

Tinfoil Barb (*Barbonymus schwanefeldii*)

Ecological Risk Screening Summary

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Available: https://commons.wikimedia.org/wiki/File:Tinfoil_barbs_01.jpg. (May 30, 2019).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2019):

“Occurs in the Mekong basin [in Cambodia] [Rainboth 1996; Kottelat 1998]. Found in Srépok, Tonlé Sap, Battambang, Siem Reap [in Cambodia] [Kottelat 1985].”

“[In Indonesia] Occurs in Sumatra [Suvatti 1981] and Borneo [Kottelat 1998]. Found in the Kapuas Lakes Area, western Borneo. Recorded from Danau Sentarum National Park in the Kapuas basin of Borneo, Kalimantan Barat [Kottelat and Widjanarti 2005].”

“Occurs in the Mekong basin [Laos]. Found in the lower Xe Bangfai river, a tributary of the Mekong [Kottelat 1998].”

“Widely distributed in all rivers and lakes of Selangor, Perak, Kelantan, Trengganu, and Pahang [Malaysia] [Mohsin and Ambak 1983]. Recorded from the Rajang Basin in Sarawak, Borneo [Parenti and Lim 2005].”

“[In Thailand:] Found in Mekong, Chao Phraya, MaeKlong, Peninsular and Southeast Thailand river systems [Vidthayanon et al. 1997]; also from Nonthaburi, Chiang Mai, Chanthaburi, Phattalung, Pattani, Phra Nakhon Si Ayutthaya, Surat Thani, Nakhon Sawan, Ratchaburi, Nakhon Ratchasima, Chiang Rai, Nakhon Nayok, Kanchanaburi and Phitsanulok [Monkolprasit et al. 1997].”

Froese and Pauly (2019) list *Barbonymus schwanefeldii* as native in Brunei Darussalam.

Status in the United States

According to Nico et al. (2019), *Barbonymus schwanefeldii* was collected in 1974 and 1999 in Florida and 2001 in Indiana.

From Nico et al. (2019):

“Failed in Florida and Indiana.”

“This species is a popular ornamental fish. In published lists of introduced species taken in Florida, this species is identified as the tinfoil barb (*Barbus* sp.) (e.g., Courtenay and Robins 1973). The exact date of collection is uncertain; dates given in the literature are in the periods 1968 to 1970 (Courtenay & Hensley 1979b) and 1970 to 1972 (Courtenay and Robins 1973). There are no known voucher specimens.”

According to Chapman et al. (1994), 24,400 individuals of *Barbonymus schwanefeldii* (listed under the synonym *Puntius schwanefeldii*) were imported to the United States in October 1992.

From LiveAquaria (2019):

“Tinfoil Red Tail Barb
(*Barbus schwanefeldii*) [...] \$4.49”

Means of Introductions in the United States

From Nico et al. (2019):

“Probable escape from fish farm in Florida; aquarium release in Indiana.”

Remarks

Information searches were conducted using the valid name *Barbonymus schwanefeldii*, the misspelling *Barbonymus schwanefeldii*, and the synonyms *Barbus schwanefeldii* and *Puntius schwanefeldii*. The taxonomic authority used for fish species spells the valid name as *Barbonymus schwanefeldii* (Fricke et al. 2019) but all other resources used the spelling *Barbonymus schwanefeldii* (e.g. Froese and Pauly 2019; ITIS 2919; Nico et al. 2019).

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Fricke et al. (2019):

“**Current status:** Valid as *Barbonymus schwanefeldii* (Bleeker 1854).”

From ITIS (2019):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Ostariophysi
Order Cypriniformes
Superfamily Cyprinoidea
Family Cyprinidae
Genus *Barbonymus*
Species *Barbonymus schwanefeldii* [*sic*] (Bleeker, 1853)”

Size, Weight, and Age Range

From Froese and Pauly (2019):

“Max length : 35.0 cm SL male/unsexed; [Baird et al. 1999]; common length : 20.0 cm SL male/unsexed; [Mohsin and Ambak 1983]”

Environment

From Froese and Pauly (2019):

“Freshwater; benthopelagic; pH range: 6.5 - 7.0; dH range: ? - 10; potamodromous [Riede 2004]. [...]; 22°C - 25°C [assumed to be recommended aquarium temperature] [Riehl and Baensch 1996]; [...]”

“In east Kalimantan, Indonesia a [water] temperature range of 20.4-33.7°C was recorded for this species [Christensen 1992].”

Climate/Range

From Froese and Pauly (2019):

“Tropical; [...]; 16°N - 4°S”

Distribution Outside the United States

Native

From Froese and Pauly (2019):

“Occurs in the Mekong basin [in Cambodia] [Rainboth 1996; Kottelat 1998]. Found in Srépok, Tonlé Sap, Battambang, Siem Reap [in Cambodia] [Kottelat 1985].”

“[In Indonesia] Occurs in Sumatra [Suvatti 1981] and Borneo [Kottelat 1998]. Found in the Kapuas Lakes Area, western Borneo. Recorded from Danau Sentarum National Park in the Kapuas basin of Borneo, Kalimantan Barat [Kottelat and Widjanarti 2005].”

“Occurs in the Mekong basin [Laos]. Found in the lower Xe Bangfai river, a tributary of the Mekong [Kottelat 1998].”

“Widely distributed in all rivers and lakes of Selangor, Perak, Kelantan, Trengganu, and Pahang [Malaysia] [Mohsin and Ambak 1983]. Recorded from the Rajang Basin in Sarawak, Borneo [Parenti and Lim 2005].”

“[In Thailand:] Found in Mekong, Chao Phraya, MaeKlong, Peninsular and Southeast Thailand river systems [Vidthayanon et al. 1997]; also from Nonthaburi, Chiang Mai, Chanthaburi, Phattalung, Pattani, Phra Nakhon Si Ayutthaya, Surat Thani, Nakhon Sawan, Ratchaburi, Nakhon Ratchasima, Chiang Rai, Nakhon Nayok, Kanchanaburi and Phitsanulok [Monkolprasit et al. 1997].”

Froese and Pauly (2019) list *Barbonymus schwanefeldii* as native in Brunei Darussalam.

Introduced

From Froese and Pauly (2019):

“Species recorded in the wild [in Taiwan], also available in pet stores in the country [Liang et al. 2006].”

Froese and Pauly (2019) list the population in Taiwan as established.

From Ng and Tan (2010):

“This species [*Barbonymus schwanefeldii*] is established in large numbers in the MacRitchie Reservoir [Singapore]; large schools of the species can frequently be encountered on the walking trails fringing the southern shore of the reservoir. Alfred [1966] considered this fish to be native to Singapore, citing specimens collected from Jurong in 1937. Given that the species is typically associated with midwater depths in large and medium-sized rivers and floodplains (a habitat that is lacking in Singapore), it is unlikely to have been native to the island.”

From Hanel et al. (2011):

“The Asian Tinfoil barb (*Barbodes schwanefeldii*) [*sic*] was introduced to Italy in the past and have disappeared (Holčík 1991).”

From Ribiero et al. (2009):

“The establishment of *B. schwanefeldii* [*sic*] [in Portugal] is not yet confirmed because of the novelty of its occurrence.”

In addition to the above locations, Froese and Pauly (2019) list *Barbonymus schwanefeldii* as introduced and status unknown in the Philippines; introduced and probably not established in Côte d’Ivoire (recorded under the synonym *Barbus schwanefeldi*).

Means of Introduction Outside the United States

From Ng and Tan (2010):

“Members of the genus *Barbonymus* are frequently cultured as food fish [Rainboth 1996], so it is possible that the fish may have been introduced to Singapore as an aquaculture species.”

Short Description

From Froese and Pauly (2019):

“Dorsal spines (total): 3; Dorsal soft rays (total): 8; Anal spines: 3; Anal soft rays: 5. Distinguished from other species of the genus in having a red dorsal fin with a black blotch at the tip, red pectoral, pelvic and anal fins, red caudal fin with white margin and a black submarginal stripe along each lobe, and 8 scale rows between dorsal-fin origin and lateral line [Kottelat 1998]. Large individuals silvery or golden yellow in life with its dorsal fin red and caudal fin orange or blood-red [Roberts 1989].

Biology

From Froese and Pauly (2019):

“Found in rivers, streams, canals and ditches [Rainboth 1996]. Occurs in medium to large-sized rivers and enters flooded fields [Taki 1978]. [...] Largely herbivorous, consuming aquatic macrophytes and submerged land plants, as well as filamentous algae and occasionally insects

[Rainboth 1996]. Also feeds on small fishes [Rainboth 1996], worms and crustaceans [Mills and Vevers 1989].”

Human Uses

From Froese and Pauly (2019):

“Usually marketed fresh [Rainboth 1996].”

“Captured from the wild [in Thailand] for the ornamental fish trade [Ukkatawewat 2005].”

“Fisheries: subsistence fisheries; aquaculture: commercial; aquarium: commercial; bait: occasionally”

Diseases

No records of OIE-reportable diseases (OIE 2019) were found for *Barbonymus schwanefeldii*.

From Froese and Pauly (2019):

“Ulcerative Rhabdovirus Syndrome, Viral diseases
White spot Disease, Parasitic infestations (protozoa, worms, etc.)
Bacterial Infections (general), Bacterial diseases”

From Krailas et al. (2016):

“In this study, *H. [Haplorchis] pumilio* metacercariae were detected in the following 9 fish species: *B. schwanefeldii* [sic], [...]”

Abdullah et al. (2018) list *Staphylococcus xylosum*, *Aeromonas sobria*, *Plesiomonas shigelloides*, and tilapia lake virus as pathogens of *Barbonymus schwanefeldii*.

Székely et al. (2009), list *Barbonymus schwanefeldii* as the type host for *Myxobolus dykova*.

Poelen et al. (2014) list *Dactylogyrus tapienensis*, *Oceanicucullanus chitwoodae*, and *Haplorchoides mehrai* as parasites of *Barbonymus schwanefeldii*.

Threat to Humans

From Krailas et al. (2016):

“The results [of a study of the causes of human trematodiasis], in the official report to the Commission on Higher Education of the Ministry of Education of Thailand, revealed that the people were infected with *Haplorchis pumilio*.” [*B. schwanefeldii* is an intermediate host, see Diseases]

3 Impacts of Introductions

From Nico et al. (2019):

“The impacts of this species are currently unknown, as no studies have been done to determine how it has affected ecosystems in the invaded range. The absence of data does not equate to lack of effects. It does, however, mean that research is required to evaluate effects before conclusions can be made.”

4 Global Distribution



Figure 1. Known global distribution of *Barbonymus schwanefeldii*. Observations are reported from the United States, Germany, Thailand, Laos, Cambodia, Malaysia, Singapore, and Indonesia. Map from GBIF Secretariat (2019). The locations in the United States were not used to select source points for the climate match; the introductions did not establish populations. The location in Germany was not used to select source points; the specimen was collected from a zoo.

A population is reported from Taiwan (Froese and Pauly 2019) but no observation locations were available to use to select source points for the climate match.

5 Distribution Within the United States

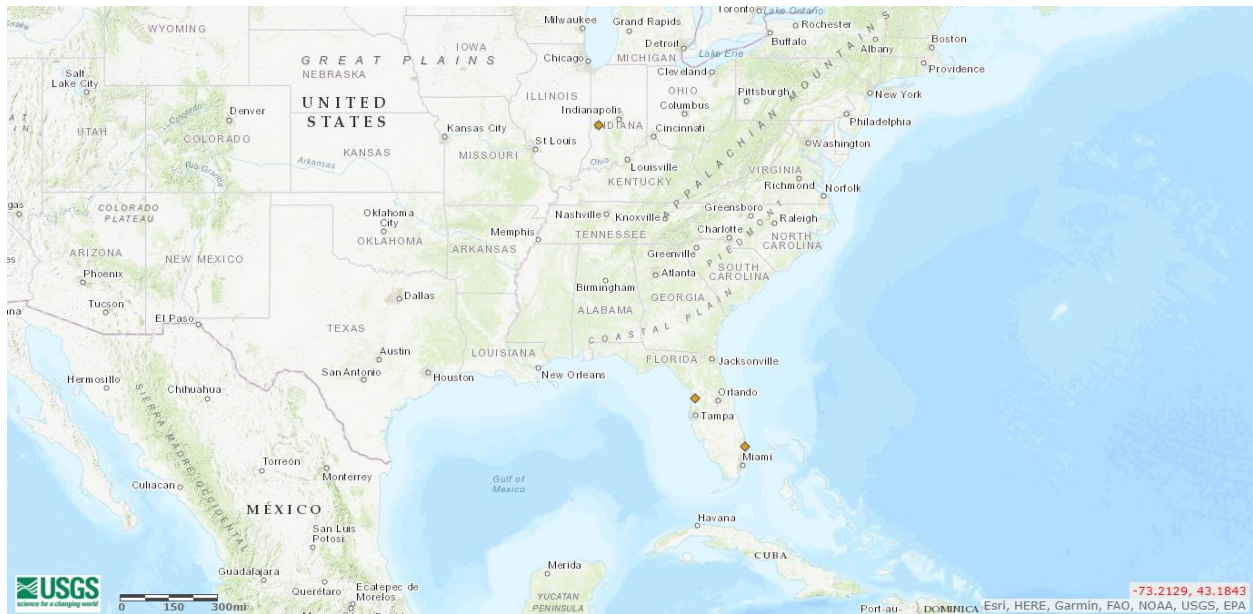


Figure 2. Known collections of *Barbonymus schwanefeldii* in the United States. Map from Nico et al (2019). None of these locations were used to select source points for the climate match as they do not represent established populations.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Barbonymus schwanefeldii* was mostly low for the contiguous United States. There were areas of medium match in southern Florida and southern Texas with a few small patches along the Gulf Coast. Everywhere else had a low match. The Climate 6 score (Sanders et al. 2018; 16 climate variables; Euclidean distance) for contiguous United States was 0.000, low (scores between 0.000 and 0.005, inclusive, are categorized low). All States had low individual climate scores.

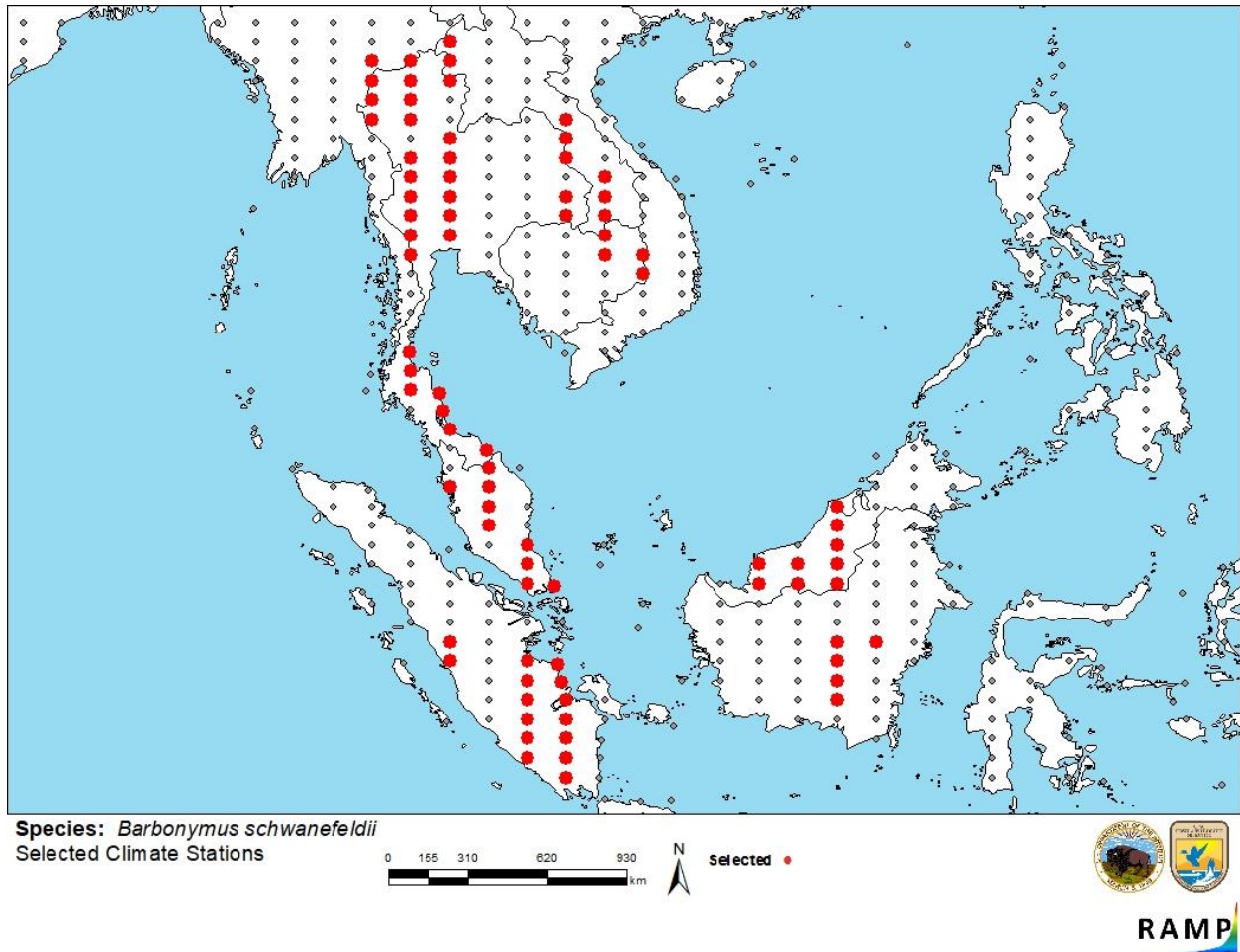


Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations in Southeast Asia selected as source locations (red; Myanmar, Malaysia, Thailand, Laos, Cambodia, Indonesia, Singapore) and non-source locations (gray) for *Barbonymus schwanefeldii* climate matching. Source locations from GBIF Secretariat (2019). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

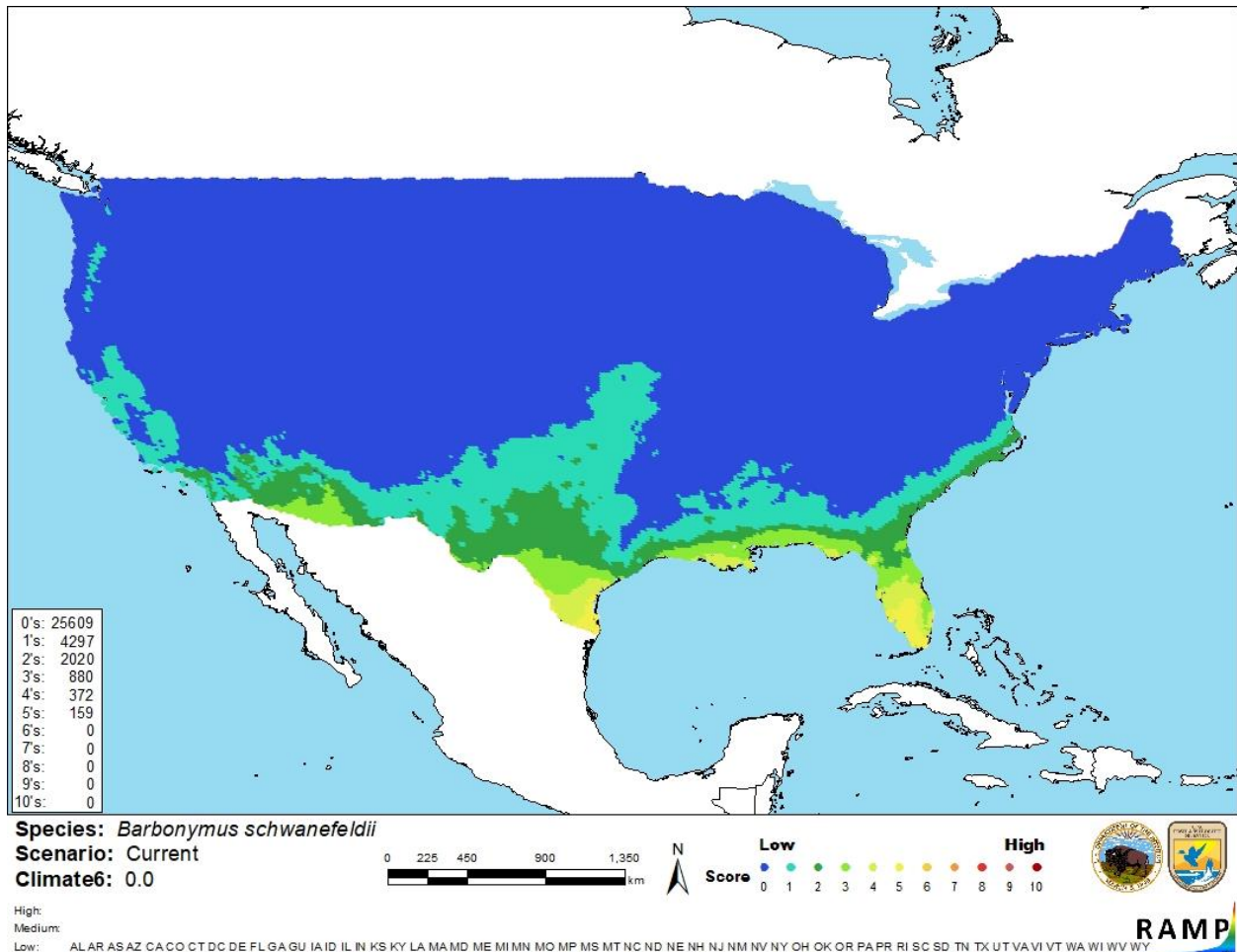


Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *Barbonymus schwanefeldii* in the contiguous United States based on source locations reported by GBIF Secretariat (2019). 0 = Lowest match, 10 = Highest match.

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

The certainty of assessment is medium. Information about the biology, ecology, and distribution of the species is available. Records of introductions were found with only two resulting in establishment. Information on trade volume was available. More information about the established populations may be available in languages other than English.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Tinfoil Barb (*Barbonymus schwanefeldii*) is a small fish native to rivers in Southeastern Asia. It is used in subsistence fisheries and is popular in the aquarium trade. The history of invasiveness for *Barbonymus schwanefeldii* is low. There are records of introduction with only two resulting in an established population. The established population in Singapore was once thought to be native. The other established population is in Taiwan. There are no reports of any impacts from either population. In addition to little evidence of establishment and no reported impacts, there has been substantial trade in *B. schwanefeldii*. *B. schwanefeldii* was imported to the United States at a rate of 24,400 in October 1992 and is still in the aquarium trade. If the rate of import continued since 1992, that would be over 7 million individuals in trade over a 25 year period. This meets the substantial trade requirement for a low history of invasiveness. The climate match is low for the contiguous United States. There were very few areas of medium match, all along the Gulf Coast. All other areas had low matches. The certainty of assessment is medium. The overall risk assessment category is low.

Assessment Elements

- **History of Invasiveness (Sec. 3): Low**
- **Climate Match (Sec. 6): Low**
- **Certainty of Assessment (Sec. 7): Medium**
- **Remarks/Important additional information:** *B. schwanefeldii* is an intermediate host for *Haplorchis pumilio*, which infects humans.
- **Overall Risk Assessment Category: Low**

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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