Piaranthus geminatus

CREW is funded by

[Logos of Botanical Society of South Africa and Mapula Trust]
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Foreword

This operations manual has been written for current and new citizen scientists working with the Custodians of Rare and Endangered Wildflowers (CREW) programme. It outlines how the programme works and provides clear guidance on how to contribute to it. We would like to emphasise that CREW takes pride in being a flexible programme that does not prescribe a specific approach. The information contained in this manual is, therefore, only to be used to guide you – never let it restrict your creative ideas.
1. Introduction

The Custodians of Rare and Endangered Wildflowers (CREW) programme is a novel citizen science initiative that involves members of the South African public in the surveying, monitoring and conservation of plants. Founded in 2003, as a collaboration between the South African National Biodiversity Institute (SANBI) and the Botanical Society of South Africa (BotSoc), CREW operates in priority parts of the South African landscape. With the help of passionate citizen scientists who make valuable contributions to the field of botanical research across South Africa, the CREW programme is able to survey and document the occurrence of plant taxa/species of conservation concern (ToCC), and identify which endemic plants require conservation. The programme links citizen scientists with their local conservation agencies and particularly with local land stewardship initiatives to ensure the conservation of key sites for threatened plant species. The detailed data collected by CREW citizen scientists is extensively used for feeding into national and international reporting on the status of biodiversity via the IUCN Red List. In addition, occurrence records for threatened plants inform land-use decision-making and protected area expansion prioritisation on an ongoing basis.

Besides the general enrichment and fulfilment of participating in the CREW programme, citizen scientists are provided with educational benefits such as skills for accurate data collection, critical thinking and scientifically informed decision-making. This increases scientific capacity, better informs decisions and improves social capital in South Africa, particularly pertaining to plant conservation. This has allowed the network of citizen scientists to be active beyond just monitoring plant species of conservation concern as they contribute to other activities such as collecting seeds of threatened species for the Millennium Seed Bank Partnership, recording presence of invasive alien plants and assisting in local municipal monitoring projects.
2. Why CREW is needed

South Africa is recognised as one of the megadiverse countries of the world and the only country that has its own plant kingdom and three biodiversity hotspots within its boundaries. Floristically, South Africa has 6% of the world’s plant species – over 20,000 plant species, 60% of which are endemic, 14% are threatened with extinction (listed as Critically Endangered, Endangered, Vulnerable) and a further 18% are listed as Near Threatened, Data Deficient or Rare range restricted endemics on South Africa’s National Red List. This implies that one out of every four of South Africa’s plant species is of conservation concern.

For most of these species, there is no recent information about the status of the plants in the wild. As a country, we urgently need to keep track of our plants and apply the best practice in conserving the unique diversity that we have. CREW citizen scientists can contribute significantly by each focusing on a small area of the country and monitoring the plants endemic to that area.
3. How the programme came about

The CREW programme started in 2003 in the Cape Floristic Region (CFR) as an initiation by a small team within the then National Botanical Institute with funding received from the Cape Action for People and the Environment (C.A.P.E.) programme. The idea for CREW to work primarily with citizen scientists was inspired by the very successful Protea Atlas Project that had encouraged large numbers of citizen scientists to collect distributional data on the Proteaceae family. The data collected by the Protea Atlas Project have been used extensively in conservation interventions, research projects and has led to the most accurate IUCN Red List assessments for this plant family. Inspiration was also derived from the fact that several recent botanical finds have been brought to the attention of scientists by amateurs (people not formally trained as botanists) with a passion for searching for interesting plant species.

In 2004 South Africa endorsed the National Environmental Management: Biodiversity Act which mandated the National Botanical Institute to become the South African National Biodiversity Institute (SANBI) – a dedicated institution
that bridges science, knowledge, policy and implementation, and now a unique entity considered to be global best practice. The Act mentions that SANBI must coordinate the collection of information on species, particularly those that have historically received little research and conservation attention, assess species’ risk of extinction, and synchronise the application of threatened species information in all spheres of biodiversity conservation.

This new mandate meant that CREW’s work was well aligned with SANBI’s mandate and in 2006 SANBI, in partnership with the Botanical Society, formally adopted the CREW programme and expanded it nationally. CREW initially started working with six citizen scientist groups and as of 2019 there are 26 citizen scientist groups consisting of over 1 000 citizen scientists nationally.
4. **What makes a CREW citizen scientist?**

Being passionate about the environment with a particular interest in plant species is the most important attribute to becoming a CREW citizen scientist. Due to the ongoing expansion of land uses that both irreversibly transform as well as degrade natural habitat, several endemic plant species have been recorded as of conservation concern. There are many other ways in which you can assist the CREW programme in making it a success – survey and record data of specific plant species, raise awareness on plants with the aim of changing landowners’ mindsets, or through educational initiatives in your area. The CREW network comprises learners, students in higher education institutions, working professionals, environmental consultants and retired individuals. Although there is no formal botanical training required for joining the CREW programme, we do encourage citizen scientists to focus on building their knowledge of plant species.
5. How can citizen scientists contribute?

- Submit data to CREW – share species lists, complete CREW data forms;
- Form a CREW group with friends, communities or students to survey priority areas for plant conservation;
- Get involved in actively managing a key site for threatened plant conservation;
- Submit observations on iNaturalist;
- Support your local CREW node office with administration tasks like quality checking data, resourcing literature, mounting specimens, etc.;
- Networking with citizen scientists via the CREW Facebook discussion posts.
6. How to register as a CREW citizen scientist

SANBI and BotSoc have numerous opportunities for citizen scientists to get involved in conservation projects. SANBI has developed a citizen scientist’s registration process to ensure that we can keep track of and quantify the significant contribution citizen scientists make to conserving South Africa’s natural heritage. CREW citizen scientists are required to complete a volunteer registration form available on the SANBI website. There are no membership fees involved for CREW, but we strongly encourage citizen scientists to join the Botanical Society of South Africa (http://www.botanicalsociety.org.za/MembershipAndSupport/SitePages/MemberApplication.aspx).
7. How can students get involved with CREW?

Skills related to plant conservation is relatively scarce, therefore the CREW programme has introduced the CREW Human Capital Development project whereby CREW works closely with higher education institutions across South Africa. The project, intended for 2nd or 3rd year Botany, Environmental Science, Horticulture and Nature Conservation students, comprises an hour-long lecture covering topics of South Africa’s biodiversity, the South African Plant Conservation Strategy, Red Listing, the CREW programme, iNaturalist and job opportunities within the plant conservation sector. In addition, some universities request a field trip either to monitor a threatened species or to teach students some plant family characteristics.

Students can make contributions to the CREW programme by:
- Contacting their CREW nodes and becoming citizen scientists;
- Joining CREW groups on field trips and participating in CREW activities;
- Joining iNaturalist and uploading their interesting plant species observations;
- Submitting plant species data obtained through their research;
- They can request assistance from CREW citizen scientists to help with site surveys.
8. Guidelines on forming a CREW group

8.1. Finding and engaging group members

- Start by finding keen individuals that are interested in plants and conservation.
- Engage interest groups in your area like the Mountain Club, ‘Friends of’ groups, garden clubs, Botanical Society branches, etc.
- Another great way to find citizen scientists is to check iNaturalist for people posting observations in your area. Comment on their observation to make contact.
- Arrange an introductory CREW talk and field trip with your CREW node co-ordinator.
- Advertise in local newspapers, on Facebook, e-mail networks, etc.

8.2. Establishing a group and developing skills

- Organise regular outings to survey populations of plants in areas close to you that are easily accessible.
- Your CREW node co-ordinator will arrange an annual planning meeting to discuss priority species and sites for each field season and discuss locating landowner details.
- Try organising fun, interactive sessions where group members can improve their identifications skills.
- Create an iNaturalist project for your area.
8.3. Roles and responsibilities of group members

- To ensure that the data collected is accurate and reaches the CREW office timely it is best to delegate roles and responsibilities to group members. The champion of the group is usually responsible for organising the field trips and will require support from the group’s members in the field. We suggest the following roles:
  - Scribe – takes field notes and completes the data forms.
  - Plant spotters – people looking for the target species or interesting plants.
  - Specimen collectors – members who collect, record associated information and allocate collection numbers.
9. Activities you can do at CREW

**Activity:** Survey natural veld for populations of species/taxa of conservation concern (ToCC)

**Explanation:**

This is the primary activity that the CREW citizen scientists are involved in. We need to improve our knowledge of the status, distribution and threats of the ToCC. Systematically sampling areas of natural vegetation is the best method of collecting this information. To get involved in this activity you will need (information available from your CREW node):

- A list of ToCC for your area of interest.
- A map of natural veld and vegetation types for your area.
- Copies of the CREW data collection forms.
- ID sheets for the ToCC that comprises plant descriptions and images.

**Activity:** Assist in management of key/priority conservation sites

**Explanation:**

Many sites where ToCC populations occur are found in small urban or agricultural fragments. These sites are typically either privately owned or owned by local municipalities. Municipal commonages are particularly important for threatened plant conservation as they are often the only sites that have not been completely transformed for agriculture or housing. You can contribute to managing these critical sites in the following ways:

- Assist your local conservation officials with implementing management plans of critical sites.
- Organise hacks to eradicate invasive alien vegetation.
- Organise open days or Bioblitzes (an intense survey in an attempt to record all the living species within a designated area at a specific time period) to raise awareness about the conservation importance of the site.
- Assist with litter clean-ups, fencing and fire management of sites.
- Should the site come under development pressure, citizen scientists can actively lobby against development by registering as an Interested and Affected Party and submitting comments in the Environmental Impact Assessment (EIA) process.
- Through the above actions citizen scientists can play an important role in the long-term conservation of these sites.

**Activity:** Supporting conservation initiatives by engaging landowners and stewardship

**Explanation:**
Most ToCC populations (>90%) occur on fragments of natural veld that are part of privately owned land. One of the most effective ways to conserve plant species is to build landowner awareness of the species that exist on their land and encourage landowners to conserve land via engagement in one of the provincial stewardship programmes. With very limited capacity in all of the provincial Biodiversity Stewardship Programmes (BSP), it is key to work closely with the BSP officials in your region so that you can support them in the process of proclaiming new areas and, in the process, keep proclaimed sites well managed. This entails:
- Engaging with your local BSP officers and working with them to highlight key sites for plant species of conservation concern (ToCC).
• Regularly visit stewardship sites in the process of being proclaimed or already proclaimed and provide feedback to landowners.

Remember to always contact landowners prior to your visit to request permission to sample on their land.

**Activity:** Long-term monitoring of certain populations on an annual basis

**Explanation:**
This entails detailed long-term monitoring of specific plant populations. Because this is an intensive monitoring activity we recommend it for well-established groups. Species selected have to display an alarming decline and some research would be required to setup the experiment. Chat to your node about conducting species presence/absence plots surveys at sites.

**Activity:** Plant conservation awareness and capacity building

**Explanation:**
CREW engages in various ad hoc awareness activities – exhibitions, flower shows, commemorative environmental days (Arbour week, International Day for Biological Diversity), holiday clubs or eco-clubs. Your node co-ordinator can provide display materials and support environmental educational activities.

The CREW programme works with the various Botanical Society branches to promote plant conservation amongst their members, with the aim of increasing family membership in particular. Given the support we receive from the Botanical Society, CREW encourages citizen scientists to become Botanical Society members.
**Activity:** Seed collecting for *ex situ* conservation (search + rescue + restore)

**Explanation:**
To ensure the long-term survival of our botanical heritage we encourage the CREW groups to assist the Millennium Seedbank (MSB) partnership to collect seeds of all plants, especially the ToCC. The MSB can provide training and the necessary materials for making seed collections. For more information you can contact your CREW node co-ordinator to assist with setting up a seed collecting project in your area.

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**Activity:** Office volunteering

**Explanation:**
The CREW node offices requires assistance from citizen scientists to complete the following administrative tasks:

- Collating plant information from reports, EIA botanical surveys and research papers.
- Data capturing and quality control.
- Filing and organising of CREW data sheets.
- Developing plant identification sheets to compile ID guides.
- Mounting specimens for the CREW quick guides.
- Scanning specimens and documents.
- Work on transcribing herbarium label notes as part of SANBI’s DigiVol Transcribe project.

Each CREW node has different requirements so if you are interested in assisting with office tasks please contact your node co-ordinator for more information.
10. Support from CREW nodes

There are three CREW nodes (contact details on page 31):

- Cape Floristic Region node – supporting the Western Cape and Northern Cape citizen scientists.
- Summer-rainfall region node – supporting KwaZulu-Natal, Gauteng, Mpumalanga and Limpopo citizen scientists.
- Eastern Cape region node – supporting the Eastern Cape citizen scientists.

The CREW node is responsible for supporting each group by:

- Providing a plant collecting permit annually.
- Ensuring field equipment (including GPS unit, plant press, etc.) and data forms are available.
- Organising identification courses for specific plant families and genera.
- Providing a list of plant species and target areas to be prioritised.
- Allocating identification sheets and as much information for each species of conservation concern prioritised for the specific field-season as soon as possible.
- Sending out reminders of upcoming field trips and data submission.
- Processing of specimens collected and providing feedback to citizen scientists.
- Conducting an annual meeting with each citizen scientist group to discuss, prioritise and set fieldtrip dates for target species and areas to be sampled.
11. Guidelines to plan and conduct successful field surveys

Pre-fieldtrip

- Set dates for field trips at planning meeting or at the group’s discretion. The best method is to select a specific day.
- Do your research well. Make sure you check the historical localities of your target species, check the flowering time and habitat requirements. This should be obtainable from the target species ID sheet provided by your CREW node. Better research will greatly increase your chances of finding target species.
- Obtain permission from landowner/tribal authority/reserve manager prior to visit (in some cases you will need to request permission a month in advance). If possible, invite someone who is familiar with the site. It is also a good idea to inform your local conservation officials of your field trip so they can join.
- Ensure your vehicle will be suitable for the particular site being visited.
- Advertise trip with your group/mailing list, include your CREW node. Use social media platforms (e.g. Facebook) to get interest in the trip.
- Make sure the plant collecting permit is valid and taken with on every fieldtrip.
- Gather equipment required for fieldtrip as per list on page 18.
- Circulate information (time, meeting point, directions, maps, ID sheets) to group timeously.
- Discuss and request presence/absence plot data-sheets for particular sites from your CREW node.

On the day

- Arrange a meeting place.
- Designate roles to members (scribe, photographer, specimen collector, group leaders).
- Have a brief on what the plan for the day is. Decide on how the site will be sampled and what the end time of the trip will be.
- Spread out and look for target species and other interesting plants. Groups are encouraged to record as many species on the site as possible.
• Complete the CREW site/species forms at the site. Please ensure that critical information like accurate locality information, population size and threats are recorded.
• If plot sampling is undertaken, record presence/absence data.
• Collect specimens (please refer to the specimen processing guidelines in section 14 on page 20).
• Take photographs of plant species. Remember to include photos of the habitat of the species and front, side and bottom views of flowers.

Post-fieldtrip

• Ensure data form is properly filled in and that all fields are completed. Your node co-ordinator will explain how to complete CREW data collection forms.
• Press specimens (refer to specimen processing guidelines in section 14 on page 20).
• Download images and rename pictures and folders.
• Process and submit CREW data forms to CREW node.
• Optional: upload pictures and data onto iNaturalist.
• Optional: write a short report to post on CREW Facebook page or your own group blog/website.
• Send best species pictures to CREW node for inclusion on Red List Website.
• Give feedback to landowners on species found. While we prefer for groups to use the CREW landowner feedback template (see section 13 on page 19) and to give this to landowners on the same day of a field trip, if you have more detailed feedback to provide a landowner you can do this in your own format.
• If plot sampling undertaken, record presence/absence data.
12. Checklist: field trip equipment
(essentials are highlighted in bold)

- GPS with fully charged batteries
- Camera with fully charged batteries
- Data sheets, clipboard, pencils/pens
- ID guide/sheets
- Relevant field guides
- Digging tool, secateurs
- Plant collecting books
- Valid plant collecting permit
- Collecting bags/ziplock bags
- Measuring tape/ruler to measure height of plant
- Hand lens (for identifying small plants)
- First Aid kit
- Landowner cards
- Suitable field apparel, including rain jacket
- Plant press
- Insect/tick repellent and sunscreen
- Packed lunch and sufficient water (min. 1 litre per person)
13. Landowner feedback

Building landowner relationships is integral for plant conservation on private land. Much care is put into obtaining permission to survey private property. CREW creates awareness amongst landowners and informs them of plants of conservation concern that occur on their property (or in their area), as well as the basic management requirements of taxa/species of conservation concern (ToCC). Post-field trip, a landowner report/e-mail should be completed and sent to the landowner. CREW has developed a more detailed landowner feedback template that can be completed and e-mailed to landowners. The template contains information about CREW, the stewardship programme, ToCC found and other interesting plants seen at the site, as well as a section where you can recommend management actions.
14. Specimen collecting and processing

Specimens are vital for learning about plants and developing plant identification skills. By law a plant collecting permit is required for collecting specimens/cuttings/seeds. Your CREW node applies for permits for each CREW group.

14.1. Why collect?

- To verify identification of species we monitor.
- To contribute material to herbaria to ensure collections are up to date and representative for the species.
- Update distributions and ecological information for species.
- Assist taxonomist with describing and curating plant groups.

14.2. When do you collect?

Collect when you see a plant that is a potential target species and compares well with the description and image in the plant identification guide provided to each CREW group. Collect strange or unknown species – these are species that are not recognised by experienced citizen scientists and botanists. If you are in the field and come across species that are not known to anyone in your group, a collection needs to be made. Contact your local Millennium Seed Bank representative for seed collection requirements.

14.3. How much to collect

- Collect enough material to cover a herbarium sheet/mounting board.
- Always collect reproductive parts (flowers and/or fruit) to guarantee a positive identification.
- If the material is not flowering at the time, go back to the same plant or population during its flowering time to collect the plant.
- If you are collecting species where the entire plant is required to complete a specimen (e.g. geophytes) the rule is to collect three whole plants. Please only collect one plant for every ten found. This will ensure that we don’t negatively impact the plant population.
14.4. What parts of the plant

- You need to collect flowers and/or fruit and rootstock (for herbs).
- Fruits are often valuable in identifying species of certain families, such as Fabaceae, Brassicaceae and Apiaceae.
- If sterile, the specimen is often of limited use.
- If the plants are herbaceous, collect the whole plant.
- CREW is not mandated to collect plants or seeds for your own ex situ collections – contact your local botanical gardens to make these collections.
15. Guidelines for collecting and pressing plant specimens in the field

Equipment required

- Press, with cardboard, blotters and newspaper.
- Ziplock bags or plastic containers.
- Digging tool (garden spade, screwdriver and geologist’s hammer are the best tools to choose from).
- Collecting book. Official CREW collecting books are available from your CREW node.

Collecting specimens in the field

- Collect decent-sized specimens. Specimens must be representative of the plant. It should have flowers, fruits and underground storage organs.
- Place the specimen in a ziplock bag or container for pressing later.
- If the plant has delicate flowers, press immediately in a field press. Your node can assist you with making one.
- Label the specimen and reference the collector number on the CREW data form.
- Make notes of flower colour, habit and any features that will be lost in the pressing process.

Pressing specimens

- Specimens can be pressed in the field, but in most cases this is done after the fieldtrip has been completed.
- When pressing specimens, spread the pieces of the plant across the flimsy and ensure that the flowers are pressed flat. It is also encouraged to dissect or spread open at least one flower if possible.
- Assign a collector number and complete the relevant information required in your collecting book.
• Record the permit and collector number, date, provisional name, locality and GPS co-ordinates on the flimsy.
• Succulent plants must be frozen for at least 24 hours to ensure that the plant material is suitable for pressing.
• Place the flimsy between two blotters to absorb the moisture released during the pressing process.
• The paper and blotters of succulent plants must be changed daily until most of the moisture has been released from the specimen.
• Place your press in a sunny position to facilitate drying of the specimens.

Post pressing

• Once the specimens have properly dried (most species will take an average of two weeks), remove them from the press.
• Ensure that the specimens are properly referenced on the CREW site forms. Please ensure that the CREW forms are submitted to the CREW node when submitting specimens.
• Once the specimens have been identified and you receive feedback from the CREW node, update the confirmed name in your collecting book. The CREW node will update the species name in the CREW database.
16. iNaturalist (iNat)

iNaturalist is a powerful tool both for recording species and to improve species knowledge, thus the CREW programme would encourage everyone to become familiar with this citizen science project. You can photograph anything in nature and post your observation to iNat. There is a healthy network of citizen scientists and experts that can assist with identification and sharing knowledge about the species you are posting. There is also the ability to explore the observations on iNat to help you learn about biodiversity and interact with like-minded individuals. iNat has incredibly powerful tools for creating projects, field and species identification guides, etc. This project is a great platform for communicating with fellow nature lovers either through forum/observation posts or direct messaging. The iNat platform is becoming increasingly popular and many projects, including the CREW programme, are developing ways of using iNat to collect valuable data required by conservation projects.

Here are a couple of pointers for CREW citizen scientists using iNat:
• Take good, clear photos that not only depict the ‘pretty picture’ aspects of the flower, but also show details of the back of the flowers, both sides of leaves

https://www.inaturalist.org/
from base, stem, habitat and some indication of size. One can always add an additional picture of the flower with a thumb or finger as a reference for relative size. Anything needed to make identification easier, and there are many flowers that look similar and can only be distinguished by looking at details of the back of the flower, or leaves, or the bulbs in geophytes. Features such as hairiness or absence of hairs are often important features for making an ID, which can be noted in the description section of the observation.

- It is essential that every member on the field trip who photographs plants uses a prescribed tag when uploading their observations from a field trip to iNat, using the format of ‘CREW Group YYMMDD Place’.
- Observations should be uploaded as soon as possible so that identifications can be made and confirmed, which facilitates loading the site data into the CREW database.
- Habitat shots are also useful for recording some information for the site forms.
- All participants on a field trip should be encouraged to use the tag for a particular field trip to go back to iNat and look at the plants that were seen to become more familiar with the species of an area and build their plant ID skills.

Protocols for submitting CREW data is available, contact your CREW node.

Nature at your fingertips

- **Keep track**
  Record your encounters with other organisms and maintain life lists, all in the cloud.

- **Crowdsource identifications**
  Connect with experts who can identify the organisms you observe.

- **Learn about nature**
  Build your knowledge by talking with other naturalists and helping others.

- **Create useful data**
  Help scientists and resource managers understand when and where organisms occur.

- **Become a citizen scientist**
  Find a project with a mission that interests you, or start your own.

- **Run a Bioblitz**
  Hold an event where people try to find as many species as possible.
Amphithalea alba
16.1. Using iNaturalist pictures

- iNat pictures may be used by the CREW network, provided there is no monetary gain in the product.
- Please credit iNat and the user who posted it: the ideal citation is to include the URL.
- It is courteous to request permission from the original iNat observer. Please post a comment on the observation requesting permission to use the picture, explaining why you want the picture and any conditions and remunerations. Acknowledge permission granted with a ‘reply’. This also serves to lock the permission on iNat. Please note: for publications, you must request permission.

16.2. Sensitive species on iNaturalist

If you find a species that is highly desirable either in the horticultural or medicinal market (if you are not sure, contact your CREW node), obscure your observations when you post it on iNat. Do not select the Private option because then not even the curator of the site has access to the information. If you obscure the sensitive species you must obscure the rest of your observations for that day.

16.3. Submitting CREW data via iNaturalist

The iNaturalist website has become increasingly popular with CREW citizen scientists. Due to the success of the website and the array of tools available; the CREW programme has developed a system of submitting data via the iNaturalist platform. The system is setup to ensure that through posting observations with the associated data required, the CREW programme can now take advantage of the technological advancements to streamline data submission. Your local CREW node can provide training on this system. Here are the simple steps to follow:

1. Join the CREW Site Sheet (s Afr) and CREW Species Sheet (s Afr) projects.
2. Before starting the field trip, decide who will be the designated person to complete the iNat site sheet.
3. To make these projects work, we have created a link field which is present in both projects. We have a standardised way of recording information in the link
field and this must be followed to ensure that we can receive and link the ToCC information. The standard text comprises of:

- CREW node-CREW group-date(yyyyymmdd)-site for the day.
- Your CREW node will provide you with the code for your CREW group. If you are on an individual trip then, instead of using the CREW group code, use your iNat name.
- Keep all text lower case, use a dash to separate the information and do not add any spaces, e.g. ccfr-ct-20190518-s1 OR ccfr-ish_crew-20190518-s1.

4. If you only find one ToCC on the site that you are sampling, then the designated individual will add the observation to the CREW Site Sheet (s Afr) project. Add the standard text in the link field and complete all the required options. The fields have dropdown menus. If an option is not on the dropdown menu you can add the information to the notes field.

5. If you find more than one ToCC, then:
   - The designated individual will add the first ToCC from the site to the CREW Site Sheet (s Afr) project. Add the link field text as described above and complete the required fields.
   - All the other ToCC found after that must be added to the CREW Species Sheet (s Afr) project. Add the same information in the link field from the site sheet (this will ensure that we can connect the data) and complete the required fields.
   - All other participants on the field trip can add their ToCC observations to the CREW Species Sheet (s Afr) project provided they use the same info from the link field in the site sheet. Multiple records of the same species are acceptable.

6. This process can be done using the iNat app (on Android or iOS) in the field or after the trip when you are posting your observations.
17. Useful resources

A large array of field guides and genus/family revisions are available; contact your CREW node for more information.

Latest book releases may be obtained from the SANBI Bookshop, although some SANBI books are also available online from the Biodiversity Advisor website.

Genus and or family revisions are also available, request further information from your CREW node.

For current happenings within CREW, follow the Facebook page.

The CREW annual newsletter, which details the programme’s activities for the previous year, is available on the SANBI website in April/May and may be available as hard copy.

The CREW programme is one of the main organisers for the annual City Nature Challenge across South Africa. Request further information from your CREW node to participate in the challenge.
18. CREW node contact information

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