

## *Tarphius gabriellae*, Ironclad Beetle

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## Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Coleoptera	Zopheridae

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

### Synonym(s):

- *Tarphius azoricus*
- *Tarphius depressus*

### 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 Gillerfors (1986, p. 21) (Pico Isl.) *Tarphius depressus* in Borges *et al.* (2005, p. 207) (Pico Isl.) *Tarphius depressus* in Oromí *et al.* (2010, p. 232) (Pico Isl.) *Tarphius depressus* in Amorim *et al.* (2012, Fig. 2) (Pico 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 gabriellae* is a single-island endemic species restricted to Pico island (Azores, Portugal) (Borges *et al.* 2017). It is a very rare species, with a restricted extent of occurrence (8 km<sup>2</sup>) and area of occupancy (8 km<sup>2</sup>). Based on the threat of the spread of invasive species, this species occurs in just one location. 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 only occurs in the soil and in dead trunks of endemic trees (mainly *Euphorbia stygiana*). 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; and (2) control of invasive species. The species is assessed as Critically Endangered CR).

## Geographic Range

### Range Description:

*Tarphius gabrielae* is a single-island endemic species restricted to Pico island (Azores, Portugal) (Borges *et al.* 2017), known from Natural Forest Reserve of Lagoa do Caiado. The extent of occurrence (EOO) is 8 km<sup>2</sup> and the maximum estimated area of occupancy (AOO) is 8 km<sup>2</sup>.

**Country Occurrence:**

**Native:** Portugal (Azores)

# Distribution Map

*Tarphius gabrielae*



**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 very rare and only occurs in a small patch of native forest in Pico island (Borges *et al.* 2017). 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 (*Hedychium gardnerianum*) (Borges *et al.* 2017), that are changing the structure of the forest and the cover of bryophytes and ferns in the soil decreasing the quality of the habitat with impacts on the species.

**Current Population Trend:** Decreasing

## Habitat and Ecology (see Appendix for additional information)

The species is very rare, and only occurs in a small patch of native forest in Pico island (Borges *et al.* 2017). It has an altitudinal range between 700 and 850 m. It is a nocturnal fungivorous species that lives in dead trunks of endemic trees and also in dead twigs of *Euphorbia stygiana*.

**Systems:** Terrestrial

## Use and Trade

The 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* since this species is changing the habitat structure, namely decreasing the cover of bryophytes and ferns in the soil and promoting the spread of other plants. 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 in a regionally protected area (Natural Forest Reserve of Lagoa do Caiado in Pico island). Degraded habitats should be restored with the removal of invasive species. A strategy needs also 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. Since this species is an icone 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 extant specimens in additional areas of native forest in Pico (e.g. Mistério da Prainha and Caveiro) 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. 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. & Lamelas-López, L.

**Reviewer(s):** Danielczak, A.

## Bibliography

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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
10. Geological events -> 10.1. Volcanoes	Future	Whole (>90%)	Very rapid declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 2. Species Stresses -> 2.1. Species mortality		
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 (Hedychium gardnerianum)	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

<b>Conservation Actions in Place</b>
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>)

<b>Conservation Actions Needed</b>
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>)

<b>Research Needed</b>
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

<b>Distribution</b>
Estimated area of occupancy (AOO) (km <sup>2</sup> ): 8
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): Unknown
Estimated extent of occurrence (EOO) (km <sup>2</sup> ): 8
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): Unknown
Number of Locations: 1

<b>Distribution</b>
Continuing decline in number of locations: Unknown
Extreme fluctuations in the number of locations: Unknown
Lower elevation limit (m): 700
Upper elevation limit (m): 850
<b>Population</b>
Continuing decline of mature individuals: Yes
Population severely fragmented: No
<b>Habitats and Ecology</b>
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 1
Movement patterns: Not a Migrant

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