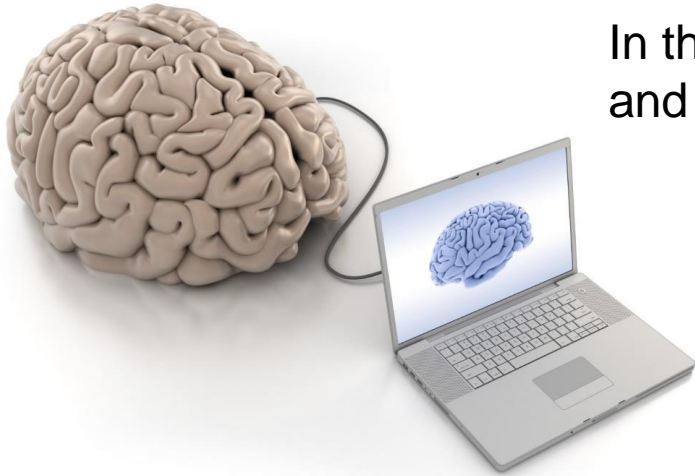




# The Norwegian Nature Index – providing an overview on the state of biodiversity

Erik Framstad, Signe Nybø, Bård Pedersen, Olav Skarpaas

# Where is information on biodiversity and ecosystems located?



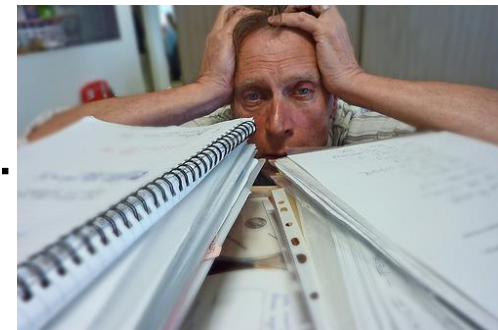
In the **brains of experts**  
and in their **computers**

In various **reports,**  
**publications,**  
**media...**



How is it communicated to society ?

The **integrated picture** might be hard to get...



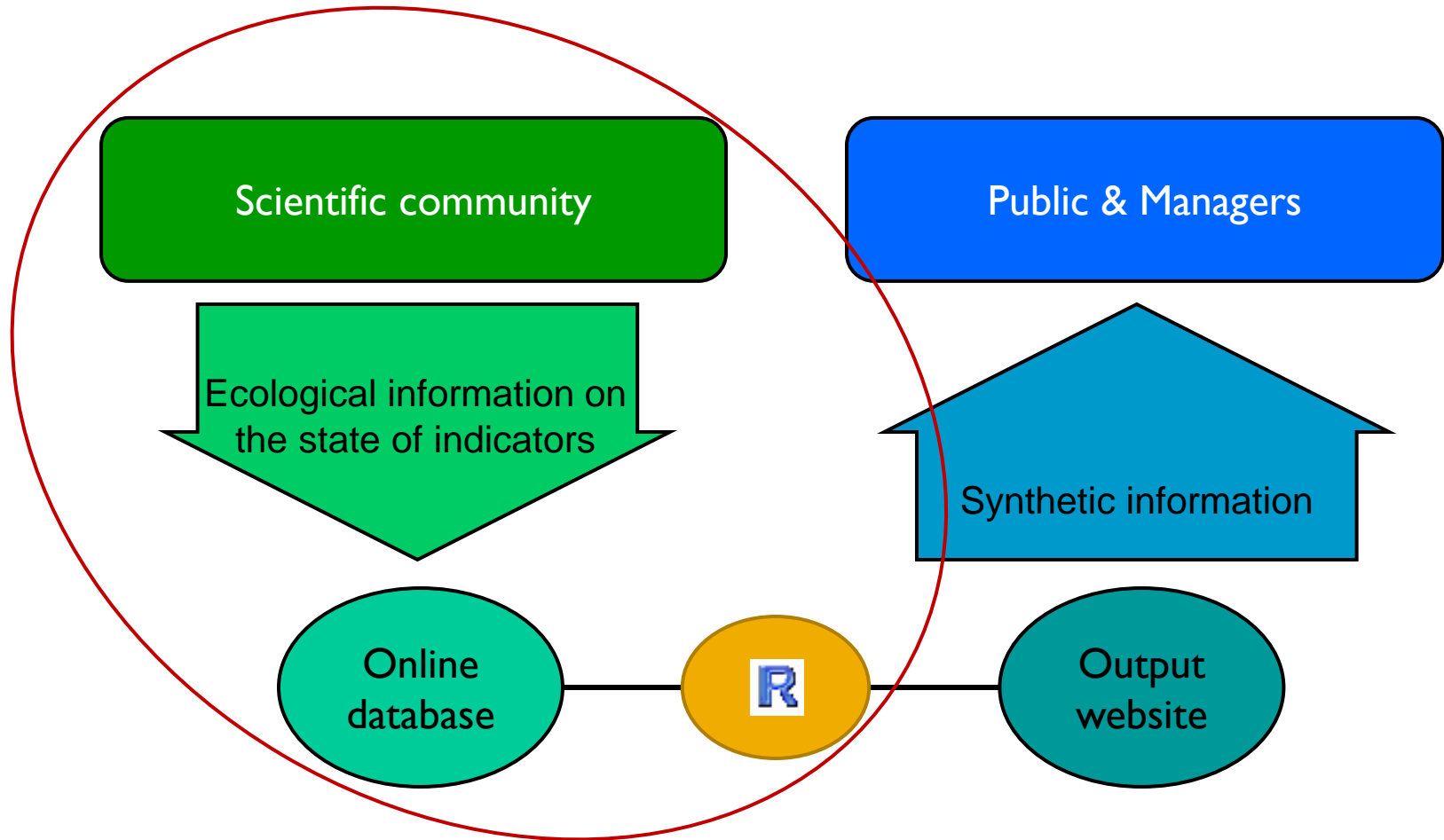
# Objectives for the Nature Index (Ministry of Environment in 2007)

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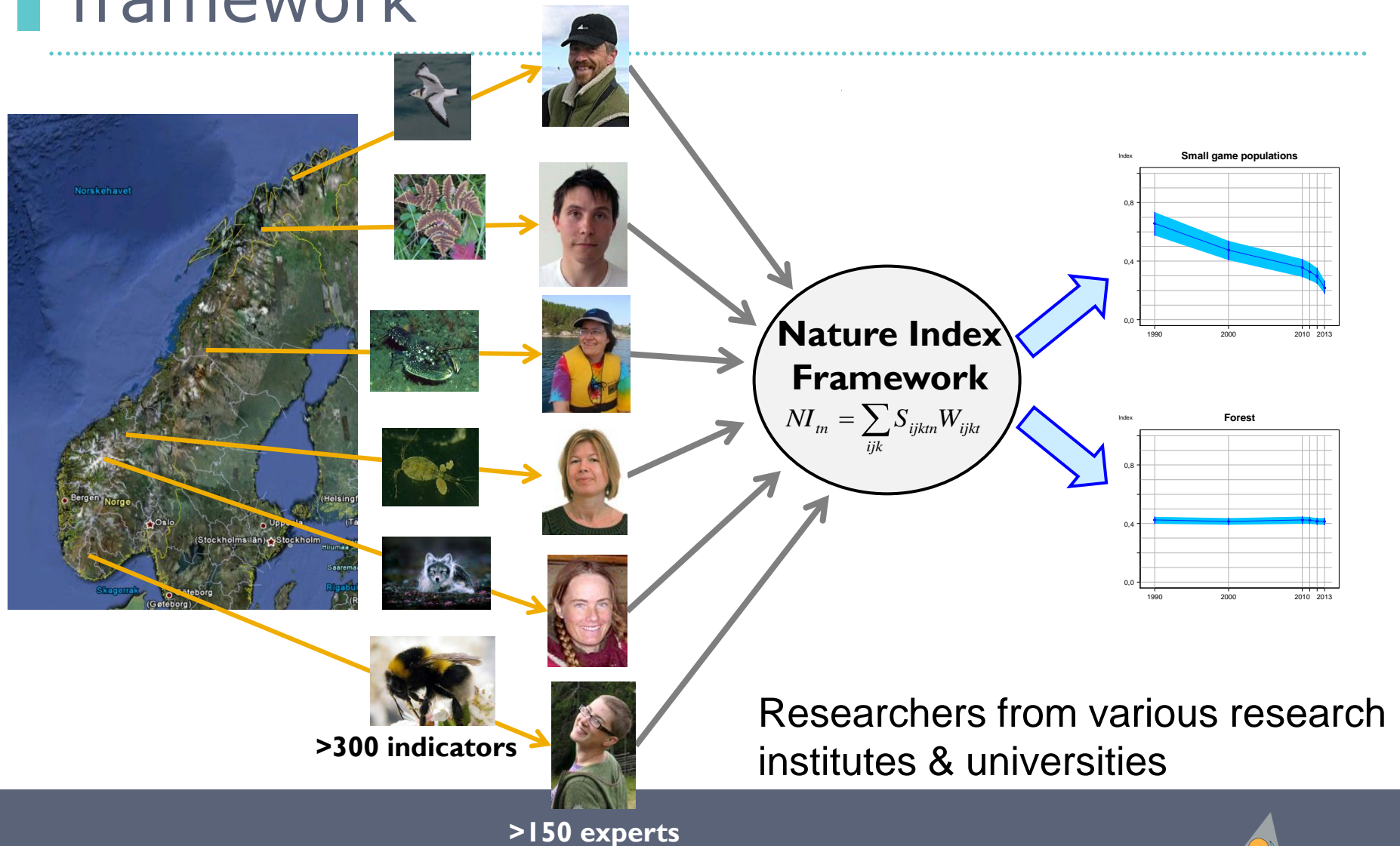
- ▶ Get an **overview** of state and trends of biodiversity in all major ecosystems, incl. semi-natural systems
- ▶ Easy to communicate
- ▶ Scientifically sound
  - ▶ Involve relevant institutions with biodiversity data
  - ▶ Involve group of statisticians
- ▶ Increase the understanding of the need for more biodiversity monitoring

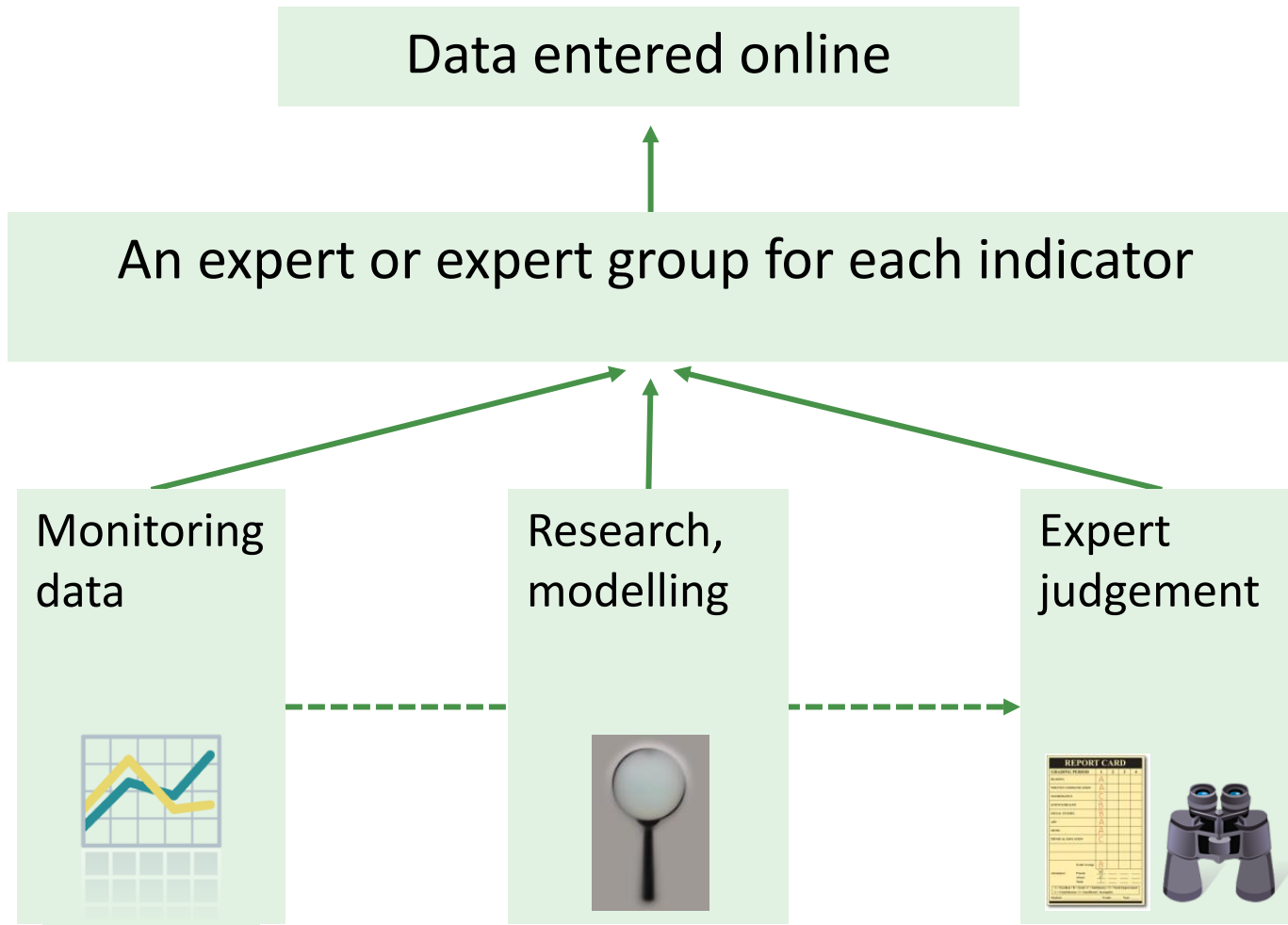
# What is the Nature Index ?

An **online system** for **storing and displaying** ecological information on the **state of ecosystems**



# Information flow - nature index framework





Mean values and uncertainties entered for each indicator and integrated in the final index

# Calculating the Nature Index I

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- ▶ The Nature Index is a composite index of many individual indicators
- ▶ Indicators are scaled (0–1) relative to a baseline (reference state)
- ▶ Then combined and weighted to produce an index that aims to assess the state and trends of biodiversity in ecosystems

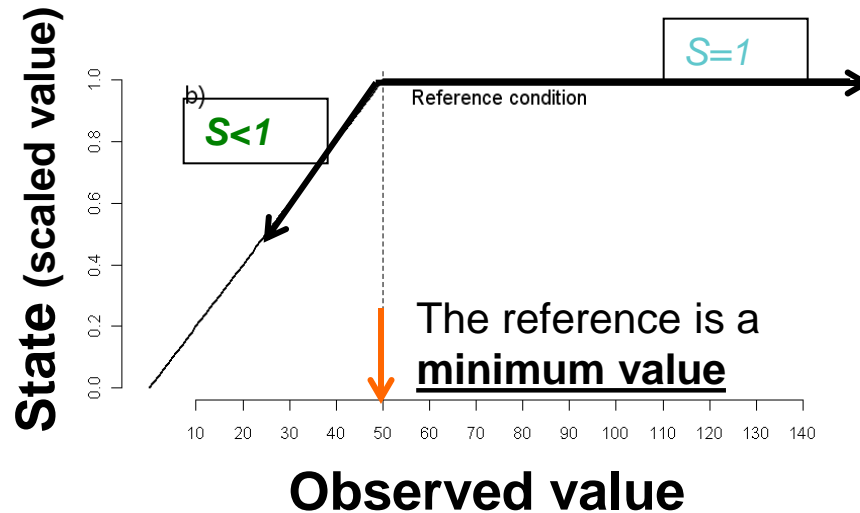
# Calculating the Nature Index II

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- ▶ Both reference values and indicator values have some degree of uncertainty
- ▶ Experts estimate these uncertainties for each indicator (interquartile range)
- ▶ Based on these estimates, probability distributions are fitted for each indicator
- ▶ These distributions are used to calculate the NI as a stochastic variable using parametric bootstrapping
- ▶ The median of the simulated distribution represents the NI estimate
- ▶ Confidence limits are obtained from the simulated distribution



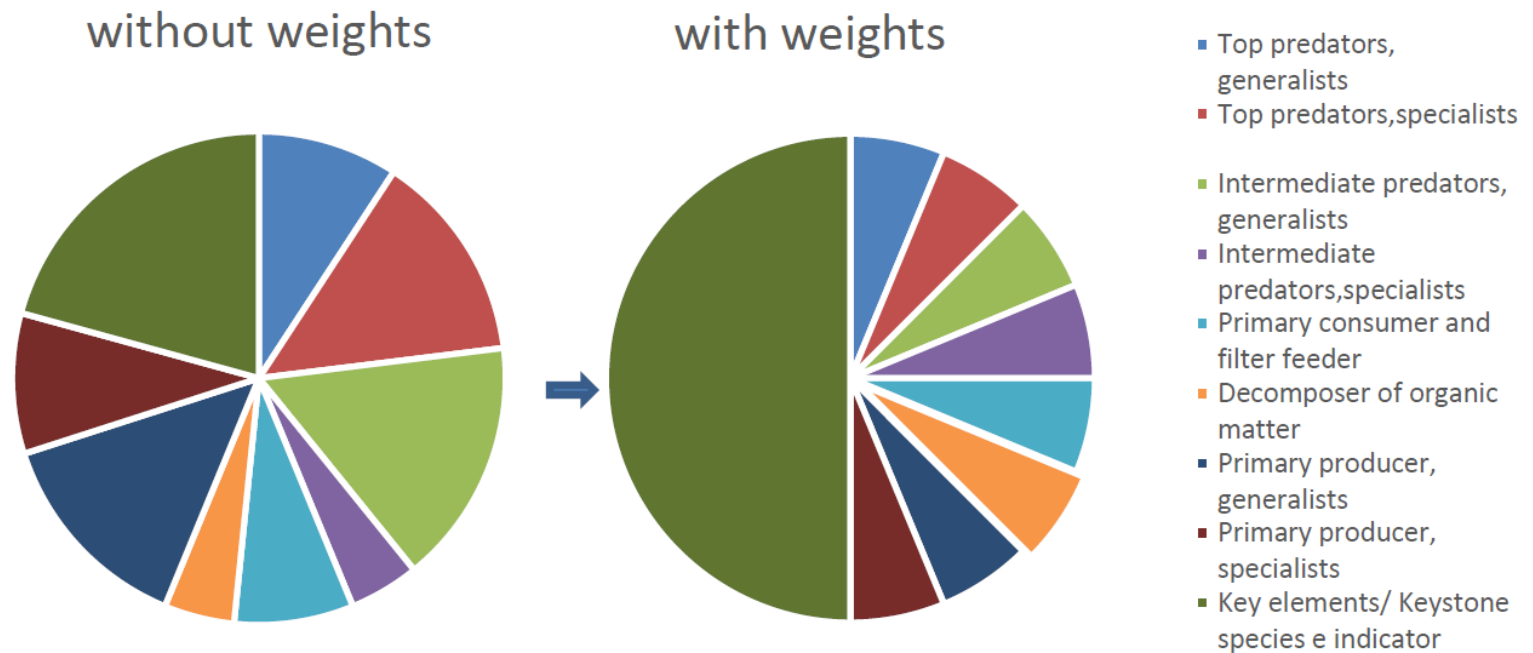
# States are calculated by scaling indicators by their reference value:



All **States** are dimensionless numbers, expressed on a **0-1** scale

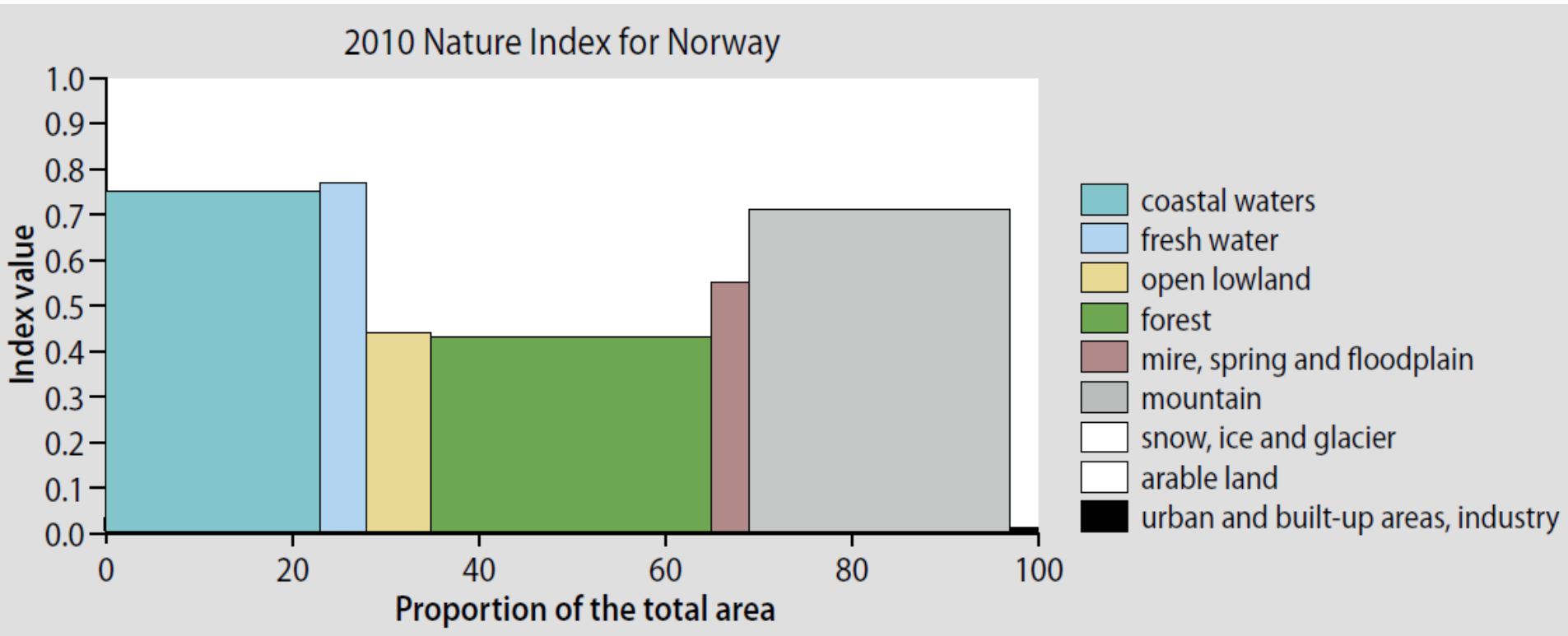


# Indicators are weighted, to increase representability



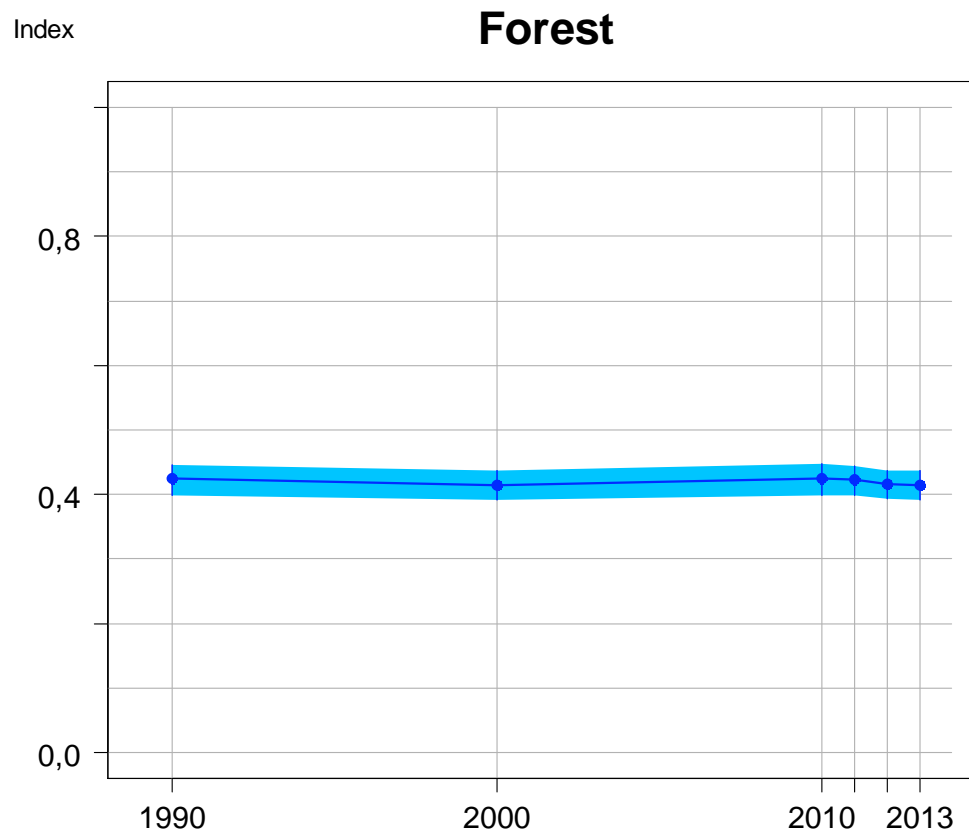
**Figure 2.** Schematic overview of the weighting of different functional groups

# Joint presentation of ecosystem Condition and Extent



# A major habitat: Forest

## A composite index of 86 indicators



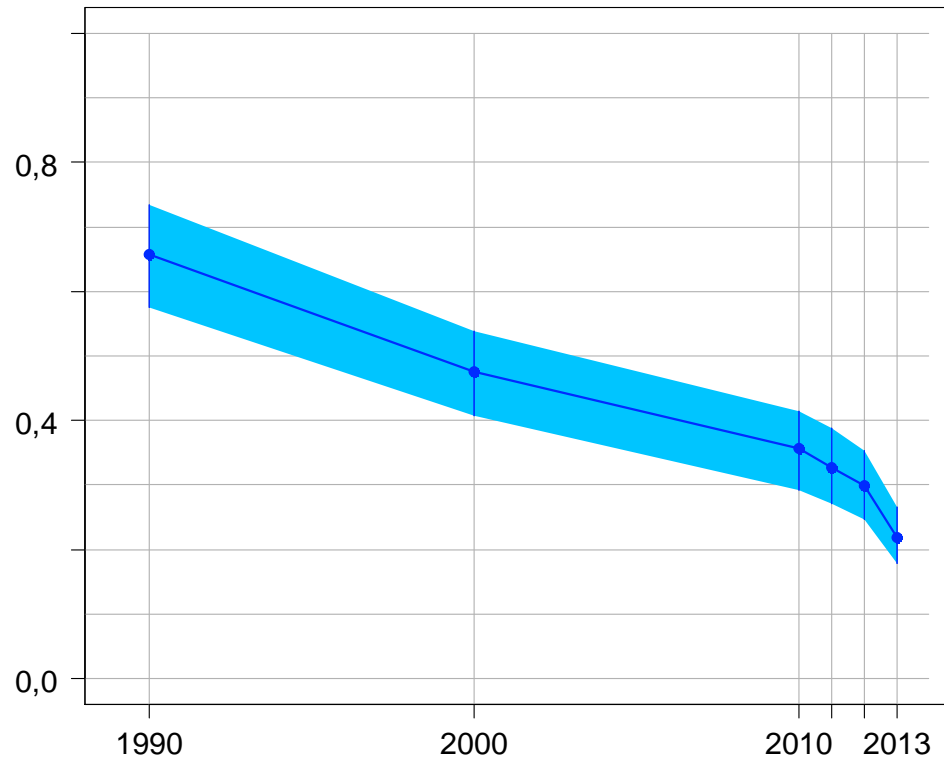
# Ecosystem service capacity

## A composite index over 4 indicators



Index

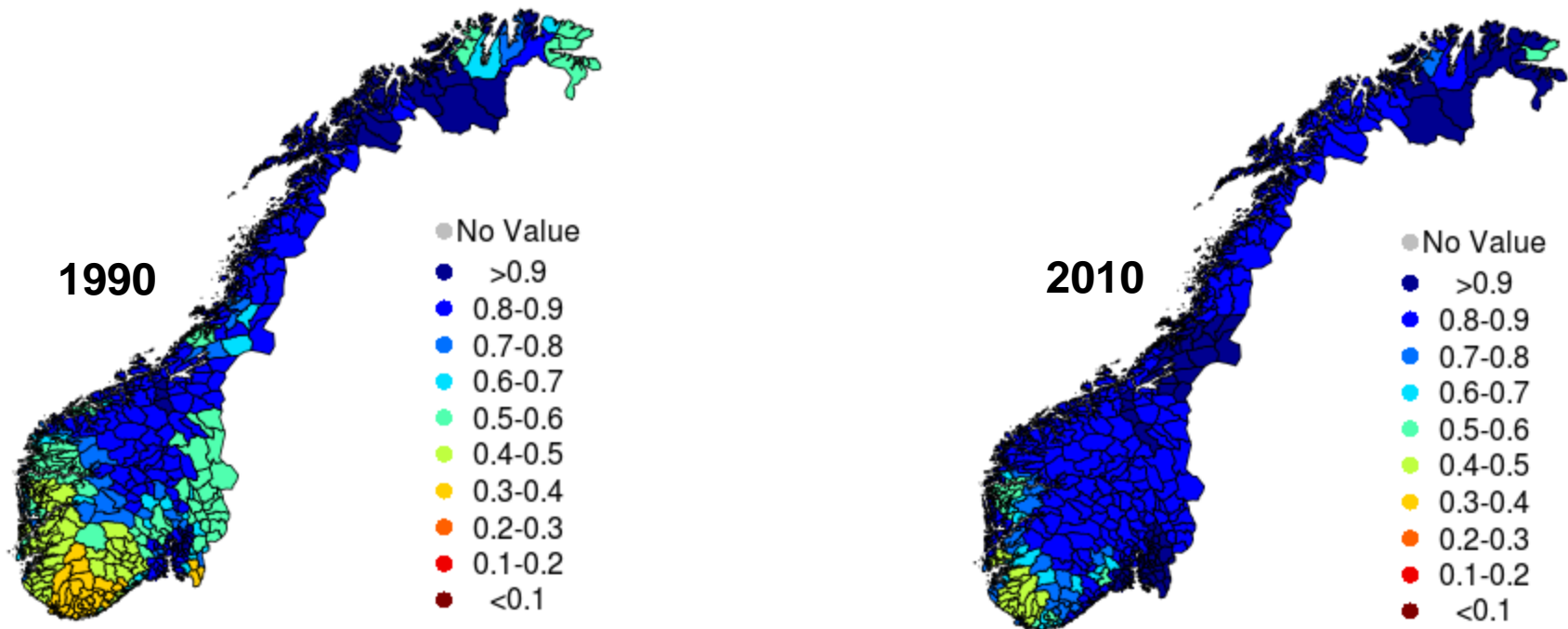
### Small game populations



Photos: © John Atle Kålås, © Jan Ove Gjershaug

# THEMATIC INDEX for ecosystem pressure: Acidification of freshwater

Group all indicators sensitive to acidification:



# Summary of the Nature Index

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- ▶ Framework for communicating experts' knowledge on biodiversity to the society
- ▶ Overview/synthesis of state and trends of biodiversity based on this knowledge
- ▶ Weighted average of scaled indicators
- ▶ Easy to communicate
- ▶ Uncomplicated and transparent framework
- ▶ Facilitate intuitive interpretation of results

# Thank you for the attention!



## **Involved Research institutes:**

Norwegian Institute for Nature Research (NINA)  
Norwegian Institute for Water Research (NIVA)  
Norwegian Institute of Bioeconomy Research (NIBIO)  
Institute of Marine Research (IMR)  
NTNU University Museum  
Statistics Norway

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