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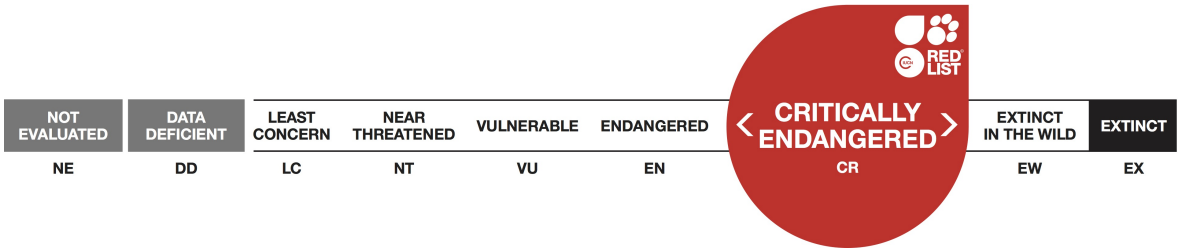
Scope: Global
Language: English

Tarphius relictus, Ironclad Beetle

Assessment by: Borges, P.A.V. & Lamelas-López, L.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Coleoptera	Zopheridae

Taxon Name: *Tarphius relictus* Borges & Serrano, 2017

Synonym(s):

- *Tarphius azoricus*

Common Name(s):

- English: Ironclad Beetle

Taxonomic Source(s):

Borges, P.A.V., Amormin, I.R., Terzopoulou, S. Rigal, F., Emerson, B.C. and Serrano, A.R.M. 2017. Cryptic diversity in the Azorean beetle genus *Tarphius* Erichson, 1845 (Coleoptera: Zopheridae): An integrative taxonomic approach with description of four new species. *Zootaxa* 4236(3): 401-449 DOI: http://dx.doi.org/10.11646/zootaxa.4236.3.1.

Taxonomic Notes:

Tarphius azoricus in Borges (1990, pp. 99, 112) (Terceira Isl.) *Tarphius azoricus* in Borges (1991, p. 2) (Terceira Isl.) *Tarphius azoricus* in Borges *et al.* (2005, p. 207) (Terceira Isl.) *Tarphius azoricus* in Oromí *et al*. (2010, p. 232) (Terceira Isl.) *Tarphius azoricus* Amorim *et al.* (2012, Fig. 2) (Terceira Isl.)

Assessment Information

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

Year Published: 2017

Date Assessed: April 5, 2017

Justification:

Tarphius relictus is a single-island endemic species restricted to Terceira island (Azores, Portugal) (Borges *et al.* 2017). It has a reduced extent of occurrence (8 km²) and area of occupancy (8 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 very rare, and only occurs in a small, disturbed site covered by exotic trees at low altitude, in Terceira island. Due to very restricted distribution, this species is the most endangered *Tarphius* species in the Azores (Borges *et al.* 2017). In the past, the species has probably strongly declined due to changes in habitat size. Therefore, we suggest as future measures of conservation: (1) a long-term monitoring plan of the species; (2) control of invasive species, and (3) translocation of individuals for the pristine patches of forest in the high altitude sites of Terceira Island (i.e. ex-situ conservation). The species is therefore assessed as Critically Endangered (CR).

Geographic Range

Range Description:

Tarphius relictus is a single-island endemic species restricted to Terceira island (Azores, Portugal) (Borges *et al.* 2017), known in only one location (Biscoito das Fontinhas), being a very rare species. The extent of occurrence (EOO) is 8 km² and the maximum estimated area of occupancy (AOO) is 8 km².

Country Occurrence:

Native: Portugal (Azores)

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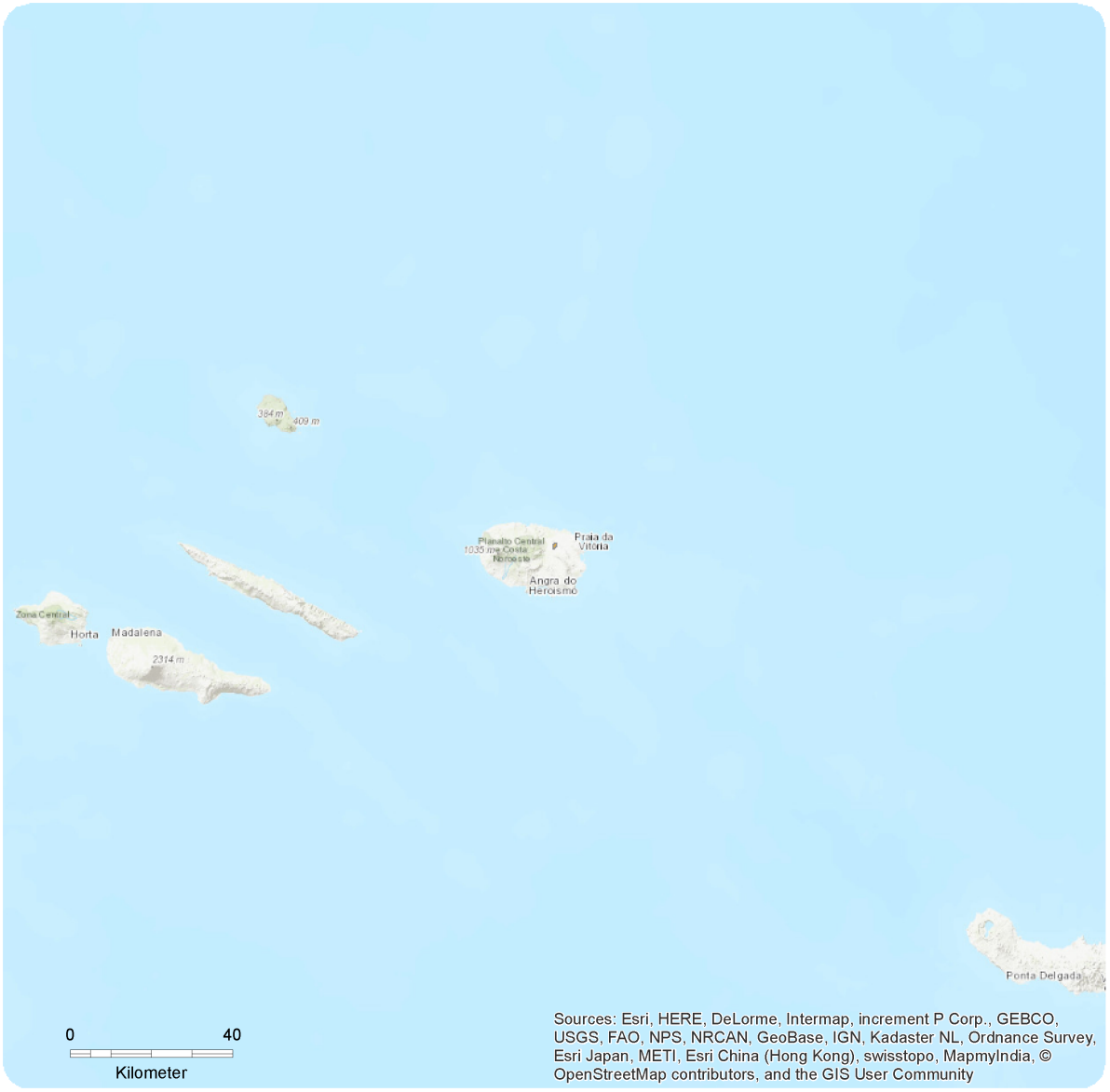
Distribution Map

Tarphius relictus



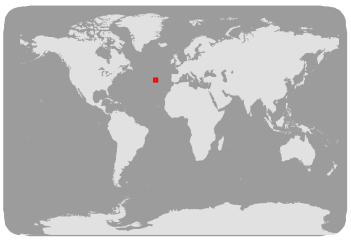
Range

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.

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Population

The species is very rare and only occurs in a small patch of exotic forest (Acacia sp.) in Terceira island (Borges *et al.* 2017). This is the most endangered *Tarphius* species in the Azores, due to restricted area of distribution and the existence of invasive plant species (Borges *et al.* 2017).

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

The species is very rare, and only occurs in a small, disturbed site covered by exotic trees at low altitude, in Terceira island (Borges *et al.* 2017). It has an altitudinal range between 200 and 300 m. It is a nocturnal fungivorous species that lives in the soil and in dead wood.

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 (Triantis *et al.* 2010). Currently, the rapid advance and expansion of invasive plants species is the major threat (Borges et al. 2017), particularly *Hedychium gardnerianum* and *Pittosporum undulatum* since are changing the habitat structure, namely decreasing the cover of bryophytes and ferns in the soil and promoting the spread of other plants. The management of the *Acacia* spp. patches could be also a problem for the unique surviving subpopulation. Based on Ferreira et al. 2016 the habitat will further decline as a consequence of climate change (increasing number of droughts and habitat shifting and alteration).

Conservation Actions (see Appendix for additional information)

The species is not protected by regional law. Its habitat is now included in the Natural Park of Terceira (IUCN Type V level of protection). Degraded habitats should be restored and a strategy needs to be developed to address the future threat by climate change. We suggest as a possible additional measure of conservation the translocation of individuals for the pristine patches of forest in the high altitude sites of Terceira Island (i.e. ex-situ conservation). Since this species is an icon of the relict native Azorean forests, it is suggested that some awareness measures should be put in practice. Further research is needed into its ecology and life history in order to find additional extant specimens in some meddle elevation forest patches in Terceira island and obtain information on population size, distribution and trends. It is also necessary 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.

Credits

Assessor(s): Borges, P.A.V. & Lamelas-López, L.

Reviewer(s): Danielczak, A.

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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?
0. Root -> 16. Introduced vegetation	Resident	Suitable	No

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 -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	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 (Pittosporum undulatum)	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		
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
In-Place Education
Subject to recent education and awareness programmes: 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): 8
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): Unknown

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Distribution
Estimated extent of occurrence (EOO) (km^2): 8
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): Unknown
Number of Locations: 1
Continuing decline in number of locations: Unknown
Extreme fluctuations in the number of locations: Unknown
Lower elevation limit (m): 200
Upper elevation limit (m): 300
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

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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.