Final Synthesis of the Ecosystem Research in the German Wadden Sea

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overview

1. Development of ecosystem research
2. Concept for the German Wadden Sea
3. Carrying out
4. Interview
5. Models
6. GIS
7. Evaluation
8. Improvements, recommendations
some facts

- Runtime: 10 years, 1889 to 1998
- Subprojects: 94
- Scientists: ~206
- Publications: ~350
- Diploma and master thesis‘: ~100
1. development

• 1970 „Man and Biosphere“, UNESCO
• 1971 first German environmental program
• 1972 German MAB-Comission
• 1978 German Concept - Ellenberg
1. Ecosystem research

• limits of resilience of ES
• conservation of natural resources
• social and economic aspects
• interaction human-environmental
• solutions from the running projects
1. demands

- 10 areas, representative
  - In- and outputs, matter and energy fluxes, species,
  - non-urban, undisturbed

important: size of area, long term mapping, rel. vicinity to universities
1. Berchtesgaden

- 1981-1991 Berchtesgaden
  - First applied ESR
- Human influence in high mountains of the Alpes and NP Berchtesgaden
- Ecol.problems
- Leitbilder of NP, development alternatives
- Helps for planning
- Methods (helpful for Wadden Sea)
2. Concept for the German Wadden Sea

• 1989 improvement of the scientific basic principles
→ Protection of WS
4 projects, S.-H. and NS, basics and applications
end in 1996, than final synthesis
2. aims

• Basic comprehension of ES WS
• structures, functions, processes, distributions and dynamics
• protection WS in NP
• Tourism and fishery joint with NP
• Criteria for evaluation
• No further threat of biodiversity
3. Carrying out

- Start 1990 Königshafen, SWAP hydrodynamic, sedimentation, suspended matters cycles of nutrients, distribution and wandering of organism,
- mapping Mussel banks, salt marshes, water level of polders
- Exchange with social science, tourism
- load-bearing capacity, experiments
3. Carrying out

- Niedersachsen ELAWAT
- Backside of Spiekeroog

Biosedimentation, mussel banks, chemistry, microbiology

Spatial distribution of benthos, plankton, dispersion of makrofauna, resting birds

Simulation of disturbances – black spots
3. Carrying out

- Leitbilder
- management and protection concept for NP

But problems financing
→ only open wadden areas
4. Interviews

- Reached the public relation the public?
- Sense of central data bank
- Akzeptance of GIS/ WATIS
- Importance / value of GIS
5. Simulations by models

- Survey about importance of models
  - necessary, but not too detailed

- Empirical-probability models
- Matter-flux models
- Spatial models
- Abiotic models
6. Information systems

- Data banks, GIS since 1991
- WADABA
- WATIS
- Recording, processing and depiction of spatial data
- Presentation, marking of protected areas. Risk maps
7. Evaluation

- Additional benefit by interdisciplinarity
- Quality and quantity of publications
- Leitbilder
- New methods
- Understanding of ecosystem
- Practical value of outcomes
- Synthesis
7. Evaluation

- Project management
  - Planning
  - Coordination, organisation
  - Structure, runtime
  - Methods
  - Control groups
- Public relation
  - Multiplier
- Data processing
7. Final consideration

- interdisciplinary teamwork
- Additional benefits
- Understanding of ecosystem
- Practical realisation of results
- Quantity of publications
- Acceptance of data bank and GIS
- Lack of digital basic data

The ecosystem research has proved it's worth.
recommandations

- GIS established, than mapping
- Specific runtime for each project
- Standardized data format
- Spokeman, journalist
- Annual reports
- No scientific solo effort
- More presence in the internet
- Clear financing from the beginning on
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