




# Management of Danish state forest - with a special focus on water

Arbejdsgruppe Waldbiodiversität  
 22 May 2023  
 Jesper Flinberg  
 Head of division

1

### Outline

1. Introduction
2. Integrated management - Close to nature forest management
3. Strategy to counter biodiversity loss
4. Summary and future prospects

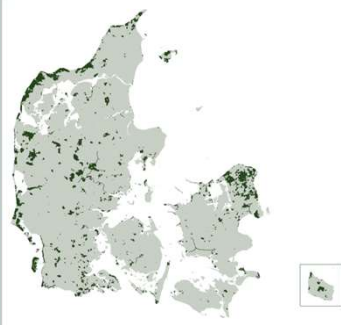



 2 | Danish Nature Agency

2

### State forest in Denmark

- Forest area: 650.000 ha  
14% of land area
- State forest: 210.000 ha  
5 % of land area
- 40% native (mainly broadleaved) species
- Close to nature forest management
- Two equal objectives
  - a) preserve and improve biodiversity
  - b) provide outdoor and recreational possibilities
  - production is only to support a) and b)



 3 | Nature Agency

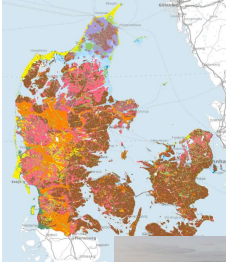
3


### Historic background


- 1800: 2-4 % forest cover of depleted forests
- 1804: First Danish forest law → Forest protection and production
- 200 years of classic forestry → Even-aged, planted, mono-species clear felling system → mainly conifers

### Landscape and geology

- Variation in conditions from east to west
- Flat and rolling hills (max 170m)



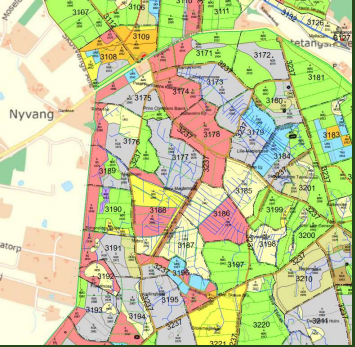



 4

4

### Starting point for restoring natural water systems

- drained wetlands and forest swamps
- drained non-wet areas
- non native species introduced (Norway spruce, Sitka spruce)



 5

5

### Outline

1. Introduction
2. Integrated management - Close to nature forest management
3. Strategy to counter biodiversity loss
4. Summary and future prospects



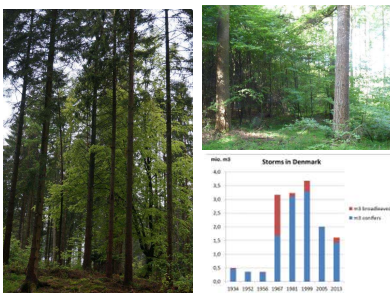
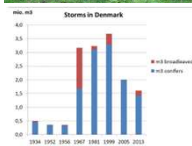
 6 | Danish Nature Agency

6

### Integrated management - Close to nature forest management

**Strategy for more resilient forest: Action plan for close-to-nature forestry**


- Reduce risk
- Continuous forest cover under future changing conditions eg. climate change
- Multipurpose forestry
- Flexibility
- Provide opportunity for future changing objectives

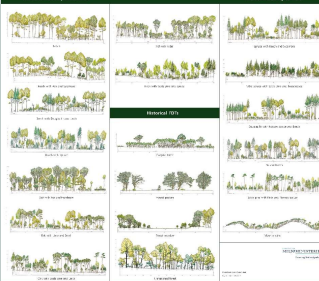
7 / Naturstyrelsen / TMJ på præsentation

7

### Close-to-nature forestry Forest Development Type (FDT)



- No clear felling
- Natural regeneration
- Single tree and tree group management
- Multispecies and age variation for structural differentiation
- Conversion → one tree generation



8 / Naturstyrelsen / TMJ på præsentation

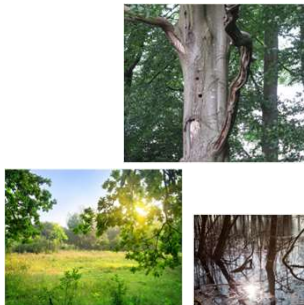
8

### Biodiversity integration in the forest matrix: Elements at multiple scale

**Single element – micro habitats**  
Dead wood - high stumps - standing dead trees  
Veteran trees - 5 long living habitat trees per ha

**Small set-aside key habitats**

- Forest meadows, small heathlands, open dryland
- Mires, forest swamps, lakes, watersheds etc.
- Old growth set-aside forest
- Open habitats provide transition zones for rare species.
- Dry habitats managed by grazing
- Wet habitats → No drainage → Active restoration



9 / Naturstyrelsen / TMJ på præsentation

9


### Restoration of natural hydrology

Mainly a passive approach

- no new ditches
- stop for maintaining ditched

In smaller scale as active restoration

- selected sites/forests
- prioritized projects
- often postponed til optimal time of harvest



10 / Naturstyrelsen / TMJ på præsentation

10

### Close to nature forest management

Gribskov – 5.700 ha. – 20 years of restoring natural hydrology



11 / Naturstyrelsen / TMJ på præsentation


11

### Rødedam, Gribskov afd. 322.

Norway spruce removed in 2005

Ditches closed in 2006

Rødedam, Gribskov 2007



12 / Naturstyrelsen / TMJ på præsentation

12

**Ryttermose, Gribskov afd. 211.**  
Ditches closed in 2011

13

**Outline**

1. Introduction
2. Integrated management - Close to nature forest management
3. **Strategy to counter biodiversity loss**
4. Summery and future prospects

14

**Strategy to meet the biodiversity crises**  
**- The Nature and Biodiversity Package 2020**

- From 5 to 60 % set-aside forest in state forest
- 70.000 ha new forest set-aside areas on 200 sites
- Areas appointed based on existing species diversity and forest-structure
- Large connected areas or whole forests
- 10 years for implementation in deciduous forest → conversion of even aged stands
- 50 years for implementation in spruce forest → introducing native broad-leaved species

15

**Management guidelines for large set-aside areas**

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

16

**Restoration of natural hydrology**

An active approach

- Masterplan for each area
- Financing set aside
- Used as an active tool to enhance dynamics
- Roads and infrastructure will be moved

17

**Outline**

1. Introduction
2. Integrated management - Close to nature forest management
3. Strategy to counter biodiversity loss
4. **Summery and future prospects**


18

**Summary**

- Large change in restoring natural water systems over the last 20 years
- Even bigger changes due to 70.000 ha (60%) set aside for biodiversity
- The passive change continues on the 40% of the state forest which are multifunctional/integrated management
- Restoration of water systems play a major role in conversion of closed, even aged, monoculture forests to diverse semi open woodlands
- Lack of monitoring till now – difficult to show benefits of close to nature management

**...and future prospects**


- Little focus on effects on high ground in current restoration of water systems
- Comprehensive scheme for baseline and monitoring in future set-aside forests
- Water4Nature - role of hydrology and groundwater in nature restoration, biodiversity and carbon sequestration in Danish forests.  
<https://www.government.dk/en/topics/2022-2023/water4nature>



19 Danish Nature Agency


19

**Thank you for listening!**



**Contact information**

Jesper Tranberg  
 Head of Division | Management and Recreation  
 +45 72 54 33 11 | [jstra@natt.dk](mailto:jstra@natt.dk)  
 Ministry of Environment of Denmark  
 Danish Nature Agency



20 Danish Nature Agency

20