INCORPORATING SUCCULENT PLANT SPECIES INFORMATION INTO CONSERVATION PLANNING –JRS

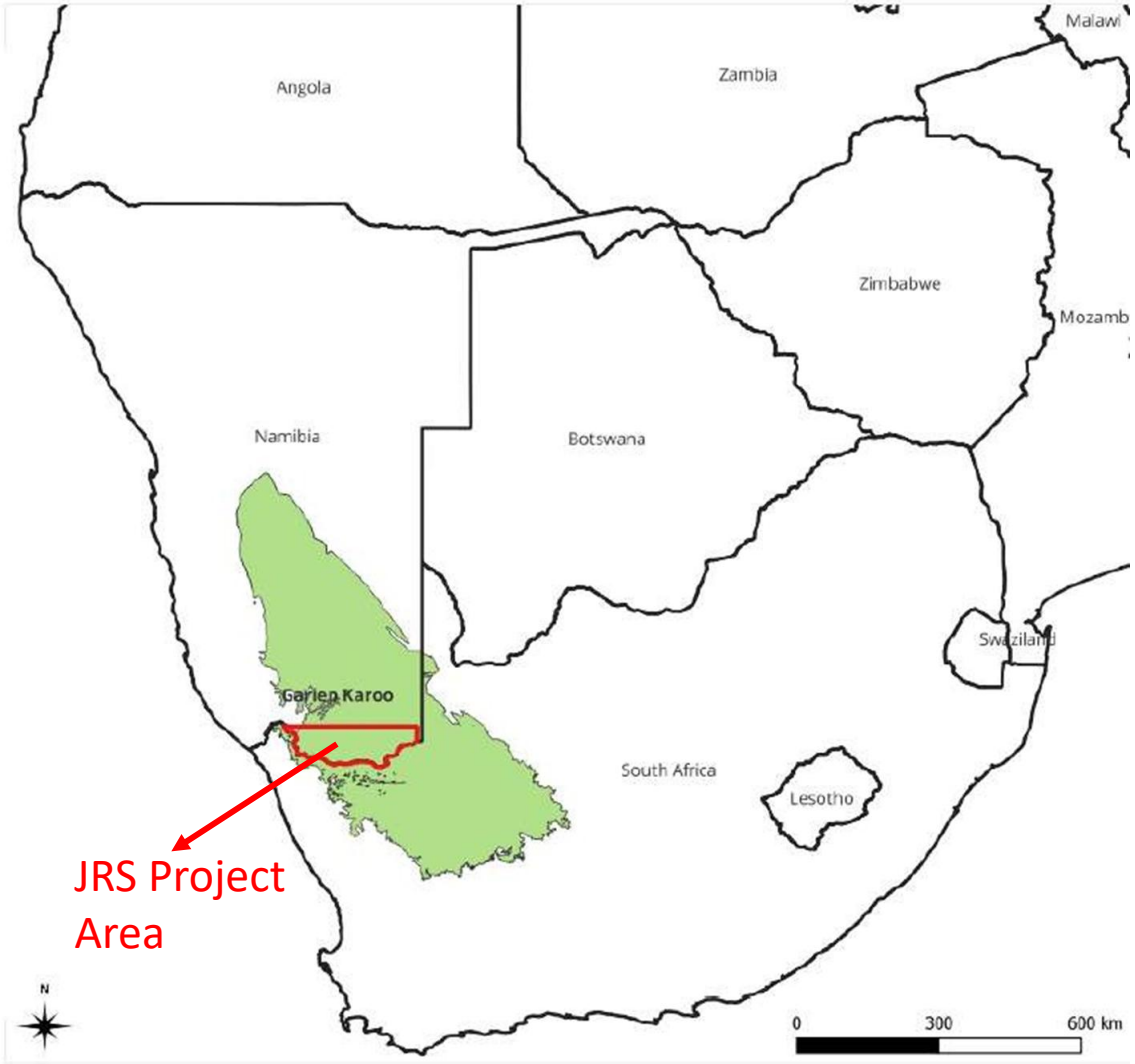






Why succulent plant information matters

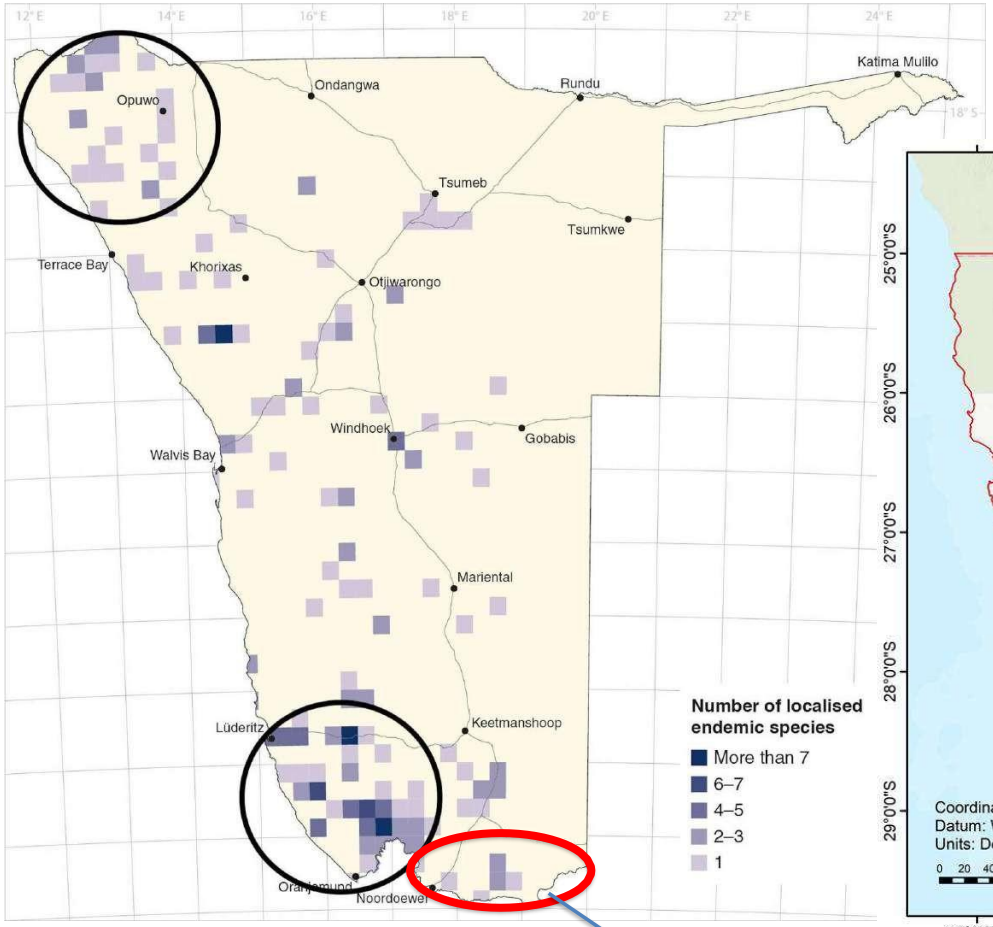
- Many succulent plants are adapted to dry environments and can be highly specialized to local soils and habitats.
- Some species have restricted distributions or occur in small, scattered populations.
- So many endemic species
- Land-use change, mining, infrastructure developmets, illegal collection and climate-related pressures can affect populations and habitat.
- Without reliable species information, important sites and risks can be missed.



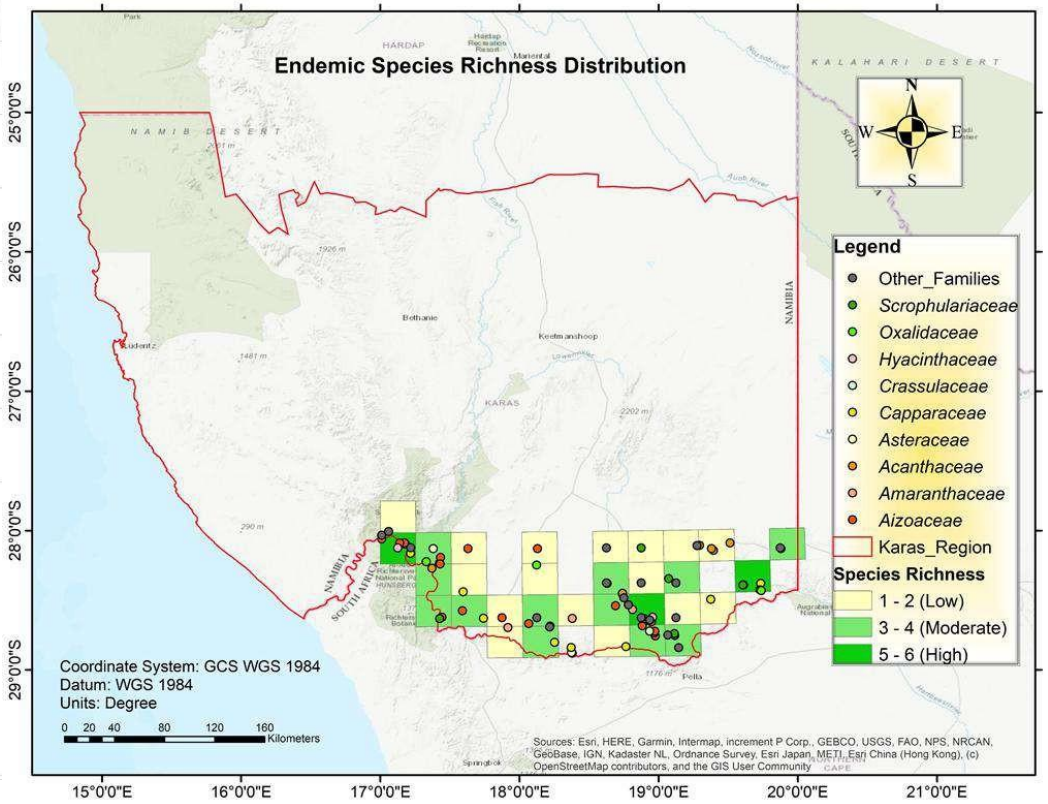
- **Key message: good conservation planning starts with knowing what occurs, where it occurs, and what threatens it.**

ENDEMISM

- Kaokoveld Centre of Endemism
- Succulent Karoo
- Warmbad Region potential centre of endemism - to be identified
- 36 endemic species in SE



Warmbad Region



What information should we collect?

- **IDENTITY: Correct scientific name and verified identification**
- **LOCATION: GPS coordinates and distribution records**
- **POPULATION: Counts or estimates, condition and recruitment**
- **HABITAT: Soil, geology, slope, vegetation and microhabitat**
- **THREATS: Mining footprint, roads, illegal collection, grazing and drought**

Herbarium specimen collection



Dwarf succulents' long term-monitoring plots



Digital monitoring tools



WIND- BRAHMS

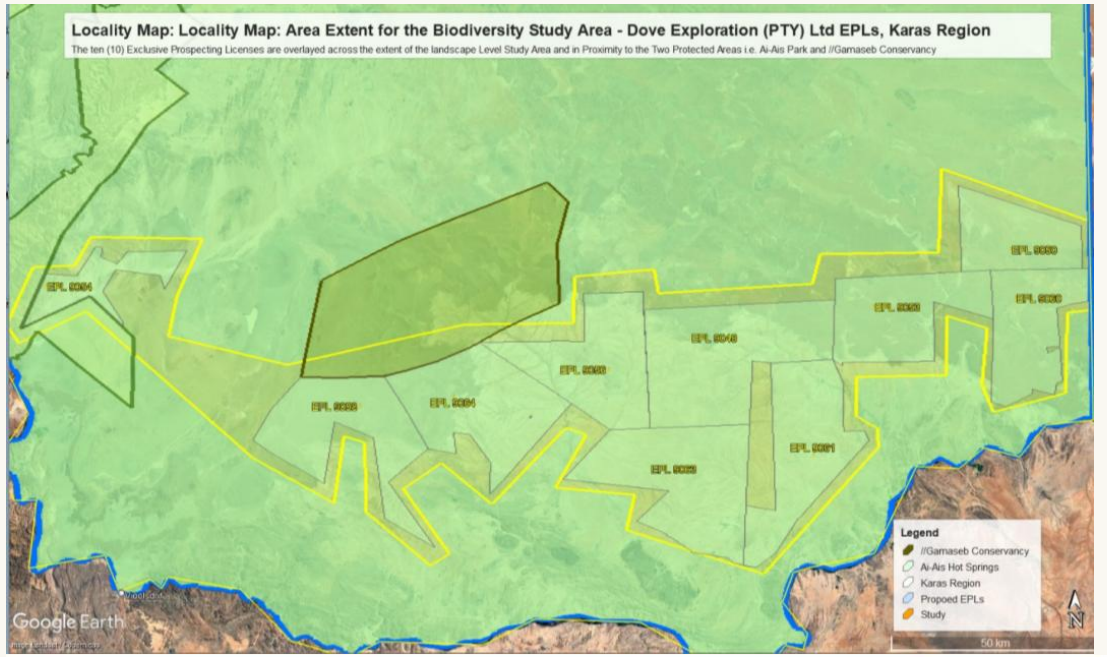
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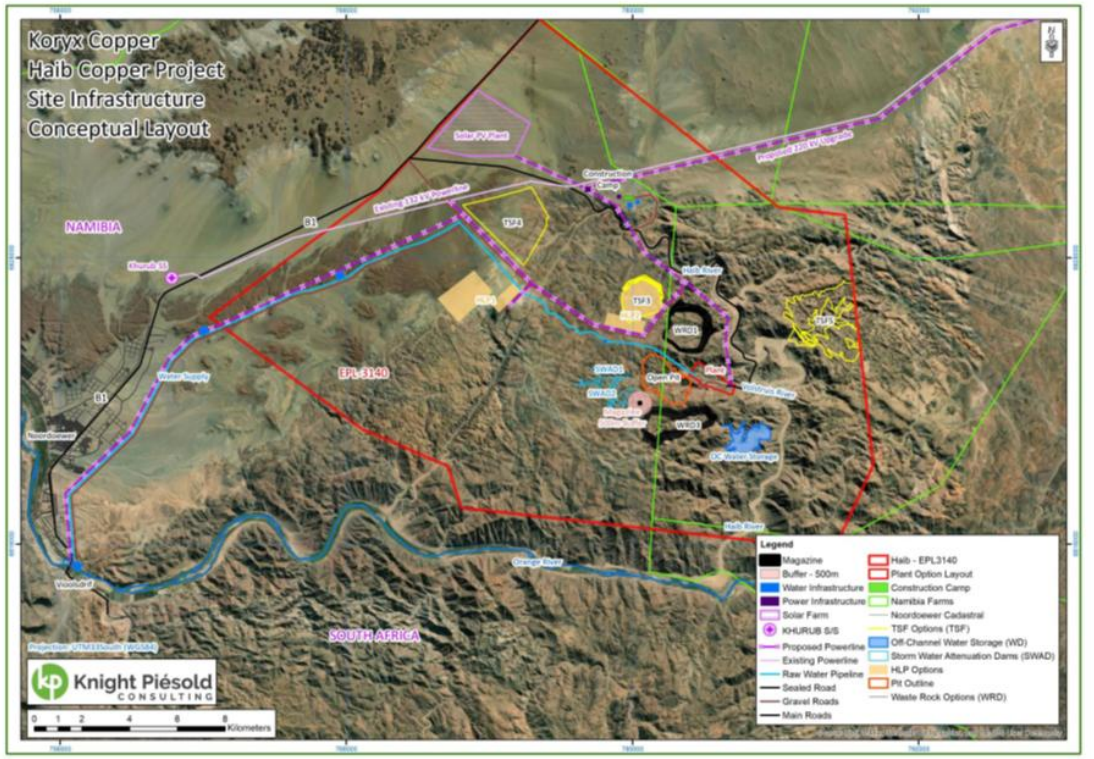
KoboToolbox

iNaturalist

How GIS/GPS can support planning

- Map verified occurrences and known population sites.
- Compare and overlay records with proposed mine areas, power lines, roads and other development footprints.
- Highlight habitat patches that contain rare, endemic or threatened species.
- Identify survey gaps before decisions are made.
- Keep maps linked to the underlying records, dates and confidence levels.





Important: a map is only as reliable as the data behind it. Broad-range maps do not replace site-level surveys.

Applying this in JRS fieldwork

During Action

Survey the area; identify species; record coordinates, abundance and habitat; flag sensitive populations; Monitoring plots.

After Action

Track avoidance or relocation measures; record plant condition; monitor survival, stress and recovery; Red List assessments; report findings; Map overlay with threats.



Field records + photographs + GIS + follow-up monitoring = stronger evidence for management.

Example: a development footprint overlaps a succulent site

SCENARIO

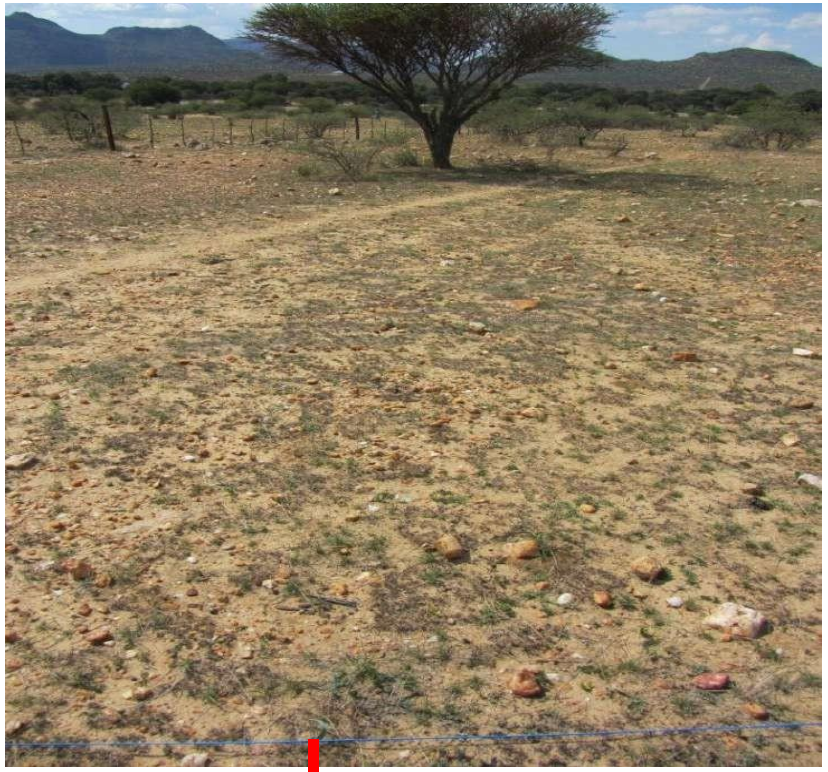
A proposed access road is mapped close to a known succulent population.

1 VERIFY	Confirm the species identification, GPS points and population extent.
2 ASSESS	Survey the wider area and check habitat, population condition and likely direct/indirect impacts.
3 AVOID FIRST	Work with planners to assess route alternatives and avoid the population or key habitat where feasible.
4 MITIGATE & MONITOR	If impacts cannot be avoided, apply approved measures and monitor outcomes; document limitations and results.

- Example: Development Footprint Planned

  Undisturbed Lithops habitat

  Population lost after area cleared for development







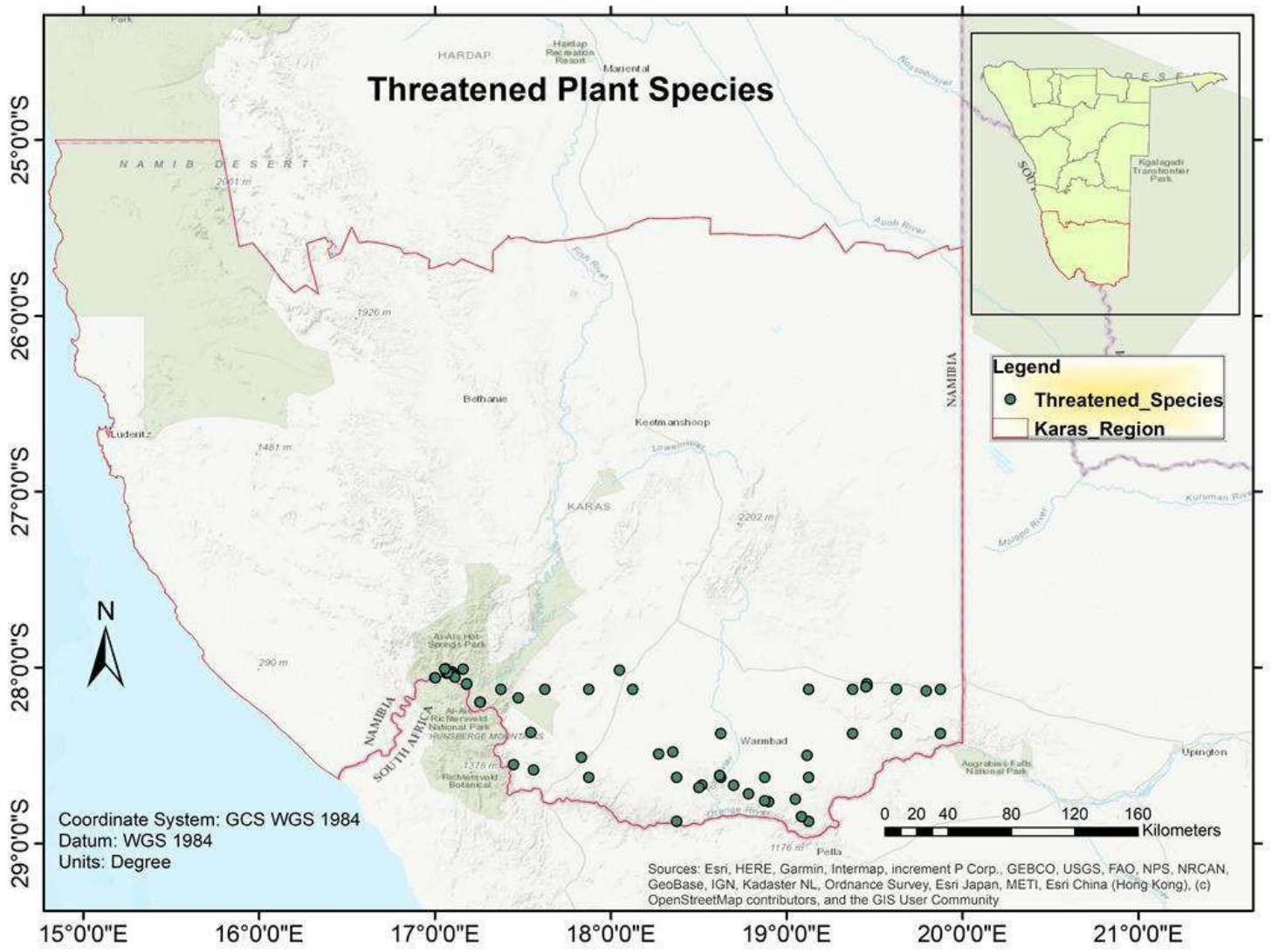
IUCN Red List Assessments

23 IUCN Red listed Species

10-VU, 5-EN, 4-CR, 4-NT

Why it Matters?

- Provides threat status and extinction risk
- Supplies locality and population data
- Supports range mapping and species monitoring
- Critical for identifying KBA trigger species



Target Key Families and Genera of Concern



Avonia quinaria CR

High endemism :

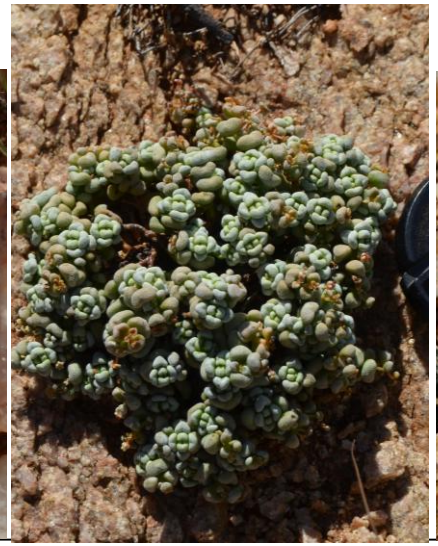
- *Aizoaceae, Acanthaceae,*
- *Scrophulariaceae, Amaranthaceae*
- *Dinteranthus, Lithops, Anacampseros, Jamesbrittenia*



Lapidaria margaretae EN



Dinteranthus puberulus EN



Crassula corallina VU



Lithops jullii CR



Schwantesia constanceae VU

Use conservation status — but not in isolation

- IUCN Red List assessments help summarise extinction risk using evidence such as threats, population and trends.
- Threat information and habitat requirements help explain why a species is at risk.
- Local field observations can reveal site-specific impacts that a national or global assessment cannot show.
- Combine field surveys, habitat data, development plans and expert knowledge with Red List information to feed into conservation planning.
    - i.e. Delineation of KBA's AND IPA's



A threatened category is an important signal — not a substitute for site-level evidence.

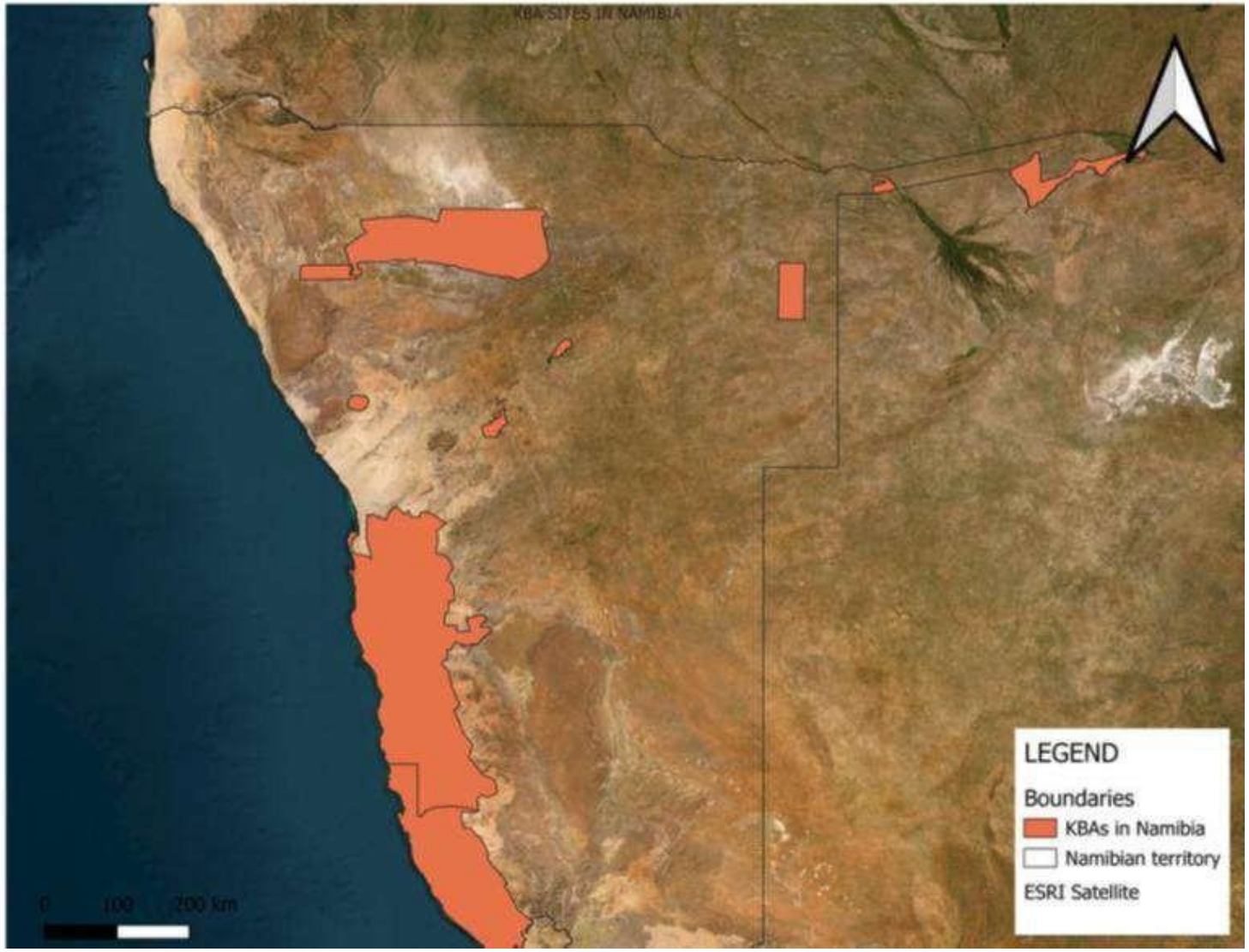
Key Biodiversity Areas (KBAs)

- Globally important sites for biodiversity persistence
- Identified using IUCN Global Standard
- Based on threatened and restricted-range species
- Supports protected area planning and conservation prioritization



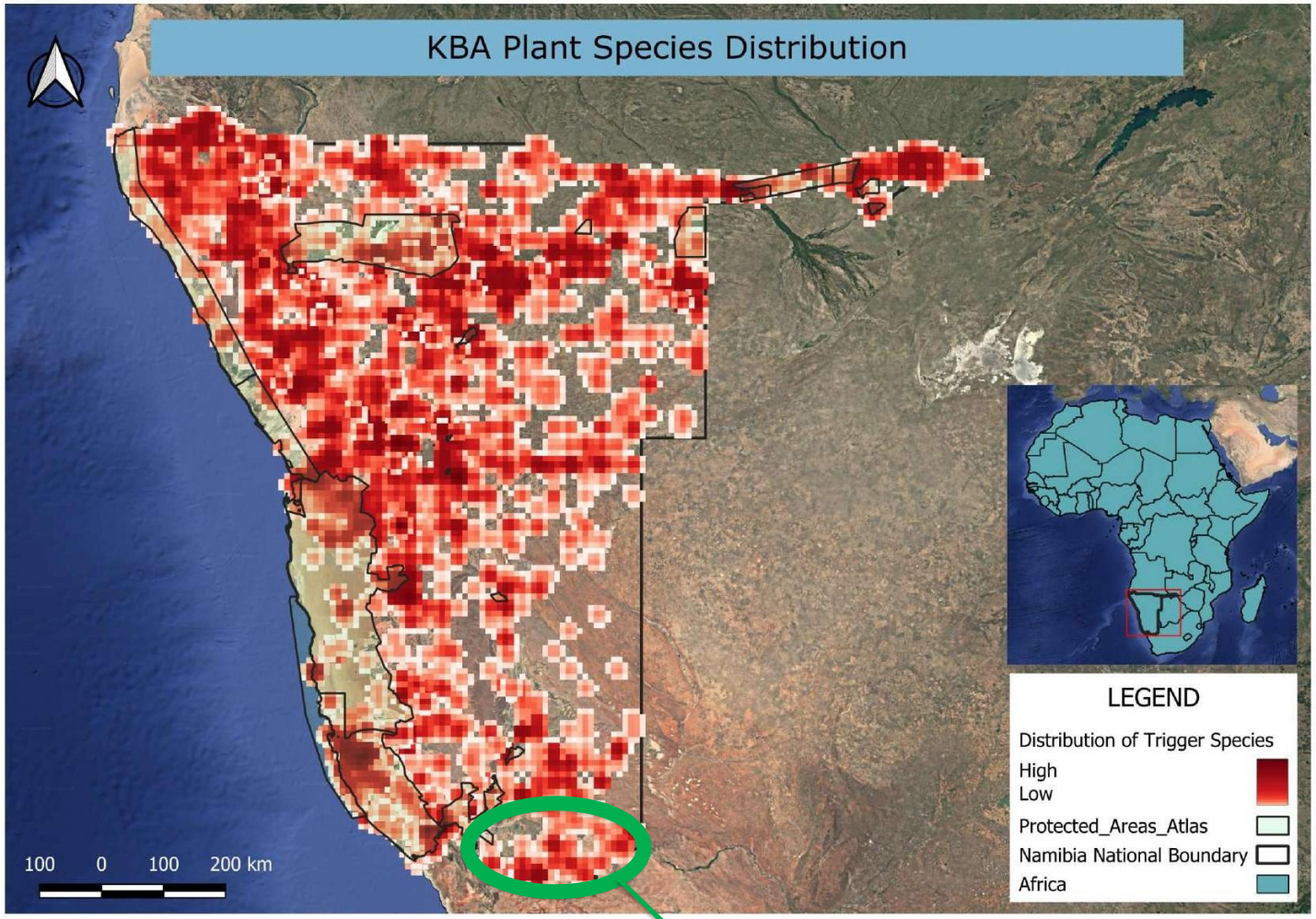
KBA legacy sites in Namibia

- 21 sites Initially triggered by birds and aquatic invertebrates
- Identified in 2001 before the 2016 Global standard for identifying Key Biodiversity Areas
- No KBA site identified for the southeastern region



Key Findings

- High concentration of endemic and threatened trigger species in southern eastern Namibia
- JRS study area site occur outside protected areas and Identified Legacy sites
- Sampling bias exists in accessible regions
- Red List data strengthens evidence-based KBA prioritization



Examples of Potential KBA Trigger Species



Tylecodon hallii



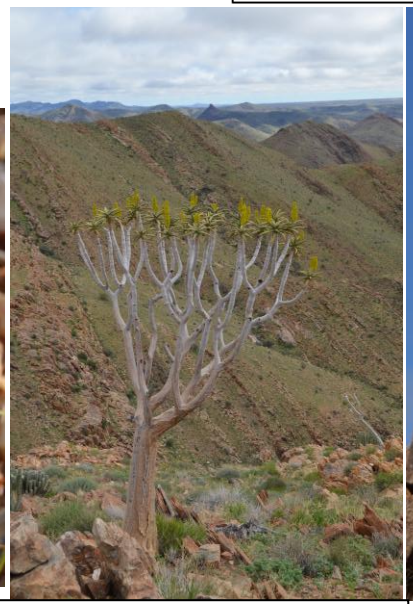
Adenia pechuelii



Aloe claviflora



Dinteranthus microspermus



Aloidendron dichotomum



Pachypodium namaquanum

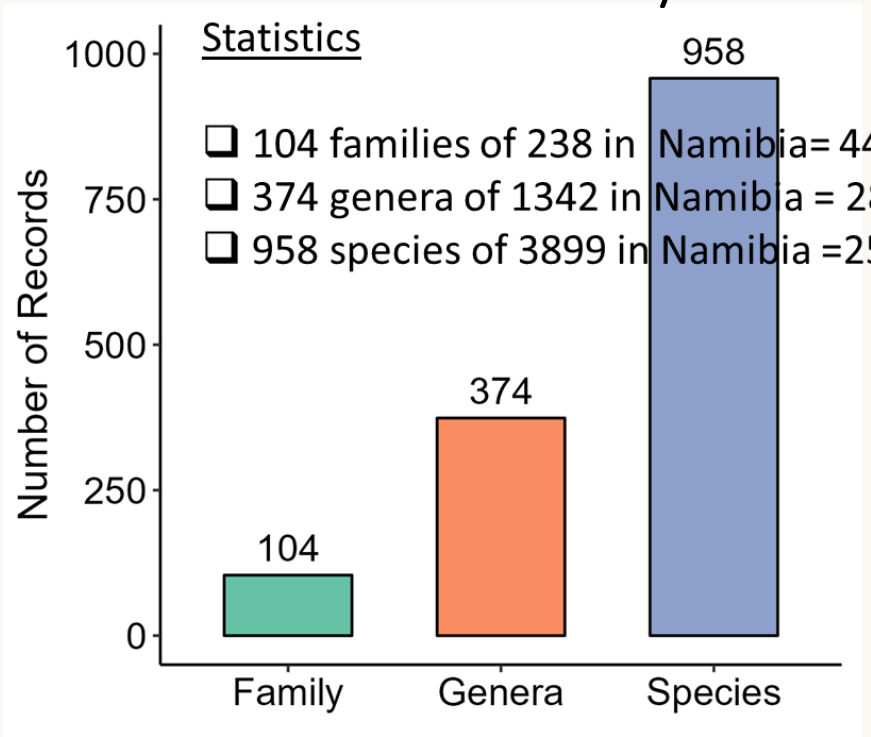


Ruschia barnadii

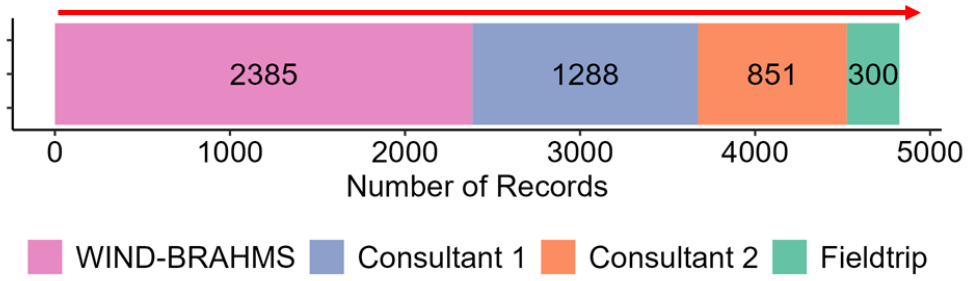
Turning information into priorities

- A verified and regularly updated database of succulent species records.
- GIS layers showing important populations, habitats, threats and survey gaps.
- A shortlist of species and sites needing urgent assessment or monitoring.
- Clear recommendations for avoidance, mitigation, rehabilitation and follow-up monitoring.
- A feedback loop: new field findings update maps, assessments and future survey plans.

- Baseline Summary



- Baseline Species Record Data



KEY TAKE-HOME MESSAGES

Good conservation planning connects species information to real decisions.

01 Know the species: identity, distribution, population, habitat and threats.

02 Use spatial data to identify overlaps, sensitive sites and knowledge gaps.

03 Prioritise avoidance, evidence-based mitigation and long-term monitoring.

Thank You!

Questions and discussion



JRS Biodiversity Foundation

National Botanical Research Institute

National Museum of Namibia
'Heritage Conservation is our business'

Namibia Nature Foundation
Committed to conservation