

# Towards an effective survey design for population studies within the Wadden Sea

Report (work in progress)

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Population assessments are a primary component of wildlife conservation, but scientists are continuously under pressure to reduce survey cost. Survey design is therefore usually a trade-off between the scientific requirements of a study and the costs involved. In a relatively well studied area like the international Wadden Sea, comprehensive long-term datasets on population developments are available for numerous taxa. It is not always clear, however, how many surveys are needed to detect changes in abundance, what the power of detection would be given a certain survey rhythm, or how complete an area must be covered to obtain adequate data. To enhance the accuracy of existing censuses, or indeed to make programmes more 'cost-effective' from a management point of view, a power analysis based on existing data is often possible. This paper will report on specific constraints regarding population survey designs for studies within the Wadden Sea (habitat characteristics, three nations, subregions), review the need for methodological standardisation, and address cost-effective aspects based on an analysis of census data collected in Denmark, Germany and The Netherlands. The Trilateral Monitoring and Assessment Programme (TMAP) requested the Trilateral Seal Expert Group (TSEG) to design a survey scheme for harbour seals *Phoca vitulina* in the Wadden Sea, the research questions were rather specific, but the proposed strategy will have wider implications, for more taxa than just seals.