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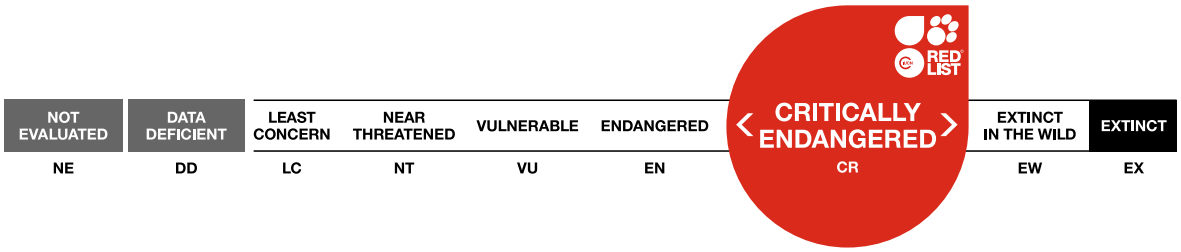
Megaselia miguelensis

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



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Diptera	Phoridae

Scientific Name: *Megaselia miguelensis* Disney, 2007

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 27, 2018

Justification:

Megaselia miguelensis is an Azorean-endemic eutroglophile species known from a single island, S. Miguel (Azores, Portugal). It has a very small Extent of Occurrence (EOO = 4 km²) and Area of Occupancy (AOO = 4 km²). The species is very rare and only known from a single subpopulation in a single cave; with the area surrounding the cave being heavily impacted by human activities. The present situation of this species needs to be further assessed and further research is needed into its population, distribution, threats, ecology and life history. A habitat management plan is needed and one is anticipated to be developed during the coming years. We also suggest as future conservation measures the regular monitoring of the species and fencing the entrance of the cave where the species occurs. The species is assessed as Critically Endangered (CR).

Geographic Range

Range Description:

Megaselia miguelensis is single island endemic species known from S. Miguel island (Azores, Portugal) (Borges *et al.* 2010), occurring in only one lava tube cave (Gruta da Água de Pau). The species can also potentially occur in the surrounding environment. The Extent of Occurrence (EOO) is 4 km² and the maximum estimated Area of Occupancy (AOO) is 4 km².

Country Occurrence:

Native, Extant (resident): Portugal (Azores)

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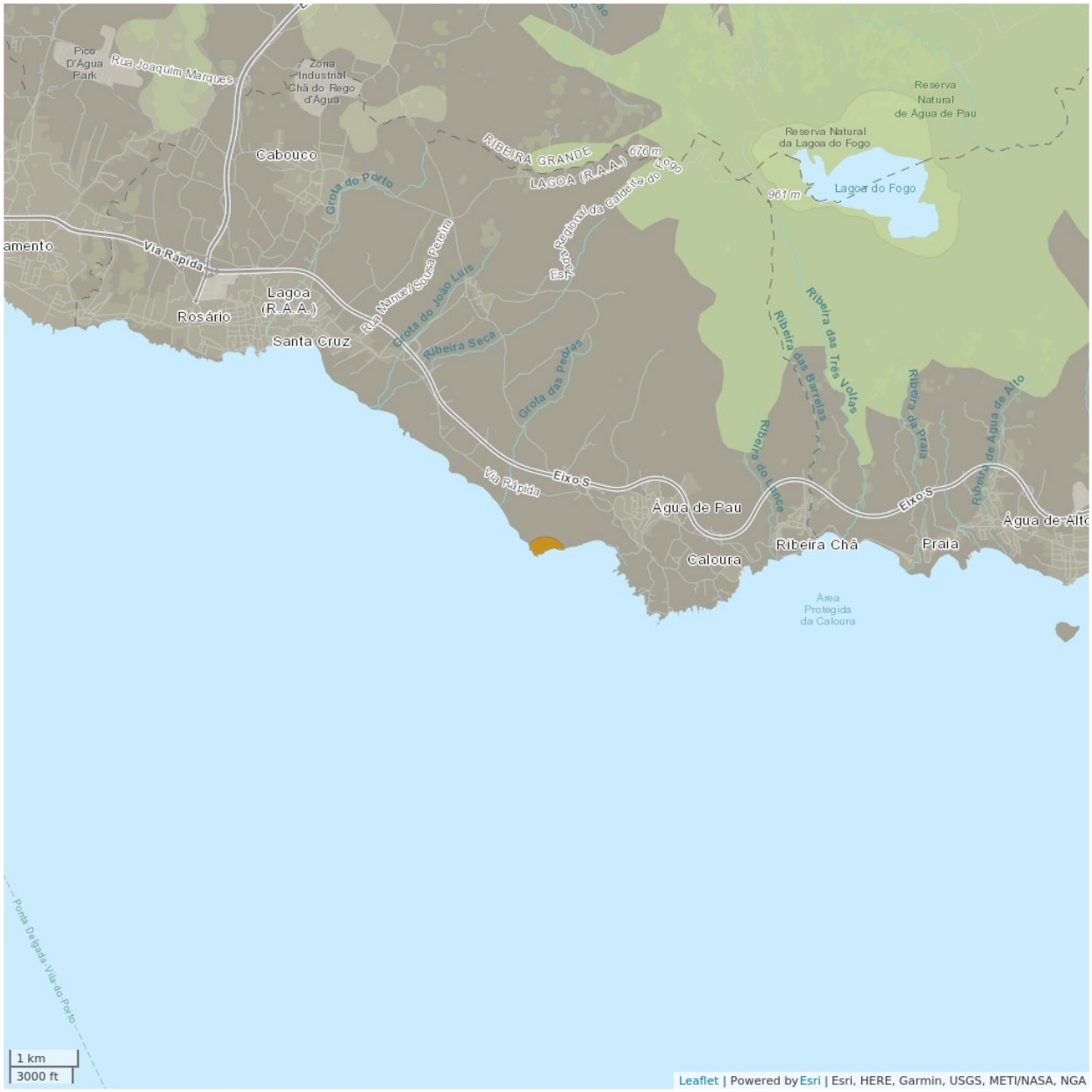
Distribution Map



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.

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Population

The species is very rare and only known from a single subpopulation in S. Miguel island. The area surrounding the cave is heavily impacted by human disturbance.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

The ecology and traits of this species are unknown. Phorids are usually found in damp habitats, in the presence of different kinds of decomposing plant and animal matter, including human corpses (hence the name coffin flies), on flowers and fungi or on ant nests and beehives, among others. Larvae, besides being found in the aforementioned habitats can also be found in faeces, in gastropods, as internal parasites of other arthropods, or as parasites or commensals of ants and termites (McAlpine *et al.* 1987). Most adults feed on nectar or on the liquids exuded by carrion and dung. Some species can be a vector of food contamination. Some species of the genus *Megaselia* feed and develop on fungi and are considered pests of cultivated mushrooms, while others develop in decaying material organic material, trash and sewers or on carrion. *Megaselia miguelensis* is an eutroglophile species (i.e. epigean species able to maintain a permanent subterranean population), being known from only one lava tube.

Systems: Terrestrial

Threats (see Appendix for additional information)

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

Conservation Actions (see Appendix for additional information)

This species is not protected by regional law. The present situation of this species needs to be assessed and further research is needed into its population, distribution, threats, ecology and life history. 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 creation of a fence in the entrance of the cave 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): Russell, N.

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Disclaimer

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%)	Slow, significant declines	Medium impact: 6
	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%)	Slow, significant declines	Medium impact: 6
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		
9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.2. Run-off	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
10. Geological events -> 10.1. Volcanoes	Future	Whole (>90%)	Very rapid declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
10. Geological events -> 10.2. Earthquakes/tsunamis	Future	Majority (50-90%)	Rapid declines	Low impact: 5
	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		

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

Conservation Action in Place
Systematic monitoring scheme: No

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 -> 4.1. Formal education
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
1. Research -> 1.5. Threats
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): 4
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): Unknown
Estimated extent of occurrence (EOO) (km^2): 4
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): Unknown
Number of Locations: 1
Continuing decline in number of locations: Unknown
Extreme fluctuations in the number of locations: Unknown

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Distribution
Lower elevation limit (m): 0
Upper elevation limit (m): 10
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

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.