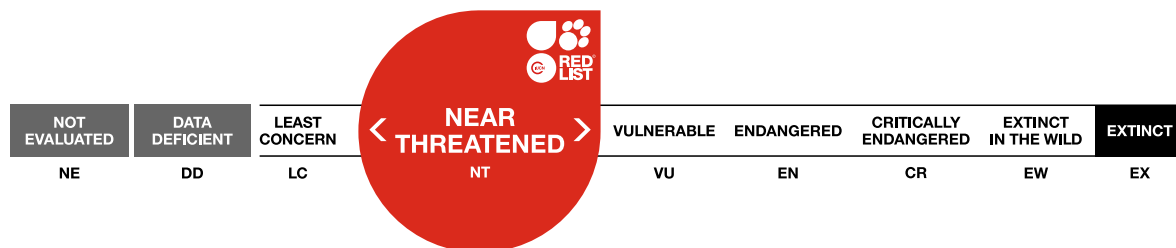


Pseudosinella ashmoleorum

Assessment by: Nunes, R. & Borges, P.A.V.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Entognatha	Collembola	Entomobryidae

Scientific Name: *Pseudosinella ashmoleorum* Gama, 1988

Assessment Information

Red List Category & Criteria: Near Threatened B1ab(iii)+2ab(iii) [ver 3.1](#)

Year Published: 2021

Date Assessed: March 31, 2018

Justification:

Pseudosinella ashmoleorum is an Azorean-endemic, cave dwelling species from the islands of Faial, Pico and Terceira (Azores, Portugal). It has a small Extent of Occurrence (EOO = 2,828 km²) and a small Area of Occupancy (AOO = 52 km²). The species is relatively common and known from several subpopulations, in lava tubes of all three islands, and also in the MSS. The area surrounding some caves is heavily impacted by human activities. Further research is needed into its population, ecology and life history, and a habitat management plan is needed, with one anticipated to be developed during the coming years. We also suggest as future conservation measures the regular monitoring of the species (every ten years) and limiting access to the caves. Overall, the species has a restricted range, is experiencing an ongoing decline in habitat quality, and is found at a small number of locations. This number of locations, however, is not low enough to warrant listing under a threatened category. Therefore, *P. ashmoleorum* is assessed as Near Threatened.

Geographic Range

Range Description:

Pseudosinella ashmoleorum is an Azorean-endemic, cave dwelling springtail species known from Faial, Pico and Terceira islands (Azores, Portugal) (Borges *et al.* 2010), known from several caves and lava tubes in Faial (Furna Ruim); in Pico (Gruta da Agostinha, Gruta do Henrique Maciel, Gruta do Soldão); and in Terceira (Algar do Carvão, Gruta das Agulhas, Gruta dos Balcões, Gruta do Caldeira, Gruta do Coelho, Gruta do Chocolate, Gruta da Madre de Deus). The Extent of Occurrence (EOO) is *ca* 2,828 km² and the estimated Area of Occupancy (AOO) is 52 km². The species has also found in the MSS ("Milieu Souterrain Superficiel" or "Mesocavernous Shallow Stratum") (Borges 1993) in the area of Pico Rachado (Terceira island), far from its known distribution in lava caves.

Country Occurrence:

Native, Extant (resident): Portugal (Azores)

Distribution Map

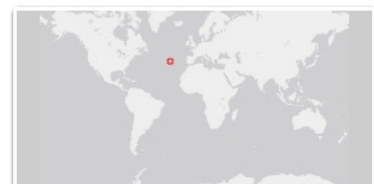


Legend

■ 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

No current population size estimates exist for this species, but it seems to be relatively widespread through several caves and in the MSS of three islands, which might indicate a stable population at least in the MSS area.

Current Population Trend: Stable

Habitat and Ecology (see Appendix for additional information)

There is limited information regarding this species' ecology and life-history. It occurs in eleven volcanic caves, some in protected areas (Natural parks of Pico and Terceira) and some surrounded by disturbed habitats, and also in the MSS (mesocavernous shallow stratum) habitats (Borges 1993). *Pseudosinella ashmoleorum* has been found in the dark and humid part of caves, with abundant mud or roots from the ceiling. Nevertheless, this species has only small possible adaptations to a troglobiont life-style, being likely an eutroglophile (i.e. epigeal species able to maintain a permanent subterranean population).

Systems: Terrestrial

Threats (see Appendix for additional information)

The main current threats to this species are the degradation of the habitat quality due to human activities like agriculture, urbanisation and construction, and recreational cave visitation. There are also several future potential threats: climatic changes (Ferreira *et al.* 2016) that can change the conditions inside the caves, changes in the nearby infrastructures, changes in land use, potential human recreational activities with cave visitation, and geological events (volcanic activity and earthquakes).

Conservation Actions (see Appendix for additional information)

The species is not protected by regional law, but part of its habitat is in a regionally protected areas (Natural Parks of Pico and Terceira). Land-use changes are one of the main current and future threats, and conservation measures should be extended beyond the caves. Further research is needed into its population, ecology and life history, and a monitoring plan for the invertebrate community is necessary in order to contribute to the conservation of this species. As a future conservation measure, the restriction of visits to the caves could be considered. A habitat management plan is needed and one is anticipated to be developed during the coming years.

Credits

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

Reviewer(s): Danielczak, A.

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Borges, P.A.V. 1993. First records for the mesocavernous shallow stratum (M.S.S.) from the Azores. *Mémoires de Biospéologie* XX: 49-53.

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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
7. Caves and Subterranean Habitats (non-aquatic) -> 7.2. Caves and Subterranean Habitats (non-aquatic) - Other Subterranean Habitats	Resident	Suitable	Yes

Threats

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

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Minority (50%)	Rapid declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.1. Small-holder plantations	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
4. Transportation & service corridors -> 4.1. Roads & railroads	Future	Minority (50%)	Rapid declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
6. Human intrusions & disturbance -> 6.1. Recreational activities	Ongoing	Majority (50-90%)	Causing/could cause fluctuations	Medium impact: 6
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.3. Herbicides and pesticides	Ongoing	Minority (50%)	Very rapid declines	Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
10. Geological events -> 10.1. Volcanoes	Future	Majority (50-90%)	Very rapid 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		
10. Geological events -> 10.2. Earthquakes/tsunamis	Future	Majority (50-90%)	Slow, significant declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects		
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Future	Majority (50-90%)	Slow, significant declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects		
11. Climate change & severe weather -> 11.2. Droughts	Future	Majority (50-90%)	Slow, significant declines	Low impact: 4
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality		

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: No
Occurs in at least one protected area: Yes

Conservation Actions Needed

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

Conservation Action Needed
2. Land/water management -> 2.1. Site/area management
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.1. Legislation -> 5.1.3. Sub-national level

Research Needed

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

Research Needed
1. Research -> 1.2. Population size, distribution & trends

Research Needed
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): 52
Continuing decline in area of occupancy (AOO): No
Extreme fluctuations in area of occupancy (AOO): Unknown
Estimated extent of occurrence (EOO) (km ²): 2828
Continuing decline in extent of occurrence (EOO): No
Extreme fluctuations in extent of occurrence (EOO): Unknown
Number of Locations: 12
Continuing decline in number of locations: No
Lower elevation limit (m): 5
Upper elevation limit (m): 750
Population
Continuing decline of mature individuals: No
Extreme fluctuations: Unknown
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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