



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

Progress Report April 2022



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



Collect seeds and cuttings of *Maramodes undulata* and associated threatened plants

- Unfortunately we lost one of the original plants grown from seed. In November 2021 we took additional cuttings were made from the original plants to increase the number of plants available for planting. In an attempt to maximise the number of cuttings made from the growth of the original plants smaller cuttings were made to increase the number of plants. This strategy was unsuccessful as about 50% of the cuttings did not root. We also discovered that the rooting is much slower if the cuttings are made smaller. We have found that cuttings between 7 and 10cm are the ideal size for cuttings
- 110 cuttings were made and only 50 cuttings rooted by January 2022
- The mother plants at the Stellenbosch University was replanted into bigger pots to allow for more growth and hardened in the shade house
- In Mid march we noticed plants where starting to bud. This was incredibly exciting as the prospect of flowers would give us additional options of seeds to increase the number of plants we have.
- The plants flowered in the beginning of April and we hand pollinated a total of 48 flowerheads from 4 clones of the Marasmodes plants where hand pollinated.
- Pollen of the Kirstenbosch mother plant was shared with the Stellenbosch University team and the 4 clones were hand pollinated.
- Flowerheads were bagged after hand pollination



Fig 1: Marasmodes plants budding



Fig 2: Victoria Wilman of the MSB hand pollinating plants



Fig 3: Flowerheads of hand pollinated plants bagged

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

- In Nov 2021 we did another seed collecting trip to the site with the MSB staff. Additional seed of 12 species were collected and this has been added to the seed collection for the purpose of site restoration. .

Actively restore disturbed areas of the site

- Although the plants planted during the August 2021 restoration planting showed good signs of survival many of the plants did not survive the summer period. The area had below average rainfall in the winter of 2021 and many plants succumbed to the hot dry conditions over summer. The smaller shrubs like *Monopsis variifolia* and *Psoralea alata* did not survive well but *Leucadendron stellare* fared much better. 15 of the 115 plants planted has survived and is well established.
- The natural recovery after the 2019 fire has been good. The pioneer species like *Relhania fruticosa*, *Dicrothamnus rhinocerotis*, *Athanasia crenata*, *Themeda triandra*, etc has recruited well
- Due to the informal settlement adjacent to the site there has been a dramatic increase in litter on the site. The staff of the municipal park has been doing monthly clean-ups and in early April 2021 we did another community cleanup and alien clearing activity.
- The municipality has approved the construction of a concrete Vibacrete fence around the informal settlement which will mitigate the dumping of litter on the conservation area.
- We have noticed an increase in the growth of *Vicia benghalensis*, which is an annual herb invading the site. These plants have been manually removed during alien clearing operations on site.



Fig 4: *Acacia meansii* removed



Fig 5: Youth from the community helping with Alien clearing

Conduct habitat suitability analysis at sites within a 10 kilometer radius

- In November 2021 we supported Paul Emms, a botanical consultant with a search and rescue at a site approved for development in the vicinity of Orleans Park. The site had been approved for development and although it was previously disturbed there were still small patches that had some indigenous geophytes. Corms were removed from the development footprint and stored for replanting at Orleans park. Species included *Sparaxis grandiflora* subspecies *fimbriata*, *Geissorhiza aspera* and *Gladiolus alatus*. These occur naturally at Orleans Park and the corms collected will be planted in the restoration areas in Autumn

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

- The official proclamation process has not been completed yet. The relevant assessment forms has been submitted to the provincial conservation agency (Cape Nature) and the estimated timeframe for completing the process is Mar 2023.

Revise management plan of site

- The management plan for the site has been approved by the municipality. We have seen the value of the management plan being approved as the staff of the Orleans Park has become more involved in alien clearing, litter cleanup and have become more aware of the significance of the site.



Fig 6: *Sparaxis grandiflora subsp fimbriata* from search and rescue site

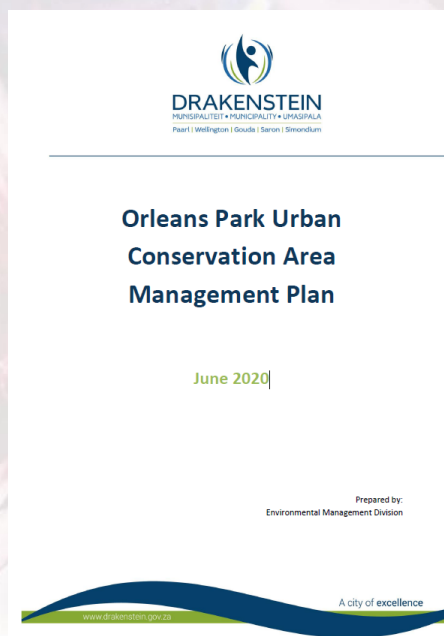


Fig 7: Management plan for implementation

Conduct open day and bioblitzes at the site

- In this period we did not arrange any special Bioblitzes with the community to record species. The CREW team and MSB team visited the site for seed collection and checking on restoration planting

Initiate friends group to support management and activities at the site

- Our iNaturalist project now has 219 observations with 95 species recorded. Although we have not had much participation from local communities surrounding the area in recording biodiversity on the site through iNaturalist they have been involved in alien clearing and litter clean-up activities. We have also engaged interns working at Kirstenbosch Botanical Gardens to join us on fieldtrips to the site.



Fig 8-10: Screenshots of observations on iNaturalist including a map of all observations from the site.