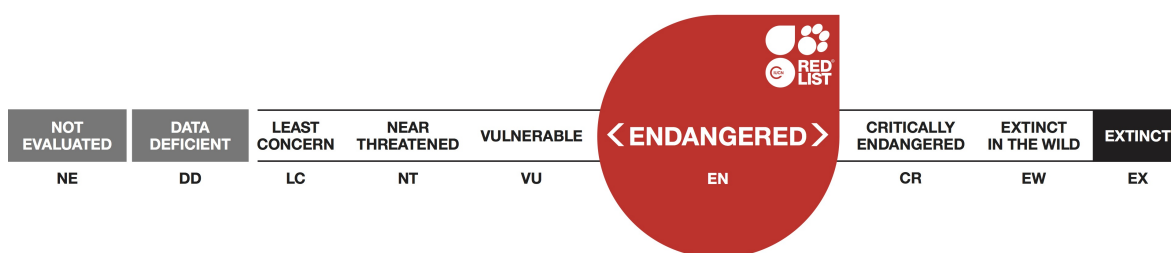


Cedrorum azoricus

Assessment by: Borges, P.A.V.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Coleoptera	Carabidae

Taxon Name: *Cedrorum azoricus* Borges & Serrano, 1993

Taxonomic Source(s):

GBIF. 2016. Global Biodiversity Information Facility. Available at: <http://www.gbif.org/>.

Assessment Information

Red List Category & Criteria: Endangered B2ab(i,ii,iii,iv,v) [ver 3.1](#)

Year Published: 2018

Date Assessed: November 17, 2016

Justification:

Cedrorum azoricus is endemic to Azores, occurring in three islands with two subspecies. It has a relatively small extent of occurrence (EOO = 12,300 km²) and reduced area of occupancy (AOO = 40 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 and the subpopulation of Santa Maria is very low in number of individuals. In the past, the species has probably strongly declined due to changes in habitat size and quality and its large body size. Some of the most important sites in Terceira and Pico are still pristine. 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 Endangered (EN).

Geographic Range

Range Description:

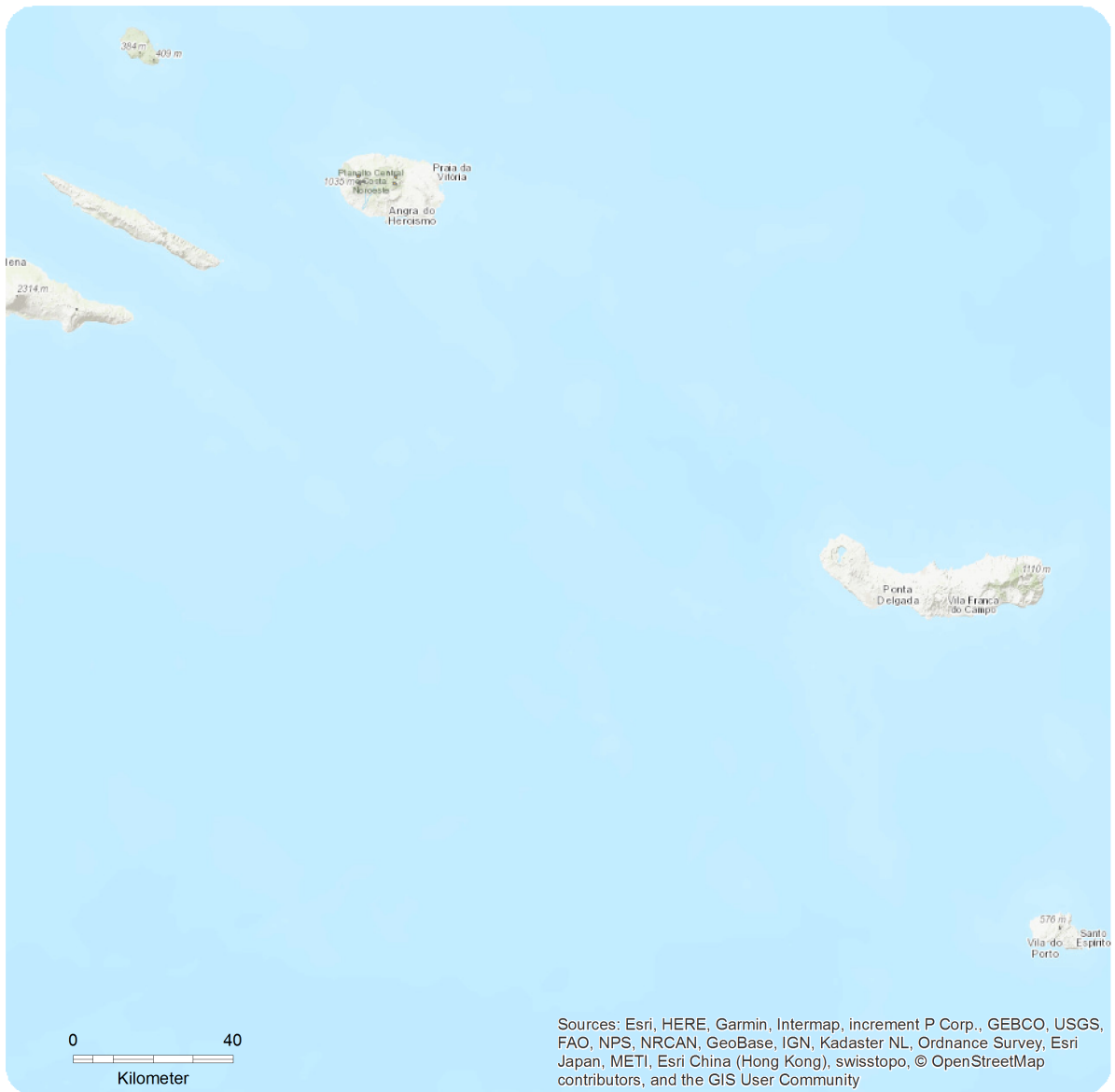
Cedrorum azoricus is an endemic species with two subspecies, *C. a. azoricus* present in Terceira and Santa Maria islands, and *C. a. caveirensis* restricted to Pico island (Azores, Portugal) (Borges *et al.* 2010). The species is known from Natural Forest Reserves of Biscoito da Ferraria, Caldeira Sta. Bárbara e Mistérios Negros, Terra Brava (Terceira), Caveiro and Mistério da Prainha (Pico) and Pico Alto (S. Maria). The extent of occurrence (EOO) is *ca* 12,300 km² and the maximum estimated area of occupancy (AOO) is 40 km².

Country Occurrence:

Native: Portugal (Azores)

Distribution Map

Cedrorum azoricus

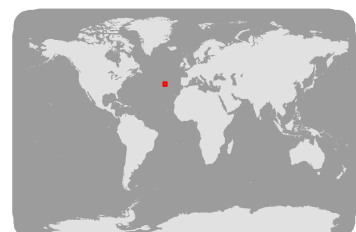


Range

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 particularly restricted and the subpopulation of Santa Maria is very low in number of individuals. A continuing decline in the number of mature individuals is inferred from monitoring schemes (never sampled in S. Maria after its description, in spite of several sampling efforts in the last ten years), and from the ongoing habitat degradation due to invasions of alien plants. This species is assessed here as severely fragmented as at least 50% of its population can be found in subpopulations that are 1) smaller than would be required to support a viable population, and 2) separated from other habitat patches by a large distance. In fact, the species occurs in fragments that are isolated in a matrix of pastures.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

Cedrorum azoricus has two subspecies, *C. a. azoricus* present in Terceira and Santa Maria islands, occurs in native forests of high altitude (altitudinal range between 500 and 1000 m) ("cloud-zone forests"; dominated by *Juniperus brevifolia*, *Ilex perado* subsp. *azorica* and *Laurus azorica*), and *C. a. caveirensis*, restricted to Pico island, occurs also in native forests (dominated by *Juniperus brevifolia*) (altitudinal range between 800 and 1200 m) (Borges and Serrano 1993; Borges *et al.* 2010). It is a nocturnal predator that lives in the soil. In both Terceira and Pico islands it occurs mostly in sites with deep crevices in hyper-humid forest.

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 and its large body size (Terzopoulou *et al.* 2015). Ongoing invasion of an invasive plant species (*Hedychium gardnerianum*) in Terceira and Pico and in addition *Pittosporum undulatum* in Santa Maria, are major threats since these plant species are changing the habitat structure in the main native forest, 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 & alteration).

Conservation Actions (see Appendix for additional information)

The species is protected by regional law (RAA 2012). Its habitat is in regionally protected areas (Natural Parks of Terceira, Pico and Santa Maria). The Terceira Natural Park administration is currently starting control measures of the invasive plants. Further spread of invasive plants needs to be stopped in order to avoid any future declines of the species. 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 find extant specimens 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 in the island of Santa Maria. 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.

Reviewer(s): Danielczak, A.

Contributor(s): Lamelas-López, L. & Amorim, I.R.

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External Resources

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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	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 Research, Monitoring and Planning
Systematic monitoring scheme: Yes

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): 81-90
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): 40
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): Unknown

Distribution
Estimated extent of occurrence (EOO) (km ²): 12300
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): Unknown
Number of Locations: 6
Continuing decline in number of locations: Yes
Lower elevation limit (m): 500
Upper elevation limit (m): 1200
Population
Continuing decline of mature individuals: Yes
Population severely fragmented: Yes
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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