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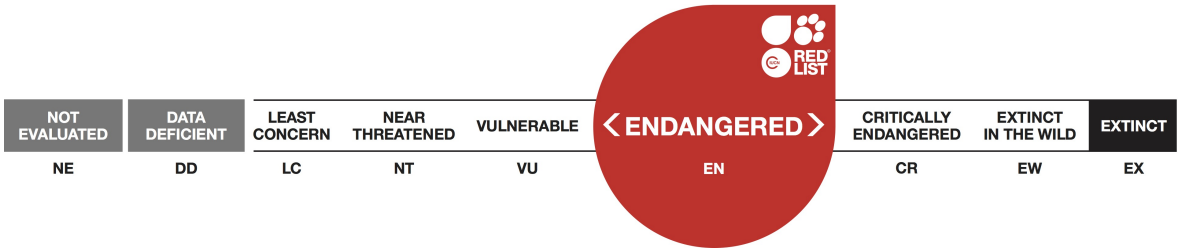
Trechus terrabravensis, Ground-beetle

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 terrabravensis* Borges, Serrano & Amorim, 2004

Common Name(s):

- English: 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,v)+2ab(i,ii,iii,iv,v) ver 3.1

Year Published: 2018

Date Assessed: December 13, 2016

Justification:

Trechus terrabravensis is a single island endemic species restricted to Terceira (Azores). It has a very small extent of occurrence (EOO = 32 km²) and reduced area of occupancy (AOO = 32 km²). There is a continuing decline in the EOO, AOO, extent and quality of habitat as well as the number of mature individuals as a result of the invasions of non-native plants. The species is particularly restricted to some still pristine locations. In the past, the species has probably strongly declined due to changes in habitat size. Therefore, we suggest as future measures of conservation: (1) regular monitoring of the species; and (2) control of invasive species namely *Hedychium gardnerianum*. The species is assessed as Critically Endangered (CR).

Geographic Range

Range Description:

Trechus terrabravensis is a single island endemic species restricted to Terceira (Azores, Portugal) (Borges *et al.* 2010), known from the Natural Forest Reserves of Biscoito da Ferraria e Pico Alto, Pico do Galhardo, Terra Brava and Caldeira Sta. Bárbara e Mistérios Negros. The extent of occurrence (EOO) is 32 km² and the maximum estimated area of occupancy (AOO) is 32 km².

Country Occurrence:

Native: Portugal (Azores)

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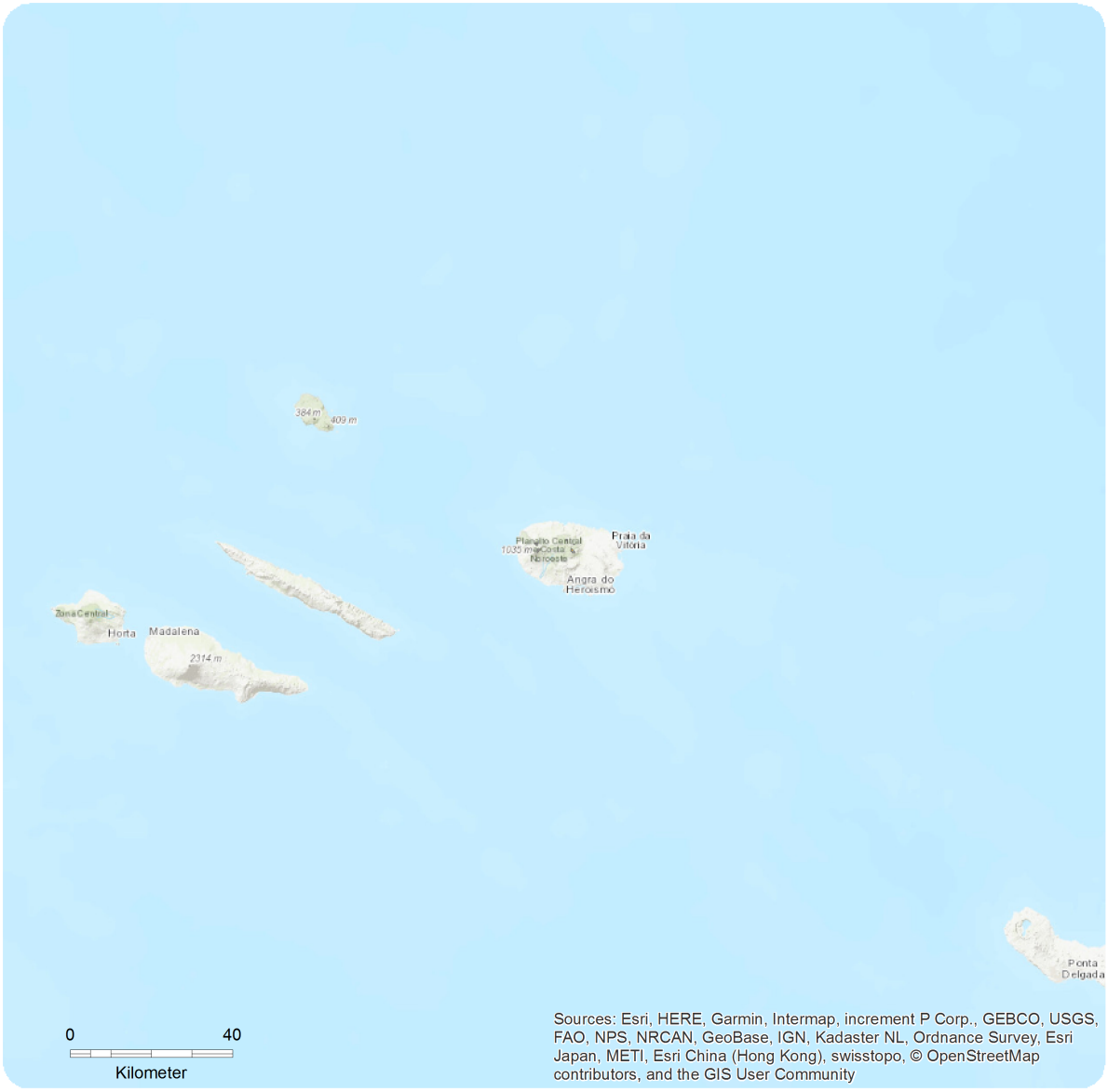
Distribution Map

Trechus terrabravensis



Range

Extant (resident)

Compiled by:

Paulo Borges

NE DD LC NT VU EN ENDANGERED CR 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.

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Population

The species is particularly restricted but abundant in some of the locations (Gaston *et al.* 2006). A continuing decline in the number of mature individuals is inferred from monitoring schemes and from the ongoing habitat degradation due to invasions of alien plants.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

This species occurs deep inside very humid laurel forests (native forests dominated by *Laurus azorica, Ilex perado* subsp. *azorica* and *Juniperus azorica*) on Terceira, with an altitudinal range between 500 and 1000 m. Several specimens were collected in leaf litter, suggesting that this is a litter species. In both Terra-Brava and Caldeira da Serra de Santa Bárbara, the terrain is basaltic with a system of cracks and deep holes and the forest floor is covered by a dense carpet of mosses and ferns with little light reaching the ground (Borges *et al.* 2004). It is a predator that lives in in the soil.

Systems: Terrestrial

Use and Trade

This species is not utilised.

Threats (see Appendix for additional information)

In the past, the species has probably strongly declined due to changes in habitat size and quality and lack of resources due to its large body size (Terzopoulou *et al*. 2015). Currently, *Cryptomeria japonica* wood & pulp plantations management and invasive plant species spreading (e.g. *Hedychium gardnerianum*) are changing the structure of the forest and the cover of bryophytes and ferns in the soil with impacts on the species. Based on Ferreira *et al.* (2016) the habitat will further decline as a consequence of climate change (increasing number of droughts and habitat shifting & alteration).

Conservation Actions (see Appendix for additional information)

The species is not protected by regional law. Its habitat is in a regionally protected area (Natural Park of Terceira). The Terceira Natural Park administration is currently starting control measures of the invasive plants. Degraded habitats should be restored and a strategy needs to be developed to address the future threat by climate change. A habitat management plan is needed and anticipated to be developed during the coming years. Further research is needed into its ecology and life history in order to obtain information on population size, distribution and trends. It is also necessary to create an area-based management plan and a monitoring plan for the invertebrate community in the habitat in order to contribute to perform a species potential recovery plan as a consequence of invasive plant species spread in two native forest fragments (Biscoito da Ferraria e Pico Alto and Pico do Galhardo). Monitoring every ten years using the BALA protocol will inform about habitat quality (see e.g. Gaspar *et al.* 2011).

Credits

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

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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?
1. Forest -> 1.4. Forest - Temperate	Resident	Suitable	Yes

Threats

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

Threat	Timing	Scope	Severity	Impact Score
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Future	Whole (>90%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 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 -> 11.2. Droughts	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. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.1. Small-holder plantations	Ongoing	Minority (50%)	Causing/could cause fluctuations	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Hedychium gardnerianum)	Ongoing	Majority (50-90%)	Rapid 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 entire range
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 91-100

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Conservation Actions in Place
Invasive species control or prevention: Yes

Conservation Actions Needed

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

Conservation Actions Needed
2. Land/water management -> 2.1. Site/area management
2. Land/water management -> 2.2. Invasive/problematic species control
2. Land/water management -> 2.3. Habitat & natural process restoration
4. Education & awareness -> 4.1. Formal education
4. Education & awareness -> 4.3. Awareness & communications
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) (km^2): 32
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): Unknown
Estimated extent of occurrence (EOO) (km^2): 32
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): Unknown
Number of Locations: 4
Continuing decline in number of locations: Yes

Distribution
Lower elevation limit (m): 500
Upper elevation limit (m): 1000
Population
Continuing decline of mature individuals: Yes
Population severely fragmented: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 1
Movement patterns: Not a Migrant

The IUCN Red List Partnership

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