

Caucasian Bleak (*Alburnus escherichii*)

Ecological Risk Screening Summary

U.S. Fish & Wildlife Service, February 2022

Revised, February 2022

Web Version, 1/3/2023

Organism Type: Fish

Overall Risk Assessment Category: Uncertain



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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2022):

“Asia: Sakarya river drainage and Kizilirmak river, Turkey.”

From Fricke et al. (2022):

“Distribution: Asia Minor: Sakarya and Kızılırmak basins (Black Sea tributaries), Anatolia; Eskişehir Province (Turkey); [...]”

Status in the United States

No records of *Alburnus escherichii* in trade or in the wild in the United States were found.

Means of Introductions in the United States

No records of *Alburnus escherichii* in the wild in the United States were found.

Remarks

Information for this assessment was searched for using the valid name *Alburnus escherichii* and the synonyms: *Alburnus kosswigi* (Battalgil 1941) and *Alburnus nasreddini* (Battalgil 1944).

Another common name used for this species is “Sakarya bleak.” The common name “North Caucasian bleak” refers to a different species, *Alburnus hohenackeri*.

Additional information on *Alburnus escherichii* was found in languages other than English during the preparation of this assessment. The final ERSS includes information from English language sources only.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

According to Fricke et al. (2022), *Alburnus escherichii* (Steindachner 1897) is the current valid name for this species. *A. escherichii* has the following synonyms: *Alburnus kosswigi* (Battalgil 1941) and *Alburnus nasreddini* (Battalgil 1944).

From ITIS (2022):

Kingdom Animalia

Subkingdom Bilateria

Infrakingdom Deuterostomia

Phylum Chordata

Subphylum Vertebrata

Infraphylum Gnathostomata

Superclass Actinopterygii

Class Teleostei

Superorder Ostariophysi

Order Cypriniformes

Superfamily Cyprinidae

Family Alburninae

Genus *Alburnus*

Species *Alburnus escherichii* Steindachner, 1897

Size, Weight, and Age Range

From Froese and Pauly (2022):

“Max length : 18.2 cm TL male/unsexed; [Reis et al. 2019]; max. published weight: 46.80 g [Reis et al. 2019]”

Environment

From Froese and Pauly (2022):

“Freshwater; brackish; benthopelagic. [...]”

From Freyhof (2014):

“Inhabits a wide range of stream and river habitats including lakes and reservoirs. Lacustrine populations migrate to inflowing rivers or streams to spawn.”

“Very widespread and usually abundant in all kinds of habitats in Sakarya drainage [Turkey]. This species seems to be able to cope with most threats in the area. [...]”

Climate

Froese and Pauly (2022):

“[...] Subtropical”

Distribution Outside the United States

Native

From Froese and Pauly (2022):

“Asia: Sakarya river drainage and Kizilirmak river, Turkey.”

From Fricke et al. (2022):

“Distribution: Asia Minor: Sakarya and Kızılırmak basins (Black Sea tributaries), Anatolia; Eskişehir Province (Turkey); [...]”

Introduced

From Freyhof (2014):

“Introduced in Lake Beyşehir basin in Central Anatolia, Manavgat river in Mediterranean basin and most likely elsewhere.”

From Fricke et al. (2022):

“[...] introduced in Manavgat River and Beyşehir Lake basin (Turkey).”

From Küçük (2012):

“[...] from the outlet of Çarşamba channel (Beyşehir), a population of introduced *Alburnus escherichii* [sic] were reported (Freyhof and Özuluğ, 2009).”

No information was found to confirm whether *A. escherichii* is established in the Manavgat River.

Means of Introduction Outside the United States

Alburnus escherichii has been reported as introduced outside of its native range but no information on means of introduction was found.

Short Description

From Cetinkaya et al. (2015):

“Sakarya bleak is a small bodied Cyprinid with silver color (Bogutskaya 1997; Geldiay and Balık 2007) [...]”

Biology

From Freyhof (2014):

“Lacustrine populations migrate to inflowing rivers or streams to spawn.”

Human Uses

From Freyhof (2014):

“Very locally taken as a food fish.”

Diseases

No records of OIE-reportable diseases (OIE 2022) were found for *Alburnus escherichii*.

No information on diseases was found.

Threat to Humans

From Froese and Pauly (2022):

“Harmless”

3 Impacts of Introductions

There are no reported impacts of introductions available in the literature for *Alburnus escherichii*. However, this species is reported to be introduced to multiple locations within Turkey.

4 History of Invasiveness

Alburnus escherichii was reported as being introduced within Turkey in the Lake Beyşehir basin in Central Anatolia, and in the Manavgat River in the Mediterranean basin. There is evidence of an established population in the Lake Beyşehir basin but the establishment status in the Manavgat River is unknown. *A. escherichii* is harvested for food consumption but no information on the trade of the

species could be found. The History of Invasiveness is classified as Data Deficient due to the lack of knowledge on impacts and the status of establishment where introduced.

5 Global Distribution



Figure 1. Known global distribution of *Alburnus escherichii*. Observations are reported from the Sakarya and Kizilirmak river basins and the Lake Beyşehir basin in western Turkey. Map from GBIF Secretariat (2022). A single occurrence in the vicinity of Istanbul was reported without precise coordinates (GBIF Secretariat 2022) and is not known to represent an established population, so it was excluded from the climate matching analysis.

6 Distribution Within the United States

No records of *Alburnus escherichii* in trade or in the wild in the United States were found.

7 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Alburnus escherichii* in the contiguous United States was generally high in western States, except for areas along the Pacific Coast and Cascade-Sierra Mountains that had low matches. Additionally, there were small, scattered areas of high match in the interior Southeast and an area of medium-high match in the Great Lakes basin. East of the Continental Divide, the climate match was generally medium with the lowest matches occurring along the Gulf Coast and in the north-central United States. The overall Climate 6 score (Sanders et al. 2021; 16 variables; Euclidean distance) was 0.310, High (scores greater than or equal to 0.103, are classified as high). Alabama, Arkansas, Arizona, California, Colorado, Georgia, Idaho, Illinois, Indiana, Kentucky, Massachusetts, Michigan, Mississippi, Montana, New Mexico, Nevada, New York, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Washington, West Virginia, and Wyoming had high individual scores. Kansas, Louisiana, Maine, Maryland, Minnesota, North Carolina, Nebraska, New Hampshire, Oklahoma, Virginia, and Wisconsin had medium individual scores. All other States had low individual scores.

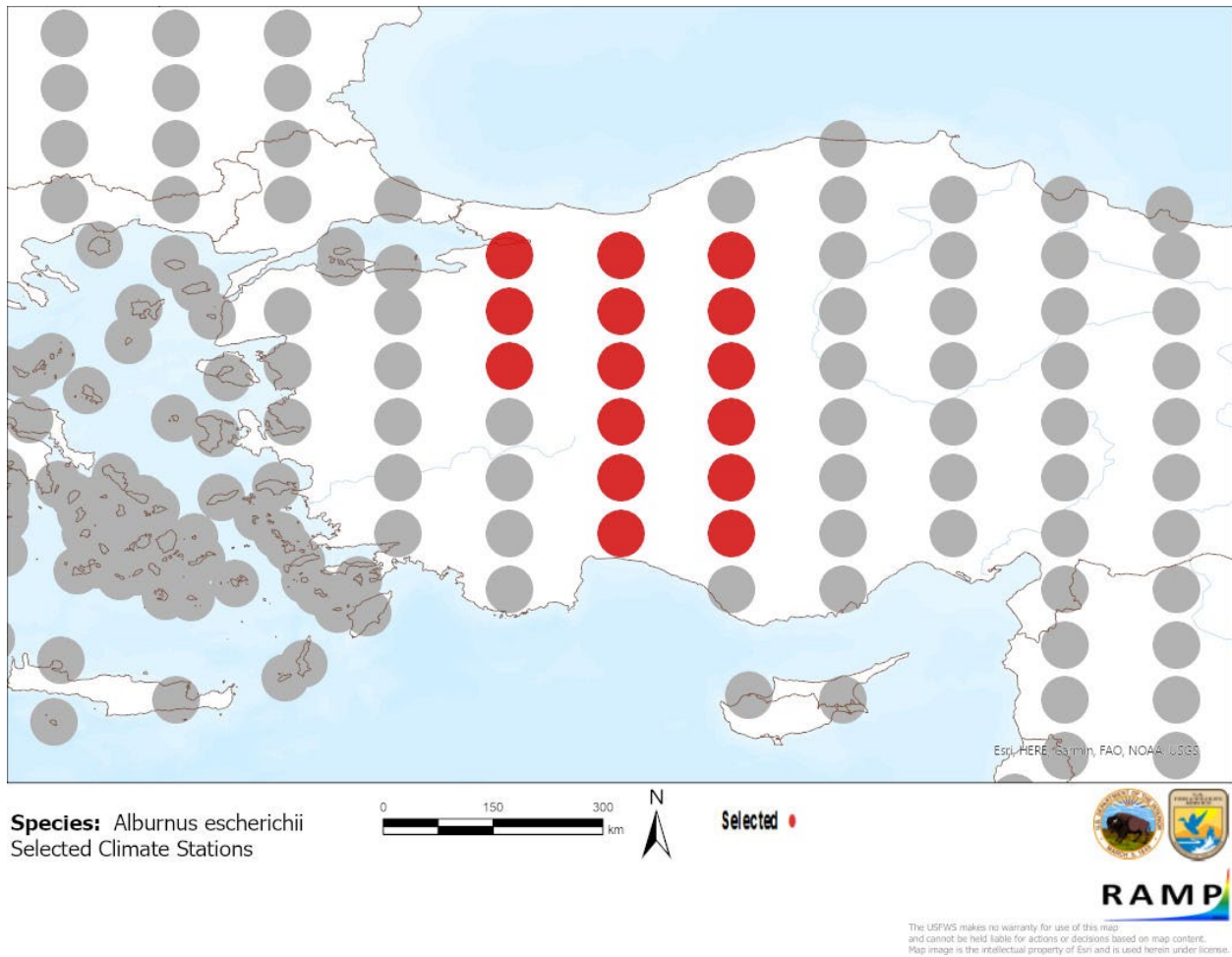


Figure 2. RAMP (Sanders et al. 2021) source map showing weather stations in western Asia selected as source locations (red; Turkey) and non-source locations (gray) for *Alburnus escherichii* climate matching.

Source locations from GBIF Secretariat (2022). Selected source locations are within 100 km of one or more species occurrences, and do not necessarily represent the locations of occurrences themselves.

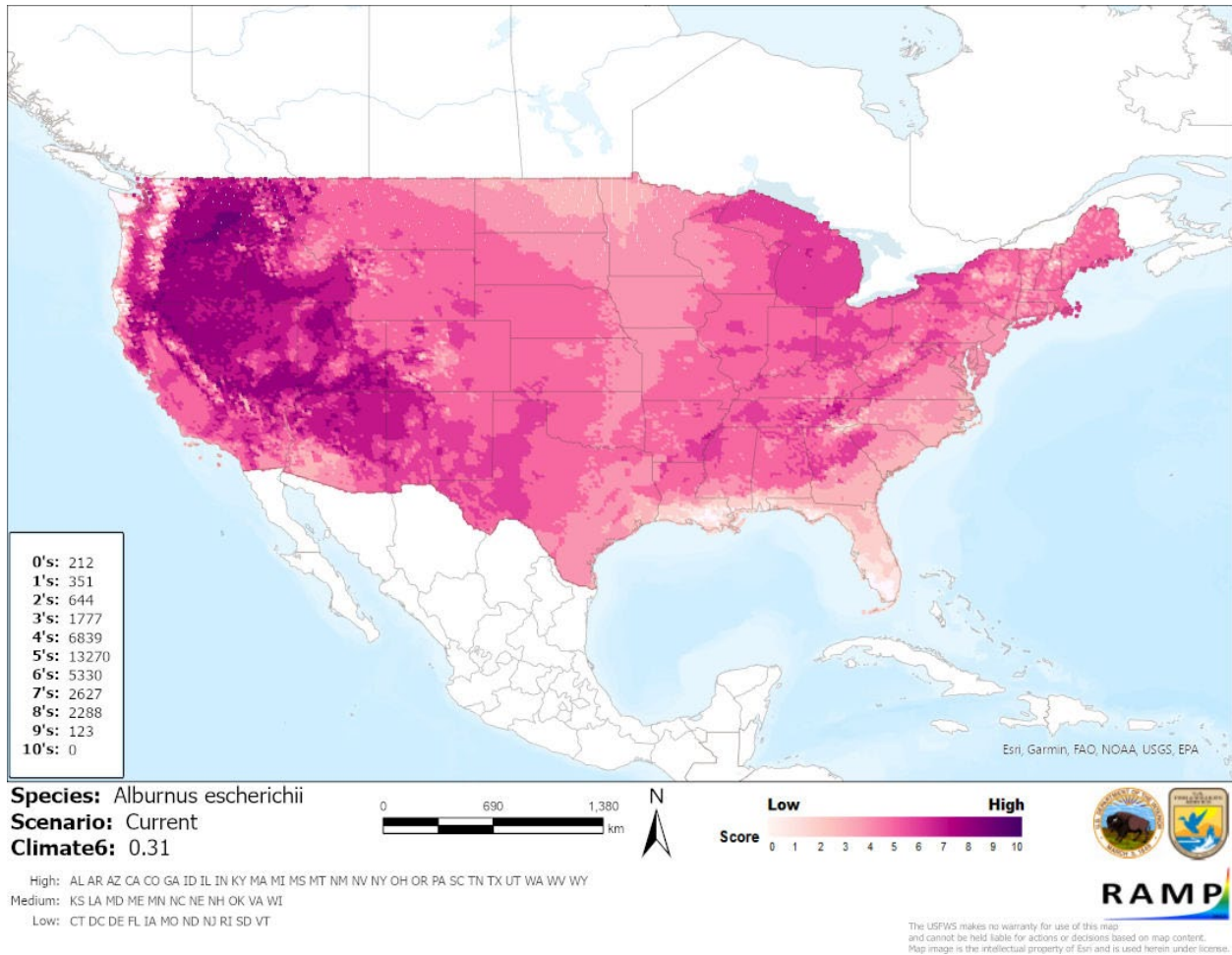


Figure 3. Map of RAMP (Sanders et al. 2021) climate matches for *Alburnus escherichii* in the contiguous United States based on source locations reported by GBIF Secretariat (2022). Counts of climate match scores are tabulated on the left. 0/Pale Pink = Lowest match, 10/Dark Purple = Highest match.

The High, Medium, and Low Climate match Categories are based on the following table:

Climate 6: (Count of target points with climate scores 6-10)/ (Count of all target points)	Overall Climate Match Category
$0.000 \leq X \leq 0.005$	Low

Climate 6: (Count of target points with climate scores 6-10)/ (Count of all target points)	Overall Climate Match Category
$0.005 < X < 0.103$	Medium
≥ 0.103	High

8 Certainty of Assessment

The certainty of assessment is Low. Limited information is available on the biology, ecology, and introductions of *Alburnus escherichii*. Although the species is established in at least one location outside its native range, there is no information on whether there were any impacts from the introduction.

9 Risk Assessment

Summary of Risk to the Contiguous United States

Alburnus escherichii, Caucasian Bleak, is a freshwater fish species native to Turkey in the Sakarya river drainage and Kizilirmak river. *Alburnus escherichii* has been reported as introduced in Lake Beyşehir basin in Central Anatolia, and in the Manavgat river in the Mediterranean basin; only the former location is known to have an established population and there is no information on whether there were impacts from the introduction. The history of invasiveness is classified as Data Deficient. The climate match for the contiguous United States is High. Most of the contiguous United States had a high to medium match with areas of highest match found in the Intermountain West. The certainty of assessment is Low due to a lack of information on impacts of introduction. The overall risk assessment category for *Alburnus escherichii* is Uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 4): Data Deficient**
- **Overall Climate Match Category (Sec. 7): High**
- **Certainty of Assessment (Sec. 8): Low**
- **Remarks, Important additional information:** Additional information on this species may be available in languages other than English.
- **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.

Cetinkaya S, Yegen V, Bilgini F, Uysal R, Bostan H. 2015. Variations of some growth characteristics and length-length relationships of Sakarya Bleak (*Alburnus escherichii* Steindachner, 1897) in different habitats. *Journal of Limnology and Freshwater Fisheries Research* 1:29–35.

Freyhof J. 2014. *Alburnus escherichii*. The IUCN Red List of Threatened Species 2014. Available: <https://www.iucnredlist.org/species/19018485/19222778> (February 2022).

Fricke R, Eschmeyer WN, van der Laan R, editors. 2022. Eschmeyer’s catalog of fishes: genera, species, references. California Academy of Science. Available: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp> (February 2022).

Froese R, Pauly D, editors. 2022. *Alburnus escherichii* (Steindachner, 1897). Fishbase. Available: <https://www.fishbase.de/summary/Alburnus-escherichii.html> (February 2022).

GBIF Secretariat. 2022. GBIF backbone taxonomy: *Alburnus escherichii* (Steindachner, 1897). Copenhagen: Global Biodiversity Information Facility. Available: https://www.gbif.org/occurrence/search?taxon_key=2363000 (February 2022)

[ITIS] Integrated Taxonomic Information System. 2022. *Alburnus escherichii* (Steindachner, 1897). Reston, Virginia: Integrated Taxonomic Information System. Available:

https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=639494#null (February 2022).

Küçük F. 2012. Extinct endemic fishes of Turkey: *Alburnus akili* (Göyce) and *Pseudophoxinus handlirschi* (Kavinne) (Pisces: Cyprinidae). Turkish Journal of Fisheries and Aquatic Sciences 12:345–347.

[OIE] World Organisation for Animal Health. 2022. Animal diseases. Available: <https://www.oie.int/en/what-we-do/animal-health-and-welfare/animal-diseases/> (February 2022).

Sanders S, Castiglione C, Hoff M. 2021. Risk Assessment Mapping Program: RAMP. Version 4.0. U.S. Fish and Wildlife Service.

11 Literature Cited in Quoted Material

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.

Bogutskaya NG. 1997. Contribution to the knowledge of leuciscine fishes of Asia Minor. An annotated checklist of leuciscine fishes (Leuciscinae, Cyprinidae) of Turkey with descriptions of a new species and two new subspecies. Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut 94:161–186.

Freyhof J, Özuluğ M. 2009. *Pseudophoxinus fahrettini*, a new species of spring minnow from Central Anatolia (Teleostei: Cyprinidae). Ichthyological Exploration of Freshwaters 20:325–332.

Geldiay R, Balık S. 2007. Türkiye tatlısu balıkları. VI. Baskı. İzmir: Ege Üniversitesi Basımevi. (In Turkish.)

Reis I, Cerim H, Ates C. 2019. Length-weight relationship of 13 fish species from the Lower Sakarya River, Turkey. Aquatic Science Engineering 34(3):86–89.