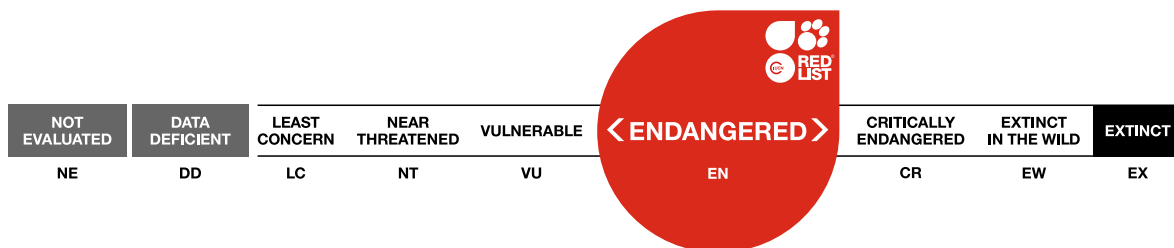


Turinyphia cavernicola, Algar do Carvão Cave Spider

Assessment by: Borges, P.A.V. & Cardoso, P.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Arachnida	Araneae	Linyphiidae

Scientific Name: *Turinyphia cavernicola* Wunderlich, 2008

Common Name(s):

- English: Algar do Carvão Cave Spider
- Portuguese: Aranha Cavernícola do Algar do Carvão

Taxonomic Source(s):

Platnick, N.I. 2014. The World Spider Catalog, Version 14.5. P. Merrett & H.D. Cameron (eds). American Museum of Natural History. Available at: <http://research.amnh.org/iz/spiders/catalog/index.html>. (Accessed: 31 March 2014).

Borges, P.A.V. and Wunderlich, J. 2008. Spider biodiversity patterns and their conservation in the Azorean archipelago, with descriptions of new species. *Systematics and Biodiversity* 6(2): 249-282.

Taxonomic Notes:

This species was described based on males only.

Identification Information:

This is a pale spider with long legs and large eyes. Male pedipalpus: tibia with single trichobothrium, paracymbium with tooth-shaped distal hook, embolus basally wide (Borges and Wunderlich 2008).

Assessment Information

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

Year Published: 2021

Date Assessed: October 19, 2017

Justification:

Turinyphia cavernicola is a single island endemic restricted to the Island of Terceira (Azores, Portugal). It has a very small Extent of Occurrence (EOO = 8 km²) and Area of Occupancy (AOO = 8 km²). The species is very rare and only known from three isolated natural subpopulations. The main current threats to this species are cave visitation by tourists and the impact of agriculture activities. We propose 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 Endangered (EN), mostly due to its small Extent of Occurrence (EOO) and Area of Occupancy (AOO) and the decline of habitat quality.

Geographic Range

Range Description:

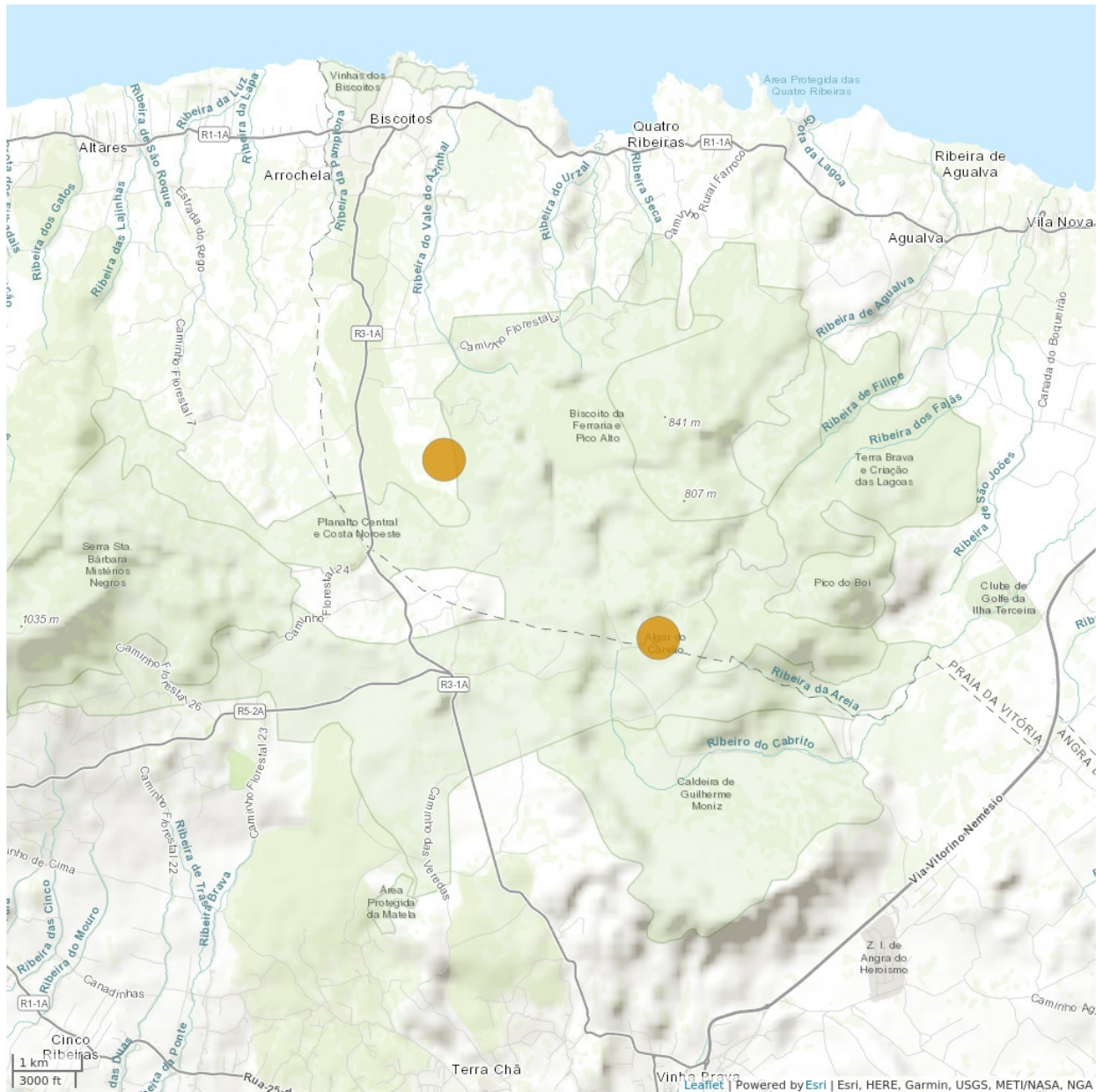
This is a single island endemic restricted to the Island of Terceira, Azores, Portugal (Borges *et al.* 2010). The species was originally described from a single cave, the volcanic show pit Algar do Carvão, and later

also found in two lava tubes, Gruta da Malha and Furna de Santa Maria, that are located nearby (Pereira *et al.* 2016). The Extent of Occurrence (EOO) is 8 km² and the maximum estimated Area of Occupancy (AOO) is 8 km².

Country Occurrence:

Native, Extant (resident): Portugal (Azores)

Distribution Map



Legend

● EXTANT (RESIDENT)

Compiled by:

Azorean Biodiversity Group 2018



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



Population

Three subpopulations are known on the island, but two of them are very small and located in disturbed lava tubes. The single large subpopulation is located in the show cave Algar do Carvão, which is under intensive pressure due to increasing levels of visitation in the last ten years.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

The species is a troglobite specialist occurring only in humid lava tubes and volcanic pits. The species builds sheet-webs across small holes in volcanic basaltic rock. It usually occurs from twilight conditions near cave openings to deep parts of the caves (Borges and Wunderlich 2008). In the main pit-cave of Algar do Carvão, the construction of the lateral walls of the stairs with stones from the cave allowed the creation of additional supports for the webs.

Systems: Terrestrial

Threats (see Appendix for additional information)

The main current threats to this species are 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; spread of plantations of *Cryptomeria japonica*; change in the road infrastructure around the caves; potential human recreational activities with radical cave visitation; and geological events (volcanic activity).

Conservation Actions (see Appendix for additional information)

The species is protected by regional law (RAA 2008). An area of 40.5 ha around Algar do Carvão was classified as “Regional Natural Monument” by the Regional Decree nr 9/2004/A, of March 23rd 2004, due to its unique volcanic features and its environmental importance. Since pasture intensification is one main threat, it might be important to safeguard the species' survival in the future, and conservation should be extended beyond the current area, possibly allowing the recovery of other caves to original conditions where the species might be reintroduced. Further research is needed into its ecology and life history in order to find extant specimens in additional lava tubes. An area-based management plan is also necessary for the caves, including invertebrate monitoring to contribute to a potential species recovery plan.

Credits

Assessor(s): Borges, P.A.V. & Cardoso, P.

Reviewer(s): Russell, N.

Contributor(s): Lamelas-López, L.

Authority/Authorities: IUCN SSC Spider and Scorpion Specialist Group

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RAA - Região Autónoma dos Açores. 2008. *Regime jurídico da conservação da natureza e da proteção da biodiversidade - Decreto Legislativo Regional n.º 15/2012/A de 2 de Abril*.

Citation

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External Resources

For [Supplementary Material](#), and 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
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	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 -> 2.2. Wood & pulp plantations -> 2.2.2. Agro-industry plantations	Future	Majority (50-90%)	Slow, significant declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality		
4. Transportation & service corridors -> 4.1. Roads & railroads	Future	Majority (50-90%)	Rapid 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		
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 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 -> 10.1. Volcanoes	Future	Majority (50-90%)	Very rapid declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Future	Whole (>90%)	Rapid declines	Medium impact: 6
	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	Future	Whole (>90%)	Rapid declines	Medium impact: 6
	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		

Conservation Actions in Place

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

Conservation Action in Place
In-place research and monitoring
Action Recovery Plan: No
Systematic monitoring scheme: No
In-place land/water protection
Conservation sites identified: Yes, over part of range
Percentage of population protected by PAs: 41-50
Area based regional management plan: No
Occurs in at least one protected area: Yes

Conservation Actions Needed

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

Conservation Action Needed
1. Land/water protection -> 1.2. Resource & habitat protection
3. Species management -> 3.2. Species recovery
3. Species management -> 3.3. Species re-introduction -> 3.3.1. Reintroduction
4. Education & awareness -> 4.1. Formal education

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

Research Needed
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
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: 3
Continuing decline in number of locations: Yes
Extreme fluctuations in the number of locations: Unknown
Lower elevation limit (m): 520
Upper elevation limit (m): 607
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

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