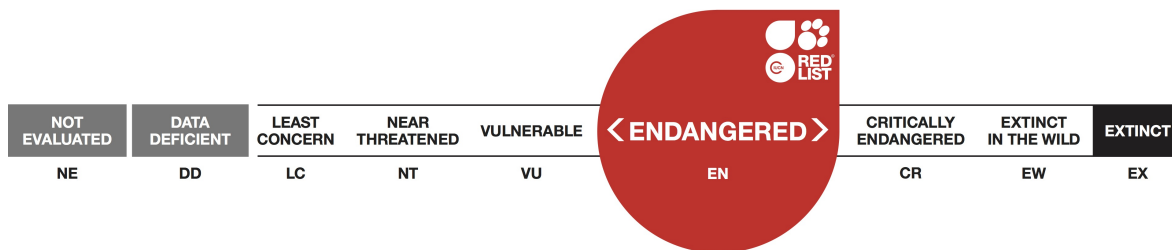


Trechus picoensis, Cave ground-beetle

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



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Coleoptera	Carabidae

Taxon Name: *Trechus picoensis* Machado, 1988

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: Endangered B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv) [ver 3.1](#)

Year Published: 2018

Date Assessed: December 9, 2016

Justification:

Trechus picoensis is an endemic cave adapted species from a single island, Pico (Azores, Portugal). It has a relatively small extent of occurrence (EOO = 285 km²) and reduced area of occupancy (AOO = 40 km²). The species is known from nine isolated subpopulations. The area surrounding some 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 Endangered (EN).

Geographic Range

Range Description:

Trechus picoensis is a cave adapted endemic species known from Pico (Azores, Portugal) (Borges *et al.* 2010), occurring in several lava tubes (Furna da Baliza, Furna de Frei Matias, Furna das Cabras II, Furna dos Montanheiros, Furna Nova I, Gruta do Gabriel, Gruta do Henrique Maciel, Gruta da Ribeira do Fundo and Gruta das Torres). The extent of occurrence (EOO) is 285 km² and the maximum estimated area of occupancy (AOO) is 40 km².

Country Occurrence:

Native: Portugal (Azores)

Distribution Map

Trechus picoensis

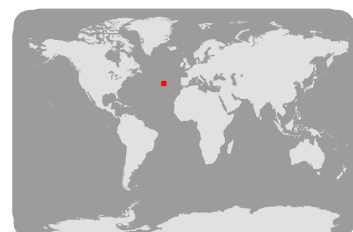


Range

Extant (resident)

Compiled by:

Paulo Borges



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



Population

The species is particularly abundant in some of the caves in Pico island. The area surrounding two of the caves is protected and we assume some impacts for some of the other subpopulations. This species is assessed here as severely fragmented as at least 50% of its population can be found in subpopulations/in habitat patches that are 1) smaller than would be required to support a viable population, and 2) separated from other habitat patches by a large distance. In fact, the species occurs in caves that are isolated in a sea of pastures and *Cryptomeria japonica* plantations.

Current Population Trend: Stable

Habitat and Ecology (see Appendix for additional information)

This species occurs in several volcanic caves (lava tubes) of Pico island. This species show a strong morphological adaptation to cave life (Machado 1988; Oromí *et al.* 1990; Amorim 2005). 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: agriculture/livestock farming and unregulated visitation to some of the caves. 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 caves; 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 not protected by regional law. Some of the caves are in a regionally protected area (Natural Park of Pico). Degraded habitats should be restored, a strategy needs to be developed to address the future threat by climate change that may change the vegetation cover above the caves, and the entrance of the caves most impacted by unregulated human visitation should be fenced. 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.

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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	Majority (50-90%)	Very rapid declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 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	Minority (50%)	Slow, significant declines	Low impact: 3
	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 -> 11.1. Habitat shifting & alteration	Future	Majority (50-90%)	Slow, significant declines	Low impact: 4
	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	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		
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			
9. Pollution -> 9.2. Industrial & military effluents -> 9.2.1. Oil spills	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
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 21-30

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

Research Needed
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km ²): 40
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): Unknown
Estimated extent of occurrence (EOO) (km ²): 285
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): Unknown
Number of Locations: 9
Continuing decline in number of locations: Yes
Lower elevation limit (m): 10
Upper elevation limit (m): 770
Population
Continuing decline of mature individuals: No
Population severely fragmented: Yes
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 1
Movement patterns: Not a Migrant

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