

Butterfly Splitfin (*Ameca splendens*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2013

Revised, January 2018

Web Version, 8/27/2018



Photo: *Ameca splendens*. Source: Getty Images. Available: <https://rmpbs.pbslearningmedia.org/resource/128605480-endangered-species/butterfly-goodeid-ameca-splendens/#.Wld1X7enGUk>. (January 2018).

1 Native Range and Status in the United States

Native Range

From Fuller (2018):

“This species is confined to a very small area, the Río Ameca basin, on the Pacific Slope of western Mexico (Miller and Fitzsimons 1971).”

From Goodeid Working Group (2018):

“This species comes from the Pacific Slope and inhabits the Río Ameca and its tributary, the Río Teuchitlán in Jalisco. More habitats in the ichthyological [*sic*] closely connected Sayula valley have been detected quite recently.”

Status in the United States

From Fuller (2018):

“Reported from Nevada. Records are more than 25 years old and the current status is not known to us. One individual was taken in November 1981 (museum specimen) and another in August 1983 from Rodgers Spring, Nevada (Courtenay and Deacon 1983, Deacon and Williams 1984). Others were seen and not collected (Courtenay, personal communication).”

From Goodeid Working Group (2018):

“Miller reported, that on 6 May 1982, this species was collected in Roger's Spring, Clark County, Nevada, (pers. comm. to Miller by P.J. Unmack) where it is now extirpated. It had been exposed there with several other exotic species (Deacon [and Williams] 1984).”

From FAO (2018):

“Status of the introduced species in the wild: Probably not established.”

From Froese and Pauly (2018):

“Raised commercially in Florida, U.S.A.”

Means of Introductions in the United States

From Fuller (2018):

“Probably an aquarium release.”

Remarks

From Fuller (2018):

“Synonyms and Other Names: butterfly goodeid.”

From Goodeid Working Group (2018):

“Some hybridisation attempts have been undertaken with the Butterfly Splitfin to solve its relationship. All of them, even with the related *Xenotoca variata*, *Xenophorus captivus* and "*Xenotoca*" *eiseni* haven't been successful. To clear the relationship of *Ameca splendens*, R. R. Miller and T. Uyeno [1980] initiated also a study of chromosomes that lead finally to Karyotype analyses of 35 species.”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2018):

“Kingdom Animalia
Phylum Chordata
Subphylum Vertebrata
Superclass Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Acanthopterygii
Order Cyprinodontiformes Berg, 1940
Suborder Cyprinodontoidei
Family Goodeidae Jordan, 1923
Subfamily Goodeinae Jordan, 1923
Genus *Ameca* Miller and Fitzsimmons, 1971
Species *Ameca splendens* Miller and Fitzsimmons, 1971”

“Taxonomic Status: valid”

Size, Weight, and Age Range

From Froese and Pauly (2018):

“Max length : 8.0 cm TL male/unsexed; [Baensch and Riehl 1985]; 12.0 cm TL (female).”

“[...]

From Fuller (2018):

“Size: 10 cm.”

Environment

From Froese and Pauly (2018):

“Freshwater; demersal; pH range: 6.0 - 8.0; dH range: 9 - 19; depth range ? - 2 m [Wischnath 1993].”

“[...] 26°C - 32°C [Baensch and Riehl 1985; assumed to represent recommended aquarium water temperatures]”

From Goodeid Working Group (2018):

“The Butterfly Splitfin former [*sic*] lived in clear warm springs (26°-28°C) and their outflows (Río Teuchitlán), a stream with moderate to slight currents averaging 6m wide and up to 1.2m (but generally less than 1m) deep. Substrates were mud, sand, gravel, rocks and boulders. Plants in this habitat were a broad-leaved species of *Potamogeton*, water hyacinths, *Ceratophyllum* and green algae. In the original description, Miller wrote, that the habitat was heavily used for irrigation, drinking water and washing, with much pollution by man and livestock. He described the water continuously muddied by cattle, horses and pigs wading or being bathed in the stream. Nevertheless, he documented also that the fishes there have been extraordinarily [*sic*] prolific.”

“Nowadays, this fish has disappeared from both ríos and survived only in the waterpark of El Rincón, near Ameca, which is the main-spring of the Río Teuchitlán. It is also called Balneario Teuchitlán (100 x 70m, depth to 1.3m) and the species is abundant there. At least one remnant population exists in a small spring nearby.”

Climate/Range

From Froese and Pauly (2018):

“Tropical; [...] 23°N - 22°N”

Distribution Outside the United States

Native

From Froese and Pauly (2018):

“Distribution: North America: Jalisco, Mexico.”

“IUCN Red List Status [IUCN 2017]: Extinct in the Wild”

From Goodeid Working Group (2018):

“Status after IUCN: Extinct in wild”

“Status following other sources: Endangered; Comment: 2 new populations found”

“Nowadays, this fish has disappeared from [Río Teuchitlán and Río Ameca] and survived only in the waterpark of El Rincón, near Ameca, which is the main-spring of the Río Teuchitlán. It is also called Balneario Teuchitlán (100 x 70m, depth to 1.3m) and the species is abundant there. At least one remnant population exists in a small spring nearby.”

“Quite recently, this species has been found in the Sayula valley and in some habitats in the Teuchitlán/Ameca area. The Fish Fauna of the Sayula valley is closely related to fish from the Teuchitlán area (e.g. a form of *Skiffia* resembling *Skiffia francesae*). It seems that *Ameca splendens* is wider distributed than presumed and is thought to be not more critically endangered. Nevertheless, the habitats in the Sayula valley and elsewhere [*sic*] are in danger, too, so this must be seen critically.”

Introduced

No known introductions outside the United States.

Means of Introduction Outside the United States

No known introductions outside the United States.

Short Description

From Goodeid Working Group (2018):

“R. R. Miller pictures in the original description the colour pattern of both sexes very detailed: ‘The life colours of mature adults readily distinguish the sexes. In the male, the outer third of the caudal fin is brilliant yellow-orange to deep orange followed medially by a curved broad, black bar about equal to diameter of pupil, and with the basal part of the fin milky-white. The distal fourth of the anal fin is also yellow-orange to orange, as are the pectoral and pelvic fins. The dorsal fin is mostly dusky, but has a narrow to moderate yellow or orange margin. The sides show metallic bluish to turquoise reflections from the scales, and the head (except top) and abdomen are golden yellow. The back is olivaceous brown. Females are greenish yellow over the caudal peduncle and entire venter and show pale bluish reflections from the scales over the sides; their fins are pale watery, with no bright colours.’”

“Typical for newborn young of *Ameca* is the pattern of spotting with a large spot at the base of the caudal fin and a conspicuous row of from two to seven (usually four or five) spots below the midside of the caudal peduncle forward to above the pelvic fins.”

“Females can be easily distinguished from the similar looking *Xenotoca variata* and *Chapalichthys pardalis* by the flaming [*sic*] black stripe pattern in the caudal fin.”

“*Ameca splendens* is one of the rare cases in Goodeids, where an ornamental [*sic*] form has been selected and distributed in the hobby. M. Kempkes selected a dark strain, that seems to be inherited autosomatic-recessive [*sic*]. Some tank-raised populations of *Ameca* are paler and a shade lighter [*sic*] than usual, replacing the yellow terminal band in the caudal fin by a whitish one.”

Biology

From Goodeid Working Group (2018):

“Individuals 17mm long taken in the wild on 13 February and 25 March indicate reproduction in midwinter to early spring. In this warm stream and its springs, the reproductive period may be greatly extended.”

“This species is chiefly herbivorous as can be seen from its long coiled gut, the lack of a discrete stomach, its numerous gill rakers and its bifid teeth. It grazes on filamentous algae and diatoms (mostly *Ulotrichales*, *Zygnematales* and *Oedogoniales*). Sparse Mosquito larvae, copepods and oligochaets [*sic*] also occur in the guts and small insects and spiders falling on the water surface are readily taken (Kingston 1979).”

From López-López and Sedeño-Díaz (2009):

“*Reproduction*: Viviparous with multiple reproductive cycle. The life history parameters of two *A. splendens* populations reveal that stress conditions elicit different reproductive periods, longevity, fecundity and offspring size (López-López et al. 2004, Ortiz-Ordoñez et al. 2007). *Threats*: Environmental degradation, reservoir construction, habitat fragmentation, agricultural and urban development, industrial pollution, water extraction and exotic species introduction (López-López and Paulo-Maya 2001; López-López et al. 2003, 2004; Contreras-Balderas 2005; Tejada-Vera et al. 2007).”

Human Uses

From Froese and Pauly (2018):

“Fisheries: of no interest; aquarium: commercial.”

From Fuller (2018):

“This species is raised commercially for the aquarium industry in Florida (Robins et al. 1991).”

From Borstein and Borstein:

“*Ameoca splendens* was once a very popular fish in the aquarium trade. Recently, that has changed. It is still available from hobbyists and is inexpensive. Why it isn't more popular is a mystery as it is a very attractive fish that is not demanding.”

Diseases

None reported. No OIE-reportable diseases have been documented.

Threat to Humans

From Froese and Pauly (2018):

“Harmless”

3 Impacts of Introductions

No confirmed established introductions, and no known studies of impacts.

4 Global Distribution



Figure 1. Global distribution of *Ameca splendens*. A point in Thailand was removed because its location is believed to be incorrect. Map from GBIF Secretariat (2017).

5 Distribution Within the United States

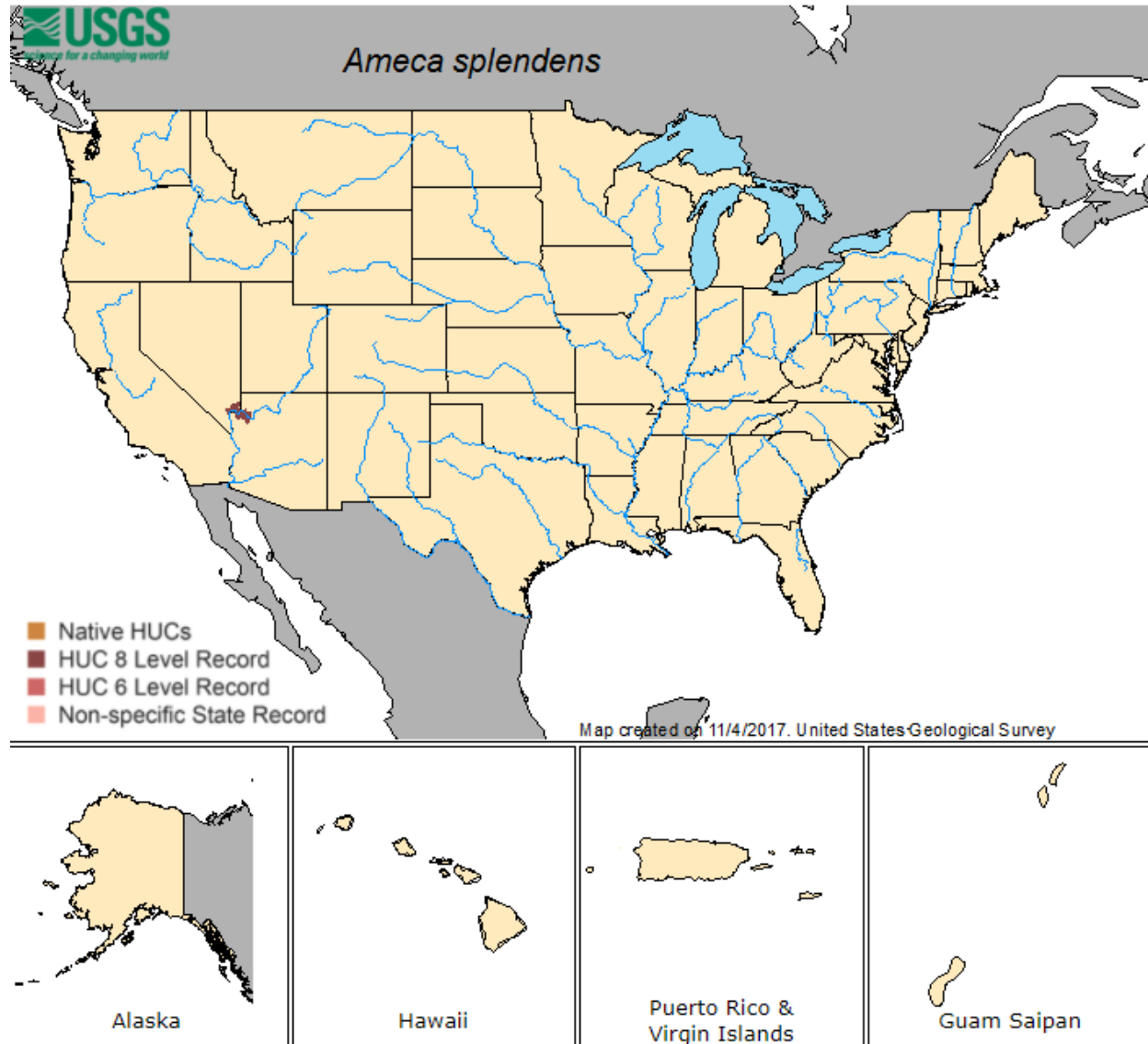


Figure 2. Possible distribution of *Ameca splendens* in the United States. The introduced population in Nevada may be extirpated, and therefore were not included in the climate matching analysis; the climate matching analysis uses only confirmed established populations. Map from Fuller (2018).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) for *A. splendens* with the contiguous United States was low overall, with a Climate 6 score of 0.000. Scores of 0.005 and below are classified as low match. Southern Texas, southern New Mexico,

coastal California, and peninsular Florida all showed medium match. The remainder of the contiguous United States had a low match.



Figure 2. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red; Mexico) and non-source locations (gray) for *A. splendens* climate matching. Source locations from GBIF Secretariat (2017). A point in Thailand was removed because it is believed to be incorrectly located.

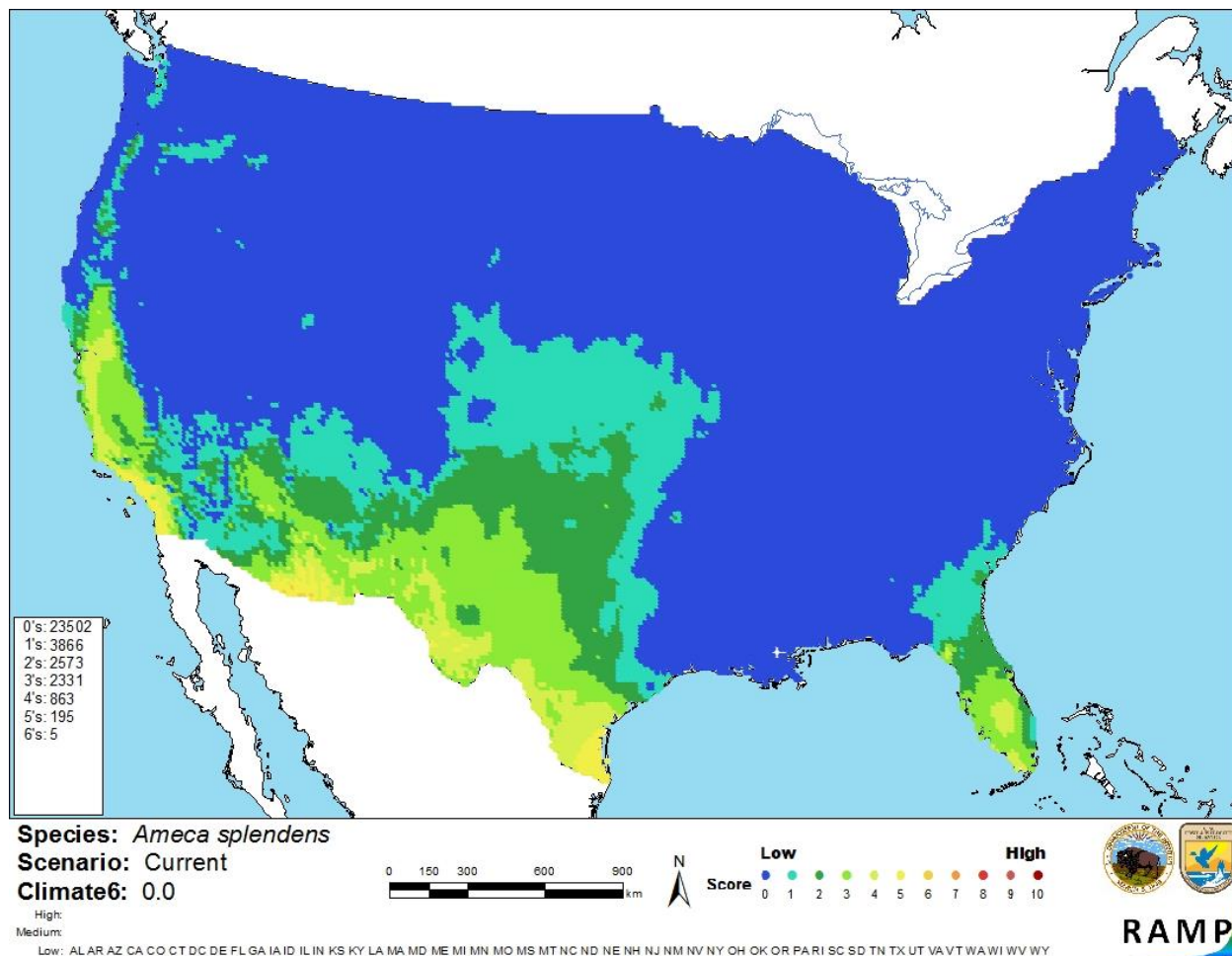


Figure 3. Map of RAMP (Sanders et al. 2014) climate matches for *A. splendens* in the contiguous United States based on source locations reported by GBIF Secretariat (2017). 0=Lowest match, 10=Highest match.

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
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

Peer-reviewed literature on the biology, ecology and distribution associated with *Ameca splendens* is limited, as well as information on its potential invasiveness. Its native range and status in the wild is uncertain at this time. Additional information and research on this species will be needed to strengthen the certainty of this assessment. Based on available data, the certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

This highly localized freshwater fish from central Mexico seems to be sensitive to pollution and environmental conditions and was thought to be extinct or nearly so in its native habitat. It was subsequently found in the same general area in Mexico. In the early 1980s, specimens of *Ameca splendens* were preserved from a small spring in Nevada; however, no additional specimens have been captured from this location, and the population is now thought to be extirpated. This species survives in captivity as part of the aquarium pet trade; therefore, risk for established populations in the United States exists. More information is needed to determine the range, status, and risk of this species to the United States. Overall risk for *A. splendens* is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Low**
- **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

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