

Banded Cichlid (*Heros severus*)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, March 2025

Revised, December 2025

Web Version, 2/4/2026

Organism Type: Fish

Overall Risk Assessment Category: Uncertain



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1 Native Range and Status in the United States

Native Range

From Nico et al. (2025):

“Upper Orinoco and Negro River basins in Brazil, Colombia, and Venezuela (Kullander 2003).”

Status in the United States

From Nico et al. (2025):

“Based on recent collections, this species is apparently established in Florida (Shafland et al. 2008; Nico, personal communication). Extirpated from Nevada (Courtenay and Deacon 1982, 1983; Deacon and Williams 1984; Courtenay and Stauffer 1990). Contrary to statements that the species is possibly established (e.g., Courtenay and Hensley 1979; Page and Burr 1991), no additional *Heros severus* have been seen or taken at Rogers Spring [Nevada] since eradication efforts in 1963 (Courtenay and Deacon 1983).”

“The statement by Page and Burr (1991) that the species is ‘apparently established in Rogers Spring’ appears erroneous. The rotenone treatment of Rogers Spring in 1963 was undertaken to rid the site of introduced species; until that time, it was not known that *H. severus* was even present (Hubbs and Deacon 1964).”

According to Nico et al. (2025) there was a record of *Heros severus* in Oak Lake in Lincoln, Nebraska but the introduction failed.

There is evidence of live trade of *Heros severus* within the United States (e.g. PredatoryFins.com 2025).

Regulations

No species-specific regulations on possession or trade were found within the United States.

Means of Introductions within the United States

From Nico et al. (2025):

“Probable aquarium release.”

FAO (2025) lists introductions to United States as “ornamental.”

Remarks

This ERSS was previously published in January 2018. Revisions were completed to incorporate new information and conform to updated standards.

From Frederico (2023):

“Despite there being little information available on this species, it is assessed as Least Concern [by the IUCN] due to its wide range and no direct threats.”

There may be many records in South America identified as *Heros severus* that are actually records of more recently described or unknown *Heros* species (Staeck and Schindler 2015 and sources therein), particularly outside the described native range of *H. severus*.

From Staeck and Schindler (2015):

“But in 1983 KULLANDER resurrected *Heros* as a monotypic genus with *Heros severus* as sole species taxon. [...] At present, the alpha taxonomy [species description and identification] of the genus is by far not resolved because there are several nominal species for which no adequate diagnoses are available (KULLANDER 1986, 2003).”

“In the latest taxonomic treatment of the genus KULLANDER (2003) synonymised *Heros appendiculatus* with *H. efasciatus* and recognized four taxa as valid, *Heros severus* Heckel, 1840, *H. spurius* Heckel, 1840, *H. efasciatus* Heckel, 1840 and *H. notatus* (Jardine, 1843). He indicated that the status of other nominal taxa needs further analysis. Apparently more species exist, for since the end of the last century commercial imports and collections by aquarists have yielded *Heros* specimens which clearly depart in their bar patterns or other characteristics from the known taxa (STAWIKOWSKI & WERNER 1988, 1998, STAECK 2009).”

Mention of commercial products in this Ecological Risk Screening Summary does not entail endorsement by the U.S. Federal Government.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2025):

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 *Heros*
Species *Heros severus* Heckel, 1840

According to Fricke et al. (2025), *Heros severus* Heckel, 1840 is the current valid name for this species.

The following synonym of *Heros severus* from Fricke et al. (2025) was used to search for information for this report: *Cichlasoma severum*.

Size, Weight, and Age Range

From Froese and Pauly (2025a):

“Max length : 20.0 cm SL [standard length] male/unsexed; [Lee et al. 1980]; common length : 13.5 cm TL [total length] male/unsexed; [Hug 1996]”

Environment

From Froese and Pauly (2025a):

“Freshwater; [...] benthopelagic; pH range: 5.0 - 6.5; dH range: 0 - 6. [...] 23°C - 29°C [water temperature] [Stawikowski and Werner 1998].”

Schofield and Kline (2018) reported lower lethal temperatures for *Heros severus* between 9.5°C and 12.8°C.

From Paixão et al. (2019):

“In its natural environment, it is associated with densely vegetated areas [...] (Mérigoux et al., 1998; Alishahi et al., 2014; Veras et al., 2016).”

From Staeck and Schindler (2015):

“[...] *H. severus* seems to be a blackwater adapted species with narrow habitat requirements. All our collecting sites of this species were exclusively extremely acidic blackwater habitats with very low pH and conductivity (pH 4.1-4.2). These observations suggest that this cichlid is exclusively restricted to blackwater habitats.”

Climate

From Froese and Pauly (2025a):

“Tropical [...]”

Distribution Outside the United States

Native

From Nico et al. (2025):

“Upper Orinoco and Negro River basins in Brazil, Colombia, and Venezuela (Kullander 2003).”

Introduced

Froese and Pauly (2025a) list introductions in the Philippines (1970-1979) as unknown in terms of establishment status.

From Ng and Tan (2010):

“Recorded from: BD [Bedok Reservoir, Singapore]”

“It is likely that the single individual of this species obtained from the Bedok Reservoir represents the isolated discard of an aquarium fish.”

Means of Introduction Outside the United States

From Ng and Tan (2010):

“It is likely that the single individual of this species obtained from the Bedok Reservoir represents the isolated discard of an aquarium fish.”

FAO (2025) lists reason of introduction to the Philippines as ornamental.

Short Description

From Staeck and Schindler (2015):

“Body of adult specimens uniformly pale yellow, head greenish, chest dark red. Small maroon to reddish spots scattered over gill cover, lower region of head and anterior sides of body. Iris brown or dark reddish. On lower preoperculum a dark stripe between its posterior border and mouth.”

“With eight dark brown to blackish vertical bars between eye and caudal fin: No separate caudal spot; bar 1 and bar 2 fused, positioned on posterior end of caudal peduncle; bar 3 from soft anal-fin base to soft dorsal fin, darker than the others; bar 4 shortened, commonly reaching only to the lower or at the most to the upper lateral line; anterior and posterior part of bar 5 from base of spinous anal fin to base of spinous dorsal fin; bar 6 between middle of belly and dorsal fin; bar 7 between pectoral axilla and dorsal fin slightly slanting, continued ventrally between pectoral axilla and belly slightly posterior to pelvic fin origin; bar 8 indistinct, between dorsal fin origin and operculum, slightly slanting, continued on chest as stripe from pelvic fin to suboperculum. Super- and suborbital stripe pronounced only in subadult specimens.”

“Underwater observations in the natural habitats revealed that in juvenile specimens usually all the bars are distinctly visible, even in neutral colouration [...]”

“Dorsal fin light grey to smoky, posterior part of soft portion with maroon spots in crossseries. Anal fin smoky with reddish tinge, last membranes of soft part light green with two or three series of maroon dots. Caudal fin hyaline or smoky. Pelvic fins dark with reddish tinge and blackish anterior margin. Pectoral fins hyaline and colourless.”

Biology

From NatureServe (2025):

“In its native habitat its diet consists mainly of fruits, seeds, green algae, and detritus (Lee et al. 1980).”

From Nico et al. (2025):

“[...] omnivorous, primarily consuming small benthic invertebrates and plant material (Lowe-McConnell 1969; Méricoux et al. 1998).”

From Froese and Pauly (2025a):

“Up to 200 eggs are deposited on stones or roots and defended by both parents: larvae are taken into the mouth. Parental care can last up to 6 weeks [Stawikowski and Werner 1998].”

From Federico (2023):

“*Heros severus* exhibits parental care, being a mouth incubator. It does not have a large number of offspring; consequently the population is naturally not very abundant (ICMBio 2018).”

Human Uses

From Froese and Pauly (2025a):

“Fisheries: commercial; aquarium: commercial”

From Paixão et al. (2019):

“Among the species that contribute to the diversity of Amazonian ornamental fauna, severum (*Heros severus*) has great potential for aquaria life because of its calm behaviour, fast adaptation to new environments, and relatively easy reproduction (Alishahi et al., 2014; Veras et al., 2016). This fish also has a great commercial appeal due to its vibrant olive green to yellow colour with shades of orange and red.”

Diseases

No information was found associating *Heros severus* with any diseases listed by the World Organisation for Animal Health (2025).

Poelen et al. (2014) list the following parasites for *Heros severus*: *Clinostomum heluans*, *Gussevia alioides*, *Gussevia arilla*, *Gussevia dispar*, *Gussevia longihaptor*, *Gussevia tucunarensis*, *Gussevia undulata*, *Oligogonotylus manteri*, *Procamallanus peraccuratus*, *Pronamphistoma*, *Proteocephalus microcephalus*, *Proteocephalus microscopicus*, *Sciadicleithrum ergensi*, *Sciadocephalus megalodiscus*, *Sciadicleithrum umbilicum*, and *Sciadicleithrum uncinatum*.

In addition to the above parasites, Froese and Pauly (2025b) list the following parasites for *Heros severus*: *Gussevia disparoides* and *Pronamphistoma cichlacomae*.

Froese and Pauly (2025a) list *Heros severus* as susceptible to Hole-in-the-Head disease and White Spot Disease.

Threat to Humans

From Froese and Pauly (2025a):

“Harmless”

3 Impacts of Introductions

From Nico et al. (2025):

“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.”

“Concern has been expressed that if *H. severus* survived in Nevada, it, like other introduced species, would compete with local or native fish fauna and sport fish, and that if the cichlid became established in Lake Mead, it potentially would compete with native sunfish for spawning sites (Hubbs and Deacon 1964; Courtenay and Hensley 1979).”

4 History of Invasiveness

The History of Invasiveness for *Heros severus* is classified as Data Deficient. There is evidence of introductions of *H. severus*, with some introductions resulting in established populations outside of its native range. However, there was no record found of impacts, or lack of impacts, from those introductions.

5 Global Distribution



Figure 1. Reported global distribution of *Heros severus*. Map from GBIF Secretariat (2023). Observations are reported from the United States, Brazil, Colombia, Venezuela, Guyana, Bolivia, Peru, Ecuador, and French Guiana. There is no evidence to suggest that points in Nebraska and Nevada, United States, represent established populations. These records were not considered in the climate match analysis. Records in South America outside the described range of the species (Colombia, Venezuela, Brazil; see section 1) were not used in the climate matching analysis due to the unresolved taxonomy and known history of misidentification (see Remarks).

6 Distribution Within the United States



Figure 2. Reported distribution of *Heros severus* in the United States. Map from USGS (2025). Observations are reported from Nebraska, Nevada, and Florida. The orange diamonds are nonnative observations that do not represent established populations; yellow diamonds represent established nonnative populations. The point locations in Nebraska and Nevada are representative of failed introductions and were not considered in the climate match analysis.

7 Climate Matching

Summary of Climate Matching Analysis

On average, the climate match for *Heros severus* to the contiguous United States was high across portions of southern Florida. There were areas of medium match along the Gulf and southern Atlantic coasts from Texas to North Carolina. The remainder of the contiguous United States had primarily low climate matches. The overall Climate 6 score (Sanders et al. 2023; 16 climate variables; Euclidean distance) for the contiguous United States was 0.023, indicating that Yes, there is establishment concern for this species. The Climate 6 score is calculated as: (count of target points with scores ≥ 6)/(count of all target points). Establishment concern is warranted for Climate 6 scores greater than or equal to 0.002 based on an analysis of the establishment success of 356 nonnative aquatic species introduced to the United States (USFWS 2024).

Projected climate matches in the contiguous United States under future climate scenarios are available for *Heros severus* (see Appendix). These projected climate matches are provided as additional context for the reader; future climate scenarios are not factored into the Overall Risk Assessment Category.

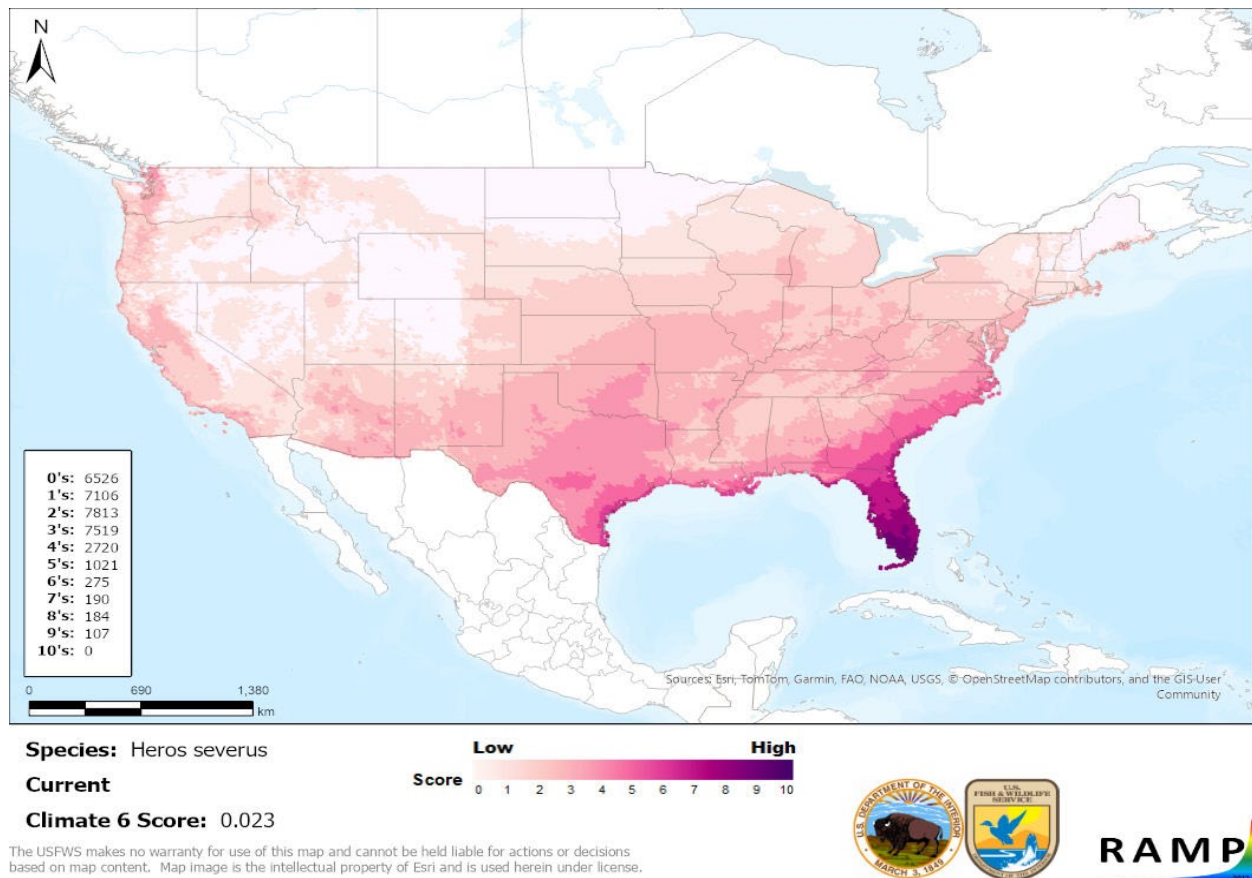


Figure 4. Map of RAMP (Sanders et al. 2023) climate matches for *Heros severus* in the contiguous United States based on source locations reported by GBIF Secretariat (2023). Counts of climate match scores are tabulated on the left. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

8 Certainty of Assessment

The Certainty of Assessment for *Heros severus* is classified as Low. Information regarding the species' biology and ecology was available. Distribution information was available. However, the taxonomy of the genus is unresolved which created some uncertainty in interpreting which georeferenced observations could be considered correctly identified and used in the climate matching analysis. There was limited information found regarding the establishment status of this species in certain locations and impacts of introductions.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Heros severus, banded cichlid, is a fish that is native to the Orinoco River and Rio Negro basins of South America. This species inhabits blackwater rivers and its diet consists of detritus, seeds, fruits, and small macroinvertebrates. *Heros severus* is present in the aquarium trade in the United States. The History of Invasiveness for *Heros severus* is classified as Data Deficient due to a lack of information on impacts, or lack of impacts, from introductions. The climate matching analysis for the contiguous United States indicates establishment concern for this species. There was a

high climate match for Florida and a medium match for the rest of the coastal Southeast from Texas to North Carolina. The Certainty of Assessment for this ERSS is classified as Low due to limited information on impacts of introduction and unresolved taxonomy within the genus which adds uncertainty to the understanding of the species' distribution. The Overall Risk Assessment Category for *Heros severus* in the contiguous United States is Uncertain.

Assessment Elements

- **History of Invasiveness (see Section 4): Data Deficient**
- **Establishment Concern (see Section 7): Yes**
- **Certainty of Assessment (see Section 8): Low**
- **Remarks, Important additional information: None**
- **Overall Risk Assessment Category: Uncertain**

10 Literature Cited

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in section 11.

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Appendix

Summary of Future Climate Matching Analysis

Future climate projections represent two Shared Socioeconomic Pathways (SSP) developed by the Intergovernmental Panel on Climate Change (IPCC 2021): SSP5, in which emissions triple by the end of the century; and SSP3, in which emissions double by the end of the century. Future climate matches were based on source locations reported by GBIF Secretariat (2023).

Under the future climate scenarios (figure A1), on average, high climate match for *Heros severus* was projected to occur in the Southern Florida region of the contiguous United States. Areas of low climate match were projected to occur in the Appalachian Range, California, Colorado Plateau, Great Basin, Great Lakes, Northeast, Northern Plains, Southern Plains, Southwest, and Western Mountains regions. The Climate 6 scores for the individual future scenario models (figure A2) ranged from a low of 0.015 (model: UKESM1-0-LL, SSP5, 2085) to a high of 0.024 (model: MRI-ESM2-0, SSP3, 2055). All future scenario Climate 6 scores were above the Establishment Concern threshold, indicating that Yes, there is establishment concern for this species under future scenarios. The Climate 6 score for the current climate match (0.023, figure 4) falls within the range of scores for future projections. The time step and climate scenario with the most change relative to current conditions was SSP5, 2085, the most extreme climate change scenario. Under one or more time step and climate scenarios, areas within California, the Colorado Plateau, Great Lakes, Northeast, Northern Pacific Coast, and Northern Plains regions saw a moderate increase in the climate match relative to current conditions. No large increases were observed regardless of time step and climate scenarios. Under one or more time step and climate scenarios, areas within Southern Florida saw a moderate decrease in the climate match relative to current conditions. No large decreases were observed regardless of time step and climate scenarios. Additional, very small areas of large or moderate change may be visible on the maps (figure A3). The magnitude of change from current conditions was more pronounced in time step 2085 than in time step 2055 under both scenarios, SSP3 and SSP5. The areas of moderate and large changes also had a larger geographic extent under SSP5 than SSP3 in the 2085 time step.

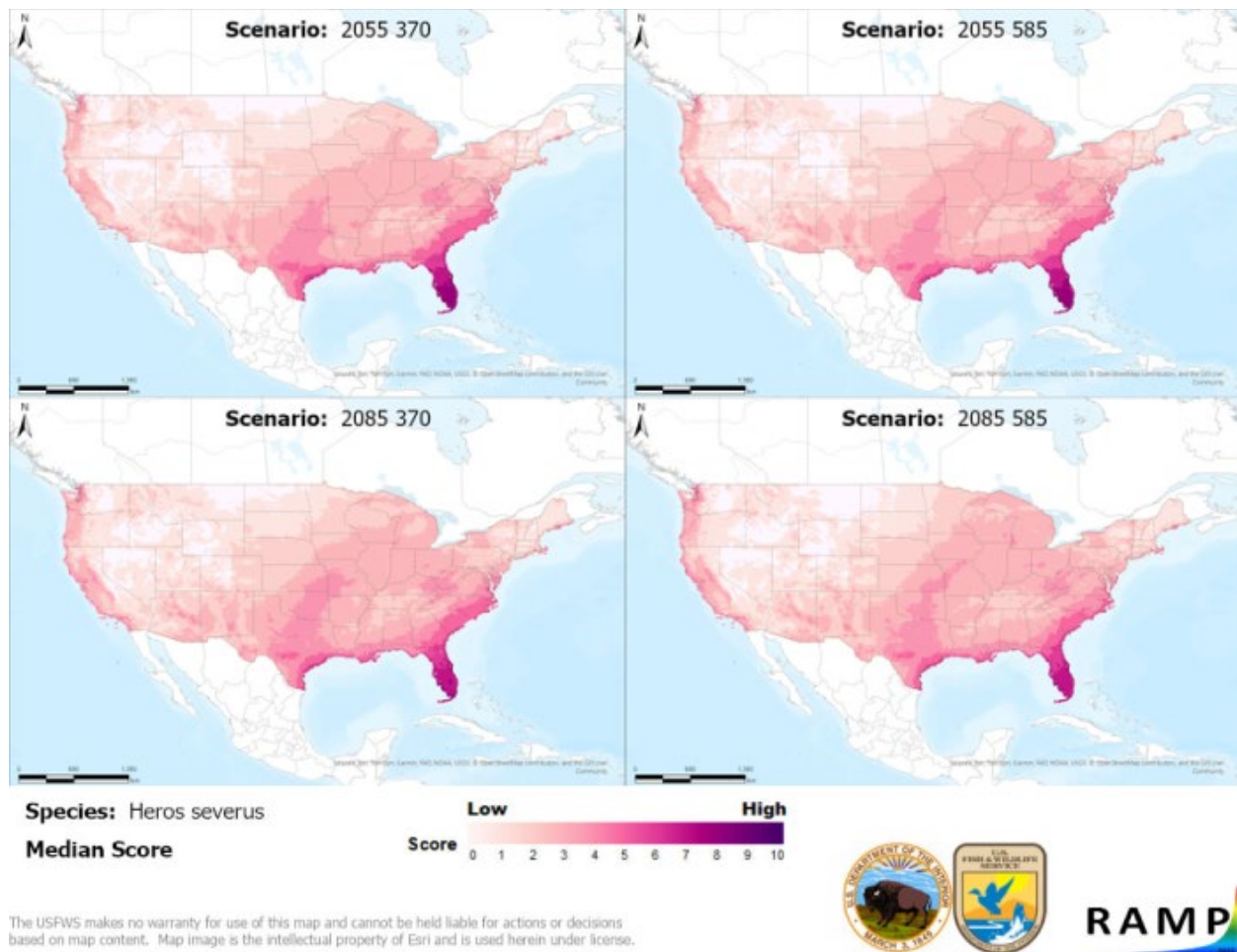


Figure A1. Maps of median RAMP (Sanders et al. 2023) climate matches projected under potential future climate conditions using five global climate models for *Heros severus* in the contiguous United States. Climate matching is based on source locations reported by GBIF Secretariat (2023). Shared Socioeconomic Pathways (SSPs) used (from left to right): SSP3, SSP5 (IPCC 2021). Time steps: 2055 (top row) and 2085 (bottom row). Climate source data from CHELSA (Karger et al. 2017, 2018); global climate models used: GFDL-ESM4, UKESM1-0-LL, MPI-ESM1-2-HR, IPSL-CM6A-LR, and MRI-ESM2-0. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

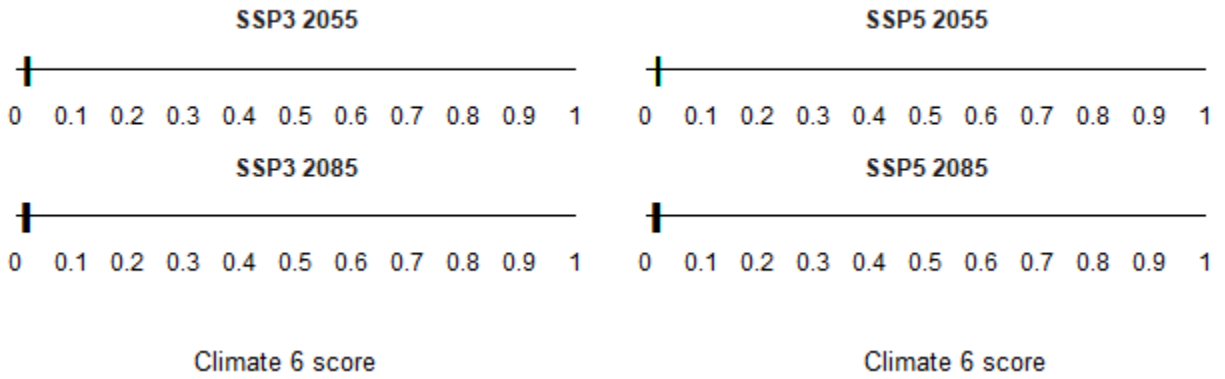


Figure A2. Comparison of projected future Climate 6 scores for *Heros severus* in the contiguous United States for each of five global climate models under four combinations of Shared Socioeconomic Pathway (SSP) and time step. SSPs used (from left to right): SSP3, SSP5 (Karger et al. 2017, 2018; IPCC 2021). Time steps: 2055 (top row) and 2085 (bottom row). Climate source data from CHELSA (Karger et al. 2017, 2018); global climate models used: GFDL-ESM4, UKESM1-0-LL, MPI-ESM1-2-HR, IPSL-CM6A-LR, and MRI-ESM2-0.

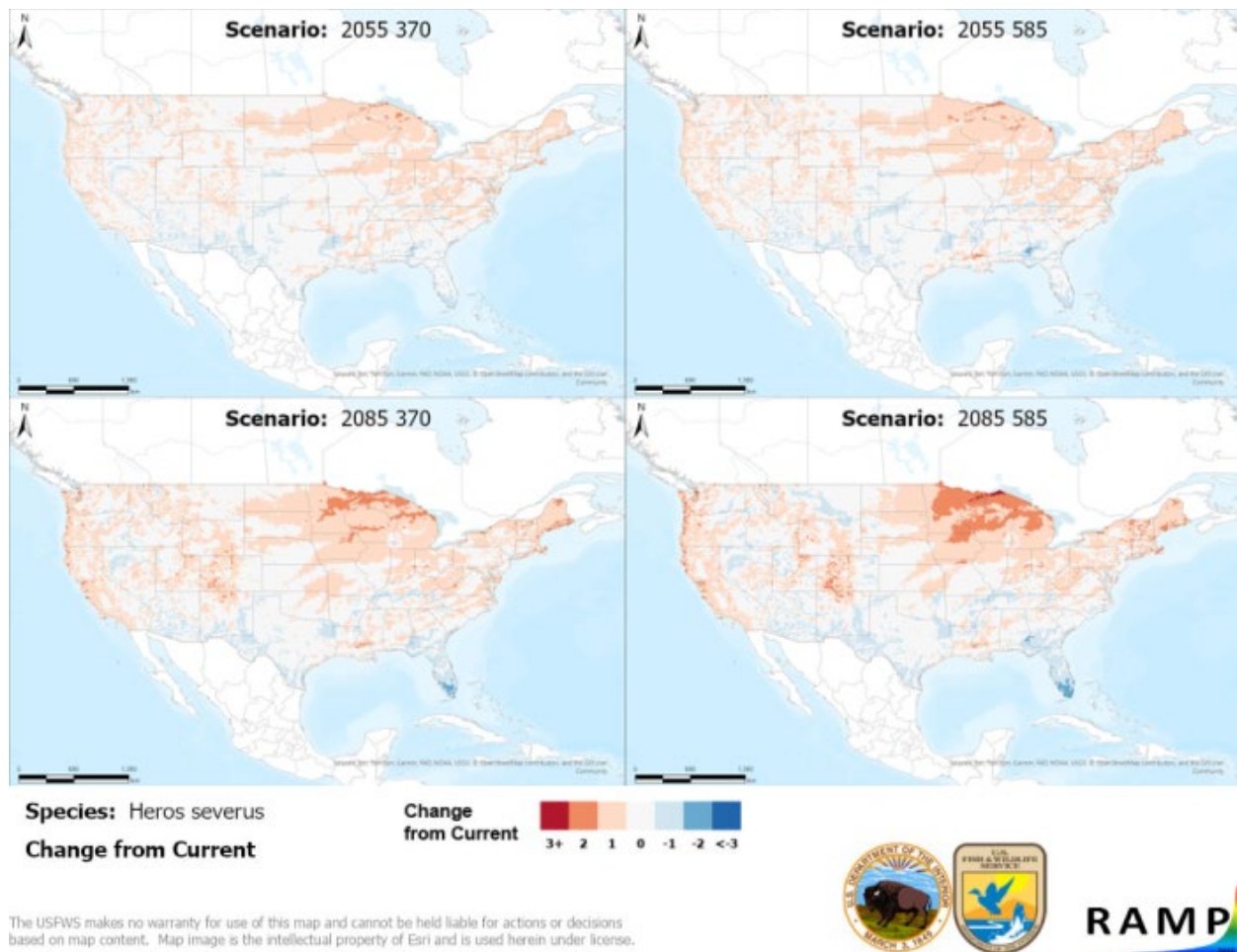


Figure A3. RAMP (Sanders et al. 2023) maps of the contiguous United States showing the difference between the current climate match target point score (figure 4) and the median target point score for future climate scenarios (figure A1) for *Heros severus* based on source locations reported by GBIF Secretariat (2023). Shared Socioeconomic Pathways (SSPs) used (from left to right): SSP3, SSP5 (IPCC 2021). Time steps: 2055 (top row) and 2085 (bottom row). Climate source data from CHELSA (Karger et al. 2017, 2018); global models used: GFDL-ESM4, UKESM1-0-LL, MPI-ESM1-2-HR, IPSL-CM6A-LR, and MRI-ESM2-0. Shades of blue indicate a lower target point score under future scenarios than under current conditions. Shades of red indicate a higher target point score under future scenarios than under current conditions. Darker shades indicate greater change.

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