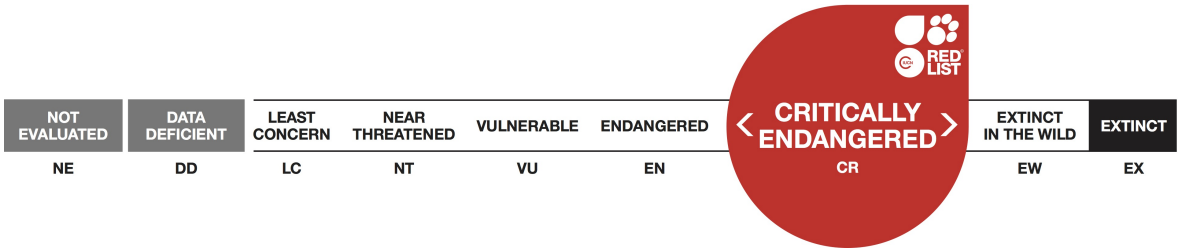
The IUCN Red List of Threatened Species™
ISSN 2307-8235 (online)
IUCN 2008: T97122954A99166584
Scope: Global
Language: English

Trechus pereirai, Cave ground-beetle

Assessment by: Borges, P.A.V. & Amorim, I.R.



View on www.iucnredlist.org

Citation: Borges, P.A.V. & Amorim, I.R. 2018. *Trechus pereirai*. The IUCN Red List of Threatened Species 2018: e.T97122954A99166584. http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97122954A99166584.en

Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Coleoptera	Carabidae

Taxon Name: *Trechus pereirai* Borges, Serrano & Amorim, 2004

Common Name(s):

- English: Cave ground-beetle

Taxonomic Source(s):

GBIF. 2016. Global Biodiversity Information Facility. Available at: http://www.gbif.org/.

Assessment Information

Red List Category & Criteria: Critically Endangered B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v) ver 3.1

Year Published: 2018

Date Assessed: December 7, 2016

Justification:

Trechus pereirai is an endemic cave adapted species known from a single island, Pico (Azores, Portugal). It has a very small extent of occurrence (EOO = 8 km²) and reduced area of occupancy (AOO = 8 km²). The species is very rare and only known from two subpopulations (lava tubes of Furna das Cabras II and Gruta da Ribeira do Fundo). The area surrounding one of the caves is heavily impacted by human activities. A habitat management plan is needed and anticipated to be developed during the coming years. We suggest also as future measures of conservation the regular monitoring of the species (every ten years) and fencing the entrances of the caves where human intrusion and disturbance has been occurring. The species is assessed as Critically Endangered (CR).

Geographic Range

Range Description:

Trechus pereirai is a cave adapted endemic species from Pico (Azores, Portugal) (Borges *et al.* 2010), known from caves of Furna das Cabras II and Gruta da Ribeira do Fundo. The extent of occurrence (EOO) is 8 km² and the maximum estimated area of occupancy (AOO) is 8 km².

Country Occurrence:

Native: Portugal (Azores)

http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97122954A99166584.en

Distribution Map

Trechus pereirai

Range

Extant (resident)

Compiled by:

Paulo Borges

NE DD LC NT VU EN CR CRITICALLY ENDANGERED EW EX

The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97122954A99166584.en

Population

The species is very rare and only known from two subpopulations in Pico island (Amorim 2005). Species abundance may have decreased in one of the caves (Gruta da Ribeira do Fundo) as it has been used as a dump site up till recent; and the population in the the other cave where this species occurs (Furna das Cabras II) may be negatively impacted since the area surrounding the cave is suitable for forest exploitation.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

This species occurs in two small lave tubes located in Pico island (Gruta das Cabras II and Gruta da Ribeira do Fundo) (Borges *et al.* 2004). It is a cavernicolous (i.e. a troglobitic species) predator and/or saprophagous species.

Systems: Terrestrial

Use and Trade

The species is not utilised.

Threats (see Appendix for additional information)

The main current threats to this species are the loss of habitat quality due to human activities: garbage and solid waste dumping, and livestock farming. However, there are several future potential threats: climatic changes (see Ferreira *et al.* 2016) that can change the conditions inside the caves; change in the road infrastructure around the cave; potential human recreational activities with radical cave visitation and geological events (volcanic activity and earthquakes).

Conservation Actions (see Appendix for additional information)

The species is protected by regional law (RAA 2008). Further research is needed into its ecology and life history in order to find extant specimens. It is necessary a monitoring plan for the invertebrate community in the habitat in order to contribute to the conservation of this species. We suggest also as future measure of conservation fencing the entrance of the cave where the species occurs. A habitat management plan is needed and anticipated to be developed during the coming years.

Credits

Assessor(s): Borges, P.A.V. & Amorim, I.R.

Reviewer(s): Danielczak, A.

Contributor(s): Lamelas-López, L.

http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97122954A99166584.en

Bibliography

Amorim, I.R. 2005. Colonization and diversification on oceanic islands: forest Tarphius and cave-dwelling Trechus beetles of the Azores. Department of Ecology and Evolutionary Biology, University of California.

Borges, P.A.V., Costa, A., Cunha, R., Gabriel, R., Gonçalves, V., Martins, A.F., Melo, I., Parente, M., Raposeiro, P., Rodrigues, P., Santos, R.S., Silva, L., Vieira, P. & Vieira, V. 2010. *A list of the terrestrial and marine biota from the Azores*. Princípia, Cascais.

Ferreira, M.T., Cardoso, P., Borges, P.A.V., Gabriel, R., Azevedo, E.B., Reis, F., Araújo, M.B. and Elias, R.B. 2016. Effects of climate change on the distribution of indigenous species in oceanic islands (Azores). *Climate Change* 138: 603-615.

IUCN. 2018. The IUCN Red List of Threatened Species. Version 2018-1. Available at: www.iucnredlist.org. (Accessed: 28 June 2018).

RAA - Região Autónoma dos Açores. 2008. *Regime jurídico da conservação da natureza e da proteção da biodiversidade - Decreto Legislativo Regional n.° 15/2012/A de 2 de Abril*.

Citation

Borges, P.A.V. & Amorim, I.R. 2018. *Trechus pereirai*. The IUCN Red List of Threatened Species 2018: e.T97122954A99166584. http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97122954A99166584.en

Disclaimer

To make use of this information, please check the Terms of Use.

External Resources

For Images and External Links to Additional Information, please see the Red List website.

Appendix

Habitats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
7. Caves and Subterranean Habitats (non-aquatic) -> 7.1. Caves and Subterranean Habitats (non-aquatic) - Caves	Resident	Suitable	Yes

Threats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Threat	Timing	Scope	Severity	Impact Score
10. Geological events -> 10.1. Volcanoes	Future	Whole (>90%)	Very rapid declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
10. Geological events -> 10.2. Earthquakes/tsunamis	Future	Whole (>90%)	Rapid declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
1. Residential & commercial development -> 1.3. Tourism & recreation areas	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Future	Whole (>90%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
11. Climate change & severe weather -> 11.2. Droughts	Future	Whole (>90%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		

2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Whole (>90%)	Slow, significant declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.2. Agro-industry plantations	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
4. Transportation & service corridors -> 4.1. Roads & railroads	Future	Whole (>90%)	Very rapid declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
6. Human intrusions & disturbance -> 6.1. Recreational activities	Ongoing	Whole (>90%)	Slow, significant declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.2. Species disturbance		
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.1. Abstraction of surface water (domestic use)	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.2. Run-off	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		

Conservation Actions in Place

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions in Place
In-Place Land/Water Protection and Management
Conservation sites identified: No
Occur in at least one PA: No
Percentage of population protected by PAs (0-100): 0

Conservation Actions Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions Needed
2. Land/water management -> 2.1. Site/area management
4. Education & awareness -> 4.1. Formal education
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.3. Sub-national level

Research Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
2. Conservation Planning -> 2.2. Area-based Management Plan
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km²): 8
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): Unknown
Estimated extent of occurrence (EOO) (km²): 8
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): Unknown
Number of Locations: 2
Continuing decline in number of locations: Yes
Lower elevation limit (m): 180
Upper elevation limit (m): 200
Population
Continuing decline of mature individuals: Yes
Population severely fragmented: Yes
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 1

http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97122954A99166584.en

Habitats and Ecology
Movement patterns: Not a Migrant

The IUCN Red List Partnership

The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership.

The IUCN Red List Partners are: Arizona State University; BirdLife International; Botanic Gardens Conservation International; Conservation International; NatureServe; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; and Zoological Society of London.