

**Long-term changes in Prosobranchia (Gastropoda) abundances
on the German North Sea coast:
the role of the anti-fouling biocide tributyltin**

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Abstract

Tributyltin (TBT) has been used as a biocide in marine anti-fouling paints since the early 1970s. Due to its strong ecotoxicity and the relatively high levels in the water column as well as in port sediments on the German North Sea coast, it probably has negative ecological effects on organisms other than those targeted. An analysis of the long-term development of prosobranchs stocks in the inner German Bight reveals a decrease in abundance for many species. For most species the decline cannot be attributed to TBT, but in four prosobranch species (*Buccinum undatum*, *Hydrobia ulvae*, *Littorina littorea* and *Nucella lapillus*) significant ecological effects by TBT pollution are very probable. Although research for alternative non-TBT anti-fouling paints (e.g. biocide-free coating on the basis of silicone) has been intensified, the potential threats to ecosystems and the ecotoxicological profiles of these alternatives have to be carefully evaluated.

Key words: macrozoobenthos; Prosobranchia; checklist; population ecology; Tributyltin; TBT; North Sea; German Bight

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