COMMENT

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Comment on Buhs and Reise (1997): epibenthic fauna dredged from tidal channels in the Wadden Sea of Schleswig-Holstein: spatial patterns and a long-term decline

Though it is not stated in the heading, the article of Buhs and Reise (1997) is meant to give rise to arguments whether – and if so which – areas in the German Wadden Sea should be closed to exploitation by fisheries. The tidal channels to the south and north of the island of Sylt have been chosen because of the richness of the fauna. A suggestion has been made in favour of closure (for study purposes) because of a "dramatic species decrease" observed in a historical comparison, thus taking a standpoint in a controversial debate.

Two historical sets of observations are used for comparison: Möbius (1893) and Hagmeier and Kändler (1927). These are contrasted with recent surveys carried out in 1988 and 1992 in the two particular channel systems using an oyster dredge as in past investigations. The gear is described as "a traditional oyster dredge of 1-cm mesh size; the dredge used by Hagmeier and Kändler, however, was equipped with a mesh of iron rings of 6-cm opening. From a larger set of samples taken in 1992, 50 were selected that were taken at 5-m depth at "sites of former oyster beds", and pooled with 12 hauls from the regional comparison in 1988. The majority of banks described by Hagmeier and Kändler were at depths of around 2 m. The analysis is carried out for selected epibenthic invertebrates in a semiquantitative way, attributing categories as "regular" (marked ++ in Table 5 of results), "occurrence in about half of the samples" (+), and "rare" (±). This scheme is from the authors, and is not, as they claim, "adopted from Hagmeier and Kändler", who rather stated explicitly that they preferred numbers over categories like "common" and "rare".

While there should not be a principal objection to such types of comparison, the different character of the sources of information makes it difficult, if possible at all, to reduce them to a common standard in a reproducible way. Möbius condenses more than 20 years (1869–1891) of observations on the oyster banks in a purely anecdotal way. His wording is colloquial and any categorization of his comments on frequency of occurrence of species is necessarily arguable. Furthermore, it is by no means clear in every case whether his comments refer to the channels around Sylt or to other places.

Hagmeier and Kändler present data of their investigations on oyster banks, summarizing their dredging data from 1924 in their Table 5 as species compositions on selected banks (selecting those with remains of an oyster population), ten of which belonged to the two channels in question. However, their standard is a so-called typical dredge haul per bank, selected from an unreported number of tows. Unfortunately, the symbol "+" may stand in the table for "existence known from other sampling gear" or "too many small individuals to be counted". This raises questions, for instance, concerning large-growing sea anemones like *Metridium* or *Urticina*. *Urticina* was marked "+" for six banks and reported with one individual for a seventh bank, such that it probably would have to be considered as "rare". An additional anecdotal reference to a few rarer species is made in the text. Without denying the overall value of such old information sources, it should be clear by now that it is rather euphemistic to speak of historical "surveys" as the authors do, and that it is anything but trivial to prepare them for a reasonable comparison. The reader is not informed whether this caused much of a problem for the authors.

The recent data were analysed on a haul-by-haul basis (at least, this is our interpretation of the scarce methodological remarks). According to their Table 5, the authors then give the "++" symbol to species occurring in 98–100% of the samples, "+" to species with 39–74% occurrence and "±" i.e. "rare", for occurrence rates of 37% or below. On the other hand, categorizing Hagmeier and Kändler's data, they give the "++" symbol for "occurring regularly" down to a species (*Metridium*) reported from only three out of ten oyster banks, and even there without number of individuals. A species marked "+" may be one that occurs on one, two

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or three banks, while a "rare" species may be one that is not reported at all for the area (the case of *Tubularia*), occurs on a single bank or is mentioned as a rare one in the text. While we may think of good reasons to consider haulwise and bankwise data in a different way, the authors do not treat or even see this as a problem, such that we are inclined to regard the obvious disproportionality in the rankings as a bias towards higher occurrence rates in the past. We shall not discuss in detail the rankings given to Möbius' conclusions because of the weak character of the material, but apparently these are mostly in line with those given to the findings of Hagmeier and Kändler.

A last word is necessary on the crucial matter of the selection of species. Amphipods and mobile annelids were excluded for being too small to be adequately retained by the sampling gear. Smaller decapods (*Crangon*, *Pandalus*) were also excluded without mention, but possibly for the same reason (our benevolent interpretation – *Crangon* was by far the most abundant species in their catches in 1992). Some species mentioned by Hagmeier and Kändler (e.g. *Echinus*, *Cancer*, *Lamellidoris*, *Anomia*) which could have been included, do not appear in the table, maybe in error. There are quite a number of species mentioned by Möbius that are omitted in the study. For instance, Möbius lists 21 sessile coelenterata, while the article deals with only 12 of them. There may be good reasons for such exclusions, but the critical reader might wish to know them.

The worst point in this context is that, as stated by the authors in the caption to their Table 5, "Only species considered in the earlier surveys are included". Therefore, any change in species composition can only appear as a negative trend. In contrast, Reise (1982) showed in a very similar study that an objective approach is possible and that in this way a balance may be found between disappearing and new species.

We hope we have pointed out that for a number of reasons the approach of Buhs and Reise (1997) is highly questionable because of bias and objective difficulties. It is a sad but well-known fact that the oyster population in the German Bight has been extinct for some decades now, and that the accompanying fauna, anything that benefits from oyster shells as hard substrate, necessarily suffers from this fact. Why have mussel banks not been included in the investigation, knowing that "Most of the former oyster beds are covered by clusters of mussels today". (Riesen and Reise 1982) and "[15 out of 30] ... species showing a long-term trend of increase ... are particularly abundant in mussel banks" (Reise 1982)? Is it a fair comparison to conduct a survey somewhere near former oyster banks, knowing that the whole biocenosis has been gone for a long time, and complaining that the fauna has been altered? If this is something "dramatic", the drama – the decline of the oyster and the loss of oyster beds as a substrate – occurred in the second half of the last century (Hagmeier and Kändler 1927) and, according to Reise (1982), was caused by the directed oyster fishery, at a time when today's type of fishery was not even evolving.

Finally, we wish to make clear that this comment does not imply an opinion in favour or against areas closed to the fishery. It is legitimate to discuss whether former habitat-forming species (besides oyster, this would be *Sabellaria* and *Zostera*) could and should be restocked, whether exclusion of the fishery would be necessary or helpful for this purpose, and whether this would be worth the price. However, we feel uneasy when, as we see it, an ongoing heated controversy is deliberately fuelled by applying soft data to strong arguments.

References

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Communicated by K. Lüning