Ministerie van Landbouw,
Natuur en Voedselkwaliteit

Use of space data for monitoring nature and biodiversity

Earth Observation for biodiversity and water management

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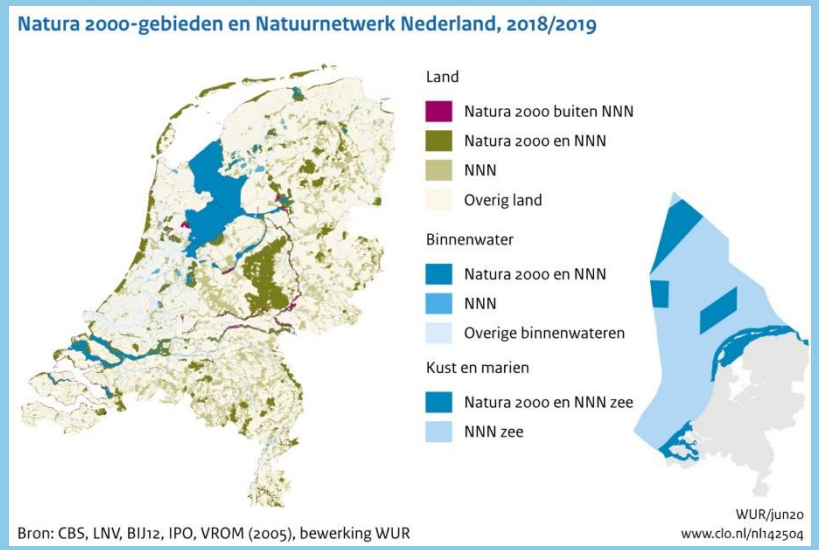
1. Nature policy and monitoring requirements

- EU Birds and Habitats Directives
- Designating nature areas and protecting species and habitats
- Act on Nature conservation:
- Developing management plans, including monitoring plans



2. Actions needed to conserve and restore nature

- Several challenges in the field of nature: disturbance, nitrogen, etc
- Several nature objectives will not be achieved.
- Action is needed: Measures such as hydrological restoration, reduction of nitrogen, zoning, etc
- Monitoring need to be intensified:
    - execution and progress of measures
    - environmental factors
    - achievement of objectives

3. Intensify nature monitoring

- December 2022: Minister for Nature and Nitrogen Policy decided to intensify monitoring of nature.
- Main objective:

  Establish a more robust national system for nature monitoring, information provision and reporting on objectives from the EU Birds and Habitats Directives (including Natura 2000 areas)
- But also improve monitoring outside Natura 2000 areas
- This is a task for the state government, provinces, as well as NGOs

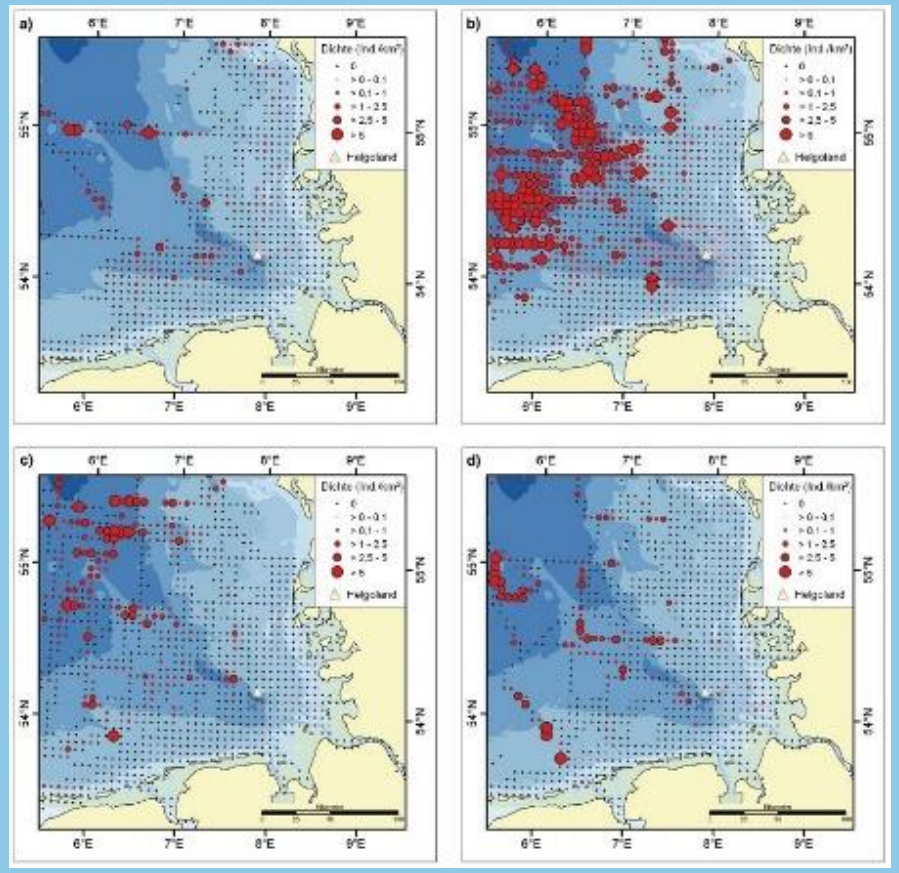
4. Monitoring method in the Netherlands

- Large network of volunteers who monitor nature
- All data and information is validated by the State to ensure quality of data
- National and sometimes provincial coverage of mammals, many insect species, fish, reptiles and amphibians
- Very good data coverage on regional/local level of birds on land
- Reasonable coverage of birds at sea, much less of marine mammals
- Seabird research is done by ship and plane
- More data from satellites and drones
- More attention needed for habitats and associated vegetation




Example 1: Monitoring of seabird

- Seabird research by ship and plane
- More data possible from satellites and drones
- data can be validated by combining it with data from seabird experts



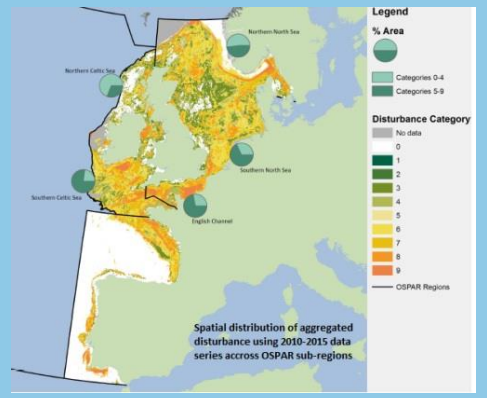
Example 2: Monitoring of habitats and associated vegetation

- EU requirement: conserve and monitor structure and function of habitat types
- This needs intensive vegetation mapping; difficult and costly
- Remote sensing might help in monitoring the structure and function of habitat types (and with spatial and temporal monitoring of land coverage/vegetation)
- Combining data from field monitoring by volunteers with space data

Example 3: Remote sensing at the NE Atlantic Ocean

- Remote sensing gains importance for monitoring at sea
- Example: www.ospar.org: protection of the marine environment of the NE Atlantic
- Monitoring of eutrophication, phytoplankton, pelagic habitats
- Data steams from different sources (ship, plane, space) are combined to make assessments

Eutrophication



Combination of data streams

Example 4: Enforcement

- Enforcement is needed to protect nature!

Example: enforcement at sea:

- Large Marine Protected Areas at the North Sea
- Measures (e.g. fisheries) are under development
- Enforcement by ship and plane
- How to enforce measures far at sea?

Conclusion

- Ultimately, a large-scale and long-term drone, space and/or remote sensing monitoring program should become part of a national nature monitoring program

- It requires more communication between space researchers and ecologists

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Thank you for listening
Questions?

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