

Conserving biodiversity: from buzzwords to a basis for management

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Kruger National Park's mission:

To maintain biodiversity in all its natural facets and fluxes

Single species → All species → Functional ecosystem

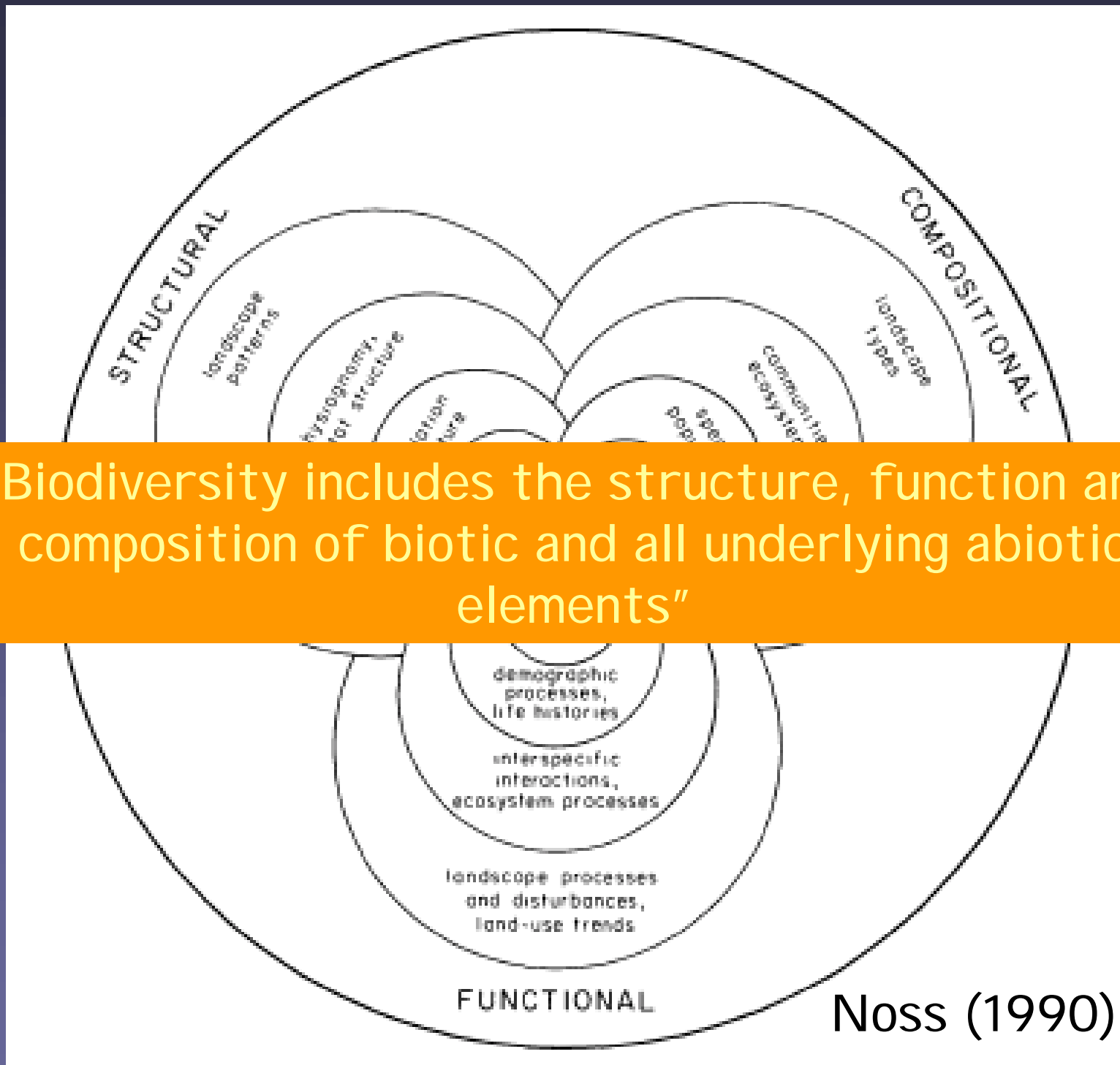


- “We aim at the persistent achievement of biodiversity [representivity and complementarity], to promote resilience and ensure ecosystem integrity”
- “Except in crucial instances..., management for system integrity and biodiversity must take precedence over species management”

-SANParks Co-ordinated Policy Framework, July 2006

What is biodiversity?





“Biodiversity includes the structure, function and composition of biotic and all underlying abiotic elements”

Noss (1990)

Biodiversity monitoring in Kruger

- New biodiversity monitoring plan
 - Changes to Veld Condition Assessment (VCA)
 - New sites
 - Includes measures of vegetation structure
 - Monitoring of reptile, amphibian, bird and small mammal diversity at “golden sites”
 - Will generate a large amount of data
- What will be done with the data? What do changes in diversity mean? How are the different aspects of biodiversity linked? How do they relate to ecosystem functioning and resilience?

Projects in Kruger

- 201 projects registered in 2006
 - Only 12 projects deal directly with any aspect of biodiversity or resilience (6.5%)
 - Only 4 studies include any aspect of biodiversity besides species diversity (2%)
 - If projects dealing with cataloguing species in understudied groups, developing tools for measuring biodiversity, and evaluating implementation are all included, the total rises to only 27 (13%)

- Very good broad theoretical background to biodiversity and its link to ecosystem functioning and resilience
- Lack of research regarding, and therefore a lack of explicit knowledge of, some of the finer details

Functional diversity

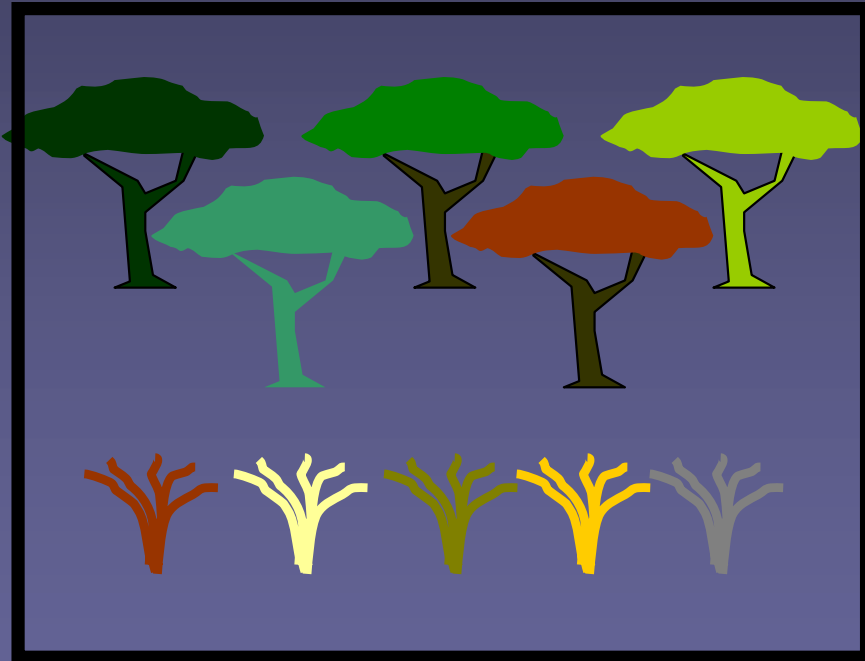
- Definition: the number, type and distribution of functions performed by organisms within an ecosystem
- The inverse of functional diversity is functional redundancy (how many species perform similar functions?)
- Examples of functions = nutrient cycling, prevention of soil erosion, carbon storage, provision of food to other organisms, provision of habitat for other organisms (shelter, nesting, hosts), influencing fire regimes, etc
- Promising approaches
- New indices

Functional linkages across trophic levels

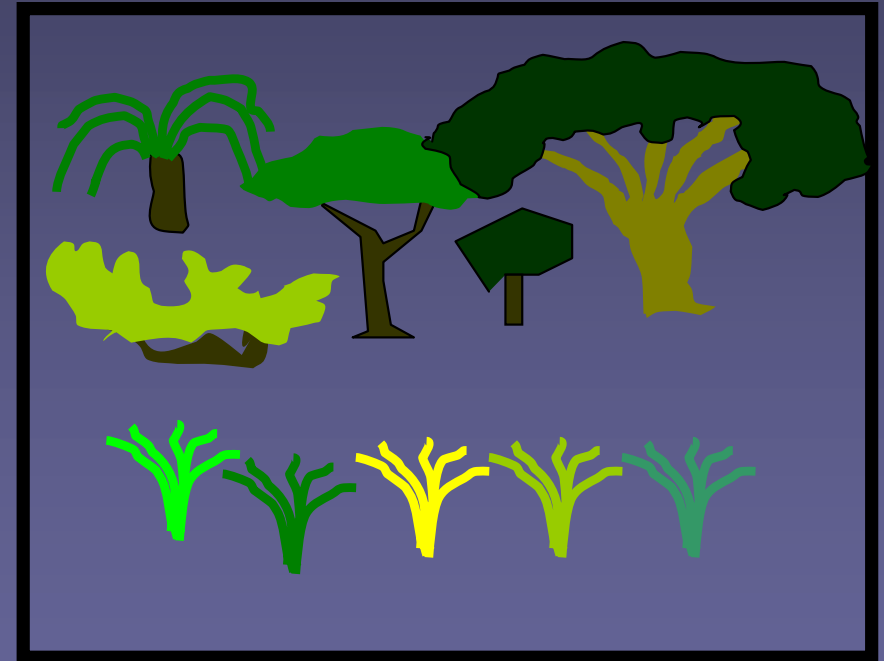
- We know very little about this
- What effect does a change in plant functional diversity have on animal diversity? Vice versa
- Approaches available
- New insights to be gained

Why all three components of biodiversity are important

Plot 1



Plot 2





The link to resilience

- Biodiversity is supposed to “promote resilience and ensure ecosystem integrity”
- But we are still very far from understanding how!

Making this link is essential if the ecosystem approach to conservation is to be applied successfully within Kruger

Conclusion

- Kruger management has a sound conceptual biodiversity framework
- Lack of understanding, and research into, some of the finer details
 - Functional diversity
 - Functional links between trophic levels
 - Links between the three components of biodiversity
- Many exciting questions to be answered
- Biodiversity need not be a buzzword, but if properly understood can provide a solid basis for management within Kruger

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