




## Targets for biodiversity pattern



## Stages in the planning process

1. Scoping and costing
2. Identifying and involving stakeholders
3. Establishing context for conservation areas
4. Identifying goals
5. Compiling data
6. **Setting conservation targets**
7. Assessing existing conservation areas
8. Selecting new conservation areas
9. Applying conservation actions
10. Maintaining and monitoring



## What are targets?

- Quantitative statements about the conservation objectives for specific features (e.g. species, vegetation types)
- Today's interpretations of broad goals, through the filter of available data



## Advantages of targets ...

- Require planners, managers, and others to state explicitly what they intend to achieve
- Provide an operational basis for measuring conservation value (does the concept of conservation value have any meaning without a clear statement of objectives?)

## Some limitations of targets ...

- All targets need periodic revision to ensure that they remain the best-possible interpretations of goals
- Uniform percentage targets fail to acknowledge differences between features in conservation requirements
- Percentage targets applied to regions and other large areas can be counter-productive because: 1. they do not reflect the requirements of particular features; and 2. they can be achieved without protecting the features that most need protection

## Targets for biodiversity pattern

**Table 1. Biodiversity surrogates for conservation planning**

*Generic surrogates*

Biodiversity pattern

Observed species distributions

Range maps—polygons<sup>b</sup>

Range maps—gridded atlas data<sup>c</sup>

Point locality records<sup>d</sup>

Densities of individuals<sup>e</sup>

Predicted species distributions

Nonstatistical models<sup>f</sup>

Statistical models<sup>g</sup>

Land-type polygons

Intuitive classifications<sup>b</sup>

Numerical classifications<sup>i</sup>

Environmental space<sup>j</sup>

~~Biodiversity process<sup>k</sup>~~

~~Biophysical templates<sup>l</sup>~~

~~Qualitative design criteria<sup>m</sup>~~

~~Quantitative design criteria<sup>n</sup>~~

## Targeted features (for biodiversity pattern) in the Cape:

- Broad habitat units (102)
- species of Proteaceae (364)
- species of fish, amphibians, reptiles (345)
- species of large- and medium-sized mammals (41)





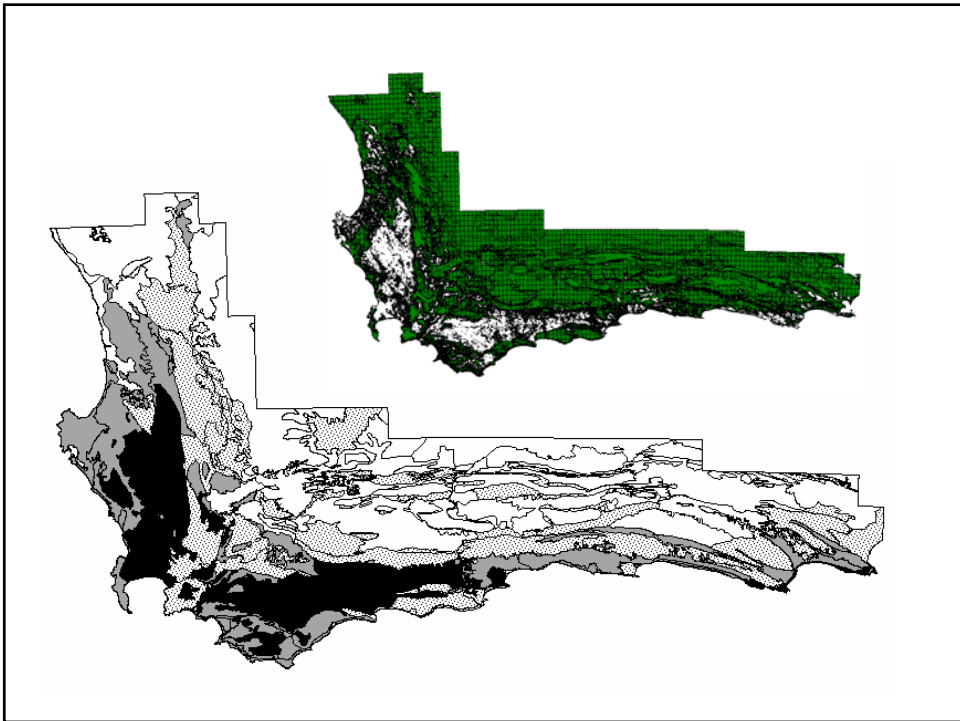
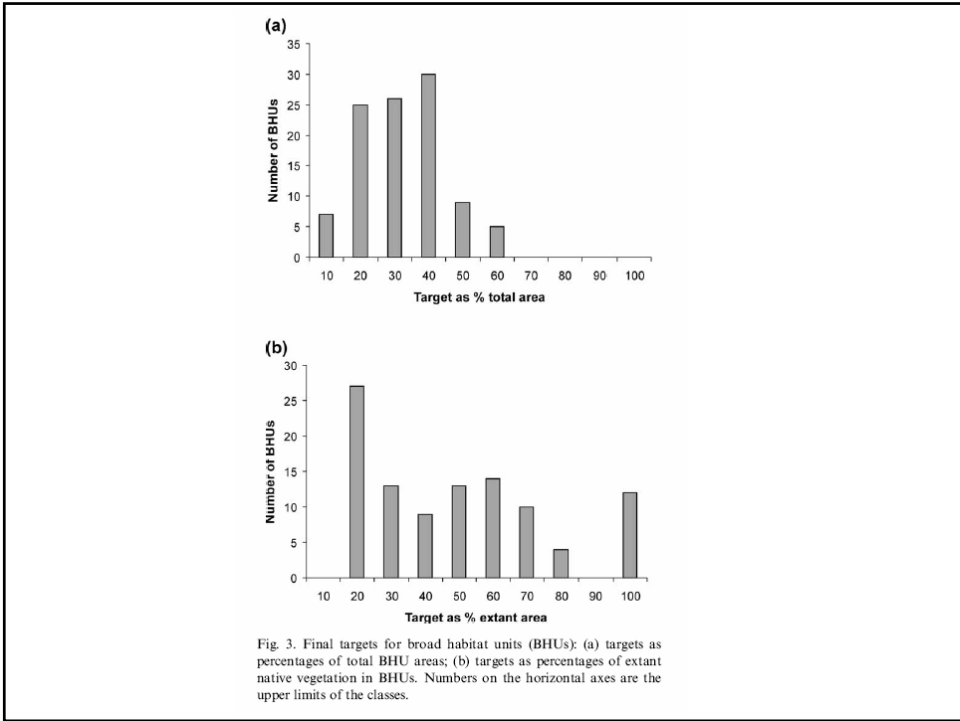
## Broad habitat units:

- 102 BHUs mapped at 1:250,000
- defined by climate, topography, geology, and vegetation with expert review
- vary in extent from 1,800 ha to about 619,000 ha (median 83,000 ha)



## Targets for broad habitat units:

- Premise 1: targets should vary
- Premise 2: targets should be framed initially as percentages of pre-European areas
- Total target = baseline + retention
- Baseline: 10, 15, 25% depending on spatial turnover of plant species
- Retention: 0, 15, 30% depending on threats from agriculture, urbanisation, alien plants



## Targets for Proteaceae species:

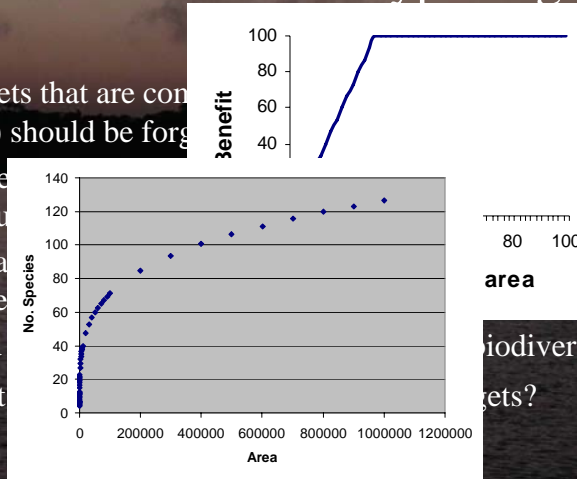
- 364 species
- 176,000 locality records
- Total target = baseline + retention
- Baseline: 10 records for rare non-sprouters, 5 records for others
- Retention: 0-5 records depending on threat profile of the species, to ensure at least five additional records secure from agriculture, urbanisation, alien plants

## General considerations for setting pattern targets for land types ...

- How much is left?
- Natural rarity
- Vulnerability to further loss
- Abiotic and/or biological heterogeneity (e.g. spatial turnover of species, local endemism)
- Functional importance (e.g. focal resource during droughts)
- Abiotic and/or biological similarity to other land types (e.g. proportional overlap in species composition)

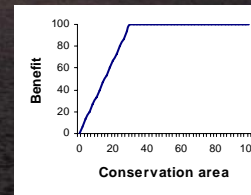
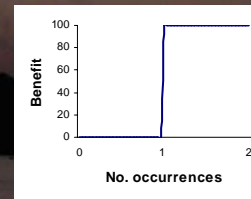
## Problems with land type targets

- Targets that are composed of (a single land type) should be forgotten
- Targeted production of a single land type is counter-productive
- All targets should be based on the real world
- Land type targets are not biodiversity targets
- What are the alternatives?



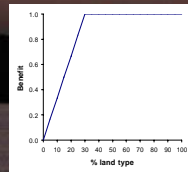
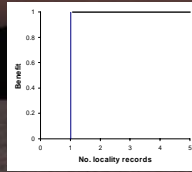
## General considerations for setting pattern targets for species ...

- How much of previous distribution is left?
- Natural rarity
- Vulnerability to further loss, including:
  - \* life history characteristics
  - \* pressures such as land use and harvesting
  - \* refugia, concentrations, critical resources
  - \* environmental variability
- Phylogenetic similarity to other species?

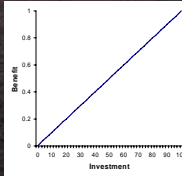
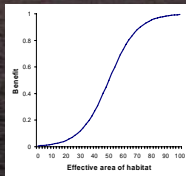
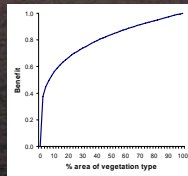


# Benefit functions for conservation planning

Ways of relating conservation investments to the benefits that result



Target-based



Continuous