

## New Publications

### Stability Properties and Mechanisms

Dittmann, S. (Ed.) 1999. *The Wadden Sea Ecosystem – Stability Properties and Mechanisms*. Springer Verlag Berlin Heidelberg, pp. 307, 169.00 DM

In the wake of the designation of the German Wadden Sea as national parks, two applied and two basic research projects on this ecosystem were funded by federal institutions and the states of Schleswig-Holstein and Lower Saxony. The strategic idea was to back up regulations in the national parks by sound scientific knowledge on the natural processes and human impacts. As a result, the German Wadden Sea advanced to one of the best studied coastal ecosystems but science was also blamed for having fostered apparent overregulation. Such an incrimination would be outright misleading concerning the ELAWAT scientists. Their basic research was devoted to the question: How is the persistence of the Wadden Sea ecosystem possible in the face of the frequent and strong disturbances? The general conclusion they offer is that stability is achieved by a high functional diversity and flexibility, high reproductive output and high mobility in the biotic assemblage of the Wadden Sea. High variability is mainly restricted to short terms and a local scale, while at longer terms and a regional scale this gives way to constancy. The synthesis of ELAWAT has now been published.

Traditionally ecosystem research is dominated by quantifying the flow of energy and matter through the web of biotic components. However, the ELAWAT project has chosen a new approach. The investigators focussed on stability properties and attempted to find the processes relevant to the development of spatio-temporal patterns observed in a back-barrier tidal flat area. Although the research was performed by several groups of investigators, altogether 69 according to an appendix of the book, a team of nine writers, headed by Sabine Dittmann, undertook the task to bring the various results and insights into a coherent synthesis. At first sight, this arrangement seemed strange to me. For example, in a chapter on the shore crab, the principal investigator is not among the authors but merely cited. However, in a large project like ELAWAT, it may have been impossible to arrive at the same degree of coherence in the synthesis as this is actually achieved in the present volume.

The book begins with a clear conceptual framework and definitions of essential terms, a general description of the area and methods, and then proceeds with chapters on observed patterns in the benthic and pelagic realm of the tidal basins near

the East Frisian island of Spiekeroog. Emphasis is given to recolonization after experimental disturbance, effects of an ice winter, mud derived from mussel beds and population dynamics of the tube worm *Lanice conchilega* in particular. A very promising approach are the grid-based models described in detail. A dynamic view on the Wadden Sea ecosystem is regarded as more appropriate than a static one. With respect to the National Park regulations, it is recommended to prevent all exploitations from selected tidal basins as the best way to secure natural dynamics such as the recolonizations by benthic organisms after disturbances as studied in the ELAWAT project. The same recommendation was voiced earlier by an ecosystem project SWAP, which concentrated on transport processes in the northern Wadden Sea.

The book is very well written and admirably edited, it is highly informative, and I strongly recommend all scientists and graduate students involved in Wadden Sea research reading it. There should be no library without this volume.

Karsten Reise

### Salt marshes in Schleswig-Holstein

Stock, M. & Kiehl, K., 2000. *Die Salzwiesen der Hamburger Hallig*. Schriftenreihe des Nationalparks Schleswig-Holsteinisches Wattenmeer. Heft 11, Boyens Verlag, Heide, pp. 88, 19.80 DM

The brochure entails the results of the long-term monitoring of the salt marshes on the Hamburger Hallig from 1991 – 1999 and covers the evolution and recent site conditions, the developments of the vegetation and their influence on the use of this site by geese, breeding bird populations, prediction of future changes in vegetations and suggestions for salt marsh management.

### ECSA Seagrass Workshop

Amus, H & Asmus, R., (Eds), 2000. *ECSA-Workshop on Intertidal Seagrass Beds and Algal Mats: Organisms and Fluxes at the Ecosystem Level*. Helgoland Marine Research 54.

Proceedings of an international workshop at the Wadden Sea Station Sylt on 7<sup>th</sup> – 13<sup>th</sup> August 1998. Besides a presentation of novel field methods, the workshop discussed the possible causes of seagrass decline all over the world. A brief summary of the workshop is given in the Wadden Sea Newsletter 1999, No. 1.

## Dune Slack Vegetation

Petersen, J., 1999. Die Dünenalvegetation der Wattenmeer-Inseln in der südlichen Nordsee. Eine pflanzensoziologische und ökologische Vergleichsuntersuchung unter Berücksichtigung von Nutzung und Naturschutz. Husum Druck- und Verlagsgesellschaft, Husum, pp. 205, 78.00 DM

The dunes on the Wadden Sea islands from Texel to Fanø have been investigated during 1994–1999 with respect to the ecology and phytosociology of the dune-slack vegetation, which is the most endangered one of coastal vegetations. On the basis of the results of these investigations, the prob-

lems of nature conservation and management of the dune-slack ecosystems are addressed at both local levels and within the overall Wadden Sea region. For example, recent data is compared with historical time series as recorded from Terschelling in the period 1937 – 1947 and historical forms of land use and their influence on the dune slack vegetations is discussed. In order to preserve the plant communities of moist dune slacks and their biodiversity, a combination of active and passive conservation measures is recommended.

## Conferences and Meetings

# ECSA-Workshop on Community Ecology of Soft Bottom Mussel Beds

Harald Asmus, Alfred-Wegener-Institute of Polar and Marine Research, Sylt, FRG

An international workshop on the ecology of mussel beds with 42 participants from 6 nations was held at the Wadden Sea Station Sylt of the Alfred Wegener Institute for Polar and Marine Research from August 2 to 6. This workshop focussed on the ecology of soft bottom mussel bed communities, which are typical elements of the Wadden Sea ecosystem and the intertidal sandy and muddy shores of the North Sea coasts and their estuaries. The objectives were to update the state of current research by exchanging experience between different "mussel bed ecologists" and to point out the demand of research issues for the future. We aimed at focussing mainly on basic research and discussed advanced aspects or conflicts between mussel bed ecology and fishery only marginally.

To introduce the workshop guests to the local situation, K. Reise and H. Asmus gave an overview on the ecology of mussel beds near the island of Sylt. They showed that mussel beds provide a unique habitat at sedimentary coasts, and they surpass by far their surroundings in terms of species richness, biomass, productivity, trophic transfer and material cycling. Even at the comparatively small spatial scale like that of the Wadden Sea around Sylt, mussels are highly variable and complex in biogenic structure, species composition and species interactions. This was also confirmed by M. Tsuchiya (University of the Ryukyus, Nishihara, Okinawa, Ja-

pan) who presented the ecological characteristics of mussel beds of Japan and East Asia showing that mussel beds are also able to accumulate biodeposits on exposed rocky shores and create a special environment. He further led the attention to the associated fauna causing a higher biodiversity in mussel beds compared to the ambient areas.

The habitat requirements of blue mussels in the Dutch Wadden Sea were described by B. Brinkman (Alterra, Texel, NL). Mussel beds in the 90s showed high preferences for regions with low wave action and moderate flow velocities as well as immersion times less than 50%. Mussel beds are very susceptible to wave disturbance, and thus an increasing storminess will limit mussel bed distribution in sedimentary environments.

On the other hand, mussels affect their ambient physical environment. This was demonstrated by studies with a laboratory flume by L. van Duren et al (NIOO-CEMO, Yerseke, NL). The filtration activity of mussels has modifying effects on the benthic boundary layer structure. Mussel beds create a microturbulent layer beneficial for food retention. This could also be shown by flume studies by J. Widows (Plymouth Marine Laboratory, UK) who demonstrated additionally that mussel beds accumulate and stabilize sediments at high densities, while low densities and disrupted mussel layers may enhance erosion.