Integrate Network
facilitated by EFI

Miljø- og Fødevareministeriet
Naturstyrelsen

Incorporating 2020 targets, data on species and their ecology in selection of sites for conservation forest

Copenhagen 28. September 2020
Forest ecologist Erik Buchwald

Political 2020 biodiversity targets

UN:

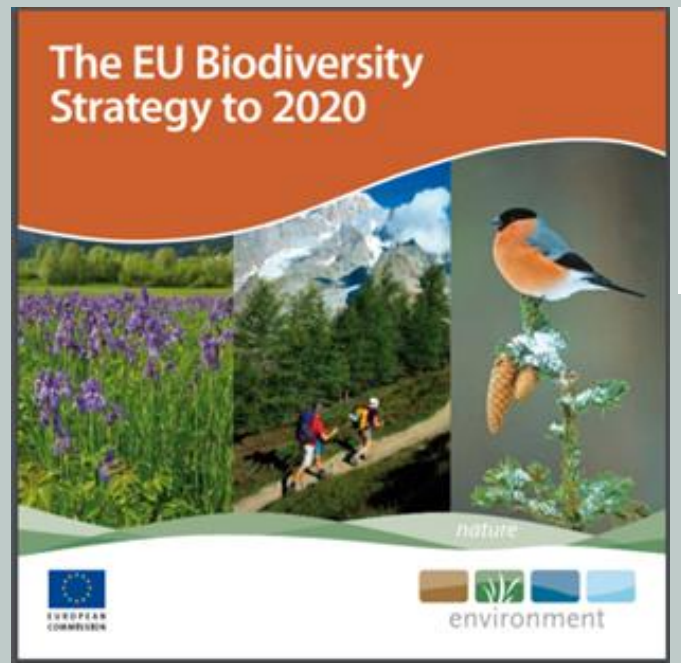
> Convention > Strategic Plan 2011-2020 > Aichi-Targets

Aichi Biodiversity Targets

Target 12

By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

EU:



Protect species and habitats - Target 1

By 2020, the assessments of species and habitats protected by EU nature law show better conservation or a secure status for 100 % more habitats and 50 % more species.

These were the basis of our work.

Process to incorporate the 2020 targets

Danish political ambitions enhanced in 2016 & 2019

Multiple scales

- Integrate: single trees, deadwood and biotopes etc.
- Segregate: set-aside >13.000 + 6.000 ha of state forest

Both are necessary for success (SLOSS discussion)

- Not Single Large or Several Small
- But both types of protection at landscape scale

Selection of scale & protection should be science based:
Systematic Conservation planning

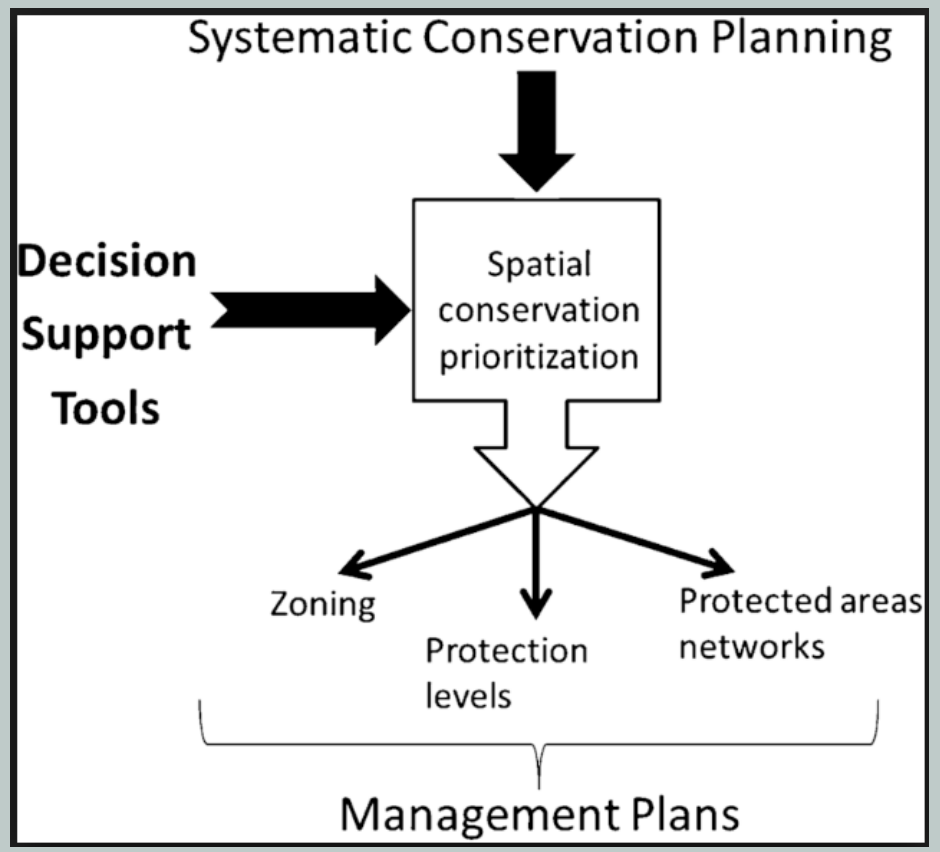
Systematic Conservation planning

SCP carried out for forest species in State Forests using decision support tool Marxan with Zones (my PhD 2015-18).

&

University experts delivered priorities for sites based on expert judgement 2017 & on ”biodiversity map” of Denmark mapping hotspots based on proxies & species data.

https://eng.naturstyrelsen.dk/media/262760/analysis-and-prioritization-of-future-efforts-for-danish-biodiversity.pdf & https://macroecology.ku.dk/dk/andre-publikationer/skove-til-biodiversitet/Anbefalinger_skovudpegning_KU_AU_Final_15dec2017.pdf



Portmann 2016, DOI 10.1007/978-3-319-26971-9_10

Variable protection types

Protected >< non-protected

or several zones or types of protection?

- Diverse needs of species (Biodiversity),
- Less than full protection may be sufficient and cheaper

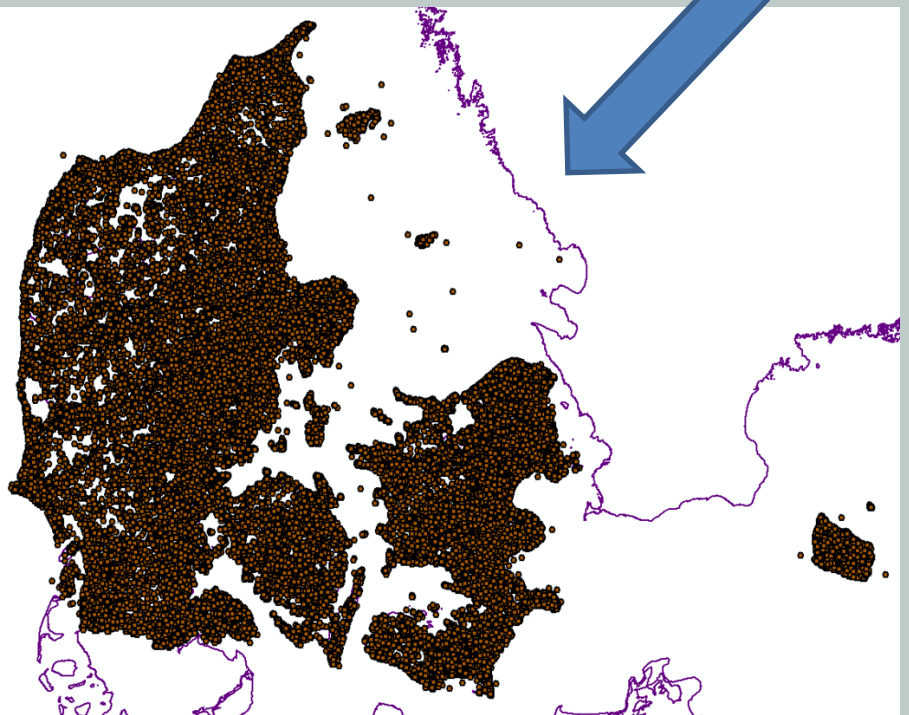
=> Four zones chosen in Marxan:

Zone	Short name	Description	Cost
1	Normal	No extra protection (available zone)	0
2	Conifer	Woods given extra protection for species needing conifers	10 or 25%
3	Active	Active conservation management in deciduous woods	50, 75 or 100%
4	Untouched	Minimum-intervention deciduous woods	100%

Data & analyses for Marxan, PhD

Cost efficiency

Marxan shows the cheapest way to reach targets.



Data on 2569 species (Redlisted / Natura2000).

- 22 million species records checked.
- 422.000 records for these species
- 285.000 records from 1991-2015 used
- 58.394 records from State Forest areas

- Protection scheme?
- Ecological preferences?
- Reported decline?

Complementarity used for optimizing coverage.

Target: at least 5 sites for each species matching its preferences.

Species preferences for zones

Preferences based on databases and expert consultation.

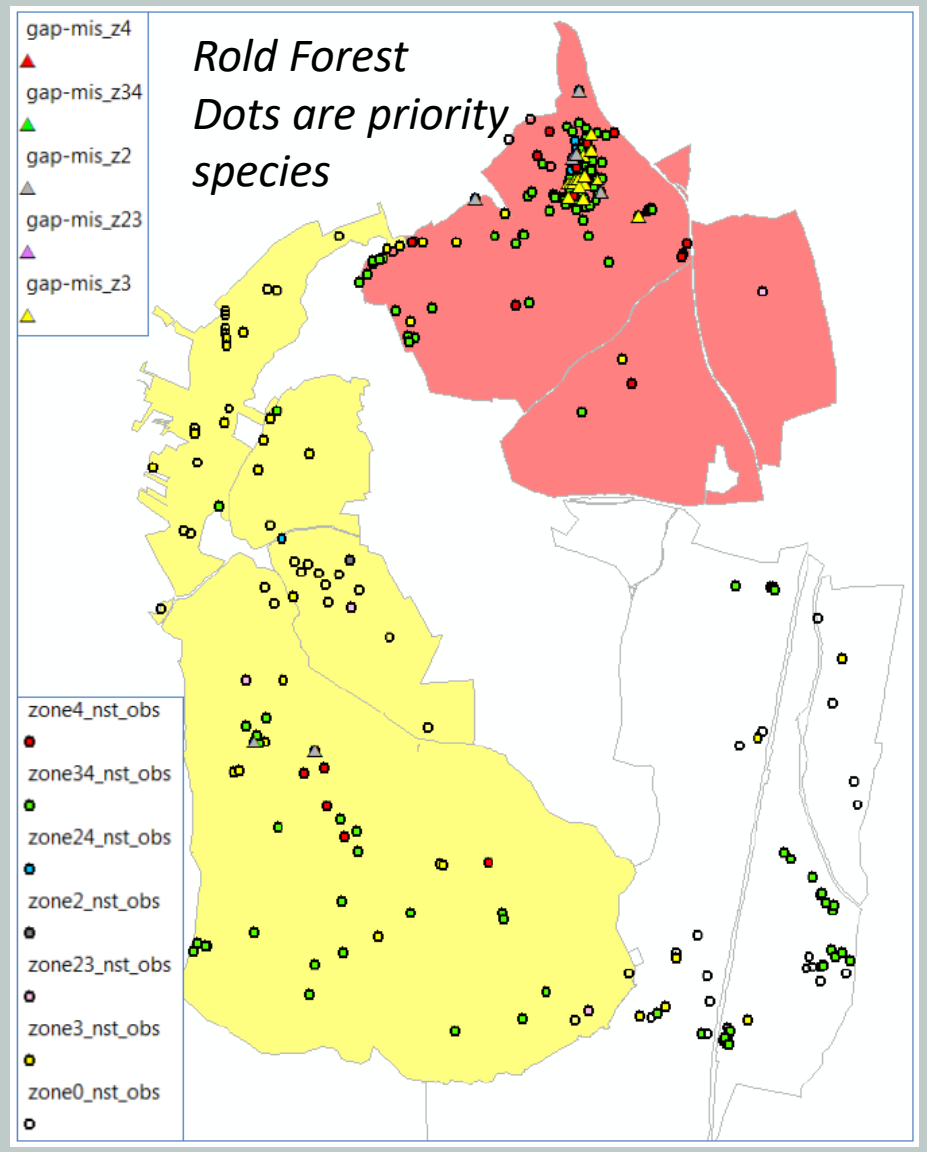
Group	N	Group name	Basic zone(s)	Habitat preferences / requirements / associations
1	38	Open saproxylic	3+4	Saproxylic species associated with deciduous trees found in open habitats but also with woodland habitats.
2	174	Open woodland	3	Non-saproxylic species associated with open habitats but also with deciduous woodland habitats.
3	102	Woodland saproxylic	4	Saproxylic species of deciduous trees associated only with woodland habitats and not with open habitats.
4	55	Untouched deciduous	4	Non-saproxylic species associated with non-intervention deciduous woods, but not with open habitats.
5	147	Other deciduous	3+4	Non-saproxylic species associated with deciduous woods, but associated neither with non-intervention nor with open habitats.
6	16	Conifer saproxylic	2+4	Saproxylic species with preference for coniferous trees.
7	55	Conifer obligate	2	Non-saproxylic species associated only with conifers or coniferous woodland.
8	39	Conifer facultative	2+3	Non-saproxylic species preferring conifers or coniferous woodland, but also associated with deciduous trees or open habitats.
Total	626	Forest species		

Selection of sites & protection scheme

Species unevenly distributed.

Colors mark
species preferences.

Target achievement
was possible for all
priority species
(5 sites pr species).



Outcome of the systematic conservation planning

Landscape scale

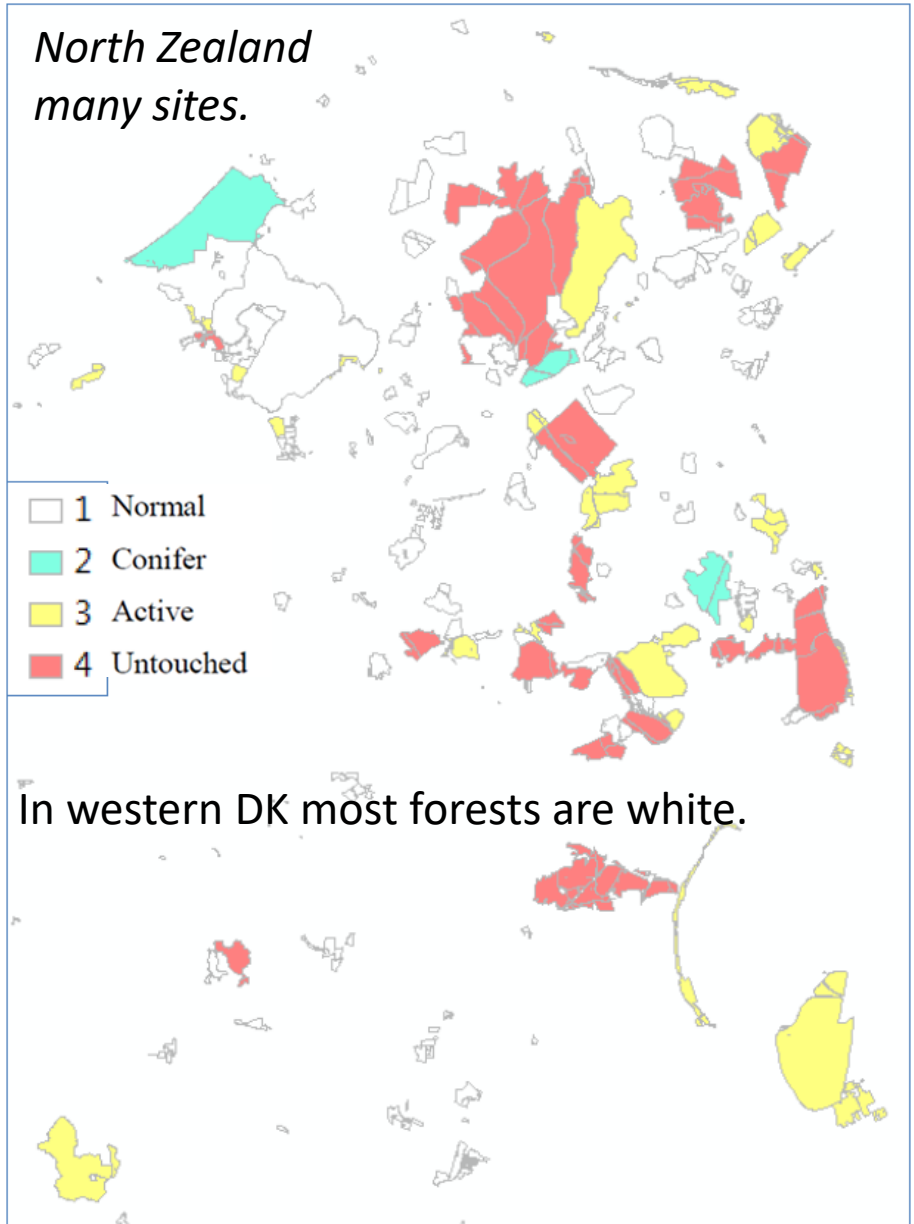
White polygons: Integrate biodiversity in normal forestry (matrix)

Turquoise polygons: Integrate biodiversity in conifer forestry including enhanced deadwood

Yellow polygons: Enhanced active protection for light-dependent species, e.g. by grazing, fire, mowing, etc. including more glades, enhanced deadwood and development of veteran trees

Red polygons: Segregate & designate more set-aside untouched forest. Restore natural dynamics including glades, hydrology, deadwood and grazing

Very high degree of overlap between colored polygons and the expert-based recommendations, but the latter only recommended untouched as protection type.



Political decisions in Denmark

The PhD-results were combined with other studies for designation of 13.800 ha forest reserves in 2018 with 10 to 50 year transition period:

- 6900 ha untouched deciduous woodlands
- 3300 ha untouched conifer plantation woodland
- 3600 ha “other biodiversity” woodland reserves

New political decision December 2019:

- Designate 6000 ha more of untouched state forest
- Stop commercial forestry now in all designations

State forests in DK cover about 110.000 ha woodland

Take home messages

- Most species can be helped by integration
- Some species need segregation
- Science can show options & solutions
- People & politics make things happen
- Involve people & science

Acknowledgements

Thank you to data providers (DOF, F&N, DBF, Svampeatlas, Bugbase et al.),
and to Matthew Watts et al. for Marxan Z

Photos: Erik Buchwald

Management guidelines for large set-aside areas
The transition period and beyond

- Eliminate overseas species
- Diversification of even aged stands by uneven felling
- Damage trees to create tree microhabitats
- Restore natural hydrology
- Introduction of large grazers in large fences – all year grazing
- Outdoor recreation: full access for the public