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Strandings of the common porpoise (*Phocoena phocoena*) in the southern North Sea : what did they die of, where did they come from ?

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Since the end of the 1990's, a strong increase in the stranding of the common porpoise has been observed in the southern North Sea. As strandings currently yield most of information about the composition of the populations of marine mammals, our study aims to refine the representativeness of the strandings as an ecological indicator of the populations at sea. Therefore, the information collected during the necropsies of 90 animals stranded during two major stranding peaks (from March 1st till May 31st 2006 and from March 20th till May 20th 2013) occurring along the Belgian and southern French coast was used. Furthermore, a first attempt to model the backtracking drift of carcasses was used to estimate the origin of the death of animals. The simulations were realized by means of the OSERIT 1.0 software (Oil Spill valuation and Response Integrated Tool). The main cause of death is by-catch, which mostly concerns the juveniles, due to the more coastal distribution of this specific age group. Additionally, most of animals died further to by-catch come from the western part of our study area. The model simulations suggested that a large part of the found animals come from waters lining the Dutch, Belgian and southern French coast. Moreover, their likely areas of origin are very wide, covering the Channel and the southern North Sea. This phenomenon could be partially explained by the current patterns, the tides and the wind, which would be the reason behind the high density of strandings on these coasts. Finally, the progressive increase of the strandings since 1990 is confirmed by our results. It would be explained in particular by the shift of the population of porpoises in the northern North Sea to the southern North Sea and by the higher incidence of by-catch since the beginning of the 2000's.