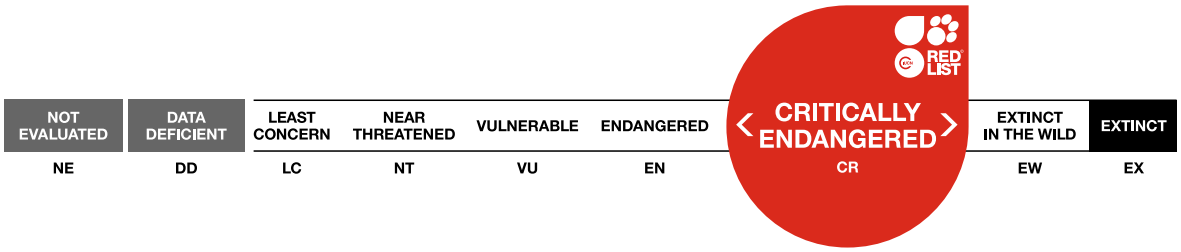
The IUCN Red List of Threatened Species™
ISSN 2307-8235 (online)
IUCN 2020: T124929897A124930911
Scope(s): Global
Language: English

Macarorchestia martini

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



View on www.iucnredlist.org

Citation: Nunes, R. & Borges, P.A.V. 2020. *Macarorchestia martini*. *The IUCN Red List of Threatened Species* 2020: e.T124929897A124930911. https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T124929897A124930911.en

Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Malacostraca	Amphipoda	Talitridae

Scientific Name: *Macarorchestia martini* Stock, 1989

Assessment Information

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

Year Published: 2020

Date Assessed: March 30, 2018

Justification:

Macarorchestia martini is a cave-adapted species from a single island, Terceira (Azores, Portugal). It has a very small Extent of Occurrence (EOO = 4 km²) and Area of Occupancy (AOO = 4 km²). The species is rare and only known from a single subpopulation in the coastal lava tube of Gruta das Agulhas. The area surrounding the cave is heavily impacted by human activities. Further research is needed into its population, ecology and life history; and a habitat management plan is needed and one is anticipated to be developed during the coming years. We also suggest the regular monitoring of the species (every ten years), and restricting access to the cave. The species is assessed as Critically Endangered (CR) based on the single location and current and future possible cave degradation.

Geographic Range

Range Description:

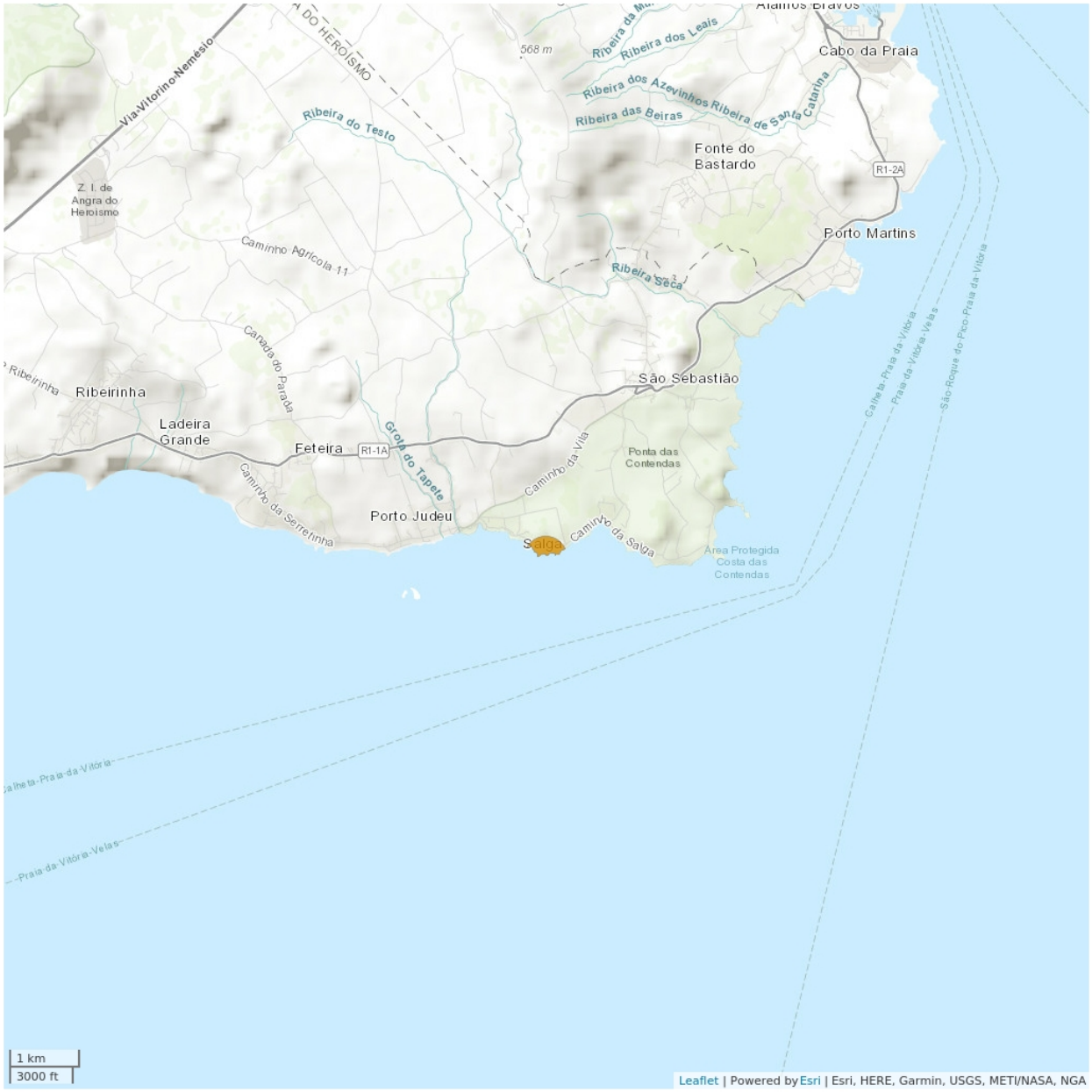
Macarorchestia martini is an endemic, cave-adapted species known from a single island, Terceira (Azores, Portugal) (Borges *et al.* 2010), and occurring in a single cave, the coastal lava tube of Gruta das Agulhas. The Extent of Occurrence (EOO) is 4 km² and the estimated Area of Occupancy (AOO) is 4 km².

Country Occurrence:

Native, Extant (resident): Portugal (Azores)

https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T124929897A124930911.en

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.

https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T124929897A124930911.en

Population

The species is rare and only known from a single subpopulation on Terceira island. The area surrounding the cave is heavily impacted by human disturbance.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

There is limited information regarding this species' ecology and life-history. Gruta das Agulhas is a 250 m long lava tube on the seashore, opening some 5 m above sea level. The above-ground area is disturbed by urbanisation and agricultural fields. Specimens of this species were found at some distance from the entrance but where dim light was still available, in high humidity but without permanent water. This species has reduced eyes, but few other adaptations to cave life (Stock 1989). It is mentioned as trogloxene, or even a driftwood specialist in Wildish (2014).

Systems: Terrestrial

Threats (see Appendix for additional information)

The main current threats to this species are the loss of habitat quality due to the impact of agricultural and domestic pollution and recreational cave visitation. However, there are several future potential threats: climatic changes (see Ferreira *et al.* 2016) are expected to cause habitat changes in lower elevations in Azores, that can change the conditions inside the cave; changes in the road infrastructure around the cave; and expanding urban development in the coastal area. The current increase in tourism in Azores is promoting the increase in cave visitation and uncontrolled recreational activities, with expected disturbance caused by cave visitation.

Conservation Actions (see Appendix for additional information)

The species is protected by regional law (RAA 2012), however, the cave where it occurs is not protected. Land-use changes are one of the main current and future threats, and conservation measures should be extended beyond the cave. 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. This should include additional surveys to confirm the troglobiont status of this species (see e.g. Wildish 2014). Future conservation work should include the consideration of the restriction of visits to the cave. 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): Russell, N.

https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T124929897A124930911.en

Bibliography

Borges, P.A.V., Costa, A., Cunha, R., Gabriel, R., Gonçalves, V., Martins, A.F., Melo, I., Parente, M., Raposeiro, P., Rodrigues, P., Santos, R.S., Silva, L., Vieira, P. and Vieira, V. 2010. *A list of the terrestrial and marine biota from the Azores*. Princípia, Cascais.

Ferreira, M.T., Cardoso, P., Borges, P.A.V., Gabriel, R., Azevedo, E.B., Reis, F., Araújo, M.B. and Elias, R.B. 2016. Effects of climate change on the distribution of indigenous species in oceanic islands (Azores). *Climate Change* 138(3-4): 603-615.

IUCN. 2020. The IUCN Red List of Threatened Species. Version 2020-3. Available at: www.iucnredlist.org. (Accessed: 10 December 2020).

RAA. 2012. *Regime jurídico da conservação da natureza e da proteção da biodiversidade - Decreto Legislativo Regional n.° 15/2012/A de 2 de Abril*. Região Autónoma dos Açores. Diário da República, 1.ª Série.

Stock, J H. 1989. A new genus and species of Talitridae (Amphipoda) from a cave in Terceira, Azores. *Journal of natural history* 23(5): 1109-1118.

Wildish, D. J. 2014. New genus and two new species of driftwood hoppers (Crustacea, Amphipoda, Talitridae) from northeast Atlantic and Mediterranean coastal regions. *Zoosystematics and Evolution* 90: 133-146.

Citation

Nunes, R. & Borges, P.A.V. 2020. *Macarorchestia martini*. *The IUCN Red List of Threatened Species* 2020: e.T124929897A124930911. https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T124929897A124930911.en

Disclaimer

To make use of this information, please check the Terms of Use.

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
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Majority (50-90%)	Rapid 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		
4. Transportation & service corridors -> 4.1. Roads & railroads	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 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
6. Human intrusions & disturbance -> 6.1. Recreational activities	Ongoing	Minority (50%)	Causing/could cause fluctuations	Low impact: 5
	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		
9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.1. Sewage	Ongoing	Minority (50%)	Rapid declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.1. Nutrient loads	Ongoing	Minority (50%)	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 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:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality		

https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T124929897A124930911.en

		2. Species Stresses -> 2.2. Species disturbance		
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Future	Whole (>90%)	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 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 -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		

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
Percentage of population protected by PAs: 0

Conservation Actions Needed

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

Conservation Action Needed
1. Land/water protection -> 1.1. Site/area protection
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
1. Research -> 1.3. Life history & ecology

Research Needed
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) (km²): 4
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km²): 4
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): No
Number of Locations: 1
Continuing decline in number of locations: No
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 5
Upper elevation limit (m): 5
Population
Continuing decline of mature individuals: Yes
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

https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T124929897A124930911.en

The IUCN Red List Partnership

The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership.

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.