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EDITORIAL

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ECSA – Workshop on Intertidal Seagrass Beds and Algal Mats: Organisms and Fluxes at the Ecosystem Level

Preface

Volume 54, 2–3 of *Helgoland Marine Research* contains papers presented during the ECSA – Workshop on Intertidal Seagrass Beds and Algal Mats held at the Wadden Sea Station Sylt of the Alfred Wegener Institute Foundation for Polar and Marine Research at List on the island of Sylt, Germany, on 7–13 August 1998.

Over the past few decades there have been catastrophic losses of seagrass beds amounting to thousands of hectares, and this decline is still continuing all over the world. During the workshop, the causes and consequences of seagrass decline were outlined. In particular, the role of eutrophication and its consequences for seagrasses, other primary producers, and also for benthic invertebrates were shown. The effect of pesticides on seagrass plants was also found to be an important cause of decline, especially in southern England and the German estuaries. Examining long-term changes in seagrass beds and seagrass modelling indicated the problems and difficulties of predicting the development of seagrass beds, especially in the North Sea region.

It is well known that seagrass beds, with their high productivity and biodiversity, have a significant ecological and economic value. Interactions of seagrasses with the hydrodynamic environment were demonstrated in detail. At the ecosystem level, seagrass beds have an important role to play in material exchanges and the food web. However, it depends on the ambient environment or on the density of seagrass beds whether they act as particle traps, as could be shown for the Wadden Sea. Negative and positive factors were listed as well as being ranked as key factors with regard to seagrass systems (see Table 1).

Coastal managers and nature protection agencies urgently need an effective management tool in order to quantify the impact and consequences of various environmental changes on seagrass beds. Assessing the ecological role of seagrass beds is still in progress and is subject to many difficulties because of major gaps in our knowledge. However, the ecological value of this special

Table 1 Negative and positive influences of physical, chemical and biological processes on intertidal seagrass beds and the rating of these factors as key factors (summarized by the ECSA Seagrass – Workshop at List on the island of Sylt, 1998)

Aspects	Negative	Positive	Key factor
Physical factors			
Light		+	+
Climate			
Storms (currents +/ waves ++)	+		+
Severe winters		?	?
Severe summers	+		?
Hydrodynamics			
Strong currents and waves	+		+
Shelter		+	+
Sediment factors			
Pool effect		+	+
Sediment stability		+	+
Chemical factors			
Salinity	+		?
Biological factors			
Natural factors			
Plants			
Dense green algal mats[a]	+		+
Epiphytes[a]	+		+
Dense phytoplankton blooms[a]	+		+
Animals			
Arenicola (bioturbation)	+		?
Nereis (damage)	+	?	+
Hydrobia (cleaning)		+	?
Littorina (cleaning)		+	?
Mytilus edulis	+		
Brent geese and wigeons (grazing)		?	
Anthropogenic factors			
Fishing activities	+		
Eutrophication	+		+
Herbicides	+		?
Land reclamation works	+		

[a] These are natural factors, which can be promoted by man-made eutrophication

community to the ambient coastal ecosystem is high, where it still occurs. The loss of seagrass bed communities has led to fundamental changes in species diversity, productivity and sediment balance of the coastal area. Therefore activities to reintroduce seagrass are being developed all over the world. During the workshop, the scientific context of reintroduction experiments in the Dutch Wadden Sea, together with the political background and the consequences, were presented.

It was the aim of the workshop to demonstrate the necessity of a multidisciplinary approach considering different aspects of the seagrass bed community in order to understand the role and the ecological value this threatened community has for the intertidal ecosystem.

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Guest Editors