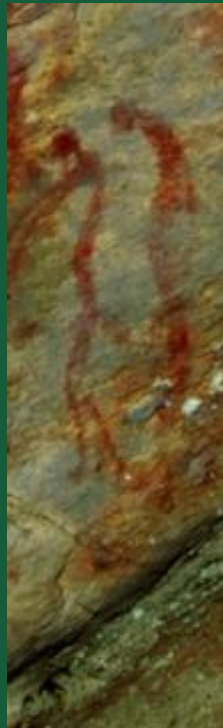
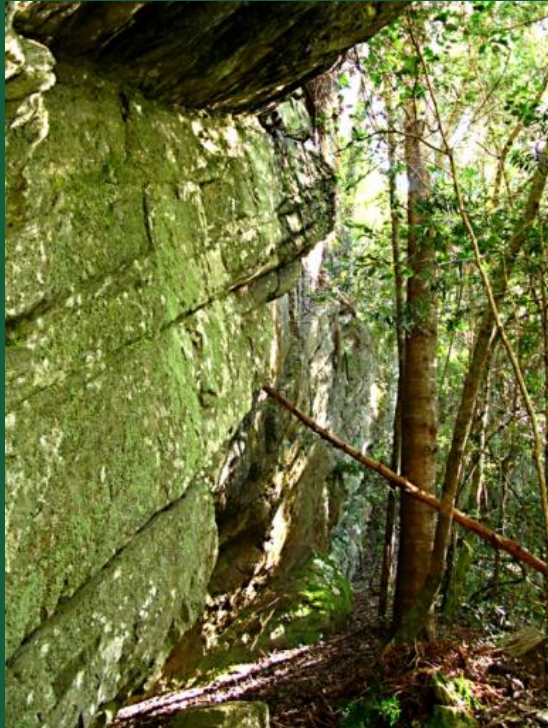
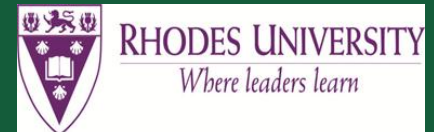


Caves in the Forest; People were Living there



A plea for more botanists to become interested in, and involved with, archaeobotany and palaeoethnobotany.

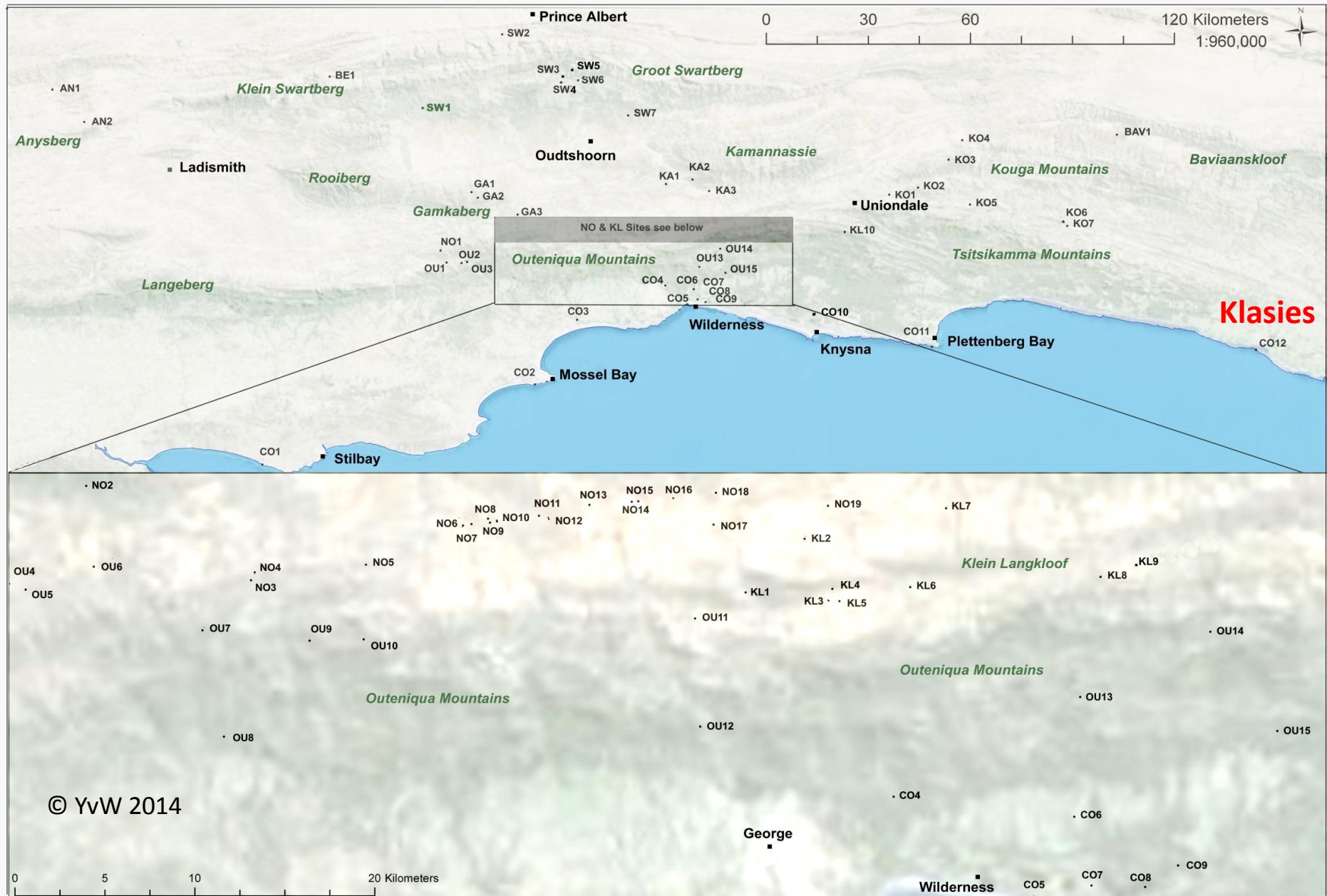
Yvette van Wijk



Objectives

- To establish links between People, Plants and Place, from the distant past to the present.
- Investigate the processes which could have resulted in the vegetation pattern found at so many archaeological sites in the Southern Cape
- Look at how mutualism and synergies between people / plants / place built up distinct plant communities over 1000's of years.
- Examine the possibility of an anthropogenic component involved in the origin of these vegetation communities so closely associated with sites in the past and today.

80 archaeological sites where plants were collected in the S Cape



S Cape is one large archaeological site



- The Knysna area is littered with stone tools at least 200 000 and perhaps 1.5 million years old. MSA & LSA tools are scattered or present in sites and middens. Many pottery shards from about 2000bp.
- The 80 sites shown on my map are just the tip of the iceberg. I find, read about and hear about others constantly. 27 sites are reported on Robberg alone.

Forest - Thicket - Fynbos



Biome = Forest / FOzl Southern Afrotemperate Forest (Muc/Ruth)

Immediate vicinity of 1 site – spp from top 10 present

32 spp total – *Searsia chirendensis* – *Diospyros dichrophylla* –
Asparagus x3 – *Aloe arborescens* – *Crassula* x2

Also - *Acokanthera*, *Carissa*, *Gonioma*, *Mystroxydon*, *Canthium*,



Biome = Succulent Karoo (Fynbos V) / SKv11 Eastern Little Karoo

Immediate vicinity of 1 large site – spp from top 10 present

40 spp total - *Searsia pallens* – *Diospyros dichrophylla* –
Pelargonium scabrum – *Solanum* x3 - *Asparagus* x2 – *Euclea*
undulata – *Aloe* x2 – *Crassula cultrata* – *Dodonea viscosa*

Also – *Lycium*, *Pollichia*, *Cissampelos*, *Chaenostoma*, *Leonotis*



Biome = Fynbos / FFs19 South Outeniqua Sandstone Fynbos

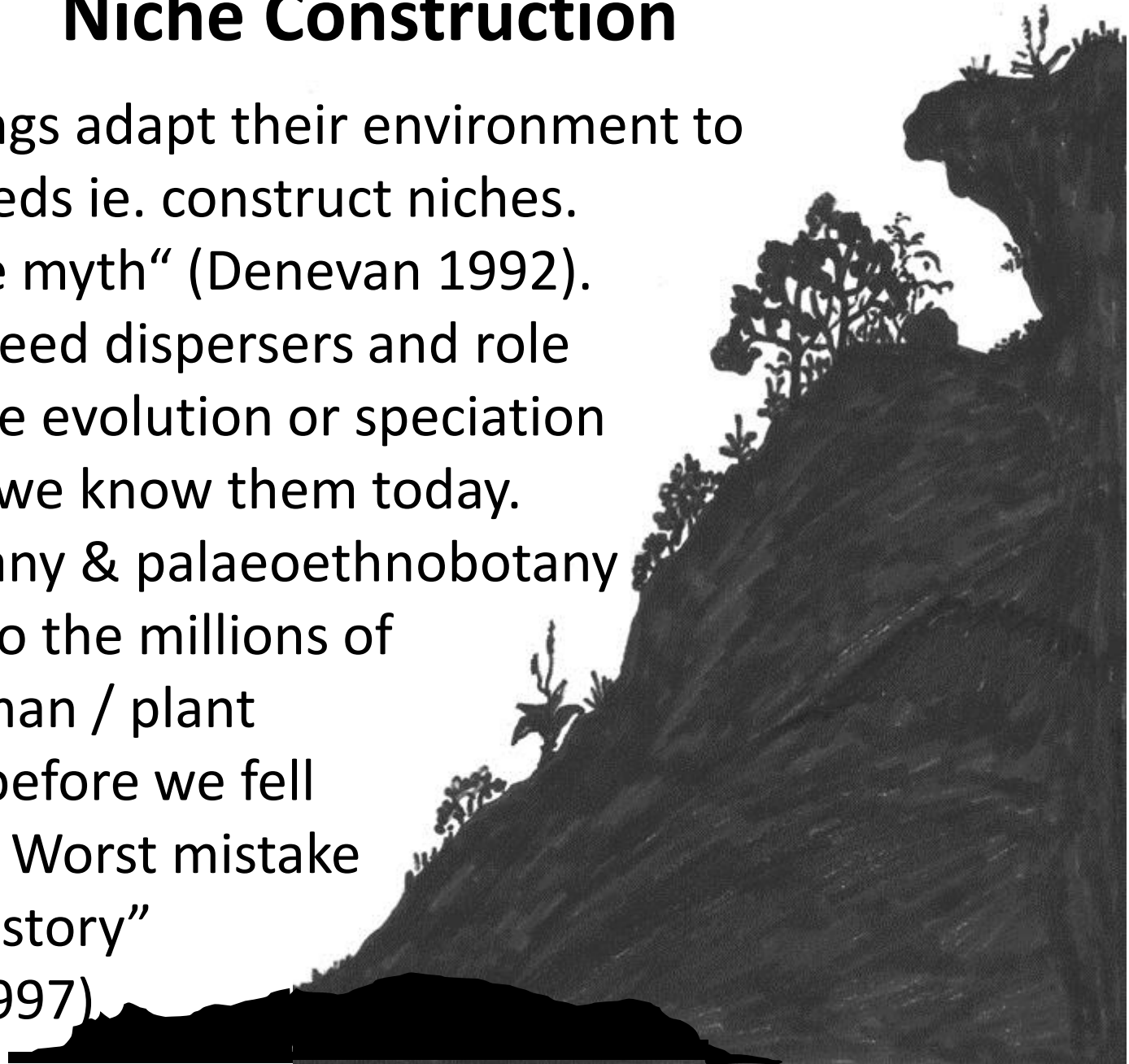
Immediate vicinity of 3 sites - spp from top 10 present

79 spp total – *Searsia* x4 – *Diospyros dichrophylla* – *Pelargonium*
x2 – *Solanum tomentosum* – *Euclea undulata* – *Aloe* x2 – *Crassula*
pellucida – *Dodonea viscosa*

Also - *Erica discolor* var *speciosa* & *Protea mundii*, *Leonotis*, *Sutera*

Niche Construction

- All living things adapt their environment to suit their needs ie. construct niches.
- The “pristine myth” (Denevan 1992).
- Humans as seed dispersers and role players in the evolution or speciation of plants as we know them today.
- Archaeobotany & palaeoethnobotany can peek into the millions of years of human / plant interaction before we fell for the “The Worst mistake in Human History” (Diamond 1997).



Plant use – the bigger picture

- The range of plants and their uses is probably much wider than normally recognised.
- Plants, seaweed, as well as shellfish, insects, marine mammals and land animals were available resources and would have provided a mixed opportunist diet.
- However, only plants provide many of the essential micronutrients not available elsewhere, and critical to human diet and health – we cannot live without eating plants.
- Seeds, buds, shoots, leaves, bark, cambium, pods, roots, tubers, bulbs, gum, nectar, galls – are all utilised.

Some of the plants in my top 20 at 80 sites



Searsia glauca
(syn. *Rhus*)
Africa, Asia,

Middle East, Americas. Seed
= Sumac (spice). Closely
related to *Pistacia* nut.



Diospyros dichrophylla

Africa, Asia, MEast,
Medit
N America, Australia.
Ancestral to Persimmon



Lycium
ferocissimum

Africa, Mediterranean, Middle
East, Asia, N America. = Goji Berry



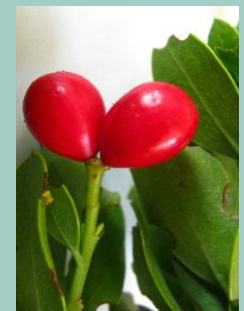
Asparagus spp.
Africa, Medit,
MEast, Asia,
N America,



Solanum spp. Tomato, Potato, Egg fruit,

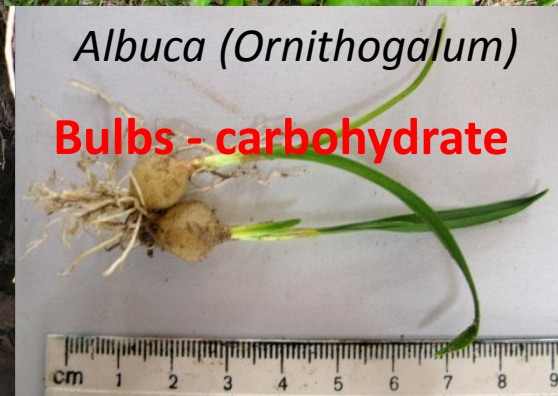
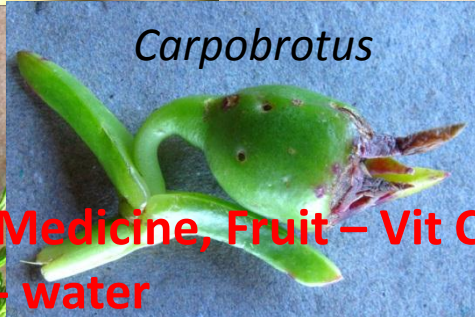


Ficus burtt-dayvi
= Figs - worldwide



Colpoon
compressum
Nantegarra
= Sandalwood

Some more useful Plants from Klasies



Questions

- How long have the plants been present that are growing today in close association with archaeological sites?
- Is there good ethnographical evidence for these plants being used as a source of food, medicine, or insecticide? Or for bedding, fuel, mastic, cordage, decoration, or tools?
- Why and how have these taxa persisted at the sites?



Q - How long?

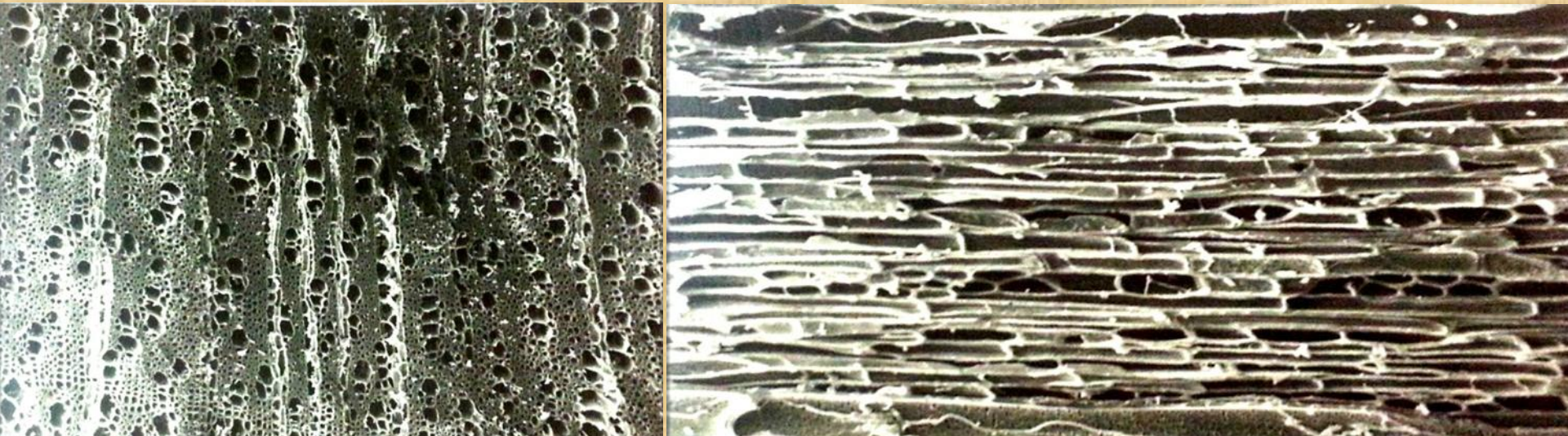
Answer –

- Extrapolating potential vegetation present from climate and vegetation change data is sometimes flawed, and at present extremely contradictory.
- Finding and identifying charcoal and pollen from excavated sites seems the best option at present.
- Scholtz at Boomplaas (1986) – 6000 to more than 10 000 years bp
- Tusenius at Klasies River (Unpublished) 20 000 to 50 000 years bp.
- B Maguire at Makapansgat (2009) 3 million years bp.

Archaeobotany

- 6 of my top 20 species were identified from LSA charcoal in excavations at Klasies River. **All** these species were collected there in 1985 by Tusenius and in 2013 by van Wijk & Rust.

SEM photographs of charcoal from Klasies River



Charred seeds from 90 000 year old sediment at Klasies River

Q – Ethnographical evidence?

Answers - Yes, plenty!

- Research undertaken with Khoisan descendants in Southern Cape over the past 22 years (to be published as part of my PhD thesis).
- Research in Western Cape van Wyk et al (2000, 2008, 2009)
- Research in Western Cape - Petersen et al (2012)
- Early historical and colonial travelogues and plant collections (eg. Sloane in British Museum).
- Hunter-gatherers would have found at least 95%-100% spp present at sites, useful in various ways.

Ethnobotanical research



Freddie Williams explaining the use of “Stink Patat” by modern Fingo/Khoisan at Klasies River.



Irene Barnardo of Covie on R. provided valuable information



I have held Workshops and walked in the veld with southern Cape indigenous communities for the past 20 years. There is a significant overlap in plants

they use now and those found at the sites. Using data from charcoal in excavated sites , it now can be said that there is enough overlap to say that in many cases a number of taxa have been growing in close proximity of many sites for at least 5000 years and probably as long as 50 000 years.

Q - Why and how have these taxa persisted at sites?

Answers

- Ash & charcoal plus bedding, food waste and human excreta, built up humus close to sites.
- Levels of Potassium, Calcium and Phosphorus increased in the soil, and salts accumulated.
- These chemicals are known to be long lasting in – Amazonia (Balee 2010), West Africa (Fairhead & Leach 2008), S Africa (Blackmore et al 1990).
- Seeds from plants eaten would have been excreted and dropped at or near the sites into enriched soil ideal for germination and growth.

How Thicket Patches persist?

- Resistance to drought, slopes prevents water-logging (most sites above $\pm 45^\circ$ slopes).
- Resistance to fire - protection from rocks - fairly high % succulent taxa and clothed in green leaves from top to bottom.
- High % resprouters which regrow after grazing, harvesting, fire, which Increases leafy density. Roots persist for generations (Thousands of years, Vlok).
- Elevated fertility of soils due initially perhaps to anthropogenic habitation for many 1000's of years.
- Long-lasting feedback loops developed as seen in Black Earths of South America and West Africa.

Some Problems

- Inevitable deterioration of samples during & after collection; sieving; washing; bagging; sorting. **Non-recognition of botanical samples. Non-botanists doing this work.**
- Changes in Botanical taxonomy render families, genera and species **invisible** to **non-botanical researchers**.
- **Invisibility** of soft bodied food and medicinal plants that leave little or no trace in deposits – cooked, ground, battered, fermented, masticated and digested by humans.
- Few botanists are also archaeologists & vice-versa. Seldom close inter-disciplinary co-operation.

Conclusions

- The connection between humans and useful taxa at habitation sites points to possible anthropogenic processes resulting in the pattern seen today.
- It is probable that important elements of the vegetation have remained essentially the same for 5000 to 50 000 years or even more?
- Close synergistic and mutualistic links between important places, plants, and people, have shaped our natural environment going back into deep time.
- This research can illuminate ways to deal with our present exploitative and destructive lifeways.

Where to from here?

- Inter-disciplinary research is essential.
- Need for a South African / African database for macro- and micro-botanical identification. Centralised - open source - fully searchable.
- Southern African research set within a wider African and global context, crossing boundaries, and finally overcoming past political isolation.
- Fewer desk-top studies and more hands-on / walk-in-the-veld research needed.

Thanks & Credits

To

- Johan Baard for much patient help with the map of sites and help with identifying various taxa.
- iSpot South Africa for help with identifications plus interesting and often lively discussion re taxonomic oddities and problems.
- SANBI, John Manning and Peter Goldblatt , for bringing out the new Core Cape flora just in time to force me to spend months updating all my databases and tables! Invaluable book.
- Rhodes University for allowing me to undertake an *ad eundem gradum* PhD - which has opened up so many fascinating areas of research and introduced me to so many amazing people.