

Mother-pup interaction and the impact of anthropogenic disturbance  
in wild harbour seals (*Phoca vitulina*)  
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**Abstract**

This study investigated the abundance of harbour seals (*Phoca vitulina*) on inter-tidal sandbanks, mother-pup interactions as well as the impact of anthropogenic disturbance during breeding season. The abundance was a composite picture of harbour seals of different age and sex, and increased gradually towards peaks in June. Although the sandbank water inlet was the longest time emerged, mother-pup pairs and other seals hauled out more abundant on the other sandbanks, probably due to space availability, differences in sandbank structure and distance to human activity. Mothers and their offspring were found to be mostly inactive during haul out. Mothers initiated significantly more frequently interactions i.e. hauling out, entering water and suckling. Seals hauled out at sandbanks close to the dyke were most frequently disturbed by pedestrians. Important regarding the impact on the seals seemed to be the group size of pedestrians and the distance to the seals (on dyke or seaside of it), i.e. pedestrians seaside disturbed more seals. This applies also to the disturbance by marine activity, e.g. distance of seals to the engine boat. Jet fighters were shown to affect the highest mean number of seals per event. After anthropogenic disturbances separations of mother and offspring were not recorded, e.g. due to seals being in the water; however, the steep edges as result of the culvert at water inlet lead to a few separations. The most frequent behavioural response towards anthropogenic disturbance was commotion with a probably lower level of energy costs during the energy consuming lactation period.

Keywords: Breeding season, disturbance, mother-pup interaction, pedestrian, *Phoca vitulina*, suckling