Blue Acara (*Andinoacara pulcher*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, August 2012
Revised, May 2018
Web Version, 6/29/2018

Photo: Eckol. Licensed under CC BY-SA 3.0. Available: http://eol.org/data_objects/27049018. (May 2018).

1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018a):

"Central and South America: Trinidad and Venezuela."

Musilová et al. (2015) reports specimens of *A. pulcher* from Venezuela and Colombia.

Status in the United States

From Nico and Loftus (2018):

"Formerly established in Florida but now considered extirpated (Courtenay et al. 1974; Courtenay and Hensley 1979); disappearance possibly the result of low winter temperatures (Courtenay and Stauffer 1990)."

"This species was formerly considered common, reportedly reproducing in canals and ditches around fish farms in the Tampa Bay, Florida, area, in Hillsborough and Manatee counties, during the 1960s; it was not collected in that area during 1970-1972 surveys or since; therefore, the species is considered extirpated (Courtenay et al. 1974; Courtenay and Hensley 1979; Courtenay and Stauffer 1990; Courtenay and Williams 1992)."

From Seriously Fish (2018):

"A wonderful beginner's cichlid, the Blue Acara has been a mainstay of the aquarium hobby for many years."

From Bluegrass Aquatics (2018):

"Blue Acara Cichlid REGULAR
$4.35 […]
DESCRIPTION
Blue Acara Cichlid REGULAR *Aequidens pulcher*"

Means of Introductions in the United States

From Nico and Loftus (2018):

"Probable release or escape from local ornamental-fish farms."

Remarks

Andinoacara pulcher was formerly recognized as *Aequidens pulcher* (Eschmeyer et al. 2018). Both names were used in searching for information on introductions and impacts of this species.

From Nico and Loftus (2018):

"The past presence of this species in Florida is poorly documented and possibly based on a misidentification. There are no known voucher specimens."

From Musilová et al. (2015):

"Whether *A. pulcher* is one or more species remains to be studied with additional (genomic) markers as well as with larger sampling effort covering more populations."

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Froese and Pauly (2018b):

"Biota > Animalia (Kingdom) > Chordata (Phylum) > Vertebrata (Subphylum) > Gnathostomata (Superclass) > Pisces (Superclass) > Actinopterygii (Class) > Perciformes (Order) > Labroidei (Suborder) > Cichlidae (Family) > Cichlinae (Subfamily) > *Andinoacara* (Genus) > *Andinoacara pulcher* (Species)"

"Status accepted"

Size, Weight, and Age Range

From Froese and Pauly (2018a):

"Max length : 16.0 cm TL male/unsexed; [Kullander 2003]."

Environment

From Froese and Pauly (2018a):

"Benthopelagic; freshwater; pH range: 6.5 - 8.0; dH range: ? – 25. […] 18°C - 23°C [Riehl and Baensch 1991; temperature presumed to be recommended aquarium temperature]"

Climate/Range

From Froese and Pauly (2018a):

"Tropical; […] 11°N - 5°N, 73°W - 60°W."

Distribution Outside the United States

Native

From Froese and Pauly (2018a):

"Central and South America: Trinidad and Venezuela."

Musilová et al. (2015) reports specimens of *A. pulcher* from Venezuela and Colombia.

Introduced

From Welcomme (1988):

"The blue acara is a small, popular, tropical species that is widely transported around the world. It has only been reported from one inland body of water of one country in which it has since been eradicated. In the future, populations are likely to become established in other areas."

According to Froese and Pauly (2018a), *A. pulcher* has been introduced to Australia, Indonesia, and the Philippines. In Indonesia, the species is established; in Australia, the species is probably established; in the Philippines, the establishment of the species is unknown.

From Corfield et al. (2008):

"Known to be present in several streams around Brisbane [Queensland, Australia] and in the Hazelwood Power Station ponds, Victoria [Australia]."

Means of Introduction Outside the United States

From Corfield et al. (2008):

"Risk of human spread: Likely to be related, at least in part, to how widely the species is kept by aquarists. In Australia, the number of fish sold is relatively small and it is of medium importance to the industry […]"

Short Description

From Froese and Pauly (2018a):

"Anal spines: 3. *Aequidens* is very similar to *Geophagus* but is differentiated by the number of spines on the anal fin and the lacks [*sic*] of a lobule on the first branchial arch found in *Geophagus*; live specimens olive green, with eight obscure transverse bands on the body; numerous bright bluish-green lines on the cheek; males are more colorful and grow bigger than females; males blue in color during the reproductive season [Galvis et al. 1997]."

Biology

From Froese and Pauly (2018a):

"Inhabits turbid standing waters as well as clear free flowing streams [Kenny 1995]. Feeds on worms, crustaceans and insects [Mills and Vevers 1989]. Reproduces in captivity [Galvis et al. 1997]. Both parents guard the eggs and larvae [Mills and Vevers 1989]. Has been used to control mosquito larvae [Stawikowski and Werner 1998]."

Human Uses

From Froese and Pauly (2018a):

"Fisheries: commercial; aquarium: highly commercial"

From Seriously Fish (2018):

"A wonderful beginner's cichlid, the Blue Acara has been a mainstay of the aquarium hobby for many years."

From Bluegrass Aquatics (2018):

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Blue Acara Cichlid REGULAR *Aequidens pulcher*"

Diseases

From Froese and Pauly (2018a):

"White spot Disease, Parasitic infestations (protozoa, worms, etc.)
Costia Disease, Parasitic infestations (protozoa, worms, etc.)
Turbidity of the Skin (Freshwater fish), Parasitic infestations (protozoa, worms, etc.)
Bacterial Infections (general), Bacterial diseases"

No OIE reportable diseases are recorded for *A. pulcher*.

Threat to Humans

From Froese and Pauly (2018a):

"Harmless"

3 Impacts of Introductions

From Corfield et al. (2008):

"Unknown as none reported to date."

From Nico and Loftus (2018):

"Unknown."

4 Global Distribution

Figure 1. Reported global established locations of *Andinoacara pulcher*. Map from GBIF Secretariat (2017). There is no georeferenced occurrence available for established population(s) in Indonesia. The occurrence reported in northern Australia was not included in the climate matching analysis because the species is not known to be established there.

5 Distribution Within the United States

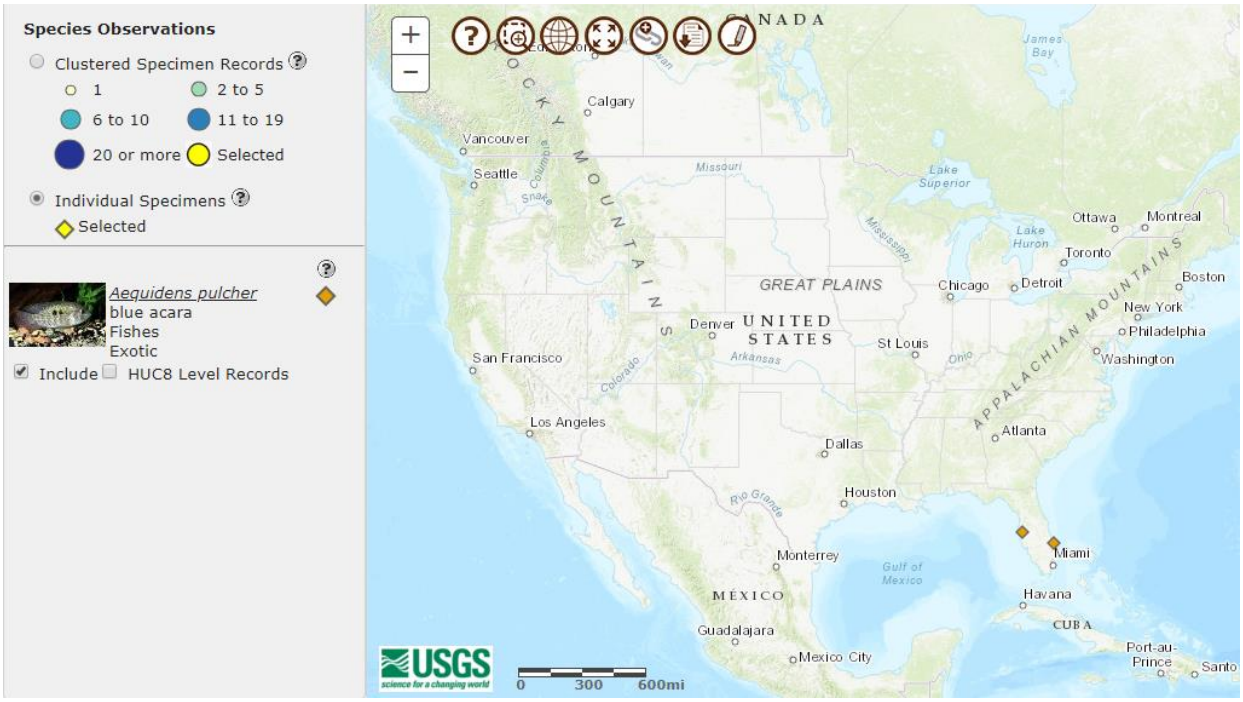

Figure 2. Locations where *Andinoacara pulcher* has been reported in the United States (Nico and Loftus 2018). Neither of the locations reported represent currently established populations.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2018; 16 climate variables; Euclidean Distance) was medium for the contiguous United States, reflected in a Climate 6 proportion of 0.018. The range for Climate 6 proportions indicating a medium climate match is between 0.005 and 0.103. The highest climate match score was 8 out of 10 which was located along the Gulf Coast of Florida. There were also high matches along the Atlantic coast of peninsular Florida and in south Texas from the southern Gulf Coast inland toward central Texas. There was a medium match along the Atlantic and Gulf coasts from coastal Maryland to the northern Gulf Coast of Texas, surrounding the high match areas of inland Texas and extending into the other Southern Plains states, in southeastern Arizona, and near Seattle, Washington. The remainder of the contiguous United States had low match. Florida had the highest match with a large portion of the United States recording 0 out of 10.

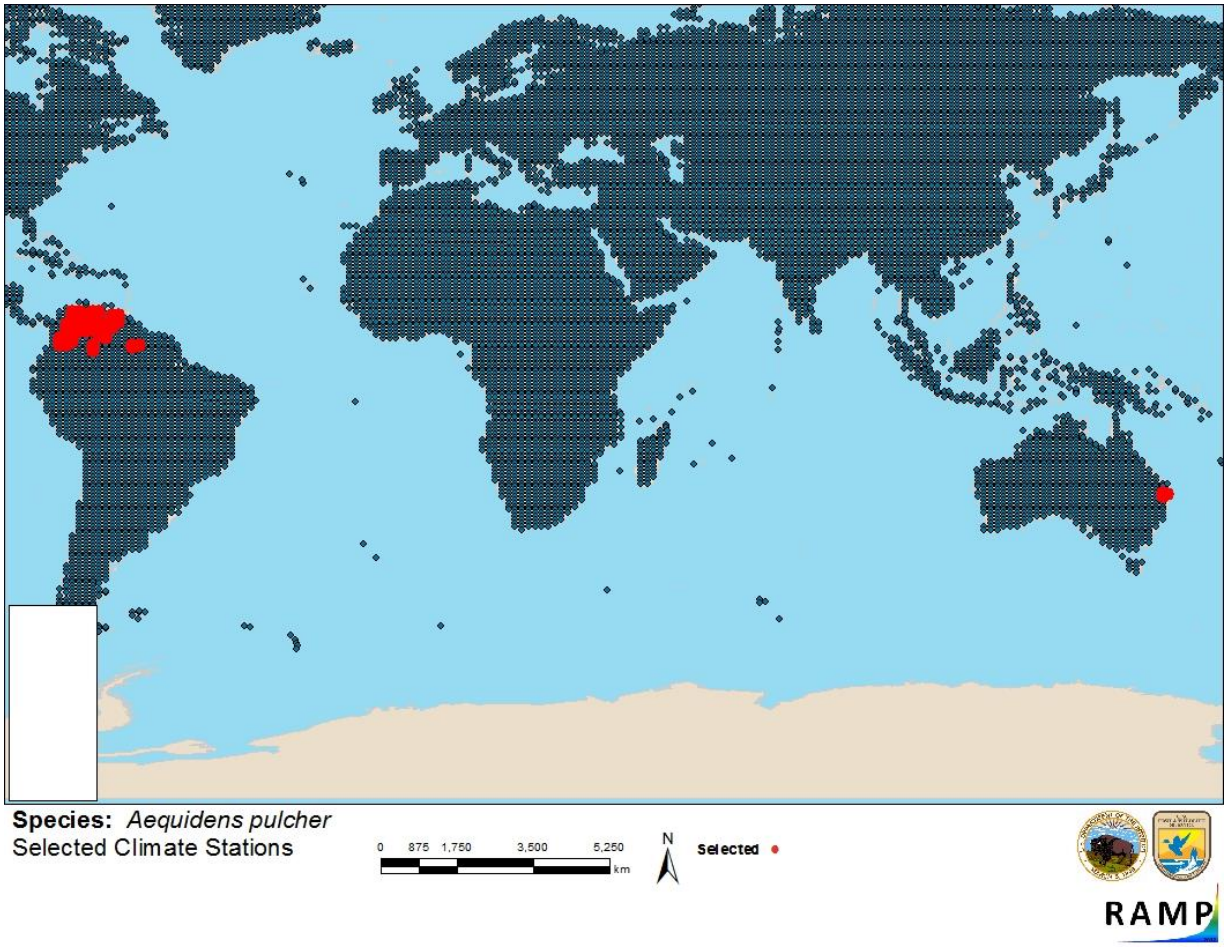

Figure 3. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Venezuela, Colombia, Trinidad and Tobago, and Australia) and non-source locations (gray) for *A. pulcher* climate matching. Source locations from GBIF Secretariat (2017).

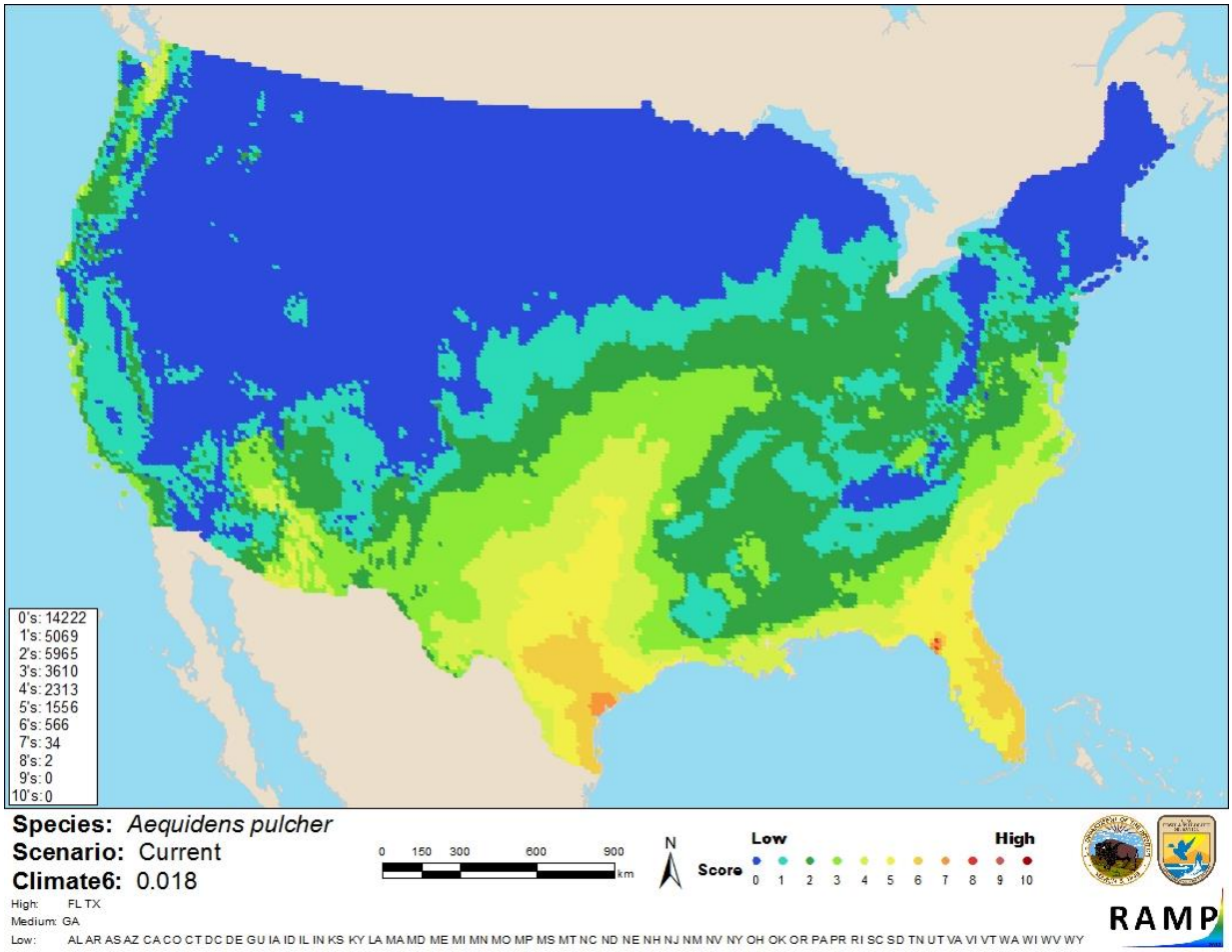

Figure 4. Map of RAMP (Sanders et al. 2018) climate matches for *A. pulcher* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0= Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

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

Information is known about the biology and ecology of *A. pulcher*. It has been introduced across the world because it is popular in the aquarium trade. Although *A. pulcher* is introduced and established outside of its native range, little information is known about the impacts of these introductions. Due to lack of information, the certainty of assessment is low. More information is needed to increase the assessment certainty.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Blue Acara (*Andinoacara pulcher*) is a South American cichlid fish that is native to Venezuela, Colombia and Trinidad and Tobago. It was reportedly established in Florida in the 1960s but further surveys have not found this species in Florida waters. The population is believed to be extirpated. In addition, *A. pulcher* is reportedly introduced in Australia, Indonesia, and the Philippines. It is likely established in Australia and Indonesia. Introductions are believed to be related to the aquarium trade. No adverse impacts have been reported from any introduction. Risk of further introductions exists as this is an extremely popular aquarium fish. The climate match for this species with the contiguous United States is medium overall. Areas of high climate match were along the Florida and Texas coasts. Due to the lack of information about potential introductions and a medium climate match with the United States, the overall risk of this species is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): None Documented**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Low**
- **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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