Drouetius borgesi, Weevil


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Taxonomy

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Phylum</th>
<th>Class</th>
<th>Order</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animalia</td>
<td>Arthropoda</td>
<td>Insecta</td>
<td>Coleoptera</td>
<td>Curculionidae</td>
</tr>
</tbody>
</table>

**Taxon Name:** *Drouetius borgesi* Machado, 2009

**Synonym(s):**
- *Laparocerus azoricus*

**Common Name(s):**
- English: Weevil

**Taxonomic Source(s):**

**Assessment Information**

**Red List Category & Criteria:** Endangered B2ab(i,ii,iii,iv) ver 3.1

**Year Published:** 2018

**Date Assessed:** December 28, 2016

**Justification:**
*Drouetius borgesi* is an endemic species with three subspecies: *D. b. borgesi* present in Terceira island; *D. b. centralis* present in Faial, Pico, S. Jorge and Graciosa islands and *D. b. sanctmichaelis* restricted to S. Miguel island (Azores, Portugal). It has a relatively large extent of occurrence (EOO = ca 11,600 km²) but a small area of occupancy (AOO = 92 km²). The several populations are highly fragmented and located at mid to high altitudes mostly in natural habitats but also in some exotic plantations. Based on Ferreira et al. (2016) the habitat will further decline as a consequence of climate change (increasing number of droughts). Based upon the small area of occupancy, the decline in AOO and number of populations, the decreasing extent and quality of habitat, the species is assessed as Endangered (EN).

**Geographic Range**

**Range Description:**
*Drouetius borgesi* is an endemic species with three subspecies: *D. b. borgesi* present in Terceira island; *D. b. centralis* present in Faial, Pico, S. Jorge and Graciosa islands and *D. b. sanctmichaelis* restricted to S. Miguel island (Azores, Portugal) (Borges et al. 2010). *D. borgesi* is known from Natural Forest Reserves of Caveiro (Pico); Pico Pinheiro (S. Jorge); Pico Galhardo, Caldeira Sta. Bárbara e Mistérios Negros and Terra Brava (Terceira); and Pico da Vara (S. Miguel). The extent of occurrence (EOO) is ca 11,600 km² and the maximum estimated area of occupancy (AOO) is 92 km².

**Country Occurrence:**
Native: Portugal (Azores)
Population

*Drouetius borgesi* is a widespread and still an abundant species in some pristine sites. The species currently has a decreasing population density due to the spread of the invasive plant *Hedychium gardnerianum* that is changing the structure of the forest and the cover of bryophytes and ferns in the soil with impacts on the species. 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.

**Current Population Trend:** Decreasing

Habitat and Ecology (see Appendix for additional information)

This species has three subspecies: *D. b. borgesi* present in Terceira island, inhabits native forests (dominated by *Juniperus brevifolia*, *ilex perado* subsp. *azorica*, *Laurus azorica* and *Erica azorica*) and *Cryptomeria* plantations; *D. b. centralis* present in Faial, Pico, S. Jorge and Graciosa islands, inhabits in native and exotic forests, native plants on lavic formations (*Erica azorica*) and grasslands and natural pastures; and *D. b. sanctmichaelis* restricted to S. Miguel island, inhabits native forests. This species has an altitudinal range between 300 and 1100 m. Adults and larvae are herbivores and feed on plant tissues, mostly leafs and during the night. Based on seasonal data from SLAM traps obtained in several islands between 2012 and 2016, the adults are active all year, being most abundant in spring and summer.

**Systems:** Terrestrial

Use and Trade

This 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 (Triantis et al. 2010, Terzopoulou et al. 2015). The most important ongoing threat to this species is the spread of invasive plants (e.g. *Hedychium gardnerianum*) that are changing the habitat structure, 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).

Conservation Actions (see Appendix for additional information)

The species is not protected by regional law. Its habitat is in regionally protected areas (Natural Parks of Pico S. Jorge, Terceira and S. Miguel). The Terceira Natural Park administration is currently starting control measures of the invasive plants. 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. Since this species occurs in relict native Azorean forests, some awareness measures were put recently in practice using for instance images from extreme macro. Further research is needed into its ecology and life history in order to find extant specimens in more sites and obtain information on population size, distribution and trends. Monitoring every ten years using the BALA protocol will inform about habitat quality (see e.g. Gaspar et al. 2011).
Bibliography


Citation


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External Resources

For Images and External Links to Additional Information, please see the Red List website.
Appendix

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

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Season</th>
<th>Suitability</th>
<th>Major Importance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Forest -&gt; 1.4. Forest - Temperate</td>
<td>Resident</td>
<td>Suitable</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Grassland -&gt; 4.4. Grassland - Temperate</td>
<td>Resident</td>
<td>Marginal</td>
<td>-</td>
</tr>
<tr>
<td>14. Artificial/Terrestrial -&gt; 14.2. Artificial/Terrestrial - Pastureland</td>
<td>Resident</td>
<td>Marginal</td>
<td>-</td>
</tr>
<tr>
<td>0. Root -&gt; 16. Introduced vegetation</td>
<td>Resident</td>
<td>Marginal</td>
<td>-</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Threat</th>
<th>Timing</th>
<th>Scope</th>
<th>Severity</th>
<th>Impact Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Climate change &amp; severe weather -&gt; 11.1. Habitat shifting &amp; alteration</td>
<td>Future</td>
<td>Whole (&gt;90%)</td>
<td>Slow, significant declines</td>
<td>Low impact: 5</td>
</tr>
<tr>
<td>11. Climate change &amp; severe weather -&gt; 11.2. Droughts</td>
<td>Ongoing</td>
<td>Whole (&gt;90%)</td>
<td>Slow, significant declines</td>
<td>Medium impact: 7</td>
</tr>
<tr>
<td>Stresses: 1. Ecosystem stresses -&gt; 1.2. Ecosystem degradation 2. Species Stresses -&gt; 2.1. Species mortality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Agriculture &amp; aquaculture -&gt; 2.2. Wood &amp; pulp plantations -&gt; 2.2.1. Small-holder plantations</td>
<td>Ongoing</td>
<td>Minority (50%)</td>
<td>Causing/could cause fluctuations</td>
<td>Low impact: 5</td>
</tr>
<tr>
<td>Stresses: 1. Ecosystem stresses -&gt; 1.2. Ecosystem degradation 2. Species Stresses -&gt; 2.2. Species disturbance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conservation Actions in Place
(http://www.iucnredlist.org/technical-documents/classification-schemes)

<table>
<thead>
<tr>
<th>Conservation Actions in Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-Place Research, Monitoring and Planning</td>
</tr>
</tbody>
</table>
Conservation Actions in Place

Systematic monitoring scheme: Yes

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): 71-80

Invasive species control or prevention: Yes

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
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution

Estimated area of occupancy (AOO) (km²): 92

Continuing decline in area of occupancy (AOO): Yes
## Distribution

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extreme fluctuations in area of occupancy (AOO):</td>
<td>Unknown</td>
</tr>
<tr>
<td>Estimated extent of occurrence (EOO) (km²):</td>
<td>11622.55</td>
</tr>
<tr>
<td>Continuing decline in extent of occurrence (EOO):</td>
<td>Yes</td>
</tr>
<tr>
<td>Extreme fluctuations in extent of occurrence (EOO):</td>
<td>Unknown</td>
</tr>
<tr>
<td>Number of Locations:</td>
<td>17</td>
</tr>
<tr>
<td>Continuing decline in number of locations:</td>
<td>Yes</td>
</tr>
<tr>
<td>Extreme fluctuations in the number of locations:</td>
<td>Unknown</td>
</tr>
<tr>
<td>Lower elevation limit (m):</td>
<td>300</td>
</tr>
<tr>
<td>Upper elevation limit (m):</td>
<td>1100</td>
</tr>
</tbody>
</table>

## Population

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing decline of mature individuals:</td>
<td>No</td>
</tr>
<tr>
<td>Population severely fragmented:</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## Habitats and Ecology

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing decline in area, extent and/or quality of habitat:</td>
<td>Yes</td>
</tr>
<tr>
<td>Generation Length (years):</td>
<td>1</td>
</tr>
<tr>
<td>Movement patterns:</td>
<td>Not a Migrant</td>
</tr>
</tbody>
</table>
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