Saving Marasmodes undulata, one of the most threatened plants in the Cape Floristic Region

Progress report August 2019

Background and Project overview

Marasmodes undulata is a Critically Endangered species occurring in the Cape Floristic Region. This species is confined to one area in the town of Paarl, Western Cape, South Africa. Historical monitoring records showed a steep decline in population numbers over the last 30 years. This species, now known from a handful of plants was in urgent need of conservation interventions to ensure that the species does not go extinct. The 'Saving Marasmodes undulata project' aims to secure and bolster the current population, improve habitat condition and ensure effective management of the site.

Our overall objectives are: -

- Restoring and strengthening the population of *Marasmodes undulata* and associated threatened plants
- Improve the habitat condition of the site
- Support the municipality to effectively manage and conserve the site
- Create awareness about the conservation significance of the species and its associated habitat

Progress (November 2018 - July2019)

Collect seeds and cuttings of Maramodes undulata and associated threatened plants

- Due to an accidental fire at the site in December 2018 we could not collect cuttings and seeds from the existing plants on site. We have managed to find a seed collection made by a nature conservator in 1982, which was stored in the Bloodbank of South Africa (similar storage conditions to the Millenium seedbank facility).
- We developed a seed sowing protocol and are testing various soil mixes and growing conditions. The 300 seeds that we have available was split between Kirstenbosch Botanical Gardens and Stellenbosch Botanical Gardens to ensure that we maximise the chances of germination success. Three expert fynbos horticulturists are managing the germination process.
- Seed viability tests were done before the sowing process began.
- Seeds were treated with fynbos smoke to encourage germination
- We conduct monthly trips to the site to collect cuttings and seeds of other species on site for restoration purposes.

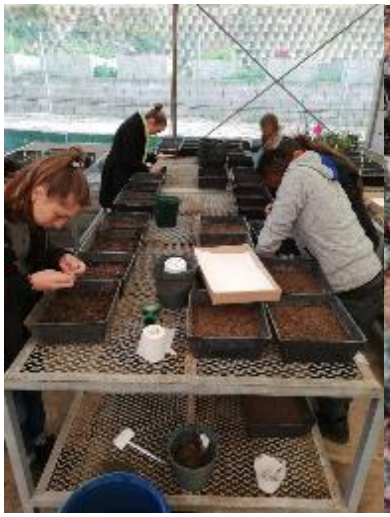


Fig 1: seed sowing

Fig 2: seeds placed in soil

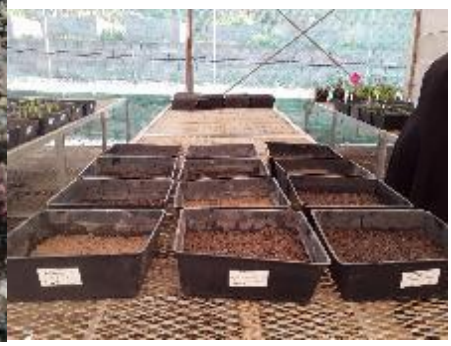


Fig 3: Seed trays fully prepared

Collect seeds of dominant and ecologically important species for purpose of reseeding

- On our monthly site visits we collect seeds of plants that occur naturally on site. However, our reference section, which is the unburnt section of the site is very small so we have not been able to collect much seeds from the site. We are looking at similar sites to augment seed collection of dominant and structurally important plants.

Actively restore disturbed areas of the site

- We developed a habitat condition map for the site to identify key areas that is in need of restoration. The map has been included in the management plan for the site
- We have started an Alien invasive clearing inititative on site. All woody alien invasive species was removed from the site and we continually monitor the recruitment of alien invasive seedlings.
- The fire in December has stimulated a number of alien grass species as well as other herbaceous weeds like Echium plantigerum (Patersons curse). Herbaceous weeds are hand pulled and removed from the site.
- In April 2019 we did a treatment of herbicide to control the alien grass emergence. We used Agil, which is a monocot specific systemic herbicide on the peripheral disturbed areas. Spraying had to commence before the first autumn rains and had to stop before the onset of the winter growing season. We will continue herbicide treatment on the disturbed areas of the site in the next summer season
- We also arranged with the municipality to remove rubble that was present on site. This will allow us to restore these disturbed areas effectively

Fig 4: Habitat condition map for the site

Fig 5: Rubble removal from the site. The disturbed areas had several mounds of rubble

Conduct habitat suitability analysis at sites within a 10 kilometer radius

- We mapped natural fragments of vegetation using Google Earth. We conducted site visits to look at vegetation type, soil type and habitat condition. The site with intact habitat is different to our site and all other sites that had similar soil type were very disturebed or transformed. We will be mapping areas in a greater radius to try and find the most suitable sites for reintroduction.

Facilitate engagement with provincial and local government agencies, civil society and relevant NGO's to discuss site protection status

- We have met with the relevant municipal officials and presented the project to gain support. We are included in their quarterly environmental committee meetings and provide feedback and progress on the project
- We supported the municipality to complete the Stewardship assessment forms and the site was presented to the Stewardship review committee and it has qualified for Contract Nature Reserve status. The preparation of the relevant documentation for official declaration of the site has commenced.

Revise management plan of site

- The municipality has taken responsibility to revise and update the management plan. We have included a section on the restoration project in the plan and we have provided the municipality with all the maps and protocols produced by our project for inclusion in the management plan.
- On our monthly visits to the site we also photograph flowering plants and we are in the process of updating the species list for the site. Our list currently stands at 118 species. This list will grow significantly during the next spring season. We have recorded several species no previously recorded from the site

Fig 6: Gladiolus recurvus (Vulnerable)

Fig 7: Isoetes stellenbossiensis (Near Threatened)

Conduct open day and bioblitzes at the site

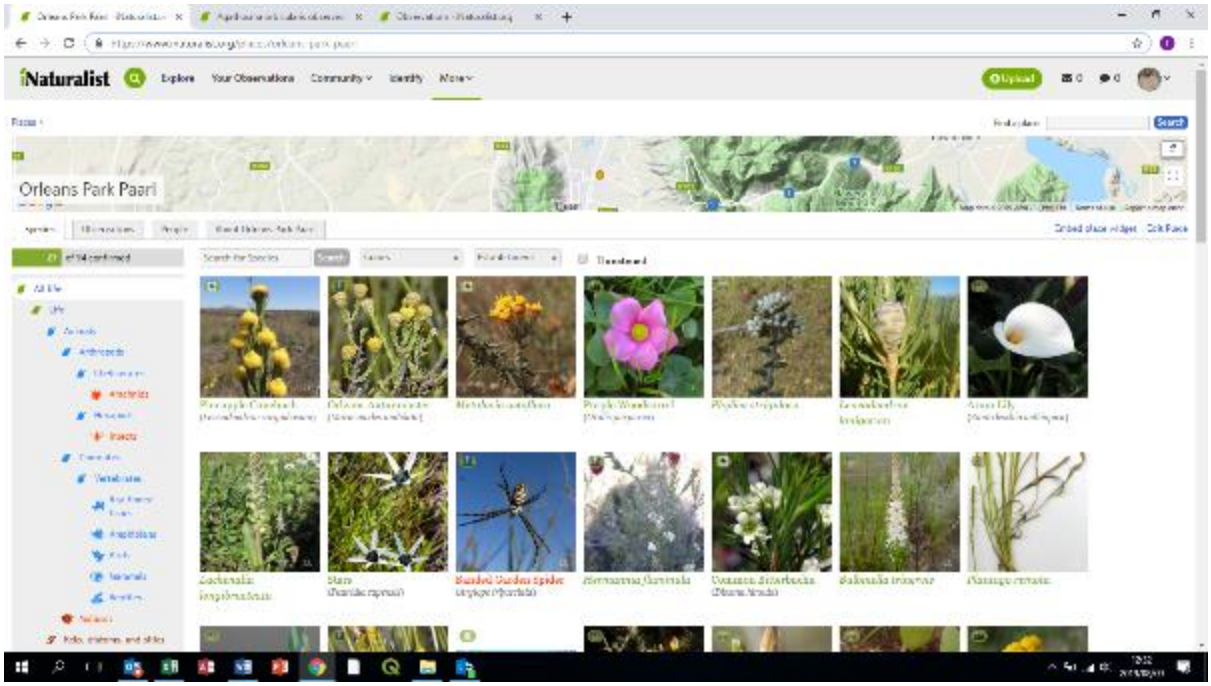
- We are in the process of planning the open day to create awareness about the site. We have selected a date in September which coincides with National Heritige Day.
- We will invite members of the community, conservation officials and interested individuals willing to form part of the Friends group we want to establish for the site.

Develop interpretative signage for the site and threatened species

- This will be done in 2020 when we have completed more of the restoration work. There is currently a sign at the entrance of the site but we will develop more signage to create awareness in the recreational spaces of the site.

Initiate friends group to support management and activities at the site

- We have created a project and place on iNaturalist and will be conducting bioblitzes in spring to encourage vistitation to the site and through that we hope to find interested individuals that will be part of the Friends group.
- Here is the link to the iNaturalist place: https://www.inaturalist.org/places/orleans-park-paarl



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