Trilateral Cooperation on the Protection of the Wadden Sea

The Trilateral Monitoring and Assessment Program (TMAP) – 15 years transboundary monitoring in the Wadden Sea

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www.waddensea-secretariat.org
The Wadden Sea

- Largest unbroken stretch of mudflats worldwide
- Highly productive ecosystem
- 10-12 million migratory birds pass through the area
- Shared by 3 countries
National Conservation Regimes

Conservation Area
11,000 km²
Wadden Sea: International Designations

Conservation Area
Birds Directive SPAs
Habitats Directive SAC
Ramsar Areas
Trilateral Wadden Sea Cooperation

Trilateral Cooperation Area
14,700 km²
Since 1978, the Netherlands, Germany and Denmark have been cooperating to conserve and protect the Wadden Sea as an ecological entity.

**Joint Declaration 1982**

“to consult each other in order to coordinate their activities and measures to implement (international and EC) legal instruments with regard to the comprehensive protection of the Wadden Sea region as a whole including its fauna (marine, terrestrial and avian) and flora”

**Common Wadden Sea Secretariat**

- Established 1987, situated in Wilhelmshaven, Germany
- Tasks: to support, facilitate and coordinate the activities of the cooperation
Trilateral Wadden Sea Cooperation

Trilateral coordinated implementation of international agreements

- European Directives
- Convention on Biological Diversity
- Ramsar Convention
- Bonn Convention: *Seal Agreement*
- ASCOBANS, AEWA
- OSPAR and North Sea Conferences
- IMO: PSSA Waddensea
Trilateral Wadden Sea Cooperation

Guiding principle
“to achieve, as far as possible, a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way”.

Wadden Sea Plan (1997)
Common Management Framework:
• Trilateral Targets
• Common Policy
• Trilateral Actions

Blue mussel bed
Trilateral Wadden Sea Plan

Targets:
• Landscape and Culture
• Water and Sediment
• Salt Marshes
• Tidal Area (tidal flats and subtidal gullies)
• Beaches and Dunes
• Estuaries
• Offshore Zone
• Birds
• Marine Mammals

Regulations on:
• Agriculture
• Fishery
• Hunting
• Dredging and dumping
• Sand and clay extraction
• Tourism
• Shipping
• Energy (wind, gas, oil)
• others
Trilateral Monitoring Program

Trilateral Monitoring and Assessment Program (TMAP)

Aim of the TMAP

• To provide a scientific assessment of the status of the ecosystem

• To assess the status of implementation of the trilateral „Targets“ of the Wadden Sea Plan
### Parameters of the Revised TMAP - 2008

#### Chemical Parameters
- Nutrients
- Metals + contaminants in sediment
- Contaminants in blue mussels, flounders and bird eggs

#### Biological Parameters
- Phytoplankton
- Macroalgae
- Eelgrass
- Macrozoobenthos
- Fish
- Breeding birds
- Breeding Success
- Migratory birds
- Beached Bird Surveys
- Harbour seals
- Grey Seals
- Harbor Porpoise

#### Habitat Parameters
- Blue mussel beds
- Salt marshes
- Beaches and Dunes

#### Human Use Parameters
- Mussel/cockle/shrimp fishery
- Recreational activities
- Agricultural utilization
- Coastal Protection measures

#### General Parameters
- Geomorphology / hydrology
- Flooding
- Land use
- Weather conditions

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Common TMAP Database and GIS
TMAP Data Management

“TMAP Data Units“

• De-central

• Identical database structure and integrated data catalogue

• Data transfer via Internet

www.waddensea-secretariat.org

• Data catalogue (public)

• Data download (registered user)
TMAP Data Unit

The User Interface

- Interactive surface for data search
- Downloading files compressed form
- Import into user’s programs
Nutrient inputs decreased.

But: the Wadden Sea is still a “eutrophication problem area”

**NH$_4$+NO$_2$ as indicator of organic inputs: 3-5 times above non-problem conditions**

Calculation based on autumn concentrations of NH$_4$+NO$_2$ (µM) as proposed by van Beusekom et al. (2001) and modified with data from the QSR 2004.

<table>
<thead>
<tr>
<th>Area</th>
<th>Non-Problem conditions</th>
<th>Potential Problem conditions</th>
<th>Problem conditions</th>
<th>'Present' values (1997-2002)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Dutch Wadden Sea</td>
<td>&lt;3.0 µM</td>
<td>3.0 µM &lt; 8.3 µM</td>
<td>&gt; 8.3 µM</td>
<td>9.9 µM</td>
</tr>
<tr>
<td>Eastern Dutch Wadden Sea</td>
<td>&lt;4.0 µM</td>
<td>4.0 µM &lt; 10.2 µM</td>
<td>&gt; 10.2 µM</td>
<td>19.8 µM</td>
</tr>
<tr>
<td>Niedersachsen Wadden Sea</td>
<td>&lt;3.2 µM</td>
<td>3.2 µM &lt; 8.2 µM</td>
<td>&gt; 8.2 µM</td>
<td>10.1 µM</td>
</tr>
<tr>
<td>Sylt Remo Bight</td>
<td>&lt;1.9 µM</td>
<td>1.9 µM &lt; 4.2 µM</td>
<td>&gt; 4.2 µM</td>
<td>6.1 µM</td>
</tr>
<tr>
<td>Danish Wadden Sea</td>
<td>&lt;2.5 µM</td>
<td>2.5 µM &lt; 6.5 µM</td>
<td>&gt; 6.5 µM</td>
<td>10.2 µM</td>
</tr>
</tbody>
</table>
Levels of contaminants are falling.

But: various newly developed substances (such as brominated flame retardants, nonylphenoles) are spreading.

Polybrominated Diphenylethers in the Western Dutch Wadden Sea (dated layers of sediment core)
Advantages

- good analytical handling (consistent matrix, high lipid content, high accumulation),
- good interpretation of results (defined area and time, breeding females; reduced seasonal variation),
- easy and low cost sampling (sampling as part of bird monitoring),
- one-lab approach (cost efficient, efficient quality assurance),
- combination with bird population parameters (toxicology, influence on eggshell quality and hatching success).

Disadvantages

- representative of only a part of the population and the year,
- some heavy metals are not accumulated in the egg (cadmium, lead)

- 13 stations, annually,
- in TMAP since 1998,
- Common Tern, Oystercatcher,
- Hg, HCHs, DDTs, PCBs, HCB, Chlordanes
Fewer seabirds contaminated by oil. Seabirds are threatened by illegal discharge of oil residues into the sea. Even though the numbers of oil-contaminated birds are falling, they are still high.
Recovery of seagrass
Seagrass beds are doing well in the northern Wadden Sea, and are gradually recovering in other areas.
Pacific oyster has spread in the entire Wadden Sea
Introduced species pose a risk, because a single new species may cause serious ecological changes and economic or health-related damage. For instance the Pacific oyster has spread and massively overgrown some of the blue mussel beds. (Pacific Oyster Workshop, March 2007)
More natural salt marshes

The area of natural salt marshes has increased, as a result of reduction of grazing and land reclamation, and summer polders have again been opened up to the tides.

Recent status of landuse on mainland salt marshes (right bars) compared to 1987.
Breeding Birds
- Yearly Counts of selected species (since 1990).

Migratory Birds
a. Bird Counts in the whole area
   - Mid-winter counts in January (since 1980),
   - Synchronous counts in an additional month,
b. Synchronous counts of selected geese species during their maximum,
c. Spring-tide counts in selected areas.

Co-operations with West-Africa and Russia
Disparate trends in numbers of breeding birds
Some breeding bird populations are stable or increasing, while significant decreases are observed in others, such as

- Oystercatcher
- Common tern
- Great ringed plover
- Kentish plover
The numbers of many migratory birds are falling.

**QSR 2004**: 22 out of the observed 34 migratory bird species showed a significant decrease (1992 – 2000):
- 15 species significant
- 7 species not significant

**Update 2006**: Migratory Bird Workshop
The population size of 11 out of the observed 34 migratory bird species decreased (1992 – 2004) – especially shellfish-eating species.

### Trends in Migratory Birds 1992-2000

**DECREASING**
- Dark-bellied Brent Goose
- Eurasian Wigeon
- Mallard
- Northern Pintail*
- Oystercatcher
- Red Avocet
- Golden Plover*
- Grey Plover
- Northern Lapwing*
- Red Knot
- Sanderling*
- Curlew Sandpiper
- Dunlin
- Bar-tailed Godwit
- Eurasian Curlew
- Spotted Redshank
- Common Redshank
- Common Greenshank
- Ruddy Turnstone
- Herring Gull*
- Great Black-backed Gull*

**INCREASING**
- Great Cormorant
- Eurasian Spoonbill
- Barnacle Goose
- Common Shelduck*
- Ringed Plover*

**FLUCTUATING**
- Common Teal
- Northern Shoveler
- Common Eider
- Kentish Plover
- Ruff
- Whimbrel
- C. Black-headed Gull
- Common Gull

Five species (in bold) show also a long-term decrease (1980 - 2000) whereas the other species were stable over that period.
Harbour Seal
- Whole area
- Yearly
- Coordinated aerial surveys (3-5 flights in summer)

The population of Harbour Seals can be considered viable with a satisfactorily reproduction capacity.
Update of QSR 2004
Recommendations for
• Monitoring and Research
• Policy and Management

Next Trilateral Governmental Conference, Germany, April 2010
TMAP Revision Process

Future Work

• Optimization and harmonization of running programs,
• Data management (data flow) and assessment tools,

• Filling of monitoring gaps:
  – Offshore area and subtidal (monitoring workshop, Oct. 2008)
  – Pelagic fish populations (TMAP expert group),
  – Sediment processes and morphology (cooperation with WFD)
  – Bird monitoring: breeding success (proposal presented by bird expert group in March 2008)
Wadden Sea Plan

• Further development until 2010
• Integration EU Directives and other international conventions
• Common understanding of:
  - Conservation objectives
  - Favorable Conservation Status
  - Good Ecological Status
• Better integration of Management & Monitoring
• Sustainable Use
Thank you for your attention!