Threatened Plant Programme annual report August 2011- September 2012

Introduction

The Threatened Plant Programme is housed in SANBI in the Applied Biodiversity Research Division. The main areas of work involve:

1) Monitoring threatened plants in the field as part of the CREW programme (an initiative that involves volunteers from the public and that is implemented in partnership with the Botanical Society)

2) Ensuring that threatened plant monitoring data are fed into producing up to date Red List assessments.

This programme is also responsible for ensuring that threatened plant information is incorporated into conservation initiative e.g. Regional Conservation Plans and Land-Use decision making. Over the past few years our programme has started focussing on developing capacity in plant conservation work by working with Tertiary Institutions. This report summaries the work done in the past year and is focused reporting against the above mentioned areas of work. Two new initiatives that build plant conservation awareness in amongst the public started in 2012 are also discussed. These are the iSpot Bioblitz project and medicinal plant project in the Pondoland.

1) CREW programme summary:

The CREW programme had one of its most successful years in 2011. With additional staff capacity in the form of interns, we engaged new volunteer groups, increased the amount of the field trips conducted, and engaged students from universities in the CREW programme.

CREW volunteer group update

CREW currently has 22 volunteer groups working across South Africa. 13 volunteer groups monitor plants in the Cape Floristic Region (CFR). These groups are distributed from Nieuwoudtville in the west to Port Elizabeth in the east. In 2011, the Hottentots Holland group was established to focus on the Helderberg Basin and the lower slopes of the Hottentots Holland Mountains. This group will work with CapeNature’s biodiversity stewardship properties in the Helderberg Basin and will support with surveying natural vegetation for populations of threatened plants. Two groups Kogelberg and Piketberg, that were started in the past 3 years are still not yet functioning independently and are in need of focussed attention.

There are now 9 CREW volunteer groups s operating in the Summer Rainfall region of South Africa. Most of the groups are based in KZN where the highest concentration of threatened plants occurs. One group is based in Mpumalanga. Five CREW groups have been involved with botanical surveys, identifying threatened species and producing plant species lists for biodiversity stewardship sites. The Nicholson Botanical group in southern KZN assisted the EDRR programme with localities of invasive alien species.
Sites monitored

The CREW staff and volunteers sampled 550 sites during the 2011 – 2012 field season. This is the highest number of sites monitored since the start of the project in 2003 (Figure 1.). Also in 2011, 519 species of conservation concern were monitored (Figure 2.) and during this past season, CREW managed to monitor a total of 1,427 different plant species. Many more species of conservation concern were monitored during 2011 in comparison to 2010 (Figure 3.).

Figure 1: Number of sites monitored since the start of CREW in 2003.

Figure 2: Total number of plant species monitored (green bars) and number of species of conservation concern (red bars).
Highlights from the 2011 field season

**Monitoring of highly threatened species and under sampled regions**

In the CFR the main focus for the field season was to find as many Critically Endangered Possibly Extinct (CRPE) and Data Deficient (DD) species as possible. These species have very little information about their distribution and current status of the population size and threats. It was a priority to search for these species to determine if they still exist at the historical localities and to collect vital information about the status of the populations in the field. In addition to these species targets, we also conducted focussed field trips with the general CREW volunteers (the C Team), to Ceres, Worcester and the Sandveld (the area between Piketberg and Graafwater). These areas were selected on the basis of either being under botanised or threatened by recent increase in habitat transformation for crop cultivation. The 2012 target areas currently being surveyed are post fire areas in the Caledon Swartberg, Klein Rivier and Elandkloof mountains.

In KZN, the Highway group found 3 threatened species at 1 site, an unusual occurrence for the Summer-rainfall region. A new population of the Endangered *Aloe neilcrouchii* was found by the Umvoti CREW Group. The Mkambathini group conducted 11 fieldtrips in the Mistbelt grasslands over the past field season, yielding many records of threatened species. The past season was not a successful one for the CREW All over group (A Team) as only 2 Critically Endangered species and 1 vulnerable species were found.

**Critically Endangered Possibly Extinct species found**

Since the publication of the Red List in 2009, there has been 14 CRPE species rediscovered. In 2011 the CREW programme was responsible for six of those rediscoveries.
**Critically Endangered** Possibly Extinct species rediscovered.

**Planea schlecteri**
This species is only known from three collections made in 1897, 1914 and 1935. The FOT found a population at the Briers Low Stewardship Nature Reserve in Feb 2012.

**Oxalis levis**
Last recorded in the 1933 in the Mamre area this species was thought to be extinct. A new population was discovered in June 2011 at the Riverlands Nature Reserve.

**Muraltia ferox**
This species was only known from one collection made by Margaret Levyns in 1951. The CREW team rediscovered it near Worcester.

**Moraea loubseri**
After numerous unsuccessful searches by the CREW team, Rupert Koopman finally rediscovered this species in September.
The other two CRPE species that were rediscovered, not included in the table, are *Pseudalthenia aschersoniana*, found by the Friends of the Tygerberg Hills (FOTH) group, and *Senecio hirtifolius*, found by the CREW team and members of the Port Elizabeth group. This species was only known from one record made by Ecklon and Zeyher made in 1895.

The Nicholson Botanical group has been searching for the CRPE *Turreae streyii* in Southern KZN without luck. The search will continue over the next 2 field seasons and if not found the status will be changed to Extinct.

**New species found by CREW and partners**

During 2011 CREW volunteers and partners working closely with the CREW programme discovered a number of new species. The George Outramps group cover a large area from the Swartberg to the Langeberg. Finding a new species was one of the major goals of this group and after many years of searching, they finally discovered a new *Erica* species in the Langeberg Mountains. *Erica* sp. nov. will be described by Ted Oliver.

The CREW group in Jacobsbaai have been very successful at finding new species. Since 2006, ten new species have been discovered in Jacobsbaai and in September 2011, Koos Claassens (Jacobsbaai group champion) added the eleventh new species to the list. *Trachyandra* sp. nov. grows on granite outcrops and only flowers between 16:00 and sunset. This species will be described by Stephen Boatwright.

Other new species discovered by CREW partners are:

- *Polhillia curtisiae, Otholobium curtisiae, Ficinia* sp. nov. and *Hesperantha* sp. nov. found by Odette Curtis in the Overberg region.
- *Moraea* sp. nov. found by Rupert Koopman in the Agter Witzenberg in September 2011.
Other interesting finds during the 2011/12 field season

The 2011 field season was one of the most successful data collecting seasons for CREW. Here are a few of the most exciting species found.

- A new population of Babiana secunda (CR) found by the FOTH group at Klipheuwel.
- Gnidia parvula (DD) is known from a single collection made over a century ago. The FOTH group found a new population on the Cape Flats.
- A new population of Cliffortia ferricola (CR) in the Kleinmond area found by the Kogelberg group. This species is only known from three small fragmented populations.
- Two new populations of Moraea angulata (CR).
- A new population of Moraea amissa found by Greg Nicolson on the Paardeberg.
- New population of the recently described Babiana avicularis
- A new population of Asclepias concinna (VU) found by Isabel Johnson at Umgano.
- A new population of Aloe neilcrouchii (EN) found by the Umvoti CREW at Blinkwater Nature reserve.
- The rare Brachystelma remotum was found in the Utrecht district by Isabel Johnson.
CREW engages universities

CREW conducted a series of lectures and field trips to educate university students on the process of Red Listing and to explain how the Red List is used in various conservation applications. The lecture comprises of three sections. The first is an introduction to plant population ecology and explanations of the factors that make species vulnerable to extinction. The second section explains the IUCN Red List categories and criteria, showing examples of how the criteria are applied when assessing the extinction risk of a species. The last section showcases the areas in conservation where the Red List and CREW data are used to make important conservation decisions and helps focus scarce conservation resources on top biodiversity priorities. The following courses were conducted:

- Nelson Mandela Metropolitan University in Port Elizabeth, October 2011, 25 students attended.
- Cape Peninsula University of Technology, Red list training and field trip, February 2012, 30 students.
- Stellenbosch University, Red list training and field trip, May 2012, 50 students.
- University of the Western Cape, Red list training and field trip, May 2012, 18 students.
- Durban University of Technology horticulture students in their third year.
- The University of Zululand’s second year Botany students were introduced to the Red Listing process and searched for the orchid Didymoplexus veruculosa (VU) for the third time without success.
- University of KZN Pietermaritzburg students undertook the lectures as well as surveying the Merwilla plumbea (EN) population at Hilton College. Data has been collected for past 3 years.
CREW plant identification courses

In the CFR, in September 2011, John Manning presented a course on the Iridaceae family, focussing on three genera namely *Ixia*, *Geissorhiza* and *Hesperantha*. Thirty-two volunteers attended the course. It was followed by a practical identification session at Rondebosch common.

Four plant identification courses were presented at the CREW CFR annual Workshop. Kenneth Oberlander (Stellenbosch University) presented on the Oxalidaceae family, Chris Cupido from SANBI’s Compton herbarium presented on the Campanulaceae family. Anthony Magee, also from Compton, presented on the Ursinia group of the Asteraceae while Bronwyn Busch (SANBI) introduced an interactive key for Relhanina (Asteraceae).

Over the past year, CREW summer-rainfall volunteers were treated to 5 identification courses - ferns ID by John Burrows, the genus *Asparagus* by Sandie Burrows, the genus *Hypoxis* by Yashica Singh, tree identification by Braam van Wyk and the genus *Gymnosporia* by Marie Jordaan. We also had a herbarium techniques refresher course at the Bews herbarium. All the courses were well attended with attendees ranging from 15 to 45 for each course!

2) Red Listing:

The Threatened Plant programme is responsible for keeping the Red List up to date. The following progress has been made over the past year:

- 500 national assessments have been updated since August 2011.
- 2449 assessments were resubmitted to IUCN in February 2012, as none of the 6000 assessments submitted in August 2010 were processed
- One Red List website update (v. 2012.1) was published in May 2012

Unfortunately due to many conflicting work demands and only one staff member responsible for working on Red Listing many tasks needed for the Red List are not being fulfilled these include:

- 417 newly described species still await assessment (many are likely to be of conservation concern)
- Assessments of 1056 species of conservation concern are in need of updating due to new information/data that has become available (including CREW data)

Threatened Species Mapping Project:

An urgent need exists for comprehensive, high resolution spatial data for South Africa’s threatened plant species, to feed into conservation plans; land-use decision making; and national and international reporting on the state of biodiversity. As of beginning 2012, the geo-referencing of all specimens of species of conservation concern in PRECIS was completed thanks to the work done by Ilva Rogers on geo-referencing since 2005. We have also assembled several external datasets of locality information from various sources. This data is however in need of vetting, as a previous analysis has shown that more than 50% of species in PRECIS have at least one incorrectly identified specimen. Since August 2012, we have started processing and quality checking the locality information for threatened species, and at the same time updating all assessments of threatened species, as much of the new data represents subpopulations not previously considered in
assessments. The initial aim was to complete this process and present a preliminary analysis at the 2013 Planning Forum, however, with current capacity constraints in the Red List team, this will not be possible:

**Target:** 2619 threatened species

**Progress:** 168 species reassessed (16.8 species per week)

Estimated date of completion (at current rate of progress): **August 2015**

We need a strategy to significantly increase the rate of assessment if this work is to make any meaningful contribution, especially considering the urgency of the need for more effective prevention of ongoing habitat loss to threatened species, as well as the rate at which new data accumulates, which at present exceeds our capacity to process it into Red List assessments. We are currently focusing our efforts on the Western Cape, where 67% of our threatened plant diversity occurs (1774 species).

3) **Bioblitz project:**

The iSpot bioblitz project project is funded by the South African Agency for Science and Technology Advancement (SAASTA). The aim of the project is to create awareness and excitement about the rich biodiversity through a series of Bioblitz events across the country. A “BioBlitz” is a large scale event that engages people with biodiversity, inviting them to get directly involved in surveying and monitoring. During a BioBlitz event experts and members of the public, particularly communities from areas surrounding important sites for conservation, work together to survey a natural area; seeking, identifying and recording as many species as possible over 24 hours. Observations are uploaded onto SANBI’s iSpot website. These events are being widely publicized and should result in increasing the numbers of users of the iSpot website.

<table>
<thead>
<tr>
<th>Bioblitz event</th>
<th>Date</th>
<th>No. observations</th>
<th>No. participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenilworth</td>
<td>14 June 2012</td>
<td>172</td>
<td>140</td>
</tr>
<tr>
<td>Nieuwoudtville Aug</td>
<td>14 Aug 2012</td>
<td>47</td>
<td>40</td>
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<tr>
<td>Nieuwoudtville Sep</td>
<td>4 Sept 2012</td>
<td>35</td>
<td>37</td>
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<tr>
<td>Wolfagt</td>
<td>25 Aug 2012</td>
<td>37</td>
<td>75</td>
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<tr>
<td>Harmony Flats</td>
<td>9 Sept 2012</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Mamre</td>
<td>15 Sept 2012</td>
<td>43</td>
<td>18</td>
</tr>
<tr>
<td>Elandsberg/Voelvlei</td>
<td>16 Sept 2012</td>
<td>172</td>
<td>26</td>
</tr>
<tr>
<td>Suurbraak (mini blitz)</td>
<td>27 Sept 2012</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Riverlands</td>
<td>7 Oct 2012</td>
<td>36</td>
<td>28</td>
</tr>
<tr>
<td>Umtamvuna NR</td>
<td>15 Sept 2012</td>
<td>30</td>
<td>25</td>
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<tr>
<td>Hilton College (mini blitz)</td>
<td>6 Oct 2012</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Hawaan Forest Durban</td>
<td>7 Oct 2012</td>
<td>30</td>
<td>13</td>
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The iSpot facebook page has also become increasingly popular. We currently have 66 likes. There has been four radio interviews and thirteen articles written about iSpot and the Bioblitz events.

Some of the main lessons we have are:
- The Bioblitz events work best if there are facilitated learning opportunities for participants joining the event. This requires much more time and effort but the interaction between the experts and the members of the public is phenomenal.
- We realised that not only are participants learning about biodiversity but they also are gaining valuable computer literacy skills, which for the community members is very empowering.
- The Bioblitzes give us unique opportunities to facilitate knowledge exchange between experts and members of the public.
- The use of hi-tech equipment makes the project attractive to younger members of the public thus filling an important gap in volunteer capacity.

4) Medicinal Plant work in Pondoland

As part of the CREW Summer rainfall workshop on 16 September we launched a publication that document the use of plants by the Amapondo. Titled Medicinal and Charm Plants of Pondoland the publication was launched at the Umtamvuna Nature Reserve with over 100 people attending including conservationists, CREW volunteers and Pondoland herbalists.

The amaMpondo have a broad, holistic approach to health care. Traditional Mpondo medicines and charms, called amayeza, include many plants used to treat a wide range of illnesses. These plants are also used for cultural and religious purposes, such as ritual purification, protection against witchcraft and religious ceremonies. Medicinal and Charm Plants of Pondoland describes sixty amayeza plants and their uses, based on information told to the author Sinegugu Zukulu during interviews conducted with four herbalists Ikhwele Mashona “Sulamntwana” Wetu Dlamini, Inyanga Samson “Jakalas” Gampe, Umnumzana Sizwe “Mistoli” Shezi and Umnumzan aMpondombini “Sixteen” Danca.

The information of indigenous plant use in Pondoland presented in this book will be of relevance to anyone interested in plants in the region, but it is primarily aimed at school pupils. The Medicinal and Charm plants of Pondoland was been produced and published by SANBI with financial support from the Norwegian Ministry of Foreign Affairs and AVIS. The Botanical Society of South Africa sponsored the printing of 5000 books.
**Staff profiles**

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<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Responsibilities</th>
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<tbody>
<tr>
<td>Domitilla Raimondo—Threatened Plant Manager</td>
<td>Tilla manages the threatened plant programme. She is responsible for all staff management as well as raising funding for the programme. She also works on updating Red List assessments. Since 2010 she has been working in an acting capacity on Red List work for animals, this involves co-ordinating other conservation assessments.</td>
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<tr>
<td>Lize Von Staden—Red List Scientist</td>
<td>Lize is responsible for conducting Red List Assessments and for managing the Threatened Species Programmes data. This entails on an annual basis doing the taxonomic updates and importing CREW data. Lize has designed the Threatened Plant Red List Website and she ensures that this site is updated every 6 months. She is also responsible for dealing with queries on threatened species that are received daily in email form.</td>
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<tr>
<td>Name</td>
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<td>Ilva Rogers</td>
<td>Digitisation officer</td>
<td>Ilva Rogers has worked as part of the Threatened Plant Programme since 2003. During this time she has been responsible for encoding and geo-referencing over 40,000 plant specimens. In September 2012 Ilva completed geo-referencing all threatened plants for the country, as a result the project can now focus on serving spatial data on threatened plant occurrences.</td>
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<td>Suvarna Parbhoo</td>
<td>CREW KZN Manager</td>
<td>As of May 2012 Suvarna has taken on the position of CREW manager for KZN. Suvarna is now responsible for all CREW groups in KZN. She is responsible for managing all aspects of the programme in KZN and for maintaining partnerships with all relevant conservation agencies.</td>
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<tr>
<td>Ismail Ebrahim</td>
<td>CREW CFR Manager</td>
<td>Ismail is responsible for managing all aspects of the CREW programme in the CFR, which includes representing CREW and SANBI on conservation forums, managing and developing the Threatened Plant Localities Database and developing partnerships with conservation agencies to ensure CREW data informs effective conservation action.</td>
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<td>Vathiswa Zikishe</td>
<td>CREW Project Coordinator</td>
<td>Vathiswa manages the CREW specimen accession process, which includes ensuring that the specimens are submitted to the herbarium and providing feedback to the volunteers on identified specimens. She is also responsible for providing groups with plant identification materials and resources, coordinating C Team field trips to search for highly threatened plant populations and coordinating data capturing.</td>
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<td>Martina Treurnicht</td>
<td>CREW Intern (DST-NRF)</td>
<td>Martina was a one-year intern with CREW funded by the Department of Science and Technology’s National Research Foundation. She was responsible for developing plant identification guides for volunteer groups and for helping with C Team field trips. She also organised Red List lecture sessions and field trips with universities in the Western and Eastern Cape, and assisted with the implementation of the CREW demographic monitoring project. Martina greatly assisted CREW during her stay from April 2011–March 2012.</td>
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<td>Lerato Hoveka</td>
<td>CREW Intern (CASSETHA)</td>
<td>Lerato is an honours student from Limpopo Province who worked on the development of an Interactive <em>Babiana</em> key for the iSpot virtual museum. Her duties included assisting with data capturing of CREW site forms, checking accuracy of CREW data and developing a threatened plant identification guide for priority species on the Cape Peninsula.</td>
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<tr>
<td>Zikhona Mdalase</td>
<td>CREW/Botsoc Administrator</td>
<td>Zikhona is employed by BotSoc and seconded to CREW to provide administrative support, develop and implement CREW Environmental Education programmes (which include Plant Monitoring Day), CREW Eco-club activities, and the Biodiversity Facilitator project. Zikhona also plays the role of facilitating BotSoc member involvement in the CREW programme.</td>
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<tr>
<td>Sarah-Leigh Hutchinson</td>
<td>Research assistant</td>
<td>Sarah is employed as the CREW research assistant for 2012. She completed a NRF-DST Internship with Tony Rebelo in 2011 and we were fortunate to be able to continue her employment as part of the SANBI – CREW team. Sarah plays a pivotal role in the implementation of the iSpot Bioblitz project as well as supports CREW in the implementation of monitoring work and conducting Red List assessments.</td>
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