





Bews Herbarium (NU)
School of Life Sciences
University of KwaZulu-Natal
Pietermaritzburg campus

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

Mobilising foundational information on medicinal / ethno-botanical collections in the Bews Herbarium

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Data-basing at Bews Herbarium (NU)

- Est. 1910 onwards; 155 000+ specimens, incl. 700 Types.
- 5th largest in SA, largest in KZN, with a good curation history.
- A well-used, frequently visited, often cited University plant collection.

➢ Data-basing started around1997, using PRECIS: Pooley books.

➢ Done piecemeal when funds / time allowed.

o From 2005: Digitisation efforts more focussed.

o API (African Plants Initiative, Mellon Foundation) from 2006-2009:

Digitised Type specimens of African plants (data + image).

NU: 3 967 specimen scans on JSTOR Plant Science.

o The algal / seaweed collection was data-based in 2008:

OBIS project, through Prof J. Bolton (UCT); 20 330 sheets.

- By 2008: 25 355 records in database via **PRECIS** (excl. algae).

BRAHMS…

- Botanical Research and Herbarium Management System
- At NU: driving force has been Benny Bytebier, Curator since 2009.
- In 2011: PRECIS data migrated to BRAHMS (Rueben Roberts).

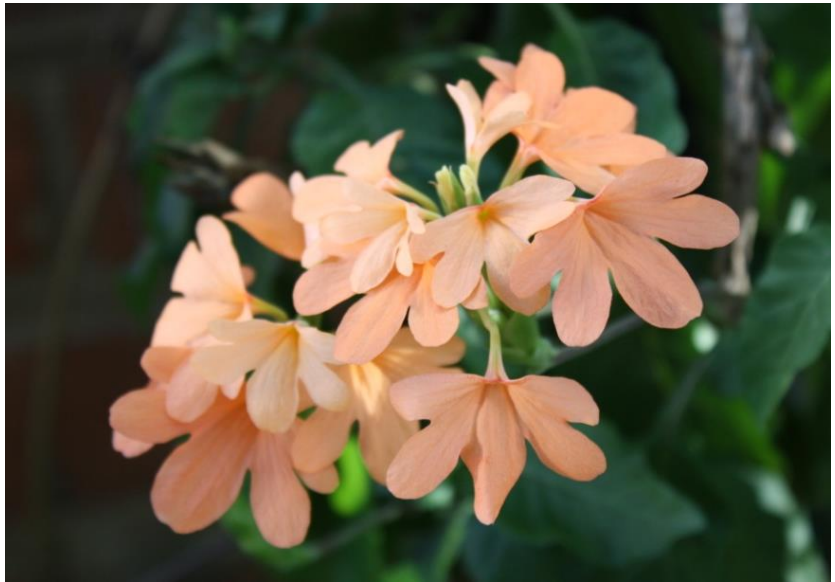
- July 2011: SABIF / EDRR-funded project on alien plants facilitated a visit by Denis Filer (BRAHMS developer at Oxford U.) to customise the NU database & trouble-shoot after data migration.
- First SA herbarium to adopt BRAHMS & make portion of records (20%) available via BRAHMS-online.
- Presently +/- 33 000 specimens in BRAHMS, plus +/- 8500 records in RDE files (staffing bottle neck). And 20 000+ algae.

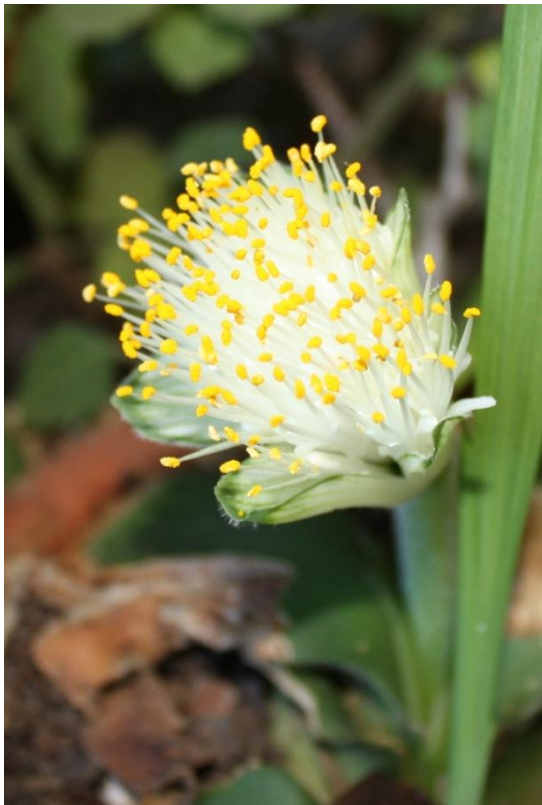
Current FBIP project:

Mobilising foundational information on medicinal / ethno-botanical collections in Bews Herbarium

Co-investigator:

Brenda Daly (SANBI)





AIMS:

1) Digitise all ethno-botanical ('blue folder') collections in NU.

- Record indigenous knowledge (e.g. medicinal use) and vernacular names (especially from historical collections), in separate fields;
- Unique set of images /photos of historical medicinal plant collections, especially from **Father Mayr** (1890 – 1910) and **A. (Tony) Cunningham**.

2) Digitise selected other priority ethno-botanical taxa.

- Mobilise additional distribution data on these species & relatives;
- Focus on families with higher than expected nos. with ethno-botanical importance (Douwes et al., 2008: 41 medicinally NB families, in 7 orders).

3) Test process of uploading non-SANBI specimen-based data (BRAHMS) to SANBI-hosted platform.

- Smooth out potential challenges with this process;
- Produce a protocol for future projects.

PLANNED OUTPUTS:

1) 9500 digitised primary data records in BRAHMS format
   - Transferred to SANBI; available to the FBI Programme.
   - Centred on ethno-botanical taxa; spanning > 120 yrs of data collection.

2) Open access, searchable 'virtual herbarium' of historical ethno-botanical specimens accessioned at NU.

3) Protocol developed for uploading specimen-level data from non-SANBI sources to SANBI data sharing platform.
   - Herbarium records shared through BRAHMS.

4) One data capturer trained and familiarised with herbarium protocol and techniques (12 month contract).

5) Progress towards long-term goal: **Digitised Bews Herbarium**.

ALIGNMENT to FBIP THEMES:

BIO-ECONOMY & GLOBAL CHANGE

1) Novel, previously unpublished data captured for medicinal & other uses of SA plants, across the full spectrum of taxa.

2) Ethno-botanical value of various plant species available for inclusion on the species pages of the e-Flora of South Africa.

3) Improved distribution data for potentially targeted or over-utilised species (conservation assessments)

POTENTIAL END-USERS:

- **Scientific researchers & students** in ethno-medicinal study field.

  Researchers consult herbarium collections to see where plant material for research may be collected, and what the plant species look like.

- **Organic chemists & pharmacologists** targeting biologically active plant taxa.

  Sister-species and related taxa often have similar activity.

- **Conservation authorities.**

  Improved distribution & occurrence data for taxa targeted by traditional medicine collectors (Red-list & conservation significance).
  Important for mitigation plans considering Global Change.

- **Traditional Healing industry** & users of indigenous knowledge.

  Steady loss of indigenous knowledge over time.
  Useful to capture notes on plant usage off collections as far back as 1890.

- **Bio-prospectors.**

  New research, projects & products often based on previous knowledge.
  Must be within legal framework of Intellectual Property legislation.

PROJECT SO FAR:

Appointed Mr Sifiso Mnxati as contract Database Technician.

1700 + collections digitised from 'blue folders' medicinal collection; (some data still in RDE format, awaiting quality checks).

Moved on to next tier of prioritised taxa:

- Families identified from Douwes et al. (2008)
- Avoiding groups already digitised
- Avoiding duplication with con-current FBIP projects at NU
  - BIO-GAPS project (e.g. Asteraceae)
  - Bytebier research project (selected Orchidaceae)

Selected families: Malvaceae, Rubiaceae, Boraginaceae, Anacardiaceae, Solanaceae, Convolvulaceae...

CHALLENGES:

1) Requested R 193 000 (1.3 staff); received R 130 000 (1 staff).
   - Institutional buy-in expected; initial outputs modified.

2) Selection and appointment process within reasonable time-frame.
   - Knew internal processes; followed up regularly; tried to leave nothing to chance; still a challenge.

3) Some specimens in various stages of digitisation.
   - Dealt with differences on a batch-by-batch basis for RDE
     (e.g. Previously in PRECIS; Accession no. stamped, but no barcode; Already in BRAHMS but use data not recorded).

4) Initial specimen handling time took longer than anticipated.
   - Improved in second phase, once initial folders dealt with.

5) Stream-lining photographic process.
   - Cut down on photo cropping and unnecessary processing.

POINTS to consider:

We are fortunate that our contract database technician has good **Zulu language skills** for capturing the (mostly Zulu) names.

He also has **years of herbarium experience**, which is invaluable.

He gives our NRF intern advice, can assist students, and helps in general.

As a specialist university-based technician I structure my own KPAs (Key Performance Areas), and can include the project in my **Performance agreement**.

However, academics at UKZN have more rigid KPAs and few would take on pure data-basing without a student project, research, or some other incentive built into the funding.

Funding for data-basing, students and equipment is great, but without **additional long-term curatorial and technical staff** our herbaria and museums will stagnate or regress.

Digitisation cannot replace collections and ongoing curation.

In summary, data-basing at NU has been in response to:

a Need

e.g. Elsa Pooley's field guides

Kick-started early PRECIS data-basing efforts at NU

a Specific Project

e.g. African Plants Initiative

Facilitated PRECIS training and equipment for African herbaria (we still use some of the equipment, e.g. A3 scanner)

a Funding opportunity

e.g. SABIF: alien invasive plants theme, co-funded by EDRR

Facilitated BRAHMS training for smaller SA herbaria

Outcomes:

- Collaboration with other herbaria and institutions;
- Equipment, staff training and additional contract staff;
- Contributing to long-term goal of a fully digitised collection.