On the decrease of Sabellaria reefs in the North Sea - the role of anthropogenic impacts

THE PROBLEM

An intensive analysis showed that the decrease of sublittoral sabellarian reefs in the German Wadden Sea is ultimately caused by human interference:

- Shrimp trawl fishery: Shrimp fisheries with bottom trawls are carried out in the main distribution area of sabellarian reefs. It is suggested that mecha-nically destructed reefs by trawls as well as extirpation of reefs by net catches were a main cause of the decline. It is assumed that recently shrimp fisheries prevented reef development.

- Oyster beds: In former times the native oyster (Ostrea edulis) was of wide-spread occurrence in the Wadden Sea alongside the subtidal regions. A monitoring should be done primarily in areas where sabellarian reefs recently occur to get more information about population dynamics of Sabellaria in the Wadden Sea.

- Coastal engineering: Building of dikes and dams as well as deepening have caused changes in hydrological conditions. It is suggested that these activities have effects on single reefs, but complete disappearance of reefs is unlikely. It is to suggest that these activities have effects on single reefs, but complete disappearance of reefs is unlikely.

ANTHROPOGENIC IMPACTS

- The main operation area of the shrimp fishery is the Wadden Sea alongside the slopes of the tidal channels.
- Total landing of the shrimp fishery have fluctuated but have not increased into the 1990s.
- The size of the fleet has declined but on the other side fishing gear has become larger and more efficient.
- The sites of former oyster beds are now occupied mainly by oil rigs and seamounts.
- Regular culturing of the Pacific oyster (Crassostrea gigas) began in 1984 in the island Schleswig.
- Since 1991 wild population of Crassostrea gigas were observed in the Wadden Sea with increasing abundances.
- The most serious and permanent destruction of artificial hard substrate in the Wadden Sea were caused by coastal protection including land reclamations.
- However, small areas along the German North Sea coast have been embanked before 1950.
- In the 20th century several causeways were constructed which have significant influences on the hydrological system in the surrounding Wadden Sea.
- During the last 130 years the estuaries were repeatedly deepened. This results in constant dredging and dumping of sediments in the estuaries up to now.

CONCLUSION

Many toxic and abiotic factors act simultaneously in an unpredictable way on sabellarian reefs interfered with anthropogenic effects. An intensive analysis showed that the decrease of sublittoral sabellarian reefs in the German Wadden Sea is ultimately caused by human interference:

- To activate sabellarian reef development the establishment of undisturbed sublittoral areas along the slopes of selected tidal channels will be a first suitable action.
- A monitoring should be done primarily in areas where sabellarian reefs recently occur to get more information about population dynamics of Sabellaria in the Wadden Sea.

Main Data Sources


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