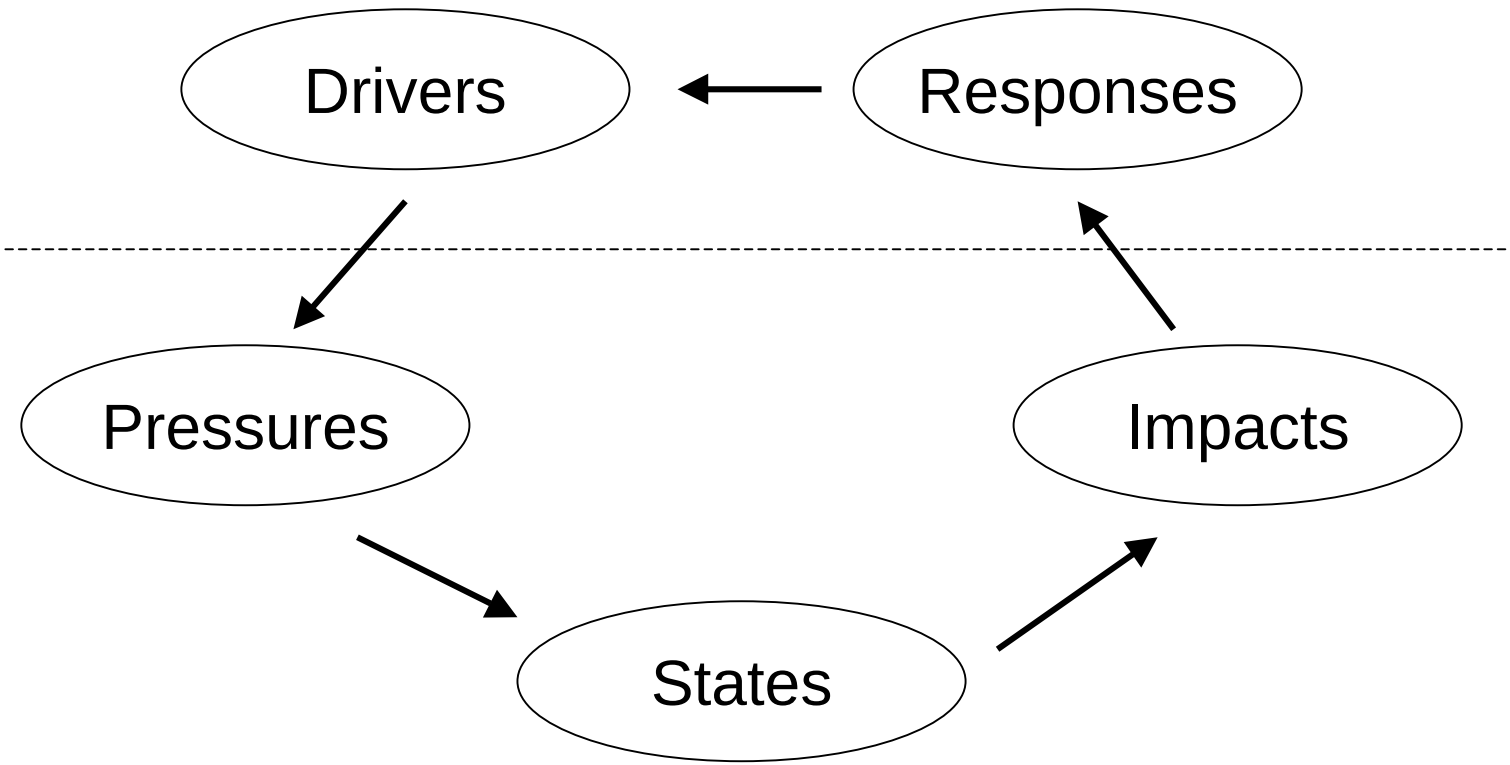
Applying land cover and land use monitoring data as indicators of biodiversity change

Jogeir N. Stokland (jns@nijos.no),

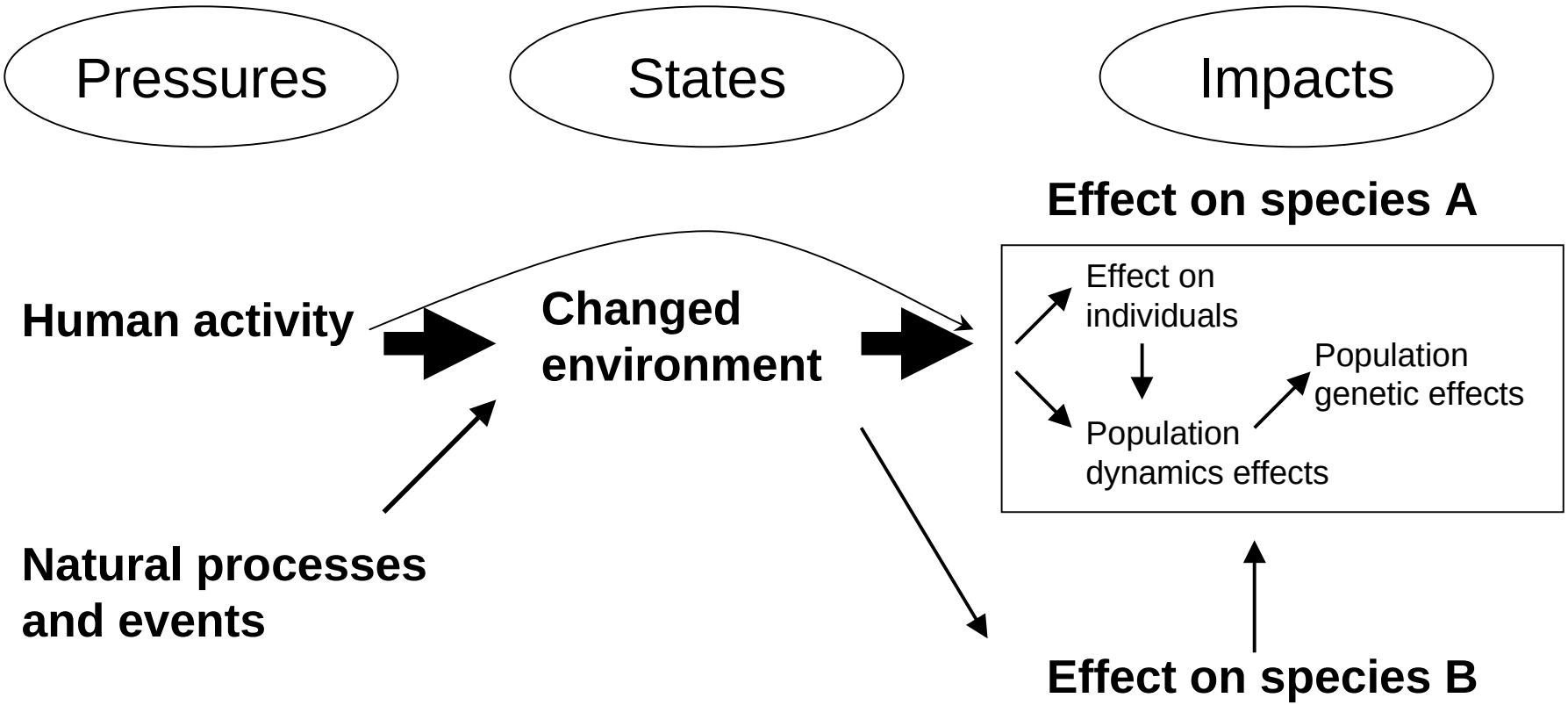
Norwegian Institute of Land Inventory
(http://www.nijos.no)

Workshop on *Classification System for Landscape Monitoring*, Tune, Denmark, October 11-12 2001

The DPSIR model



Concepts for species threats

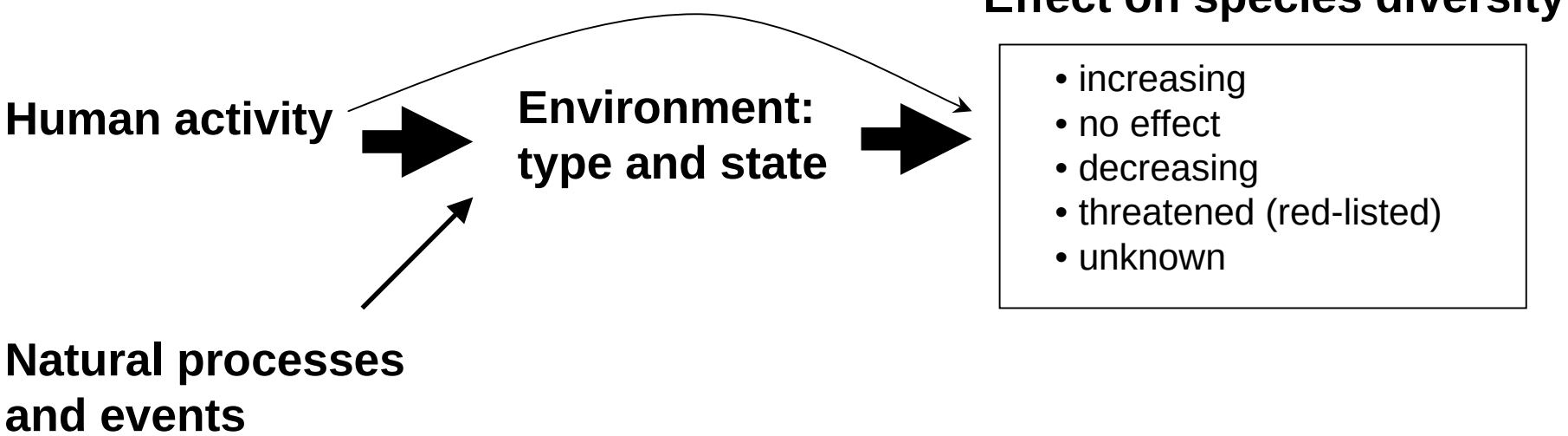


Concepts for biodiversity change

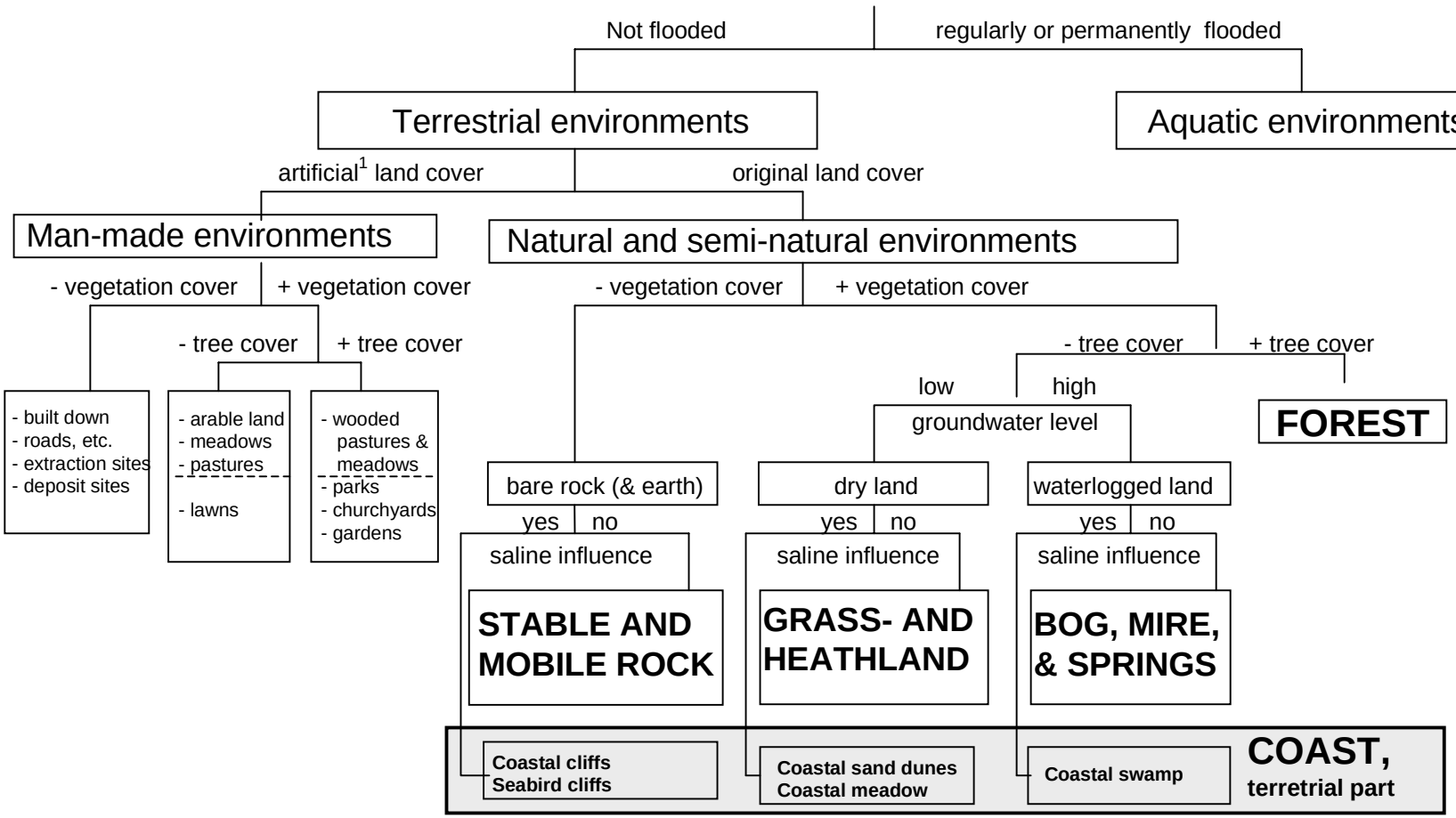
Pressures

States

Impacts



Norwegian habitat classification



1) artificial means that the original land surface is
   a) covered
   or b) removed/exchanged
   or c) intensively managed (often at least annually)

Land cover - Habitat

LAND COVER IS **NOT** HABITAT

HABITAT[1] IS MADE UP BY

* climatic factors
* land cover
  - type
  - state (incl. succession phase)
* substrate
* key factors (chemical, physical, other species)

1) habitat in the meaning: neccesary environmental factors for the existence of a species

Monitoring the environment

Pressures

States

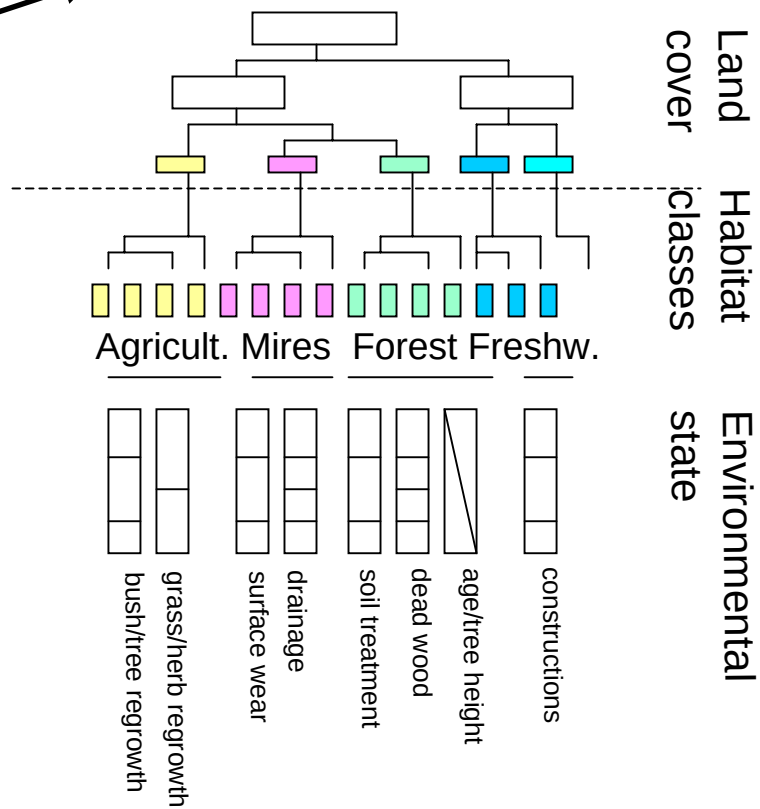
Impacts

Human activity

Natural processes and events

Environment: type and state

Effect on species diversity



Monitoring the environment

Pressures

States

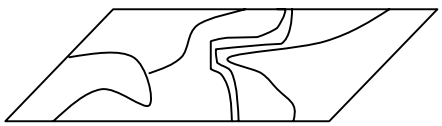
Impacts

Human activity

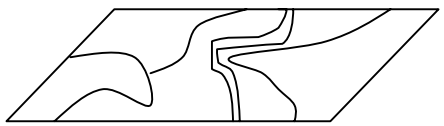
Environment: type and state

Effect on species diversity

Land use



Land cover



ID	LU type		LU activity				
1							
2							
3							
n							

ID	LC	HC	State classifiers				
1							
2							
3							
n							

Monitoring the environment

Land use activities

Agriculture

- animal grazing
- mowing
- crop class 1 … n
- abandoned

Forestry

- logging operations
- regeneration style
- draining (swamp forests)
- soil preparation

Recreation

- 1 … n

Environmental state classifiers

Mires

- drainage state classes:
  - no drainage (natural hydrology)
  - former drainage system, channels revegetated
  - active drainage system, open (water-filled) channels
  - surface vegetation removed or covered

Agricultural land

- amount of dry grass/herbs
- bush coverage
- tree coverage

Forest

- stand age
- amount and type of dead wood
- original/introduced trees
- intactness of forest floor

Indicators of biodiversity change

Drainage of mires

Pressure indicators

- mire loss disaggregated by land use (economic sectors)
- mire surface degradation (state classes) disaggregated by economic sectors

State indicators

- extent of mires disaggregated by a) habitat classes, b) state classes

Impact indicators

- number of red-listed mire species threatened by drainage
- mire accessibility near urban areas

Indicators of biodiversity change

Change in traditional land use

Pressure indicators

- grassland loss disaggregated by economic sectors
- grassland habitat degradation (state levels) due to abandonment

State indicators

- extent of grassland disaggregated by a) habitat classes, b) state classes

Impact indicators

- number of red-listed grassland species threatened by habitat loss
- grassland accessibility near urban areas