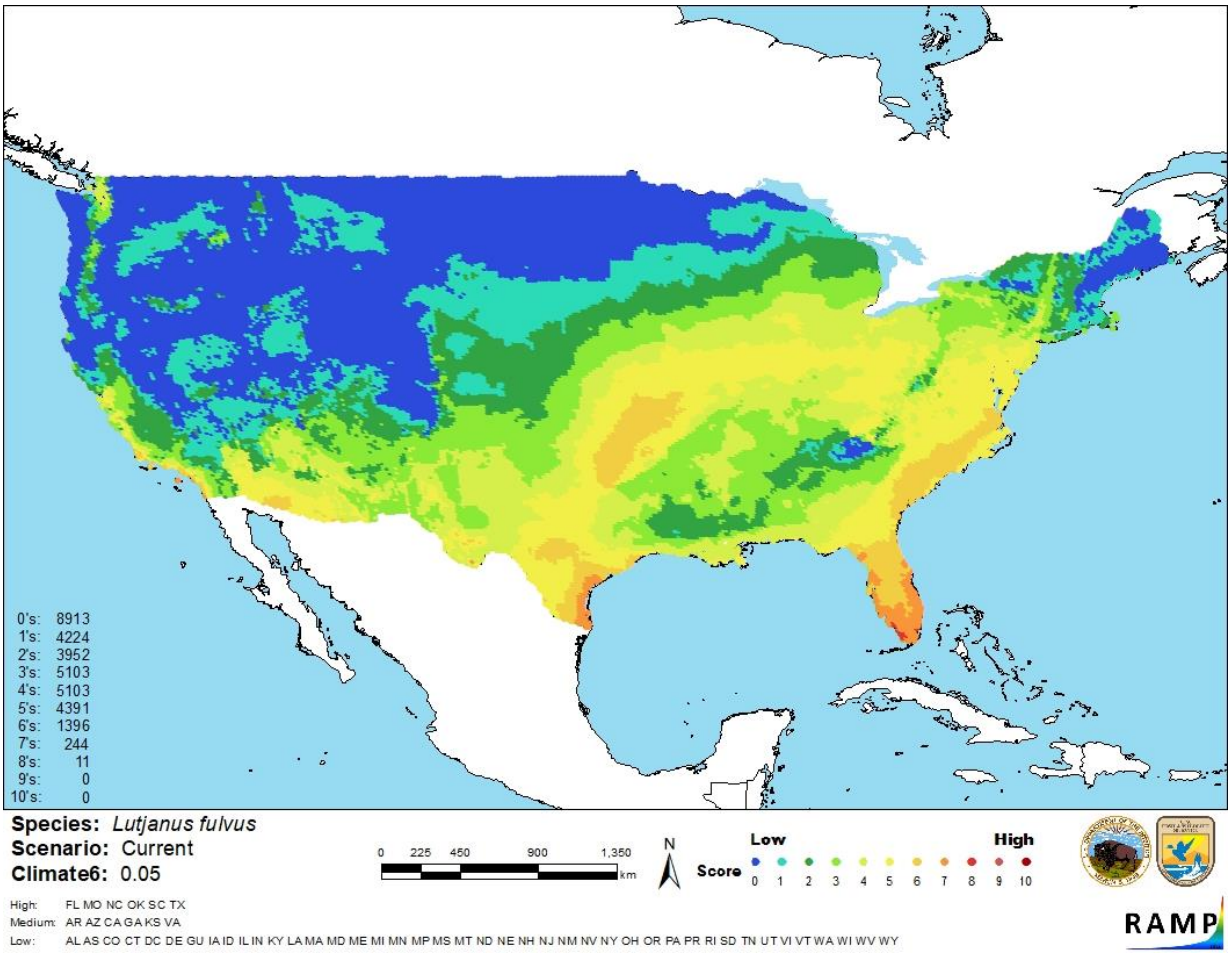

Figure 4. RAMP (Sanders et al. 2018) climate matches for *Lutjanus fulvus* in the contiguous United States based on source locations reported by GBIF Secretariat (2019). Counts of climate match scores are tabulated on the left. 0 = Lowest match, 10=Highest match.

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

Limited information is available on *Lutjanus fulvus*. This species was introduced into coastal Hawaii, where it became established. Some basic information on the species is available but little has been reported on its invasiveness and impacts. The certainty of assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

The Blacktail Snapper, *Lutjanus fulvus*, is a tropical fish native to countries in the Indo-Pacific. This species is capable of living in marine, fresh water, and brackish water environments. Only fresh water and brackish water environments were used to conduct the climate match. The Blacktail Snapper was purposely introduced to coastal Hawaii in the 1950s. *L. fulvus* there became established but not abundant. No impacts of introduction have been reported for this species, causing the history of invasiveness to be none documented. *Lutjanus fulvus* is a commercial species in its native range, often found in markets. This species has been known to cause ciguatera poisoning in humans who consume contaminated fish. The climate match for the contiguous United States is medium. Florida, Missouri, North Carolina, Oklahoma, South Carolina, and Texas all received individually high climate scores, while Arkansas, Arizona, California, Georgia, Kansas, and Virginia all received individually medium climate scores. Due to limited information on this species, the certainty of assessment is low. The overall risk assessment category for *Lutjanus fulvus* is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Low**
- **Remarks/Important additional information:** Ciguatera poisoning has been reported in people consuming this species.
- **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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