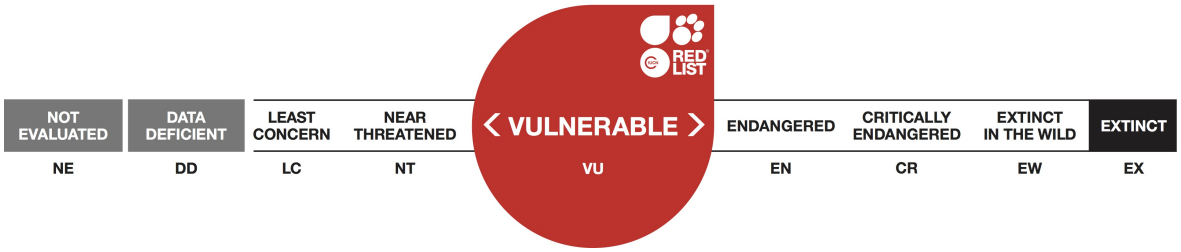
The IUCN Red List of Threatened Species™
ISSN 2307-8235 (online)
IUCN 2008: T97120426A99166564
Scope: Global
Language: English

Trechus isabelae, 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 isabelae*. The IUCN Red List of Threatened Species 2018: e.T97120426A99166564. http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97120426A99166564.en

Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Coleoptera	Carabidae

Taxon Name: *Trechus isabelae* Borges & Serrano, 2007

Common Name(s):

- English: Cave ground-beetle

Taxonomic Source(s):

Roskov, Y., Abucay, L., Orrell, T., Nicolson, D., Kunze, T., Culham, A., Bailly, N., Kirk, P., Bourgoin, T., DeWalt, R.E., Decock, W., De Wever, A., eds. 2016. Catalogue of Life. Available at: http://www.catalogueoflife.org.

Assessment Information

Red List Category & Criteria: Vulnerable D2 ver 3.1

Year Published: 2018

Date Assessed: March 21, 2017

Justification:

Trechus isabelae is an endemic cave adapted species known from a single island, S. Jorge (Azores, Portugal) and volcanic pit. It has a very small extent of occurrence (EOO = 4 km²) and reduced area of occupancy (AOO = 4 km²). The species is very rare and only known from a single natural subpopulation. However, there are no known current threats for this species, since the volcanic pit where it occurs is in a difficult to access site and located in a protected area. The species is assessed as Vulnerable (VU) with criteria D2 due to potential future threats namely climatic changes with alteration of environmental conditions in the cave, potential human recreational activities, geological events and changes in the management of the surrounding area. These threats could feasibly result in the movement of this species to CR or EX in a very short amount of time.

Geographic Range

Range Description:

Trechus isabelae is a single island endemic cave adapted species restricted to S. Jorge (Azores, Portugal) (Borges *et al.* 2010), known from a single cave, the volcanic pit Algar do Morro Pelado (Pereira *et al.* 2016) located within the regionally protected area of Pico da Esperança e Planalto Central. The extent of occurrence (EOO) is 4 km² and the maximum estimated area of occupancy (AOO) is 4 km².

Country Occurrence:

Native: Portugal (Azores)

http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97120426A99166564.en

Distribution Map

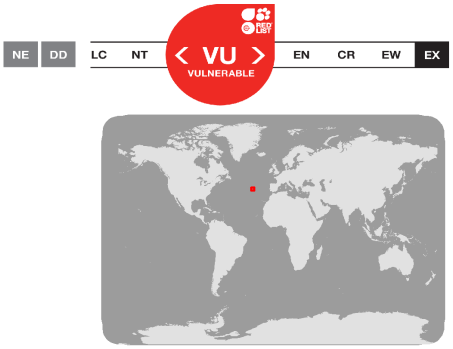
Trechus isabelae

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.

http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97120426A99166564.en

Population

The species is very rare and only known from a single subpopulation. The cave where the species occurs is located in a protected area and of difficult access and we assume no current impact for the population.

Current Population Trend: Stable

Habitat and Ecology (see Appendix for additional information)

This species occurs in a volcanic pit (Algar do Morro Pelado, S. Jorge island) of great dimensions (140 m deep) located at 1000 m Asl. The surrounding area consists of natural grassland (Borges *et al.* 2007). 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)

No threats are currently available, since the volcanic pit is located in an inaccessible area and the area is protected. However, there are several future potential threats: climatic changes (see Ferreira *et al.* 2016) that can change the conditions inside the volcanic pit; change in the road infrastructure around the cave; potential human recreational activities with radical cave visitation; reforestation of the area with exotic trees with unknown impact and geological events (volcanic activity, earthquakes and landslides).

Conservation Actions (see Appendix for additional information)

The species is protected by regional law (RAA 2011). Its habitat is in a regionally protected area (Natural Park of S. Jorge, within the regionaly protected area of Pico da Esperança e Planalto Central). 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. 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.T97120426A99166564.en

Bibliography

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.

Borges, P.A.V., Oromí P., Serrano A.R.M., Amorim I.R. & Pereira F. 2007. Biodiversity patterns of cavernicolous ground-beetles and their conservation status in the Azores, with the description of a new species: Trechus isabelae n. sp. (Coleoptera: Carabidae: Trechinae). *Zootaxa* 1478: 21-31.

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).

Pereira, F., Nunes, J.C., Borges, P.A.V., Costa, M.P., Constância, J.P., Barcelos, P.J.M., Braga, T., Gabriel, R., Amorim, I.R., Lima, E.A., Garcia, P. & Medeiros, S. 2016. *Catálogo das cavidades vulcânicas dos Açores (grutas lávicas, algares e grutas de erosão marinha) /Catalogue of the Azorean caves (lava tube caves, volcanic pits, and sea-erosion caves).* . Os Montanheiros/GESPEA.

RAA - Região Autónoma dos Açores. 2012. Regime jurídico da conservação da natureza e da proteção da biodiversidade - Decreto Legislativo Regional n.° 15/2012/A de 2 de Abril. *Diário da República, 1.ª Série.* 66: 1625-1713.

Citation

Borges, P.A.V. & Amorim, I.R. 2018. *Trechus isabelae*. The IUCN Red List of Threatened Species 2018: e.T97120426A99166564. http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97120426A99166564.en

Disclaimer

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 -> 1.1. 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	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 -> 10.3. Avalanches/landslides	Future	Majority (50-90%)	Rapid 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		
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	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		
11. Climate change & severe weather -> 11.2. Droughts	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		
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.2. Agro-industry plantations	Future	Majority (50-90%)	Slow, significant declines	Low impact: 4
	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	Future	Whole (>90%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		

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: Yes, over entire range
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 91-100

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

http://dx.doi.org/10.2305/IUCN.UK.2018-1.RLTS.T97120426A99166564.en

Distribution
Estimated area of occupancy (AOO) (km²): 4
Continuing decline in area of occupancy (AOO): No
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km²): 4
Continuing decline in extent of occurrence (EOO): No
Extreme fluctuations in extent of occurrence (EOO): No
Number of Locations: 1
Continuing decline in number of locations: No
Lower elevation limit (m): 1000
Upper elevation limit (m): 1000
Population
Continuing decline of mature individuals: No
Population severely fragmented: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: No
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.