

Reedfish (*Erpetoichthys calabaricus*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, March 2014

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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

“Africa: coastal species, inhabiting river estuaries from Ouémé River in Benin to Sanaga River in Cameroon [Teugels et al. 1992; Britz 2007]. Also reported from the Chiloango River [Boulenger 1909; Poll 1954; Frade 1963; Gosse 1984a; Gosse 1990; Gosse and Daget 2003], but

this record needs confirmation and needs to be supported by additional material evidence [Teugels et al. 1992; Britz 2007].”

“Known from lower parts of coastal rivers [of Cameroon] [Pellegrin 1929; Vivien 1991], including Wouri River [Britz 2007] and Sanaga River [Daget 1979; Vivien 1991; Teugels et al. 1992; Britz 2007]. Also [Peters 1876; Boulenger 1909; Holly 1930; Sterba 1963; Riehl and Baensch 1991].”

“Known from Ogun River [Sydenham 1977; Gosse 1990; Teugels et al. 1992; Olaosebikan and Raji 1998; Gosse and Daget 2003; Britz 2007], Niger Delta [Boulenger 1901, 1909; Reed et al. 1967; Holden and Reed 1972; Gosse 1990; Teugels et al. 1992; Olaosebikan and Raji 1998] and Cross River [Boulenger 1909; Gosse 1990; Teugels et al. 1992; Olaosebikan and Raji 1998; Gosse and Daget 2003; Offem et al. 2008]. Before closure of the dam, it was also known from Kainji area [Visser 1973].”

Status in the United States

No records of *Erpetoichthys calabaricus* occurrences in the wild in the United States were found.

GBIF Secretariat (2017) contains two records of *Erpetoichthys calabaricus* collected from a pet store in Auburn, Alabama.

Erpetiochthys calabaricus is considered a Group I species for importation in New Mexico, meaning that it is considered semi-domesticated and does not require a permit to import (New Mexico Department of Game and Fish 2010).

Means of Introductions in the United States

No records of *Erpetoichthys calabaricus* occurrences in the wild in the United States were found.

Remarks

From Lalèyè et al. (2010):

“This species is known from four River systems, and greater than five localities but fewer than 10. The EOO is less than 20,000 km². The species is threatened by the oil palm plantations in the coastal region. There is ongoing habitat degradation and loss due to deforestation, agriculture and urban development. However it is thought that this species will be fairly resilient to habitat change. If the species was found to be impacted by these threats, it may meet the qualifications for Vulnerable [...], but it is currently assessed as Near Threatened. It is assessed as Vulnerable in western Africa, and as Endangered in central Africa.”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Eschmeyer et al. (2017), *Erpetoichthys calabaricus* Smith 1865 is the current valid and the original name of this species. At one point it was also known as *Calamoichthys calabaricus*.

From ITIS (2014):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Osteichthyes
Class Actinopterygii
Subclass Chondrostei
Order Polypteriformes
Family Polypteridae
Genus *Erpetoichthys* Smith, 1865
Species *Erpetoichthys calabaricus* Smith, 1865”

Size, Weight, and Age Range

From Froese and Pauly (2017):

“Maturity: Lm 31.4 range ? - ? cm.
Max length : 37.0 cm TL male/unsexed; [Britz and Roesler 2008]”

“The maximum size of 90 cm TL [Gosse 1984a] is probably erroneous; the largest size in collections is 37 cm [Britz and Roesler 2008].”

Environment

From Froese and Pauly (2017):

“Freshwater; brackish; demersal; pH range: 6.0 - 8.0; dH range: 5 - 19; depth range 0 - ? m [Wheeler 1977]. [...]; 22°C - 28°C [assumed to be recommended aquarium temperature] [Riehl and Baensch 1991]”

From Lalèye et al. (2010):

“This species is a freshwater species also found in brackish coastal waters.”

Climate/Range

From Froese and Pauly (2017):

“Tropical; [...]”

Distribution Outside the United States

Native

From Froese and Pauly (2017):

“Africa: coastal species, inhabiting river estuaries from Ouémé River in Benin to Sanaga River in Cameroon [Teugels et al. 1992; Britz 2007]. Also reported from the Chiloango River [Boulenger 1909; Poll 1954; Frade 1963; Gosse 1984a; Gosse 1990; Gosse and Daget 2003], but this record needs confirmation and needs to be supported by additional material evidence [Teugels et al. 1992; Britz 2007].”

“Known from lower parts of coastal rivers [of Cameroon] [Pellegrin 1929; Vivien 1991], including Wouri River [Britz 2007] and Sanaga River [Daget 1979; Vivien 1991; Teugels et al. 1992; Britz 2007]. Also [Peters 1876; Boulenger 1909; Holly 1930; Sterba 1963; Riehl and Baensch 1991].”

“Known from Ogun River [Sydenham 1977; Gosse 1990; Teugels et al. 1992; Olaosebikan and Raji 1998; Gosse and Daget 2003; Britz 2007], Niger Delta [Boulenger 1901, 1909; Reed et al. 1967; Holden and Reed 1972; Gosse 1990; Teugels et al. 1992; Olaosebikan and Raji 1998] and Cross River [Boulenger 1909; Gosse 1990; 3031, Teugels et al. 1992; Olaosebikan and Raji 1998; Gosse and Daget 2003; Offem et al. 2008]. Before closure of the dam, it was also known from Kainji area [Visser 1973].”

Introduced

No records of *Erpetoichthys calabaricus* introductions to the wild were found.

Xiong et al. (2015) lists *Erpetoichthys calabaricus* as a non-native species in China but does not give any specific information on introductions, establishment of populations, or ecological impacts.

Youguang (2014) lists *Erpetoichthys calabaricus* as present in Singapore in the aquarium trade.

Watson (2000) states that *Erpetoichthys calabaricus* is regularly imported to Europe for the ornamental trade.

From Řehulková et al. (2015):

“A helminthological examination of two species of *Erpetoichthys calabaricus* (Polypteriformes: Polypteridae), imported into the Czech Republic as an aquarium fish from Nigeria, [...]”

Means of Introduction Outside the United States

No confirmed records of *Erpetoichthys calabaricus* introductions to the wild were found.

Xiong et al. (2015) lists the aquarium trade as the vector of introduction for *Erpetoichthys calabaricus* in China.

Short Description

From Froese and Pauly (2017):

“Dorsal spines (total): 7 - 13; Dorsal soft rays (total): 0; Anal spines: 0; Anal soft rays: 9 - 14; Vertebrae: 110 - 113. Diagnosis: The dorsal fin is composed of a series of well-separated spines each supporting one or several articulated rays and a membrane [Burgess 1983]. *Erpetoichthys calabaricus* is distinguished from all *Polypterus* species by its very elongated, anguilliform body and the absence of ventral fin and subopercle [Greenwood 1984; Gosse 1990; Gosse and Daget 2003].”

“Description: Body extremely elongate and anguilliform; subcylindrical, the height of which is comprised up to 24 times in standard length and head length 11 to 14 times in standard length [Poll 1941; Greenwood 1984; Gosse 1990; Gosse and Daget 2003; Britz 2007]. Head without subopercle, very faintly flattened, 1,6 to 2 times longer than broad; upper jaw prominent [Poll 1941; Gosse 1990; Gosse and Daget 2003]. Eye lateral, its diameter comprised 7,5 to 8,5 times in head length [Gosse 1990; Gosse and Daget 2003; Britz 2007]. Pelvic fins and girdle absent [Britz 2007]. Dorsal fin with 7-13 fin rays, largely separated from the others; anal fin with 9-14 rays; ventral fin absent [Poll 1941; Gosse 1990; Gosse and Daget 2003; Britz 2007]. Body covered with rhombic ganoid scales [Burgess 1983]: 106-114 in lateral line, 30-34 around body, 28-33 predorsal scales, 48-51 prepelvic scales; lateral line scales simply perforated [Poll 1941; Gosse 1990; Gosse and Daget 2003; Britz 2007].”

“Colouration: In alcohol, colour is uniformly olive brown on the back and upper part of the flanks, whitish to beige on belly [Gosse 1990; Gosse and Daget 2003; Britz 2007]. A broad dark spot on pectoral fins, extending almost to the tip of the fin rays [Gosse 1990; Gosse and Daget 2003; Britz 2007].”

“Males have a larger, broader and more muscular anal fin compared to females [Britz and Bartsch 1998; Britz and Roesler 2008]; sometimes it is said that males have 12-14 anal fin-rays and females have 9-12 anal fin-rays [Sterba 1963].”

From Miedler (1999):

“*Erpetoichthys calabaricus* has a snake-like appearance, with a yellow ventral surface and greenish black dorsal surface. This species has specialized scales, which are called ganoid scales, and it has nostrils or nares on tentacles that protrude from the head. Also on the head are passive electroreceptive organs (ampullae). This species also has one-rayed dorsal finlets instead of a singular dorsal fin.”

Biology

From Froese and Pauly (2017):

“Found in slow flowing rivers and standing waters [Wheeler 1977]. Apparently restricted to reedy habitats [Greenwood 1984]. It moves snake-wise over the bottom, but it can also side-wind quite rapidly through the water [Stebra 1963]. Feeds at night on worms, crustaceans and insects [Mills and Vevers 1989]. Able to breathe air and thus can tolerate low oxygen concentrations. Larvae have external gills and resemble salamander larvae [Wheeler 1977].”

“Parallel swimming courtship; female deposits few eggs between anal fins of male, where they are fertilized and then scattered in vegetation where they immediately stick to substrate. This procedure is repeated many times. Eggs are 2.1-2.6 mm in diameter. Larvae hatch after 70 hours but remain attached to vegetation; 22 days after hatching the yolk sac is absorbed and larvae start feeding.”

From Miedler (1999):

“*Erpetoichthys calabaricus* has no defined social system, although they tend to congregate when they are in an aquarium. In terms of behavior, their skill at capturing prey is quite interesting. This species can sense electric cues (from the gills of small crustaceans and fish) in their environment with ampullae (electroreceptors) and use this information for prey capture.”

Human Uses

From Froese and Pauly (2017):

“Fisheries: of no interest; aquarium: commercial”

From Ekpo et al. (2016):

“[...] while *Erpetoichthys calabaricus* the only species in the genus *Erpetoichthys* is threatened by human population density, habitat degradation and collection in aquarium trade (Asuquo, 2016; Olaosebikan and Bankole, 2005).”

Youguang (2014) lists *Erpetoichthys calabaricus* as present in Singapore in the aquarium trade.

From Watson (2000):

“Enquiries made in the ornamental fish industry indicate that regular exportations to Europe of freshwater species are currently taking place from the Democratic Republic of the Congo (formerly Zaire), Guinea, Nigeria, and Cameroon. Particularly cited are rheophilic cichlids from the River Congo (*Lamprologus*, *Teleogramma*, and *Steatocranus* spp.), Synodontis catfishes, *Erpetoichthys calabaricus*, various barbs and characiforms, and the freshwater butterflyfish *Pantodon buchholzi*.”

Diseases

No records of OIE reportable diseases were found.

From Froese and Pauly (2017):

“Bacterial Infections (general), Bacterial diseases”

Poelen et al (2014) list *Macrogyrodactylus polypteri* as a parasite of *Erpetoichthys calabaricus*.

Erpetoichthys calabaricus is a host of *Batrachocamallanus siluranae* and *Gendria polypteri* (Řehulková et al. 2018).

Threat to Humans

From Froese and Pauly (2017):

“Harmless”

3 Impacts of Introductions

No confirmed records of *Erpetoichthys calabaricus* introductions to the wild were found.

Řehulková et al. (2015) found two species of parasites in individuals of *Erpetoichthys calabaricus* imported into the Czech Republic. This indicates that the species has the potential to introduce new parasites to an environment if introduced into the wild.

4 Global Distribution



Figure 1. Known global distribution of *Erpetoichthys calabaricus*. Map from GBIF Secretariat (2017).

The records in Alabama are the result of collections from a pet store (GBIF Secretariat 2017) and do not represent an established population. This location was not used as a source point for the climate match.

The records in Thailand are also the result of aquarium specimens (GBIF Secretariat 2017) and were not used as source locations for the climate match.

The occurrence reported from New Caledonia was not used as a source point for the climate match as the species identification could not be verified as correct. This record was sourced from an online citizen science project and the description of the observation location creates uncertainty for the accuracy of the species identification (GBIF Secretariat 2017).

5 Distribution Within the United States

No records of *Erpetoichthys calabaricus* occurrences in the wild in the United States were found.

GBIF Secretariat (2017) and BISON (2017) contain two records of *Erpetoichthys calabaricus* collected from a pet store in Auburn, Alabama.

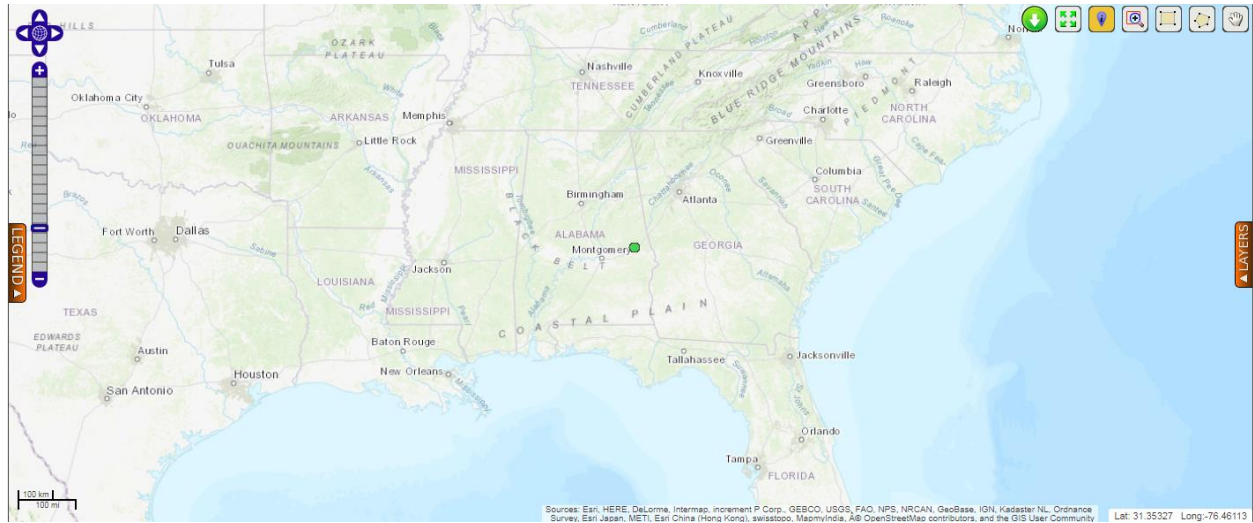


Figure 2. Location of records from an Alabama pet shop. Map from BISON (2017).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Erpetoichthys calabaricus* was medium for the very tip of Florida, the Florida Keys, and the southern part of the Texas Gulf Coast. It was very low everywhere else. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for the contiguous United States was 0.000, low, and no states had an individually high climate match.

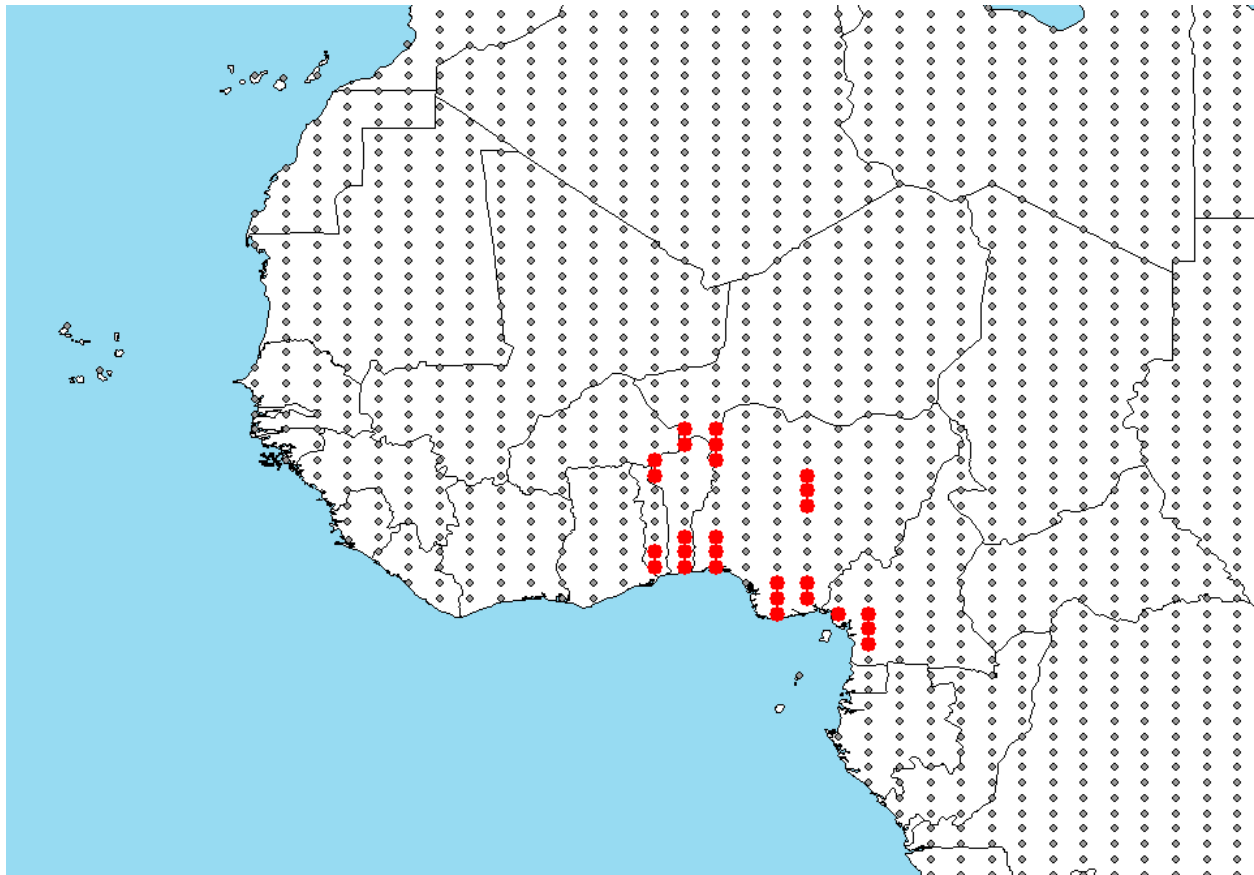


Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Togo, Burkina Faso, Benin, Nigeria, Cameroon, Niger) and non-source locations (grey) for *Erpetoichthys calabaricus* climate matching. Source locations from Froese and Pauly (2017) and GBIF Secretariat (2017).

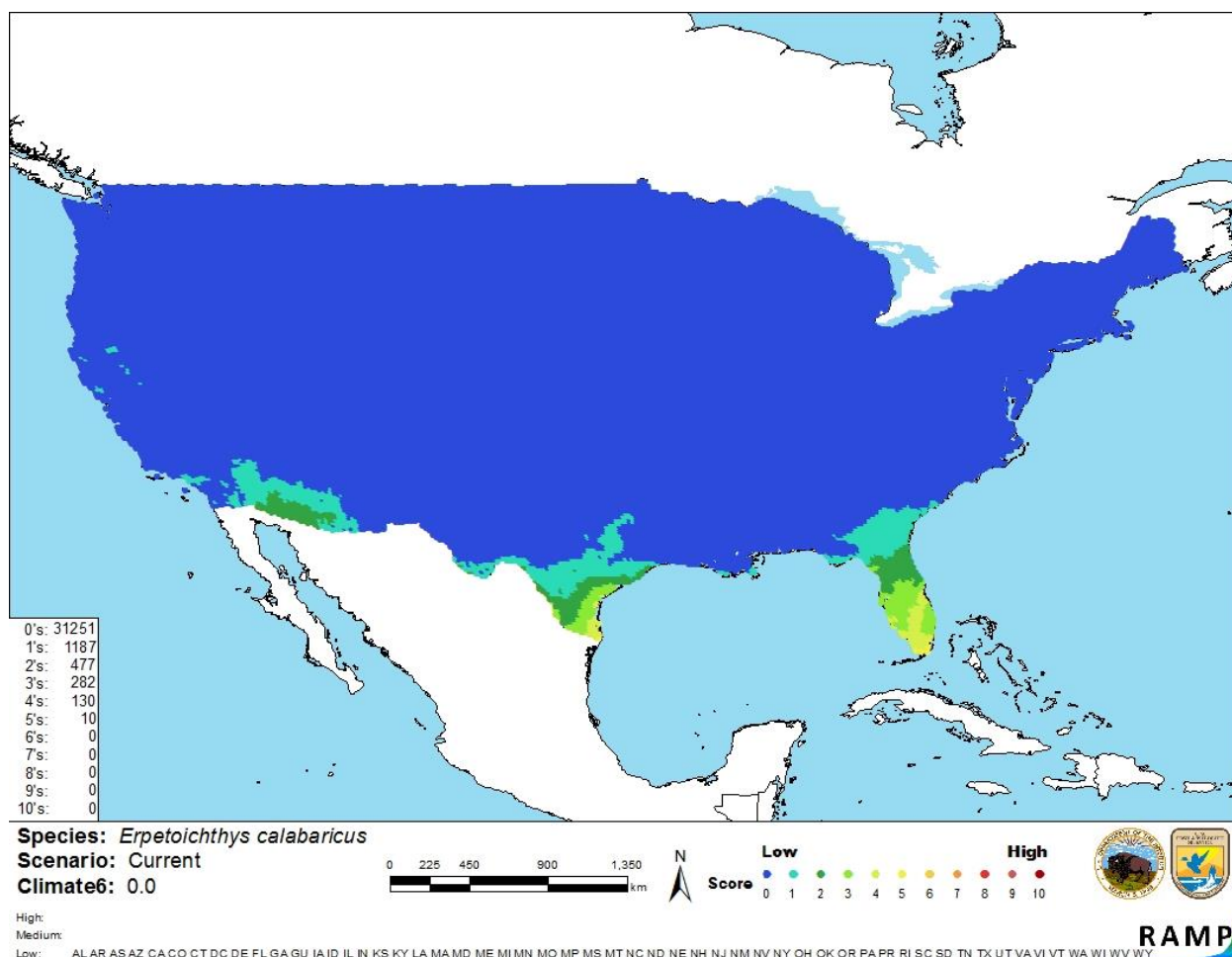


Figure 4. Map of RAMP (Sanders et al. 2014) climate matches for *Erpetoichthys calabaricus* in the contiguous United States based on source locations reported by Froese and Pauly (2017) and GBIF Secretariat (2017). 0 = Lowest match, 10 = Highest match. Counts of climate match scores are tabulated on the left.

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

The certainty of this assessment is medium. There was adequate biological and ecological information available about *Erpetoichthys calabaricus*. No records of introductions into the wild were found. This species is imported in many countries for the ornamental trade.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Reedfish (*Erpetoichthys calabaricus*) is a species of fish native to western Africa coastal drainages. The history of invasiveness is not documented. There were no records of *Erpetoichthys calabaricus* introduced to the wild. This species is imported for the ornamental trade by various countries, including the United States. No specific information on the volume or duration of trade was available. A potential ecological impact exists but with no documented wild introductions there are no documented impacts. The climate match is low; the Climate 6 score was 0.000. The certainty of assessment is medium. The overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Medium**
- **Remarks/Important additional information** No additional remarks.
- **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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