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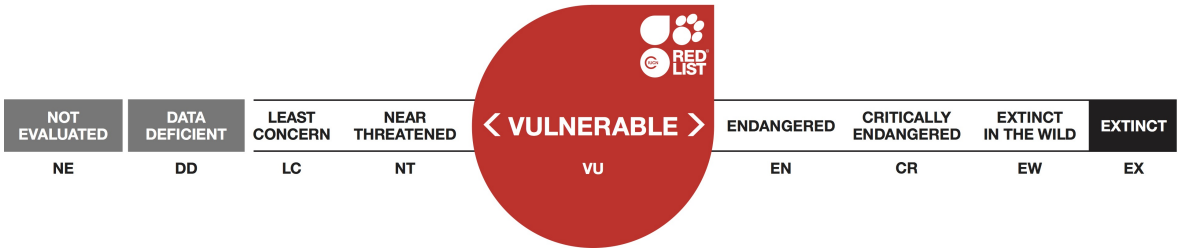
Trechus terceiranus, Cave ground-beetle

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 terceiranus* Machado, 1988

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 B1ab(iii)+2ab(iii) ver 3.1

Year Published: 2018

Date Assessed: December 12, 2016

Justification:

Trechus terceiranus is a cave adapted endemic species from a single island, Terceira (Azores, Portugal). It has a relatively small extent of occurrence (EOO = 48 km²) and reduced area of occupancy (AOO = 44 km²). The species is known from ten isolated subpopulations, but also occurs in "Milieu Souterrain Superficiel“ or ”Mesovoid Shallow Substratum" (MSS). The area surrounding some of the caves is heavily impacted by human activities, and in the Algar do Carvão Show-Cave there is an ongoing impact of tourism visitation. 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 Vulnerable (VU) due to the low habitat quality in many caves and the number of locations..

Geographic Range

Range Description:

Trechus terceiranus is a widespread cave adapted endemic species from Terceira (Azores, Portugal) (Borges *et al.* 2010), known from several caves ((Algar do Carvão, Gruta da Achada, Gruta dos Balcões, Gruta do Caldeira, Gruta do Coelho, Gruta da Malha, Gruta do Natal, Gruta dos Principiantes, Gruta do Chocolate and Gruta de Santa Maria). The extent of occurrence (EOO) is 48 km² and the maximum estimated area of occupancy (AOO) is 44 km². The species was also found in the MSS (”Milieu Souterrain Superficiel“ or ”Mesovoid Shallow Substratum“) (Borges 1993) in the area of Pico Rachado, far from the location of know caves.

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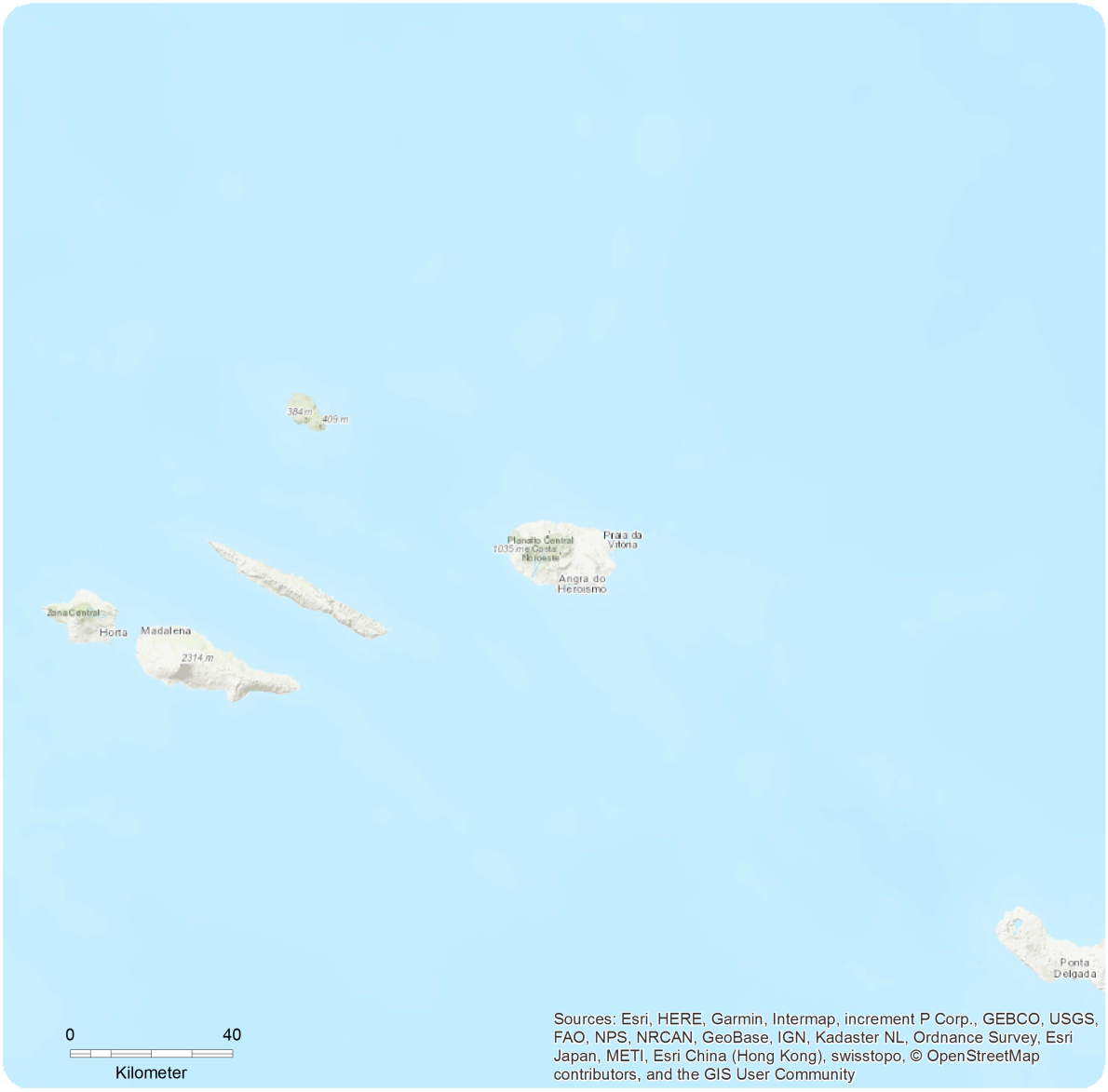
Country Occurrence:

Native: Portugal (Azores)

Distribution Map

Trechus terceiranus



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.

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Population

The species is particularly abundant in Terceira island. The area surrounding some of the caves is not protected and we assume some possible impacts for the isolated subpopulations.

Current Population Trend: Stable

Habitat and Ecology (see Appendix for additional information)

This species occurs in several volcanic formations (lava tubes and volcanic pits) of Terceira island. This species is distributed by all hypogean environments of Terceira both in the cave and MSS-mesocavernous shallow stratum habitats (Borges 1993; Amorim 2005). It is a cavernicolous (i.e. a troglobitic species) predator and/or saprophagous species. Based on monthly data collected in Algar do Carvão show cave during ten years we can confirm that this species is active all the months but with high density between May and September.

Systems: Terrestrial

Use and Trade

The species is not utilised.

Threats (see Appendix for additional information)

The main current threat to this species is cave visitation by tourists and the impact of agriculture activities. 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. Part of its habitat is in a regionally protected area (Natural Park of Terceira). Degraded habitats should be restored and a strategy needs to be developed to address the future threat by climate change. 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.

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Contributor(s): Lamelas-López, L.

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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. 1993. First records for the mesocavernous shallow stratum (M.S.S.) from the Azores. *Mémoires de Biospéologie* XX: 49-53.

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).

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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%)	Rapid declines	Low impact: 5
	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	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 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	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		
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		

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 part of range
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 41-50

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

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Distribution
Estimated area of occupancy (AOO) (km²): 44
Continuing decline in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km²): 48
Continuing decline in extent of occurrence (EOO): No
Number of Locations: 10
Continuing decline in number of locations: Unknown
Lower elevation limit (m): 250
Upper elevation limit (m): 583
Population
Continuing decline of mature individuals: No
Population severely fragmented: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 0.5
Movement patterns: Not a Migrant

The IUCN Red List Partnership

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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.