

# Intro

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Cofounder of the Goodeid Working Group

# Today's Topic:

Redlisting Goodeids for the IUCN,  
process and shortcomings

# The talk will be...

- ... about the **Differences** between CITES and the IUCN Redlist
- ... about **assessing Goodeids** for the Redlist
- ... about the **Redlist Criteria** and their **Shortcomings** in assessing fish

# About the Differences





Convention on **International Trade** in Endangered Species of Wild Fauna and Flora.

The international trade of **CITES-listed** species is regulated in the Appendices I, II and III.

# Appendix I lists species...

that are the most endangered listed species. They are threatened with extinction and CITES prohibits international trade in specimens of these species except when the purpose of the import is not commercial (e.g. scientific research).

# Appendix II lists species...

that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled. It also includes so-called "look-alike species", i.e. species whose specimens in trade look like those of species listed for conservation reasons.

# Appendix III lists species...

included at the request of a Party that already regulates trade in the species and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation.



# Included in the Appendices:

	I	II	III
Fish	16	107	24
Teleosts	6	50	1
Goodeids	0	0	0

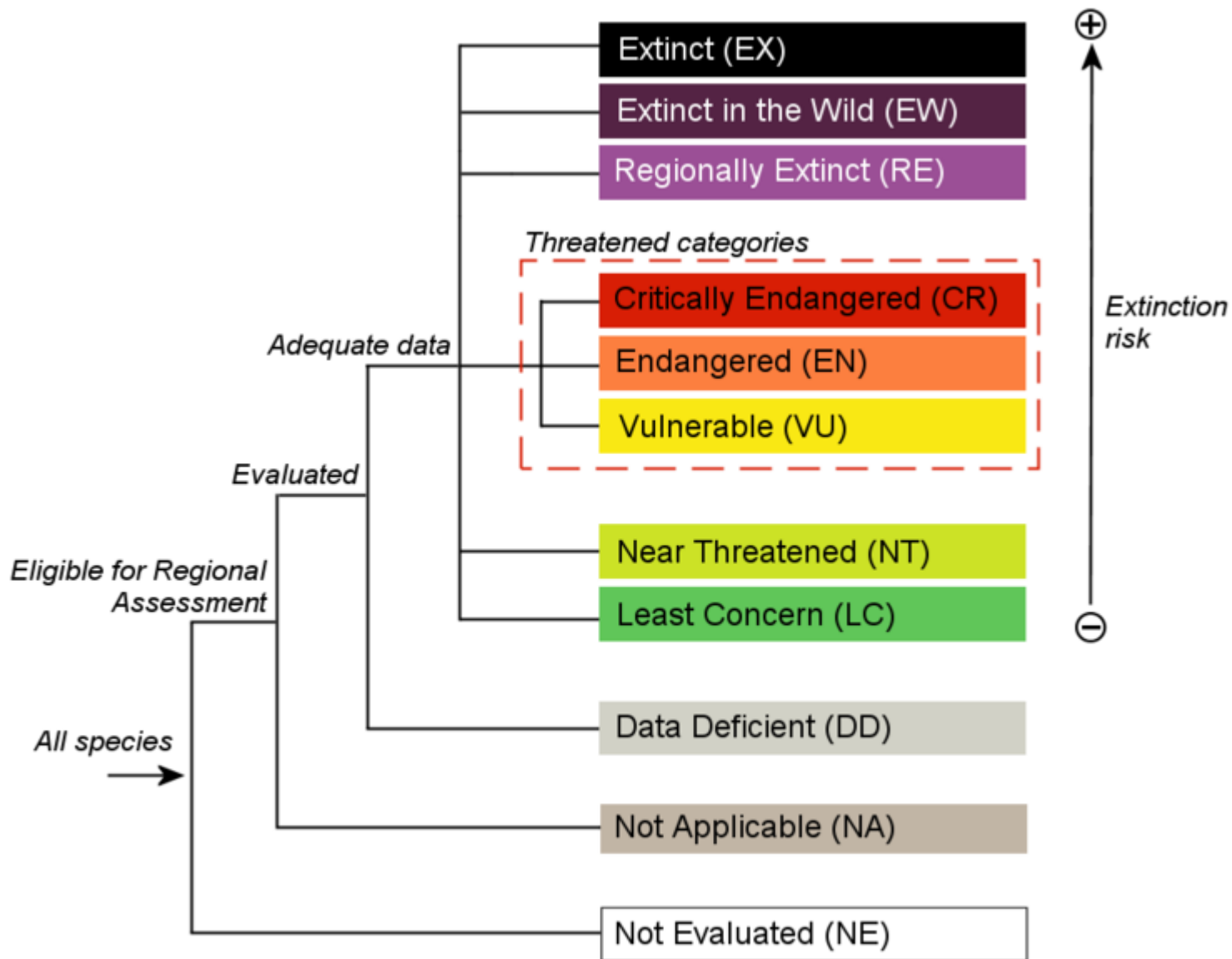
# Conclusion:

1. CITES is a trade regulative
2. Species listed don't need to be threatened
3. Goodeids are not on the list because they are not traded.
4. It has no effect on Goodeid conservation.
5. CITES consults the IUCN Redlist for the status



## International Union for the Conservation of Nature, Red List of Threatened Species

The IUCN Red List is a critical **indicator** of the health of the **world's biodiversity**. Far more than a list of species and their status, it is a powerful **tool to inform** and **catalyze action for biodiversity conservation and policy change**, critical to protecting the natural resources we need to survive. It **provides information** about range, population size, habitat and ecology, use and/or trade, threats, and conservation actions that will **help inform necessary conservation decisions**.



# Red listed Goodeids

1. *Characodon garmani* (EX)
2. *Ameca splendens* (EW)
3. *Skiffia francesae* (EW)
4. *Allotoca diazi* (CR)
5. *Allotoca maculata* (CR)
6. *Girardinichthys viviparus* (CR)
7. *Hubbsina* (G.) *turneri* (CR)
8. *Zoogoneticus tequila* (CR)
9. *Ataeniobius toweri* (EN)
10. *Characodon lateralis* (EN)
11. *Xenoophorus captivus* (EN)
12. *Characodon audax* (VU)
13. *Girardinichthys multiradiatus* (VU)



## IUCN Species Information Service

The Species Information Service (SIS) is **IUCN's web application** for **conducting** and **managing species assessments** for the IUCN Red List of Threatened Species™.



Michael Koeck

Haus des Meeres-Aqua Terra Zoo  
GmbH, Austria



*Xenophorus captivus*

#### Working Sets

Filter...

None

##### My Working Sets

Fishes\_FW\_Mexico\_Goodeidae\_JörgFreyhof via Caroline P

Mexican Fishes\_Goodeidae via Laura Maiz-Tome

#### Taxon List

Filter...

Skiffia lermæ  
Skiffia multipunctata  
Xenophorus captivus  
Xenotaenia resolanae  
Xenotoca doadrioi  
Xenotoca eiseni

#### Assessments

##### Draft Assessments (1)

2018-10-21 --- Global

Up to Parent (Xenophorus)

View Hierarchy

Assess Taxon

Taxomatic Tools

#### General Information

Assessments

Working Sets

SSC Groups

##### Overview

Full Name: *Xenophorus captivus* ([23116](#))

Level: Species

Parent: *Xenophorus*

Taxonomic Authority: (Hubbs, 1924)

Status: Accepted (plants, etc.)/Valid (animals) - Recognized

Hybrid: No

##### Taxonomic Notes

Edit

The types Hubbs used in 1924 to describe *Goodea captiva* from Jesús María were collected in 1907 by S.E. Meek but regarded as *Goodea atripinnis*. In 1937, Hubbs and Turner transferred the species into the new erected genus *Xenophorus* and described a second species in this genus, *Xenophorus erro* from the Río Santa María. In 1939 they described from endorheic streams near Venado and Moctezuma a third one, *Xenophorus exsul*. J. Fitzsimons (1979) finally synonymized the last two species with *Xenophorus captivus* as he couldn't find any differences. According to three separate drainages, three subpopulations can be distinguished: The Río Santa María subpopulation (type subpopulation), the Río Matehuala subpopulation from Venado and Moctezuma and the Illescas subpopulation, that inhabited the endorheic springs near Illescas and which is regarded Extinct in the Wild.

##### Synonyms (4)

*Goodea captiva* Hubbs, 1924 -- [Basionym/Protonym]  
*Goodea atripinnis* (partially) Meek, 1907  
*Xenophorus erro* Hubbs & Turner, 1937  
*Xenophorus exsul* Hubbs & Turner, 1939

##### Common Names (5)

\* Relict Splitfin (English)  
Mexclapique (erronously: Mexcalpique) viejo (Spanish; Castilian)  
Ritterkärpfling (German)  
Solo Goodeido (Spanish; Castilian)  
Özvegy fogasponty (Hungarian)

##### Taxonomic Sources (1)

Working Sets

Filter...

None

My Working Sets

Fishes\_FW\_Mexico\_Goodeidae\_JörgFreyhof via Caroline P

Mexican Fishes\_Goodeidae via Laura Maiz-Tome

Taxon List

Filter...

Skiffia iermae

Skiffia multipunctata

Xenophorus captivus

Xenotaenia resolanae

Xenotoca doadrioi

Xenotoca eiseni

Assessments

Draft Assessments (1)

2018-10-21 --- Global

Up to Parent (Xenophorus)

View Hierarchy

Assess Taxon

Taxomatic Tools

General Information

Assessments

Working Sets

SSC Groups

Assessment Date	Category	Criteria	Language	Status	Region(s)	Report	Edit/View	Trash
Red List Assessments								
2018-04-18	EN	B1ab(i,ii,iii,iv)+2...	English	Draft	Global			
1996-08-01	EN	A1ce+2ce, B1+...	English	Published	Global			
1994-01-01	E	N/A	English	Published	Global			
1990-01-01	E	N/A	English	Published	Global			
1988-01-01	R	N/A	English	Published	Global			
1986-01-01	R	N/A	English	Published	Global			
Use/Trade								
1996-08-01	N/A	N/A	English	Draft	N/A			



# Xenoporphus captivus (EN) (Relict Splitfin)

Status: Draft  
Region(s): Global  
Language: English  
Last: 14 Oct 2018, 7:12 PM  
Modified: UTC+2 by Michael Koeck

← Previo Net →

All Fields View

Distribution  
Occurrence  
Population  
Habitats and Ecology  
Use and Trade  
Threats  
Conservation

Read Only Mode New Save Attachments References Summary Tools Manage Credits Auto Save Options

Geographic Range AOO EOO Locations Very restricted Elevation/Depth Map Status Biogeographic Realms Hotspot and UN MDG

Geographic Range Information

**B** *I* U  $X_2$   $X^2$   $\frac{1}{x}$   $\frac{1}{x^2}$   $\frac{1}{x^3}$   $\frac{1}{x^4}$   $\frac{1}{x^5}$   $\frac{1}{x^6}$   $\frac{1}{x^7}$   $\frac{1}{x^8}$   $\frac{1}{x^9}$   $\frac{1}{x^{10}}$

Background

The Relict Splitfin is a freshwater fish species endemic to the Mexican federal state of San Luis Potosí. It is historically known from the headwaters of the Rio Santa María (Rio Pánuco drainage) to about 15km below the town of Santa María del Río, including its main source, the Rio Altamira and the Rio Villela (Rio Tierra Quemada) that merges into the Rio Santa María right below Santa María del Río. It furthermore occurs in spring areas of an endorheic river (Rio Matehuala) about 70km N of the city of San Luis Potosi, especially in the springs in Venado and Moctezuma, and it was also known to inhabit the endorheic springs at Illescas that dried up in 1996 (Artigas-Azas, pers.comm.).

In 2008, an estimation resulted in the disappearance of the Relict Splitfin from more than the 65% of its historical range (Dominguez-Dominguez *et al.*, 2008).

The underlined names are the ones officially used by the Instituto Nacional de Estadística y Geografía (<http://antares.inegi.org.mx>); nevertheless, other ones might be more often in use or better known and therefore preferred.

Read Only Mode **New** Save Attachments References Summary Tools Manage Credits Auto-Save Options

Geographic Range **AOO** EOO Locations Very restricted Elevation/Depth Map Status Biogeographic Realms Hotspot and UN MDG

### Area of Occupancy (AOO)

AOO applies to criteria A, B, and D

Estimated area of occupancy (AOO) - in km2

28-412

Justification:

The estimated AOO is given as a range and as the sum of 2 x 2km grid cells. This range has a worst case scenario - the species can be found only

Continuing decline in area of occupancy (AOO)

Yes

Qualification: Observed

Justification:

The endorheic spring area of Illescas dried up and the subpopulation there has been extirpated, leading to a decline in AOO.

Extreme fluctuations in area of occupancy (AOO)





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Geographic RangeAOOEOOLocationsVery restrictedElevation/DepthMap StatusBiogeographic RealmsHotspot and UN MDG

Extent of Occurrence (EOO)

EOO applies to criteria A and B

Estimated extent of occurrence (EOO)- in km2

4000-9400

EOO estimate calculated from Minimum Convex Polygon

Justification:

The estimated EOO is given as a range. It may encompass in the worst case only the extant collection sites and in the best case the extant collection sites and

Continuing decline in extent of occurrence (EOO)

Yes

Qualification: Observed

Justification:

The endorheic spring area of Illescas dried up and the subpopulation there has been extirpated, leading to a decline in EOO.

Extreme fluctuations in extent of occurrence (EOO)

Custom











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Geographic Range AOO EOO **Locations** Very restricted Elevation/Depth Map Status Biogeographic Realms Hotspot and UN MDG

### Locations Information

Number of Locations

2

Justification:

As droughts, water over exploitation and competition through exotic fish species have been identified as major threats to all habitats, only the two separate


Continuing decline in number of locations

Yes

Qualification: Observed

Justification:

The endorheic spring area



**Xenophorus captivus**  
**(EN)**  
**(Relict Splitfin)**

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Countries   LME   FAO

Countries of Occurrence



When using Quick-Add, please ensure you also select the appropriate country-level for each subcountry unit.

Selections for Countries of Occurrence

View/Edit

Quick Add

	Presence	Origin	Seasonality
Mexico	Extant	Native	Resident
Mexico -> San Luis Potosí	Extant	Native	Resident



**Xenoporphus captivus**  
(EN)  
(Relict Splitfin)

Status: Draft  
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Distribution

Occurrence

Population

Habitats and Ecology

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Documentation Population **Past Reduction** Future Reduction Ongoing Reduction Quantitative Analysis DEM Reduction

Population Reduction - Past

A population size reduction in the past 10 years or 3 generations, whichever is the longer

Percent Change in past

Past Population Reduction Basis

- ☐ a) direct observation
- ☐ b) an index of abundance appropriate for the taxon
- ☐ c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
- ☐ d) actual or potential levels of exploitation
- ☐ e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites)

Causes of past reduction reversible?

Alle anzeigen

**Xenoporphorus captivus**  
**(EN)**  
**(Relict Splitfin)**

Status: Draft  
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<https://sis.iucn.org/apps/org.iucn.sis.server/SIS/index.html#>

Read Only Mo New Save Attachments References Summary Tools Manage Credits Auto-Save Options

Documentation Coded Habitats Hab. Decline/ESH Land Cover Life History Movement Patterns Systems Plant Specific

IUCN Habitats Classification Scheme

Selections for General Habitat Information

View/Edit

Quick Add

	Season	Suitability	Major Importance?
5.1. Wetlands (inland) -> Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)	resident	Suitable	Yes
5.7. Wetlands (inland) -> Wetlands (inland) - Permanent Freshwater Marshes/Pools (under 8ha)	resident	Suitable	Yes
5.9. Wetlands (inland) -> Wetlands (inland) - Freshwater Springs and Oases	resident	Suitable	Yes



Michael Koeck

Haus des Meeres-Aqua Terra Zoo  
GmbH, Austria**Xenophorus captivus**  
(EN)  
(Relict Splitfin)

Status: Draft  
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Language: English  
Last Modified: 21 Oct 2018, 6:16 PM  
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## New General Habitat Information

Select:

Sea

Suit:

- 5.1. Wetlands (inland) -> Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)
- 5.2. Wetlands (inland) -> Wetlands (inland) - Seasonal/Intermittent/Irregular Rivers/Streams/Creeks
- 5.3. Wetlands (inland) -> Wetlands (inland) - Shrub Dominated Wetlands
- 5.4. Wetlands (inland) -> Wetlands (inland) - Bogs, Marshes, Swamps, Fens, Peatlands
- 5.5. Wetlands (inland) -> Wetlands (inland) - Permanent Freshwater Lakes (over 8ha)
- 5.6. Wetlands (inland) -> Wetlands (inland) - Seasonal/Intermittent Freshwater Lakes (over 8ha)
- 5.7. Wetlands (inland) -> Wetlands (inland) - Permanent Freshwater Marshes/Pools (under 8ha)
- 5.8. Wetlands (inland) -> Wetlands (inland) - Seasonal/Intermittent Freshwater Marshes/Pools (under 8ha)
- 5.9. Wetlands (inland) -> Wetlands (inland) - Freshwater Springs and Oases
- 5.10. Wetlands (inland) -> Wetlands (inland) - Tundra Wetlands (incl. pools and temporary waters from snowmelt)
- 5.11. Wetlands (inland) -> Wetlands (inland) - Alpine Wetlands (includes temporary waters from snowmelt)
- 5.12. Wetlands (inland) -> Wetlands (inland) - Geothermal Wetlands
- 5.13. Wetlands (inland) -> Wetlands (inland) - Permanent Inland Deltas
- 5.14. Wetlands (inland) -> Wetlands (inland) - Permanent Saline, Brackish or Alkaline Lakes
- 5.15. Wetlands (inland) -> Wetlands (inland) - Seasonal/Intermittent Saline, Brackish or Alkaline Lakes and Flats
- 5.16. Wetlands (inland) -> Wetlands (inland) - Permanent Saline, Brackish or Alkaline Marshes/Pools

Save Selection

Cancel

Draft Assessments (1)

Options

Read Only ModeNewSaveAttachmentsReferencesSummaryToolsManage CreditsAuto-Save Options

DocumentationCoded HabitatsHab. Decline/ESHLand CoverLife HistoryMovement PatternsSystemsPlant Specific

Continuing Decline in Habitat

Continuing decline in area, extent and/or quality of habitat?

Yes

Qualification: Observed

Justification:

The endorheic spring area of Illescas dried up and the subpopulation there has been extirpated, leading to a decline in habitats.

Maximum Extent of Suitable Habitat (ESH)

**Xenoporphorus captivus**  
(EN)  
(Relict Splitfin)

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General Use and Trade Information Non-consumptive Livelihoods

There is a separate Use/Trade Assessment available for this species. Visit the list of assessments on the taxon home page to access it.

Species not utilized ☐ No use/trade information for this species ☐

General notes regarding trade and use of this species

**B** *I* U  $x_z$   $x^2$

Background ▼

The Relict Splitfin is not used for human consumption and is no target species for the ornamental fish trade

# **Xenoporus captivus** (EN) (Relict Splitfin)

Status: Draft  
Region(s): Global  
Language: English  
Last Modified: 14 Oct 2018, 7:12 PM  
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Habitats and Ecology

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Ecosystem Services

Red List Assessment

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Documentation Coded Threats

## Selections for Threats

View/Edit Quick Add

	Timing	Scope	Severity	Impact Score	No. of Stresses
2.1.2. Agriculture & aquaculture -> Annual & perennial non-timber crops -> Small-holder farming	Ongoing	Majority (50-90%)	Slow, Significant Declines	Medium Impact: 6	0
3.3. Energy production & mining -> Renewable energy	Ongoing	Majority (50-90%)	Rapid Declines	Medium Impact: 7	0
7.2.1. Natural system modifications -> Dams & water management/use -> Abstraction of surface water (domestic use)	Ongoing	Majority (50-90%)	Slow, Significant Declines	Medium Impact: 6	0
7.2.3. Natural system modifications -> Dams & water management/use -> Abstraction of surface water (agricultural use)	Ongoing	Majority (50-90%)	Slow, Significant Declines	Medium Impact: 6	0
7.2.9. Natural system modifications -> Dams & water management/use -> Small dams	Ongoing	Whole (>90%)	Slow, Significant Declines	Medium Impact: 7	0
8.1.2. Invasive and other problematic species, genes & diseases -> Invasive non-native/alien species/diseases -> Xiphophorus hellerii	Ongoing	Majority (50-90%)	Slow, Significant Declines	Medium Impact: 6	0

**Xenophorus captivus**  
(EN)  
(Relict Splitfin)

Status: Draft  
Region(s): Global  
Language: English  
Last: 21 Oct 2018, 6:34 PM  
Modified: UTC+2 by Michael Koeck

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  - Habitats and Ecology
  - Use and Trade
  - Threats
  - Conservation**
  - Ecosystem Services
  - Red List Assessment

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Documentation   In-Place   Conservation Needed   Research Needed

Conservation Actions Documentation

Conservation Actions Information

**B**   *I*   U    $X_z$     $X^2$     $\frac{1}{2}$     $\frac{3}{4}$    [G](#)   [G](#)   ~~T~~

Background ▾

The only conservation effort is a monitoring and ex-situ breeding project run by the Laboratorio de Biología Acuática in Michoacan University, Morelia, Mexico.

**Xenophorus captivus**  
**(EN)**  
**(Relict Splitfin)**

Status: Draft  
Region(s): Global  
Language: English  
Last: 14 Oct 2018, 7:12 PM  
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Use and Trade  
Threats  
Conservation  
Ecosystem Services  
Red List Assessment

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Documentation   In-Place   **Conservation Needed**   Research Needed

Important Conservation Actions Needed

Selections for Important Conservation Actions Needed [View/Edit](#) [Quick Add](#)

1.1. Land/water protection -> Site/area protection	
1.2. Land/water protection -> Resource & habitat protection	
2.1. Land/water management -> Site/area management	
2.2. Land/water management -> Invasive/problematic species control	
3.4.1. Species management -> Ex-situ conservation -> Captive breeding/artificial propagation	
4.3. Education & awareness -> Awareness & communications	



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**Red List Assessment**

Text Accounts

The Relict Splitfin is a freshwater fish endemic to the Mexican federal state of San Luis Potosí. It was historically known from the headwaters of the Río Santa María (downstreams to just below Santa María del Río), Río Pánuco drainage, including its main source in the mountains, the Río Altamira and the Río Vilela (Río Tierra Quemada) just below Santa María del Río. It also occurred in two affluents of the endorheic Río Matehuala at Venado and Moctezuma and the also endorheic springs at Illescas. It was extirpated from the springs at Illescas due to water over exploitation and reduced to remnant stocks within the other populated drainages due to water pollution, water over exploitation, competition through non-native fish and droughts.

The worst case scenario for AOO (28km<sup>2</sup>) and EOO (4,000km<sup>2</sup>) meet the thresholds for Endangered (AOO:500km<sup>2</sup>; EOO: 5,000km<sup>2</sup>). Taking in consideration the given threats, only two locations and severe declines in EOO, AOO, subpopulations, locations, habitats and in quality of the habitats, the Relict Splitfin is assessed Endangered.



## Ameca splendens (EN) (Butterfly Splitfin)

Status: Draft  
Region(s): Global  
Language: English  
Last: 14 Oct 2018, 6:34 PM  
Modified: UTC+2 by Michael Koeck

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Red List Status Assessment Information Publication Information Assessment Rationale **Reasons for Change** Red List Index

- ☒ New Information
- ☐ Knowledge of criteria
- ☒ Incorrect data used previously
- ☐ Taxonomy
- ☐ Criteria Revision
- ☐ Other

Reason for change justification

**B** **I** U  $x_z$   $x^2$   $\frac{1}{2}$   $\frac{1}{3}$   $\frac{1}{4}$   $\frac{1}{5}$   $\frac{1}{6}$   $\frac{1}{7}$   $\frac{1}{8}$   $\frac{1}{9}$   $\frac{1}{10}$

Background

*Ameca splendens* was assessed in 1996 as Extinct in the Wild, though some stocks in several springs evidently persisted. Two more habitats have been discovered in the meantime, though one is meanwhile possibly gone. Therefore, and taking in consideration the estimated size of AOO (36km<sup>2</sup>) and EOO (160km<sup>2</sup>) in the best case as well as the number of locations (2), the existing threats, a decline in AOO, EOO, number of locations and habitats and a decrease in quality of habitats, the changed status from Extinct in the Wild to Endangered is justified.

**Xenophorus captivus**  
**(EN)**  
*(Relict Splitfin)*

Status: Draft  
Region(s): Global  
Language: English  
Last: 14 Oct 2018, 7:12 PM  
Modified: UTC+2 by Michael Koeck

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  - Threats
  - Conservation
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  - Text Accounts

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**Red List Status**

Assessment Information

Publication Information

Assessment Rationale

Reasons for Change

Red List Index

Category: **Endangered (EN)**

Criteria String: B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)

Revert to Calculated

Criteria version: **3.1**

Current standard. Use for all new assessments!

Criterion A:

- ☐ A1a   ☐ A1b   ☐ A1c   ☐ A1d   ☐ A1e  
☐ A2a   ☐ A2b   ☐ A2c   ☐ A2d   ☐ A2e  
          ☐ A3b   ☐ A3c   ☐ A3d   ☐ A3e  
☐ A4a   ☐ A4b   ☐ A4c   ☐ A4d   ☐ A4e

Criterion B:

- ☒ B1a  
☒ B1b(i)   ☒ B1b(ii)   ☒ B1b(iii)   ☒ B1b(iv)   ☐ B1b(v)  
☐ B1c(i)   ☐ B1c(ii)   ☐ B1c(iii)   ☐ B1c(iv)  
☒ B2a  
☒ B2b(i)   ☒ B2b(ii)   ☒ B2b(iii)   ☒ B2b(iv)   ☐ B2b(v)  
☐ B2c(i)   ☐ B2c(ii)   ☐ B2c(iii)   ☐ B2c(iv)



Revert to Calculated

Criteria version: 3.1 Current standard. Use for all new assessments!

Criterion A:

- ☐ A1a ☐ A1b ☐ A1c ☐ A1d ☐ A1e  
☐ A2a ☐ A2b ☐ A2c ☐ A2d ☐ A2e  
☐ A3b ☐ A3c ☐ A3d ☐ A3e  
☐ A4a ☐ A4b ☐ A4c ☐ A4d ☐ A4e

Criterion B:

- ☒ B1a  
☒ B1b(i) ☒ B1b(ii) ☒ B1b(iii) ☒ B1b(iv) ☐ B1b(v)  
☐ B1c(i) ☐ B1c(ii) ☐ B1c(iii) ☐ B1c(iv)  
☒ B2a  
☒ B2b(i) ☒ B2b(ii) ☒ B2b(iii) ☒ B2b(iv) ☐ B2b(v)  
☐ B2c(i) ☐ B2c(ii) ☐ B2c(iii) ☐ B2c(iv)

Criterion C:

- ☐ C1  
☐ C2a(i) ☐ C2a(ii)  
☐ C2b

Criterion D:

- ☐ D  
☐ D1  
☐ D2

Criterion E:

- ☐ E

SUMMARY OF THE FIVE CRITERIA (A-E) USED TO EVALUATE IF A TAXON BELONGS IN AN IUCN RED LIST THREATENED CATEGORY (CRITICALLY ENDANGERED, ENDANGERED OR VULNERABLE).<sup>1</sup>

A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%
<div> <div> A1 Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased. A2 Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible. A3 Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3]. A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible. </div> <div> based on any of the following: <div> (a) direct observation [except A3] (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality (d) actual or potential levels of exploitation (e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites. </div> </div> </div>			

C. Small population size and decline			
	Critically Endangered	Endangered	Vulnerable
Number of mature individuals	< 250	< 2,500	< 10,000
AND at least one of C1 or C2			
C1. An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2. An observed, estimated, projected or inferred continuing decline AND at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(ii) % of mature individuals in one subpopulation =	90–100%	95–100%	100%
(b) Extreme fluctuations in the number of mature individuals			

### D. Very small or restricted population

	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	D1. < 1,000
D2. <i>Only applies to the VU category</i> Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.	-	-	D2. typically: AOO < 20 km <sup>2</sup> or number of locations ≤ 5

### E. Quantitative Analysis

	Critically Endangered	Endangered	Vulnerable
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

**B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)**

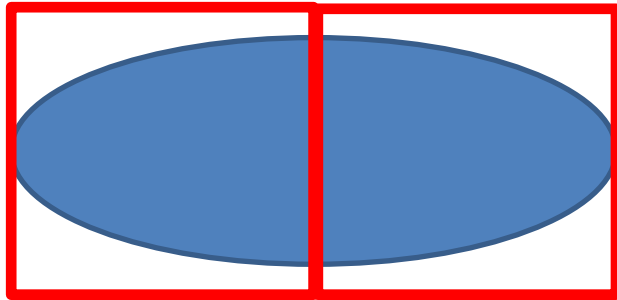
	Critically Endangered	Endangered	Vulnerable
B1. Extent of occurrence (EOO)	< 100 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>

**AND at least 2 of the following 3 conditions:**

(a) Severely fragmented <b>OR</b> Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			



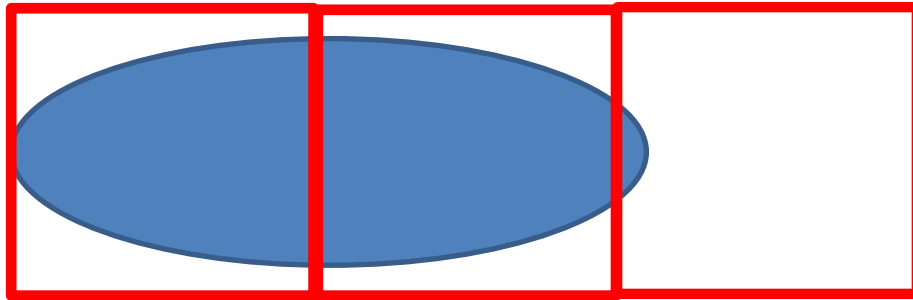
# CE versus EN



AOO of  $8\text{km}^2$  (smaller than  $10\text{km}^2$ ):

CE

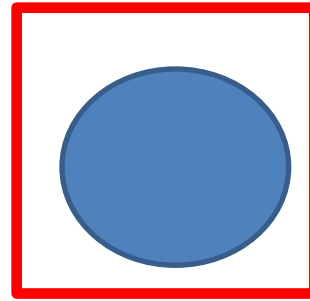
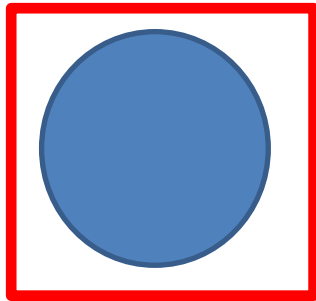
# CE versus EN



AOO of 12km<sup>2</sup> (larger than 10km<sup>2</sup>):

EN

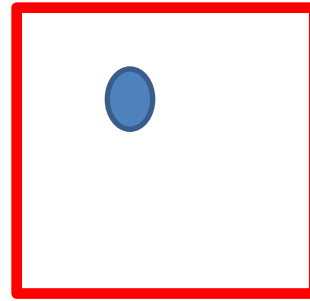
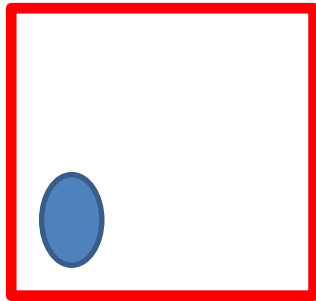
# CE versus EN



AOO of 8km<sup>2</sup>, but 2 locations:

EN

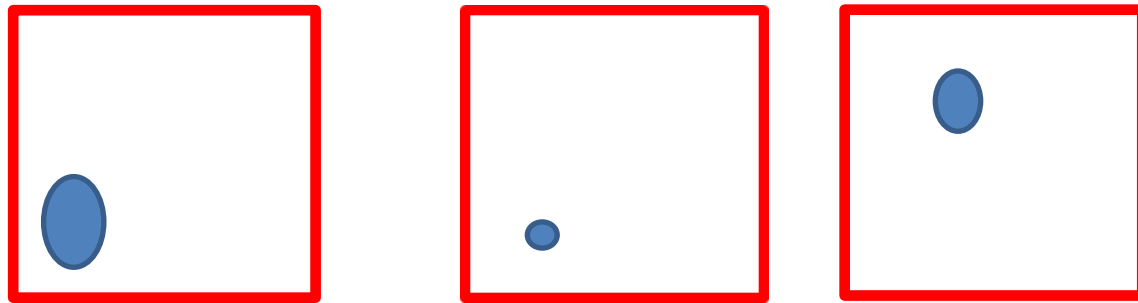
# CE versus EN



AOO of 8km<sup>2</sup>, 2 locations, but  
severely fragmented:

CE

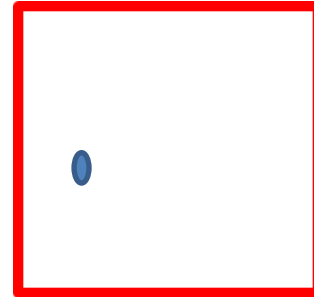
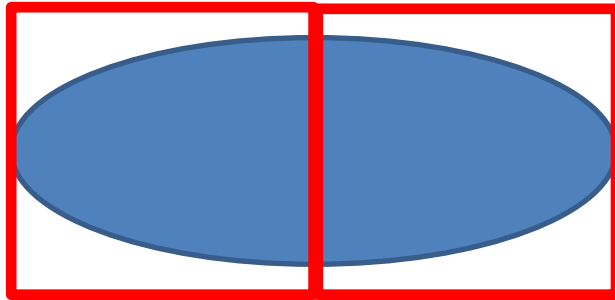
# CE versus EN



AOO of 12km<sup>2</sup>, 3 locations, but  
severely fragmented:

EN

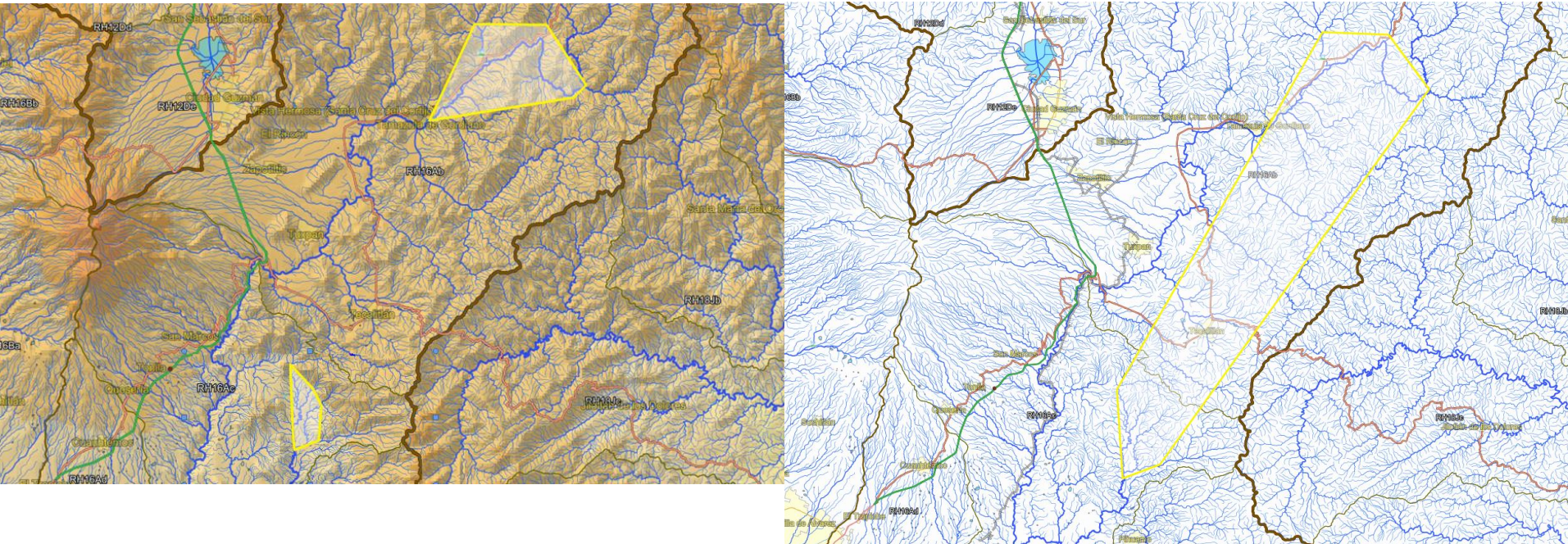
# CE versus EN



AOO of 12km<sup>2</sup>, 2 locations, but  
severely fragmented:

EN

# CE versus EN



## The pitfalls of EOO and location number:

EN

# Conclusion:

1. The Redlist is **comprehensive**, focusing also on threats and conservation, on development, not only on the status.
2. It is an **international** instrument and **popular**.
3. It has **effects** on Goodeid **conservation**.
4. The **Criteria** are made for mammals and birds and show **issues with small fish**, and has therefore **shortcomings** that need to be solved.





**FIN**