Redhead Cichlid (*Vieja melanura*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, October 2014
Revised, December 2017
Web Version, 5/15/2018

Photo: Shizhao. Licensed under Creative Commons BY-SA 3.0 Unported. Available: https://commons.wikimedia.org/wiki/File:Vieja_synspila.JPG. (October 27, 2014). *Vieja synspila* is a synonym of *Vieja melanura*.

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2017):

"Recorded from Clearwater Creek, Belize River and Progresso Lagoon [in Belize]."

"Known from the Usumacinta River drainage, De la Pasión and Lake Petén basins [in Guatemala] [Kullander 2003]."

"Restricted to the Rio Usumacinta basin [in Mexico]."

Status in the United States

From Nico and Neilson (2017):

"A single fish (104 mm SL, 58 g) was taken with boat-mounted electrofishing gear from Gateway Lake at Ellsworth Air Force Base, Pennington County, South Dakota, on 15 September 1993 (museum specimen). This species was initially collected from canal systems Miami-Dade County, Florida, beginning in 2001 (initially identified as *'Theraps* hybrid (*Theraps melanurus* x *T. zonatus* (?); Shafland et al. 2008), with more recent records from Palm Beach County beginning in 2016. In July 2017, this species was collected from a retention pond in Hillsborough County (Center for Invasive Species and Ecosystem Health, 2017). This species has also been caught by fishermen from the Guajataca Reservoir, Quebradillas County, Puerto Rico (F. Grana, written commun., 2011)."

"Failed in South Dakota; established in Florida and Puerto Rico."

Blood-red Parrot and Flowerhorn Cichlids, hybrids of *Vieja melanura*, are for sale within the United States (PetSmart.com; thatpetplace.com). *Vieja melanura* are for sale under the name *Vieja synspila* (thatpetplace.com).

Means of Introductions in the United States

From Nico and Neilson (2017):

"Probable aquarium release."

Remarks

The valid name of this species is *Vieja melanura* (Eschmeyer et al. 2017). It has previously been known as *Cichlasoma melanurum, C. synspilum, Heros melanurus, Paraneetroplus melanurus, P. synspilus,* and *Vieja synspila* (Eschmeyer et al. 2017). Not all databases are updated with the valid name of this species. Information searches were conducted using the above synonyms to ensure completeness of the information used in this assessment.

Vieja melanura can hybridize with *Cichlasoma citrinellum* (Sui et al. 2016).

From Nico et al. (2007):

"[…] eventually concluded that all were likely hybrids of "*C.*" *trimaculatum*, or possibly of *Vieja synspila*, genetic forms that presumably can be assigned to the hybrid group known as Flowerhorns."

"Some aquarists have suggested that these hybrids have been back crossed to create some of the Flowerhorn hybrid varieties that now exist. "*Cichlasoma*" *urophthalmus* supposedly is not involved, but some suspect "*C.*" *festae* has been used in some crosses, along with "*C.*" *trimaculatum, Amphilophus citrinellus* (Günther 1864) (= "*C.*" *citrinellum*), *Vieja synspila*, and others (Miller and Midgley 2002, Lutz 2004, Axelrod et al. 2005). The different Flowerhorn

varieties are often marketed under a variety of names (e.g., Red Dragon, Super Red Dragon, Rainbow Dragon, Blue Dragon, and Kamfa or Kampa) and fish breeders reportedly continue to experiment, so the situation is dynamic."

From Ng (2016):

"Blood-parrot Cichlid is a hybrid reputedly developed in Taiwan by crossing *Amphilophus labiatus*, *Heros severus*, *Amphilophus citrinellus* and *Vieja synspilum* (Tomasello, 2013)."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Eschmeyer et al. (2017), *Vieja melanura* (Günther 1862) is the current valid name for this species. *Vieja melanura* was originally described as *Heros melanurus* Günther 1862 and has been known previously as *Cichlasoma melanurum*, *Paraneetroplus melanurus*, *Paraneetroplus melanura*, *Cichlasoma synspilum*, *Vieja synspila*, and *Paraneetroplus synspilus*.

From ITIS (2017):

"Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Actinopterygii
Class Teleostei
Superorder Acanthopterygii
Order Perciformes
Suborder Labroidei
Family Cichlidae
Genus *Vieja*
Species *Vieja melanura* (Günther, 1862)"

Size, Weight, and Age Range

From Froese and Pauly (2017):

"Max length : 35.0 cm TL male/unsexed; [Kullander 2003]"

From Nico and Neilson (2017):

"30 cm (Conkel 1993)."

Environment

From Froese and Pauly (2017):

"Freshwater; brackish; benthopelagic; pH range: 7.0 - 8.0; dH range: 9 - 20."

From Nico and Neilson (2017):

"This species is found in tropical waters with temperatures ranging from 24–30 °C."

Climate/Range

From Froese and Pauly (2017):

"Tropical; […]"

Distribution Outside the United States

Native

From Froese and Pauly (2017):

"Recorded from Clearwater Creek, Belize River and Progresso Lagoon [in Belize]."

"Known from the Usumacinta River drainage, De la Pasión and Lake Petén basins [in Guatemala] [Kullander 2003]."

"Restricted to the Rio Usumacinta basin [in Mexico]."

Introduced

From FAO (2014):

"From unknown to Philippines"

From Froese and Pauly (2017):

"Established in Jurong Lake [Singapore]. Formerly caught in Pandan Canal but population seems to have disappeared [Tang 2004]. Also [NSS Vertebrate Study Group 2014]."

According to Keohn and MacKenzie (2004), *Vieja melanura* (listed under *Chichlasoma synsilum*) has been introduced in Queensland, Australia.

From Corfield et al. (2008):

"The only ornamental species known to be present in the wild [in Australia] (Table 1.1), but for which no distributional data could be found, were […], the redhead cichlid (*Vieja synspila*) and […]."

From Nico et al. (2007):

"However, after reviewing the literature and unpublished information and consultation with other cichlid experts, it was eventually concluded that all were likely hybrids of "*C*." *trimaculatum*, or possibly of *Vieja synspila*, genetic forms that presumably can be assigned to the hybrid group known as Flowerhorns. Among these were live adults that one of us (LGN) observed being sold outside a restaurant in Bangkok and the other a juvenile cichlid recently collected from a site in Malaysia (Figure 7)."

According to Takács et al. (2017), *Vieja melanura* (under the name *Paraneetroplus synspilus*) has been found in Hungarian waters in 2015.

Vieja melanura (under *Paraneetroplus synspilus*) is listed as present in China (Mu et al. 2008 in Xiong et al. 2015).

A hybrid of *Amphilophus citrinellus* and *Vieja melanura* (under the name *V. synspilus*) has been recorded in Japan but it is not known to be established (Miyazaki et al. 2015).

Means of Introduction Outside the United States

From FAO (2014):

"Reasons of Introduction: 1) ornamental"

From Ng and Tan (2010):

"The presence of this species in the Jurong Lake and the Tengeh Reservoir [Singapore] is due to discarding of unwanted aquarium fish."

Short Description

From Nico and Neilson (2017):

"In general, cichlids (Cichlidae) are superficially similar to North American sunfishes and black basses (*Lepomis* and *Micropterus*; family Centrarchidae). Cichlids are distinguished from centrarchids by a single nostril opening on each side of the head (vs. two in centrarchids) and the presence of a discontinuous or two-part lateral line (vs. continuous in centrarchids)."

Biology

From Froese and Pauly (2017):

"Inhabits sandy-bottomed lakes [Conkel 1993] and lower river valley with a slight tolerance for the brackish environment [Valtierra-Vega and Schmitter-Soto 2000]. Feeds on aufwuchs, benthic detritus of vegetable matter, and small crustaceans [Conkel 1993]."

“Produces 300-500 fry per spawning [Conkel 1993]. Reported to produce up to 1000 eggs and reach sexual maturity at 10 cm [assumed to be in aquarium conditions] [Baensch and Riehl 1985].”

Human Uses

From Froese and Pauly (2017):

“Fisheries: of no interest; aquarium: commercial”

Diseases

No records of OIE reportable diseases were fonud.

From Froese and Pauly (2017):

“Yellow Grub, Parasitic infestations (protozoa, worms, etc.)
Hysterothylacium Infection (Hysterothylacium sp.), Parasitic infestations (protozoa, worms, etc.)
Cucullanus Disease, Parasitic infestations (protozoa, worms, etc.)
Bucephalus Disease, Parasitic infestations (protozoa, worms, etc.)
Posthodiplostomum Infestation 2, Parasitic infestations (protozoa, worms, etc.)
Goezia Disease, Parasitic infestations (protozoa, worms, etc.)
Spiroxys Infestation, Parasitic infestations (protozoa, worms, etc.)
Procamallanus Infection 13, Parasitic infestations (protozoa, worms, etc.)
Raillietnema Infestation, Parasitic infestations (protozoa, worms, etc.)
Rhabdochona Infestation 5, Parasitic infestations (protozoa, worms, etc.)
Campechetrema Infection, Parasitic infestations (protozoa, worms, etc.)
Crassicutis Infection, Parasitic infestations (protozoa, worms, etc.)
Genarchella Infection, Parasitic infestations (protozoa, worms, etc.)
Homalometron Infection, Parasitic infestations (protozoa, worms, etc.)
Oligogonotylus Infection, Parasitic infestations (protozoa, worms, etc.)
Oligogonotylus Infection, Parasitic infestations (protozoa, worms, etc.)
Phyllodistomum Infestation 6, Parasitic infestations (protozoa, worms, etc.)
Saccocoelioides Infection, Parasitic infestations (protozoa, worms, etc.)
Contracaecum Disease (larvae), Parasitic infestations (protozoa, worms, etc.)
Apharyngostrigea Disease, Parasitic infestations (protozoa, worms, etc.)
Ascocotyle Infestation 1, Parasitic infestations (protozoa, worms, etc.)
Ascocotyle Infestation 2, Parasitic infestations (protozoa, worms, etc.)
Cladocystis Infection, Parasitic infestations (protozoa, worms, etc.)
Ascocotyle Infestation 3, Parasitic infestations (protozoa, worms, etc.)
Crocodilicola Infestation, Parasitic infestations (protozoa, worms, etc.)
Diplostomum Infection, Parasitic infestations (protozoa, worms, etc.)
Drepanocephalus Infection, Parasitic infestations (protozoa, worms, etc.)
Echinochasmus Infestation 2, Parasitic infestations (protozoa, worms, etc.)
Pelaezia Infection, Parasitic infestations (protozoa, worms, etc.)
Perezitrema Infection, Parasitic infestations (protozoa, worms, etc.)
Ribeiroia Infection, Parasitic infestations (protozoa, worms, etc.)

Stunkardiella Infection, Parasitic infestations (protozoa, worms, etc.)
Uvulifer Infection, Parasitic infestations (protozoa, worms, etc.)
Sciadicleithrum Infection, Parasitic infestations (protozoa, worms, etc.)
Sciadicleithrum Infection 3, Parasitic infestations (protozoa, worms, etc.)
Sciadicleithrum Infection 4, Parasitic infestations (protozoa, worms, etc.)
Mexiconema Infestation, Parasitic infestations (protozoa, worms, etc.)
Pseudoterranova Infection, Parasitic infestations (protozoa, worms, etc.)
Spinitectus Infestation 5 (Larvae sp.), Parasitic infestations (protozoa, worms, etc.)
Floridosentis Infection, Parasitic infestations (protozoa, worms, etc.)
Neoechinorhynchus Infestation 6, Parasitic infestations (protozoa, worms, etc.)
Polymorphus Infestation, Parasitic infestations (protozoa, worms, etc.)
Procamallanus Infection 13, Parasitic infestations (protozoa, worms, etc.)
Raillietnema Infestation, Parasitic infestations (protozoa, worms, etc.)"

Poelen et al. (2014) list *Arhythmorhnchus brevis*, *Ascocotyle leighi*, *Ascocotyle nana*, *Ascocotyle nunezae*, *Ascocotyle tenuicollis*, *Atrophecaecum astorquii*, *Cichlasotrema ujati*, *Cladocystis trifolium*, *Clinostomym complanatum*, *Contracaecum multipapillatum*, *Crassicutis cichlasomae*, *Crocodilicola pseudostoma*, *Culuwiya beauforti*, *Culuwiya cichlidorum*, *Diplostomum compactum*, *Echinochasmus leopoldinae*, *Floridosentis mugilis*, *Genarchella isabellae*, *Homalometron mexicanum*, *Homalometron pallidum*, *Mexiconema cichlasomae*, *Neoechinorhynchus golvani*, *Oligogonotylus manteri*, *Pelaezia loossi*, *Perezitrema bychowskyi*, *Phagicola nana*, *Phyllodistomum lacustri*, *Polymorphus mutabilis*, *Posthodiplostomum minimum*, *Procamallanus rebecae*, *Proteocepahlus brooksi*, *Raillietnema kritscheri*, *Rhabdochona kidderi*, *Riberoia ondatrae*, *Saccocoelioides nanii*, *Sciadicleithrum bravohollidae*, *Sciadicleithrum mexicanum*, *Sciadicleithrum splendidae*, *Spriocamallanus pereirai*, *Spriocamallanus rebecae*, *Stunkardiella minima*, and *Tabascotrema verai* as parasites or pathogens of *Vieja melanura*, under the name *Paranetroplus synspilus*.

Vidal-Martínez and Kennedy (2000) list *Apharyngostrigea* sp., *Cichlasotrema ujati*, *Crassicutis cichlasomae*, *Genarchella isabellae*, *Homalometron pallidum*, Metacercariae gen. sp. 1, Nematoda gen. sp. 1 and 2, *Neochinorhynchus golvani*, *Oligogonotylus manteri*, *Phagicola nana*, *Posthodiplostomum* sp., *Procammallanus* sp., *Proteocephalus* sp., *Raillietnema kritscheri*, *Spriocamallanus rebecae*, and *Sprioxys* sp. as parasites of *Vieja melanura*, under the name *Cichlasoma synspilum*.

Threat to Humans

From Froese and Pauly (2017):

"Harmless"

3 Impacts of Introductions

No records of impacts from introductions were found.

4 Global Distribution

Figure 1. Known global distribution of *Vieja melanura*. Map from GBIF Secretariat (2017e).

The location in South Dakota is a failed introduction (Nico and Neilson 2017) and was not used as a source location for the climate match.

Figure 2. Known global distribution of *Cichlasoma melanurum*. Map from GBIF Secretariat (2017a).

Figure 3. Known global distribution of *Cichlasoma synspilum*. Map from GBIF Secretariat (2017b).

The location in Australia was not used as a source point for the climate match. The record basis is a preserved specimen and the record location is the same as the collection the specimen is housed in (GBIF Secretariat 2017b), indicating that it is not representative of an established population.

Figure 4. Known global distribution of *Paraneetroplus melanurus*. Map from GBIF Secretariat (2017c).

The location in South Dakota is a failed introduction (Nico and Neilson 2017) and was not used as a source location for the climate match.

The locations in Hong Kong were used as source locations for the climate match. No other literature records were found indicating an introduction in Hong Kong but there is no information in the observation records that would indicate they should be excluded as source points (GBIF Secretariat 2017c).

Figure 5. Known global distribution of *Paraneetroplus synspilus*. Map from GBIF Secretariat (2017d).

The location in Australia was not used as a source point for the climate match. The record basis is a preserved specimen and the record location is the same as the collection the specimen is housed in (GBIF Secretariat 2017d), indicating that it is not representative of an established population.

Figure 6. Known global distribution of *Vieja synspila*. Map from GBIF Secretariat (2017f).

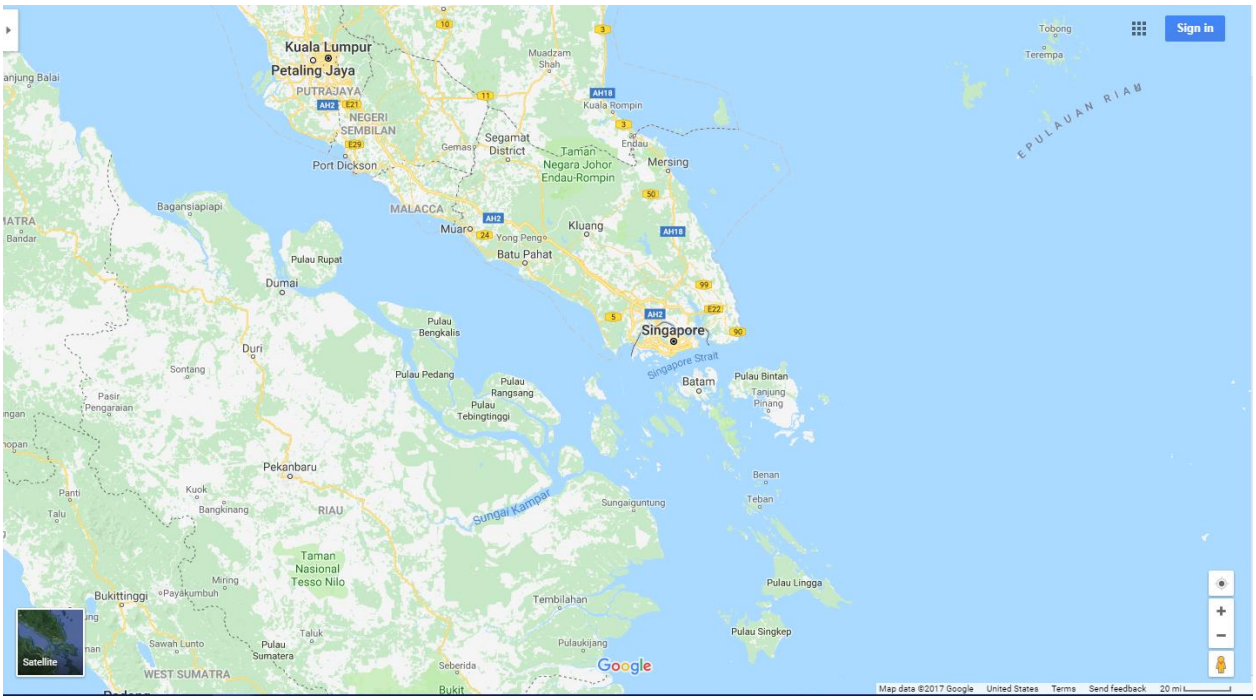

Figure 7. Location of the city-state of Singapore in Southeast Asia which has an established population of *Vieja melanura* (Froese and Pauly 2017).

5 Distribution Within the United States

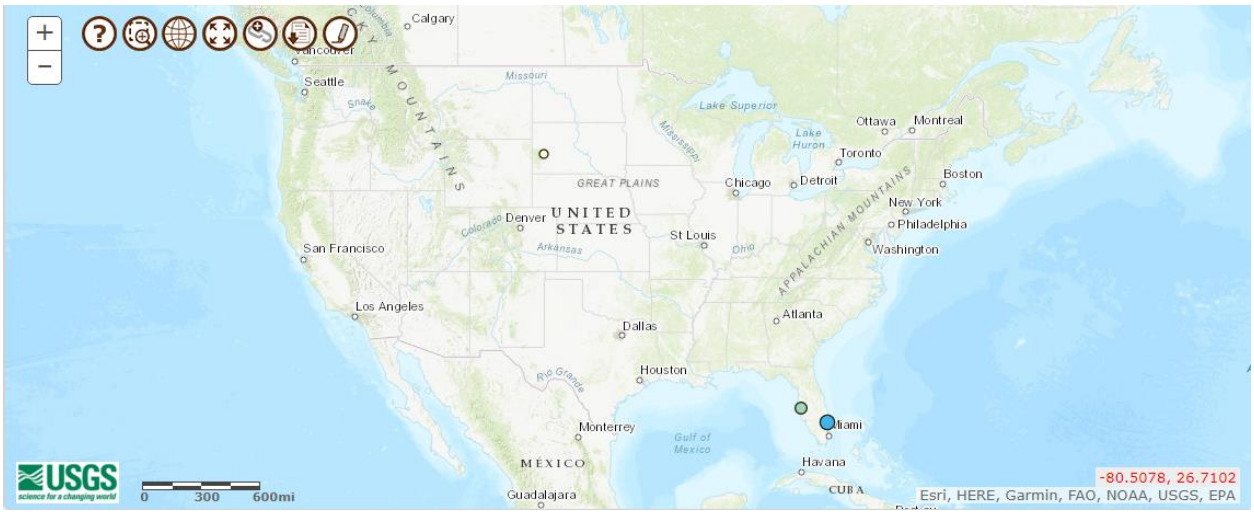

Figure 8. Known distribution of *Vieja melanura* in the contiguous United States. Map from Nico and Neilson (2017).

The location in South Dakota is a failed introduction (Nico and Neilson 2017) and was not used as a source location for the climate match.

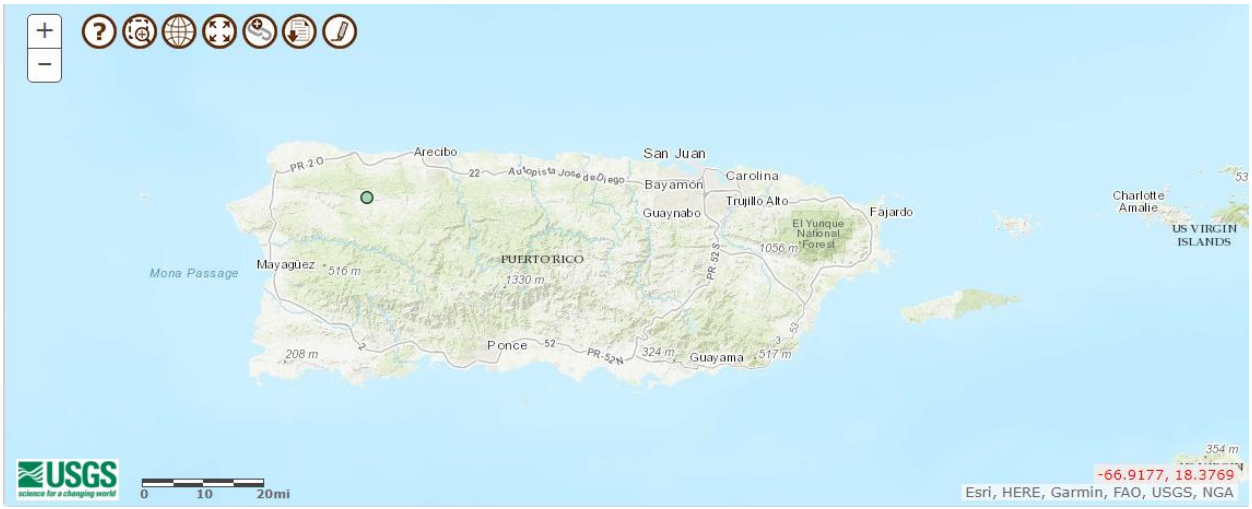

Figure 9. Known distribution of *Vieja melanura* in the United States territory of Puerto Rico. Map from Nico and Neilson (2017).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Vieja melanura* was high along the southern Atlantic coast starting in Georgia, Florida, and the Gulf Coast of Texas. The match was medium along the remained of the southern Atlantic and Gulf coasts, the southern border with Mexico and the southern Pacific coast. The climate match was low everywhere else. The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the contiguous United States was 0.024, medium. Florida and Georgia had high state level climate scores.

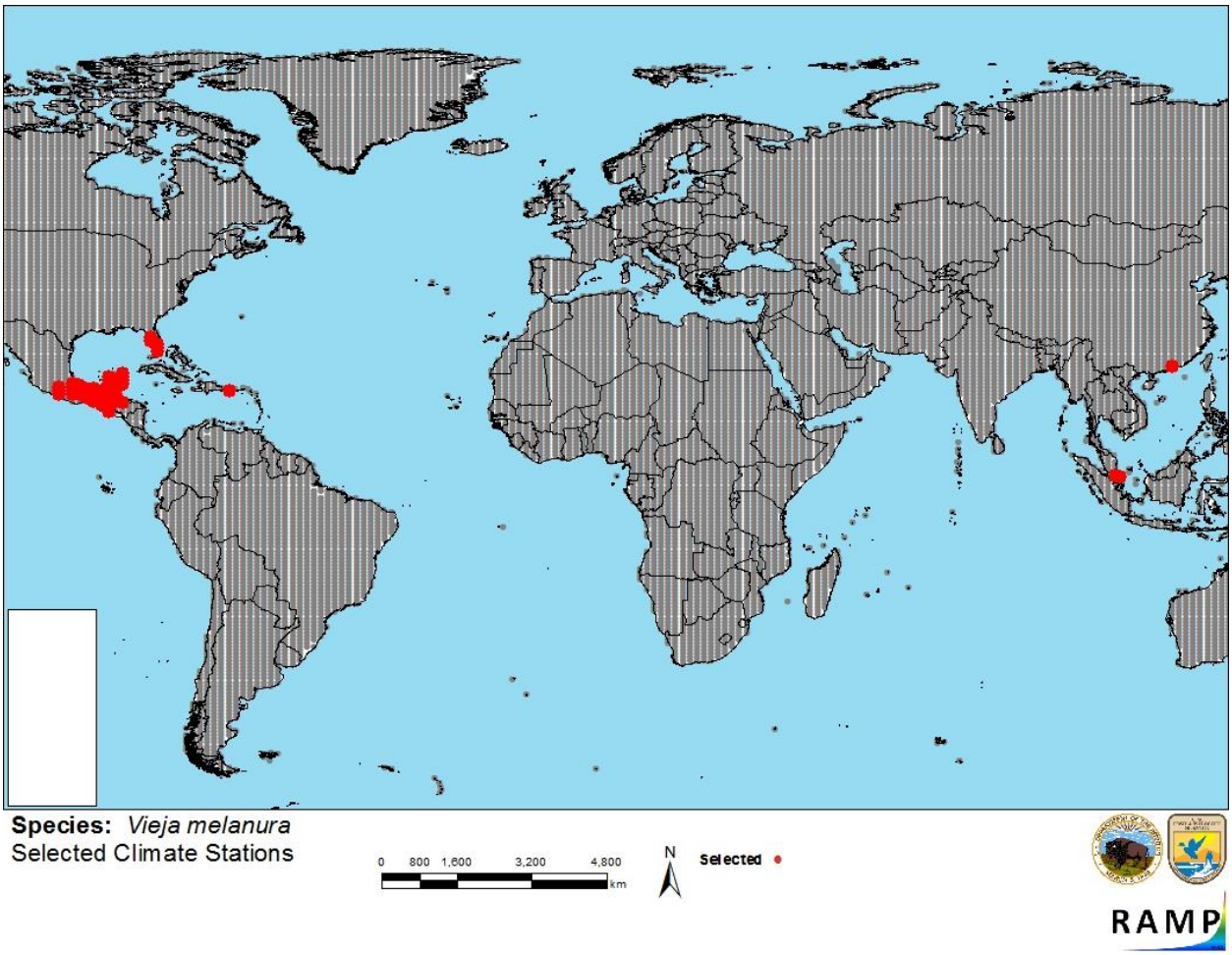

Figure 10. RAMP (Sanders et al. 2014) source map showing weather stations in Florida, Puerto Rico, Mexico, Belize, Guatemala, Singapore, and Hong Kong selected as source locations (red) and non-source locations (grey) for *Vieja melanura* climate matching. Source locations from Froese and Pauly (2017), GBIF Secretariat (2017a-f), and Nico and Neilson (2017).

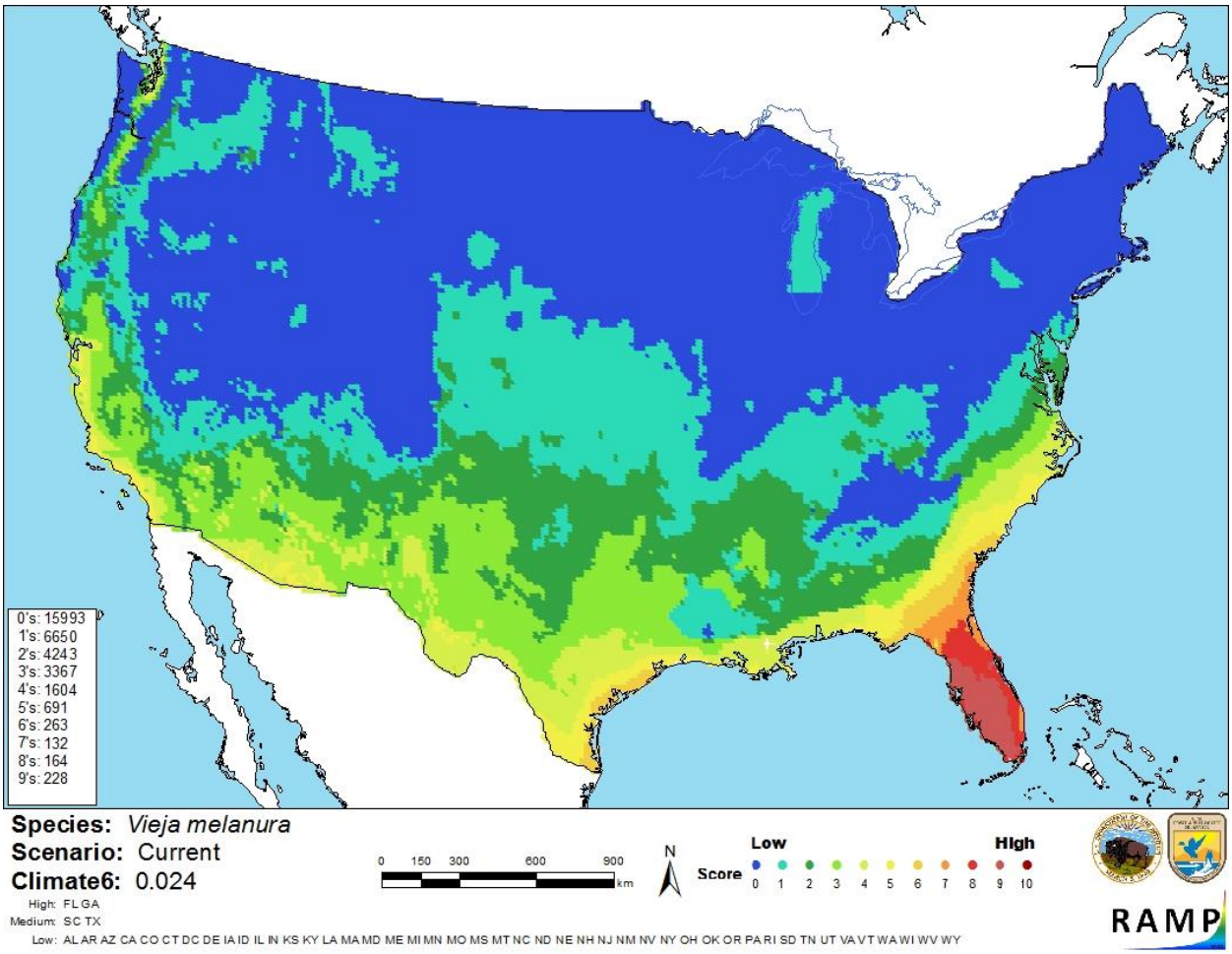

Figure 11. Map of RAMP (Sanders et al. 2014) climate matches for *Vieja melanura* in the contiguous United States based on source locations reported by Froese and Pauly (2017), GBIF Secretariat (2017a-f), and Nico and Neilson (2017). 0 = Lowest match, 10 = Highest match.

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

The certainty of this assessment is low. Some biological and ecological information was available for *Vieja melanura*. Records of introductions and established populations were found. However, no records of ecological or economic impacts could be found. Determining if the ecological or introduction information pertained to this species is complicated by the taxonomic changes detailed in the Remarks and Section 2, and the many potential *V. melanura* hybrids present in the aquarium trade.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Redhead Cichlid (*Vieja melanura)* is a fish native to Central America common in the aquarium trade. Many parasitic infections are reported from this species. The history of invasiveness for *V. melanura* is not documented. There are established nonnative populations of *Vieja melanura* in Florida, Puerto Rico, and Singapore which are thought to be the result of aquarium releases. This species and hybrids of this species are very popular in the aquarium trade but no other introductions are recorded. No records of the impacts of those populations could be found. The climate match is medium for the contiguous United States. There are areas where the climate would be suitable for the establishment of a population, particularly in Florida and Georgia. The overall risk assessment category 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** This species has experienced recent taxonomic changes and many synonyms are in use. There are many hybrids of this species present in the aquarium trade.
- **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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