

SANBI

Biodiversity for Life

South African National Biodiversity Institute

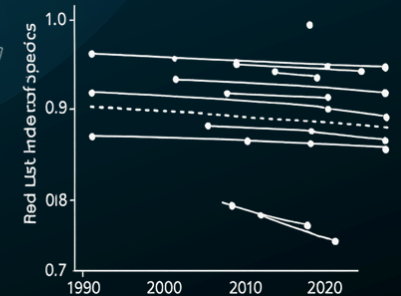
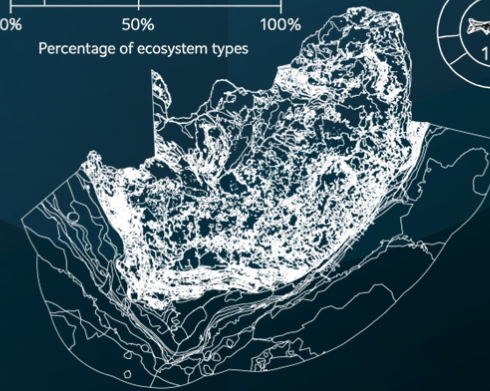
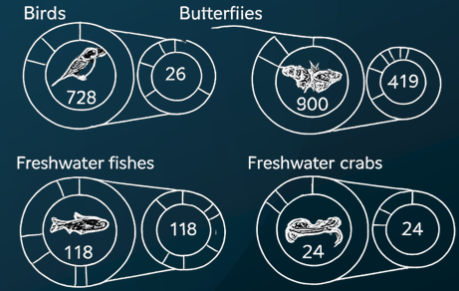
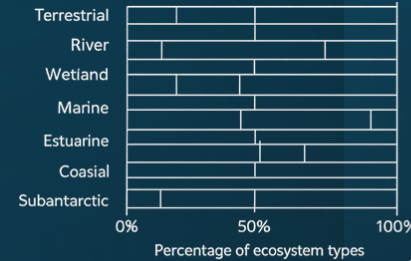


NBA

National Biodiversity Assessment

Code for Conservation

The data science evolution of the
National Biodiversity Assessment



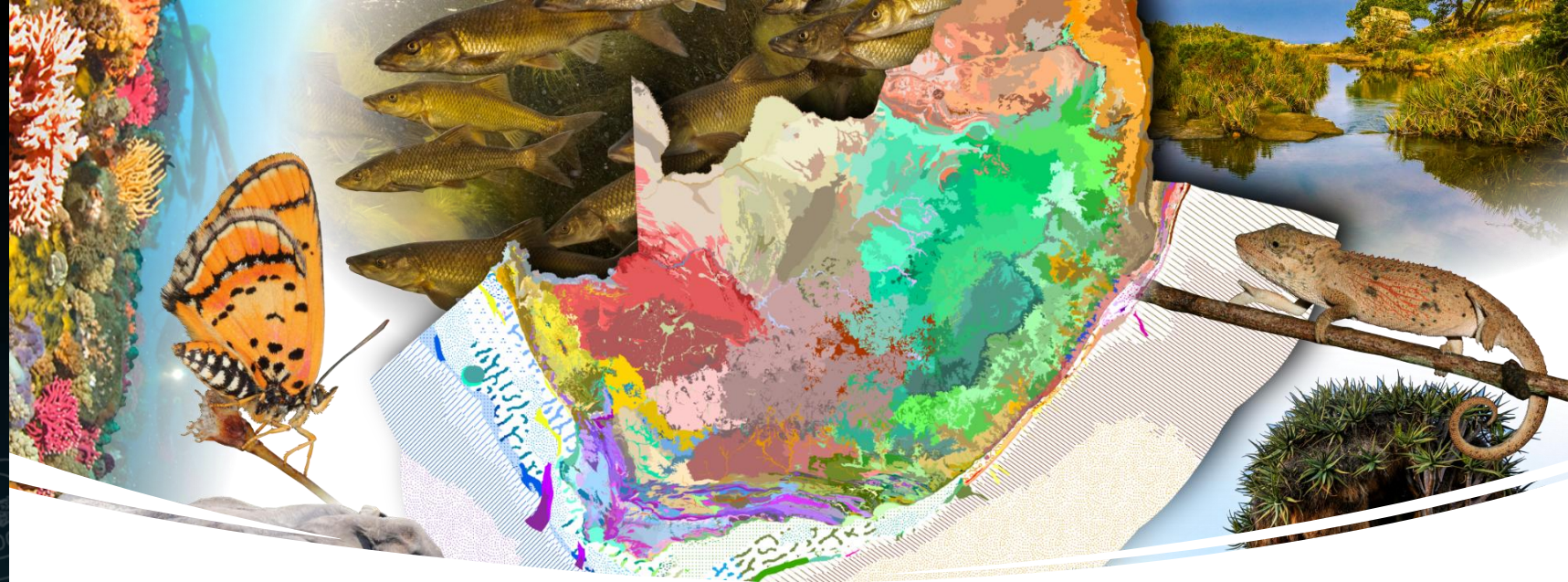
Lize von Staden

South African National Biodiversity Institute

NSTF Discussion Forum: Research software as enabler and research output

7 October 2026

The National Biodiversity Assessment



2004



2011



2018

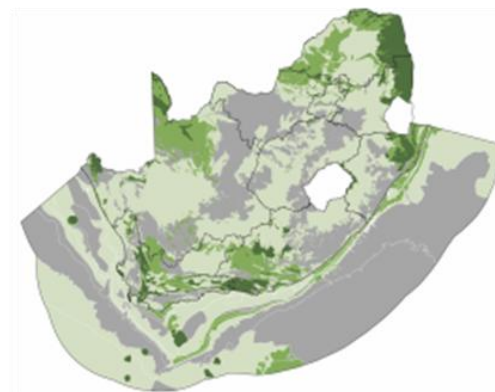


2025

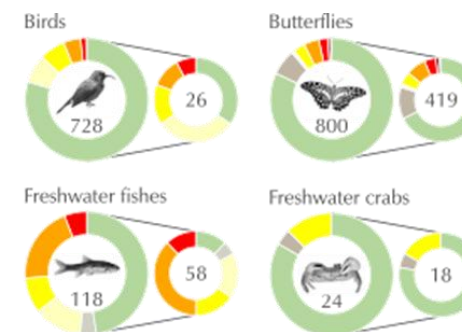
National Biodiversity Assessment

Key characteristics

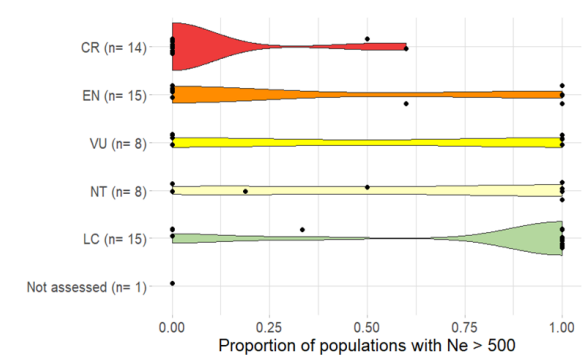
- Headline indicators focused on ecosystems, species and genetic diversity
- Emphasis on spatial data and assessment methods



Protection level



Threat status



Genetically effective populations

National Biodiversity Assessment

Key characteristics

- Four headline indicators focused on species and ecosystems
- Emphasis on spatial data and assessment methods
- **Key messages and recommendations for action aimed at policy-makers**

Key Messages

Key messages summarise the main findings of the NBA, explain why they matter, and point to practical actions, responses, and interventions that can be taken in response. There are 15 key messages in the NBA 2025 that are clustered into three themes:

Cluster A



Cross-realm pressures on South Africa's biodiversity are impacting people

Cluster B



Improving the status of South Africa's biodiversity is key to a sustainable and equitable future for all

Cluster C



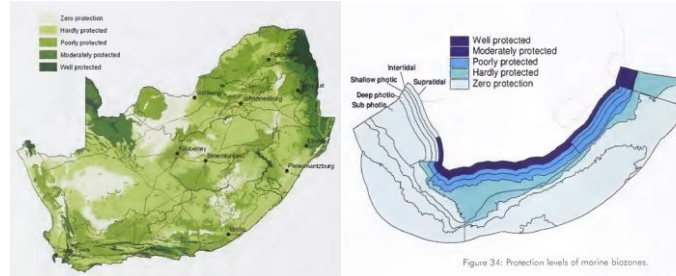
Inclusive actions across the whole of government and whole of society are needed to secure nature's contributions to people

Assessment → Policy → Action

NBA
2004



First
ecosystem
protection
assessment

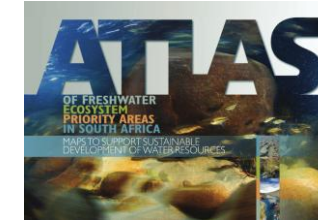
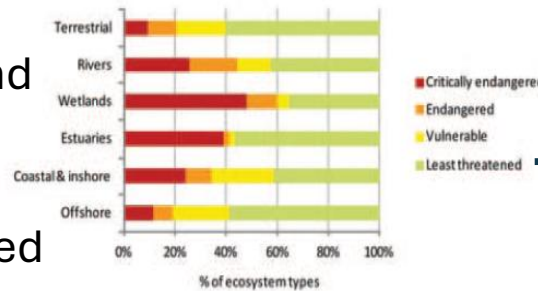


20 new
offshore MPAs
declared in
2019

NBA
2011



Freshwater and
estuarine
ecosystems
most threatened

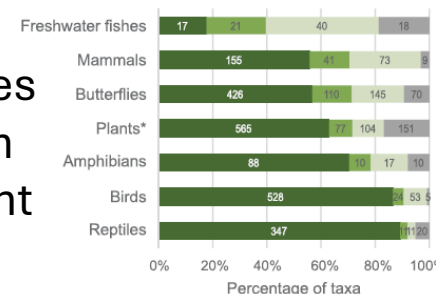


National
prioritization of
freshwater
ecosystems for
conservation and
restoration

NBA
2018



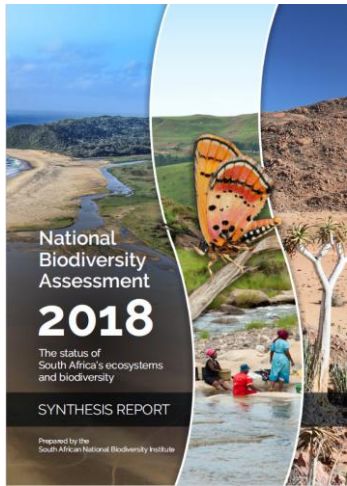
First species
protection
assessment



Adoption of
species protection
target in national
government
planning

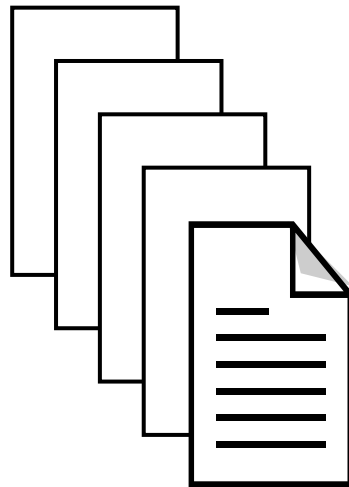
Examples of major policy outcomes from previous national assessments

From static reports to a living assessment



Synthesis
report

+



Technical
reports



Improve transparency and
credibility of indicator assessments
through reproducible code

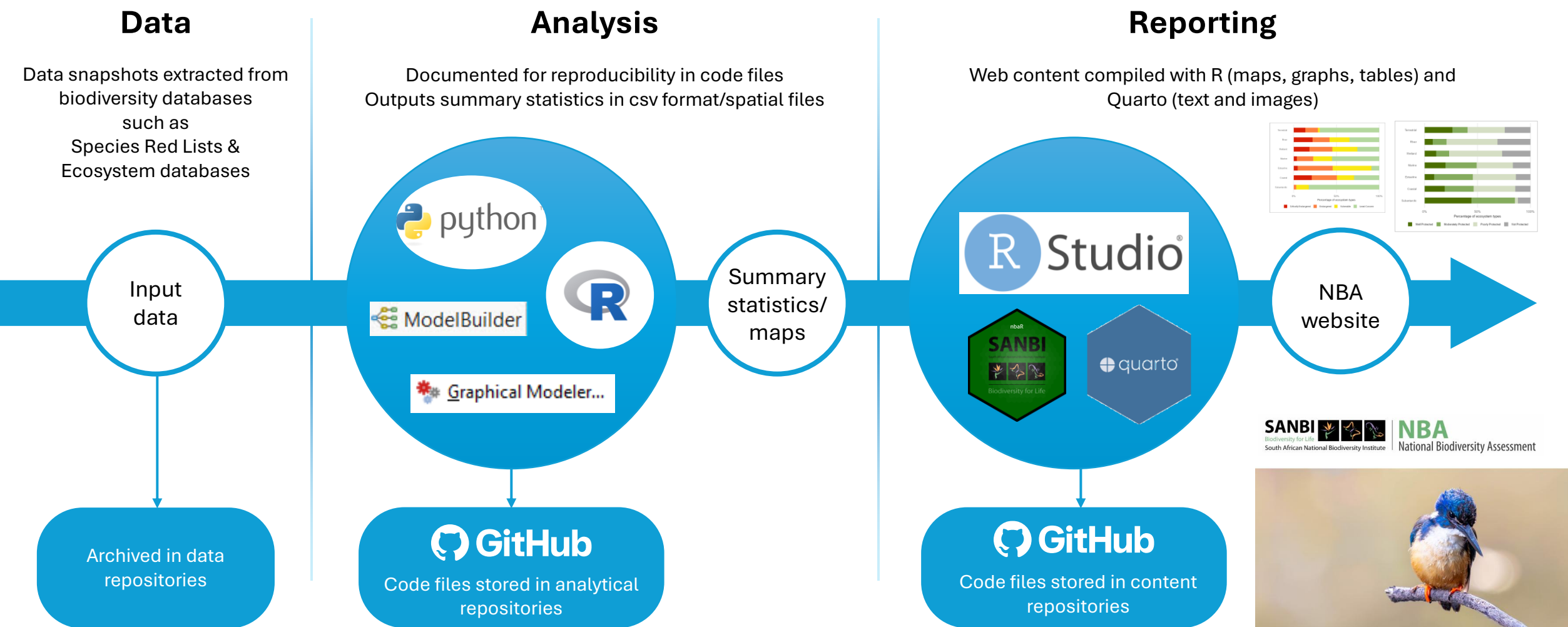


Better documentation of
source data



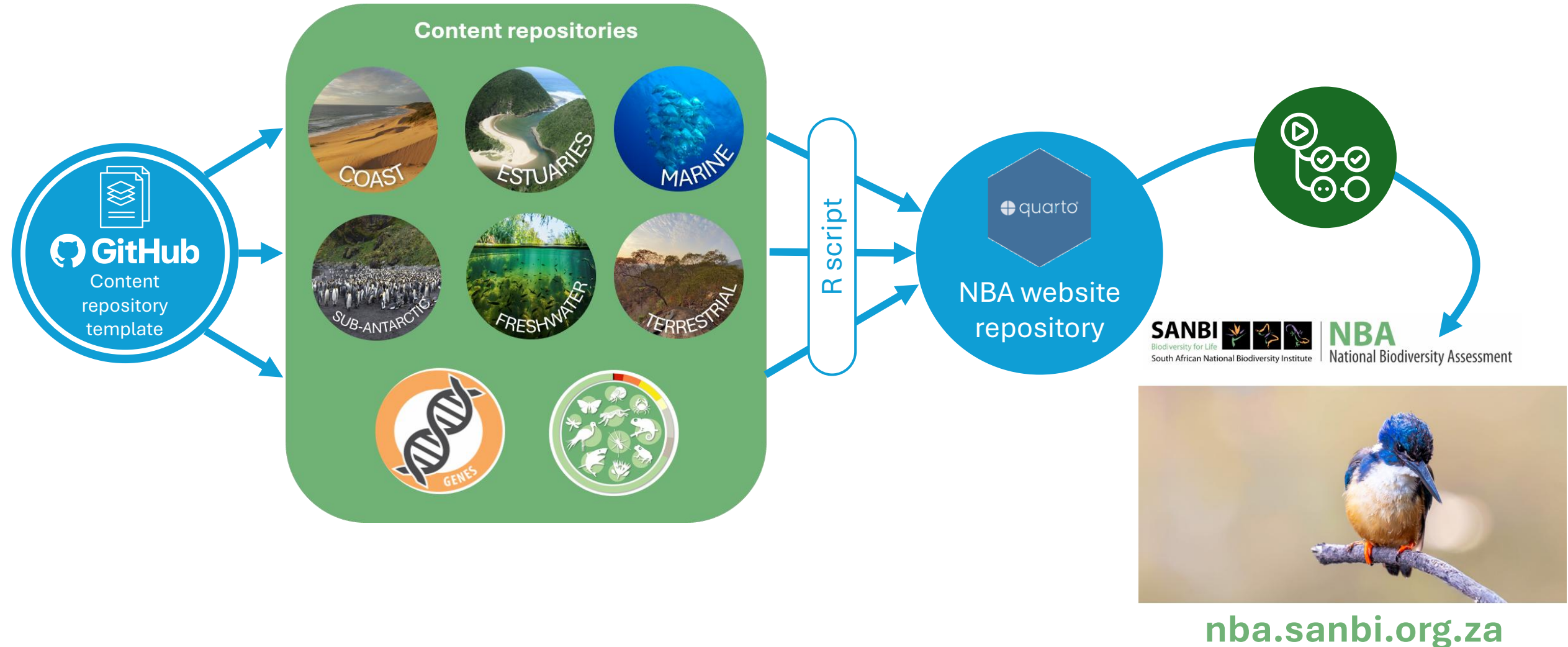
Web-format publication – can be
updated as new data becomes
available

The NBA's open science framework

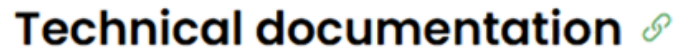


Compiling the NBA website:

How to transition a collaborative assessment to an online format



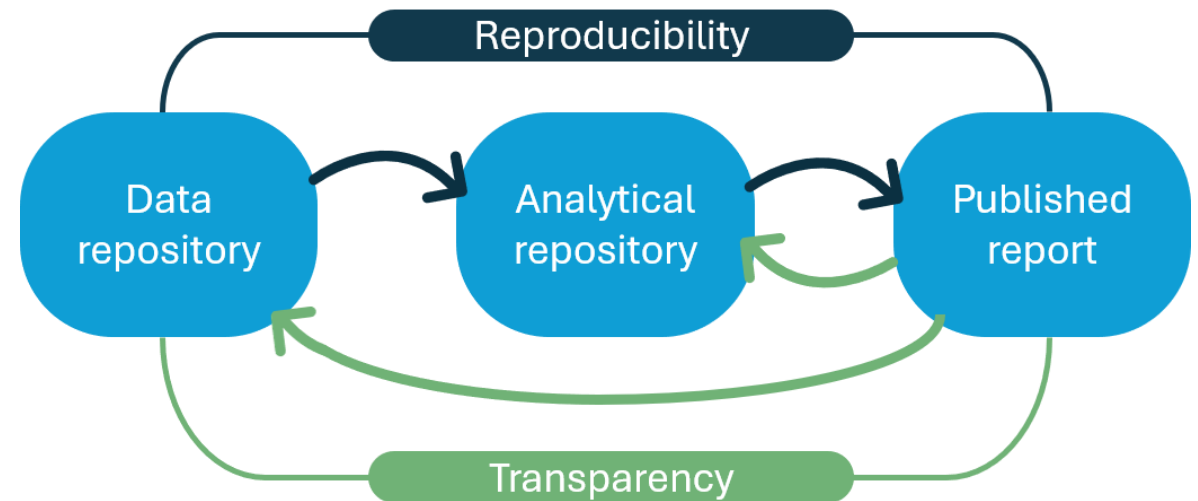
Diversity indicators



- **Methods and workflows of the marine ecosystem protection level assessment**

Table of marine ecosystem types protection level and threat status

- Ecosystem protection level results
- Marine protected and conserved areas
 - MPAs
 - MPA effectiveness
 - Other Effective area-based Conservation Measures
- Approach
- Acknowledgements
- Technical documentation
 - Code repositories
 - Data
 - Key publications
- Recommended citation
- References



How did we do it?

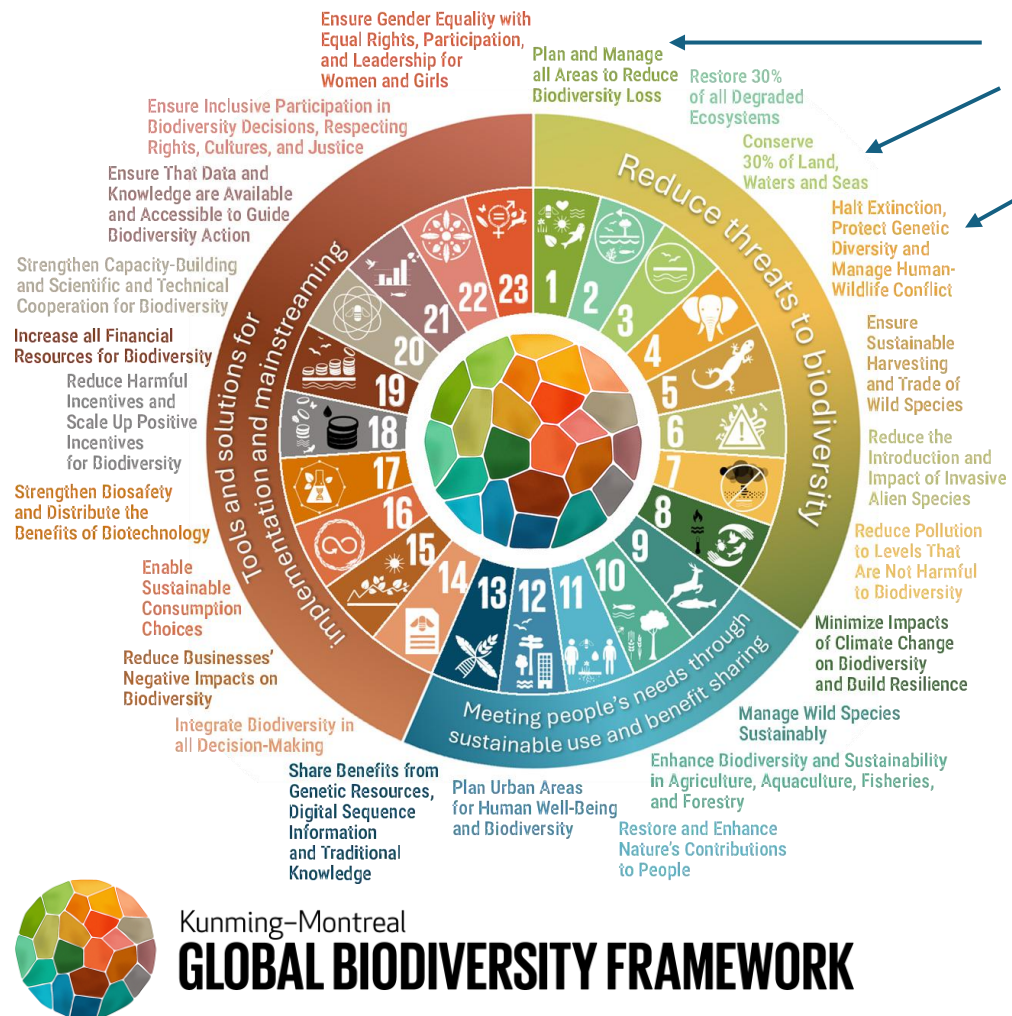
- Invest in data science skills development
~ 3 years
 - R & Python for data analysis
 - Git for version control
 - Content development with Quarto
- Small technical working group develop templates, website configuration, process design
- nbaR package for simple, reusable graph and table styling
- R, Quarto & git training workshops for NBA content leads
- Helper model - pairing technically stronger team members with less technically confident content contributors

What we learned

- **Scientists can adopt data science practices with the right support.** Training, immediately applicable tasks, templates and SOPs gave contributors a practical route into new ways of working.
- **Technical design supporting scientific ownership and credit is possible.** Shared publication infrastructure allowed teams to retain control of, and recognition for, their contributions.
- **Investing in the transition reduced the ongoing production burden.** The result is a more resilient assessment that takes less effort to maintain than the previous static reporting process.



What's next

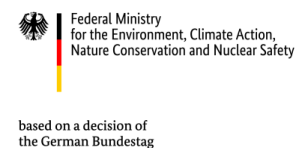


NBA National Biodiversity Assessment

- Consolidate fragmented monitoring and assessments
- Address monitoring gaps
- Apply NBA open science framework to other biodiversity indicators



Supported by:



Explore the assessment

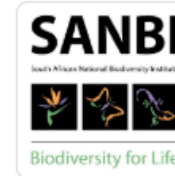


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nba.sanbi.org.za

The NBA on GitHub



SANBI National Biodiversity Assessment

An assessment of the status of South Africa's ecosystems and biodiversity

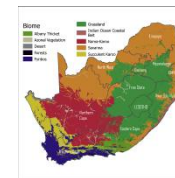
11 followers

<https://www.sanbi.org/>



github.com/SANBI-NBA

Terrestrial indicators



github.com/SANBI-TER-ECO

Marine indicators



gitlab.com/nba_2025

Further reading

- Da Silva, J.M. et al. 2025. National biodiversity and ecosystem assessments for conservation impact: Uptake and lessons learnt from the South African experience. *Ambio* 2025. <https://doi.org/10.1007/s13280-025-02285-8>
- Dayaram, A. et al. 2025. South Africa's biodiversity profile. National Biodiversity Assessment 2025. South African National Biodiversity Institute. <https://nba.sanbi.org.za/content/context/biodivprof.html>
- Poole, C.J. et al. 2023. Taking state of biodiversity reporting into the information age – A South African perspective. *Frontiers in Ecology and Evolution* 1–6. <https://doi.org/10.3389/fevo.2023.1107956>
- Sink, K.J. et al. 2023. Iterative mapping of marine ecosystems for spatial status assessment, prioritization, and decision support. *Frontiers in Ecology and Evolution* 11: <https://doi.org/10.3389/fevo.2023.1108118>

Acknowledgments



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