

Relationship between biological, pathological and toxicological parameters and the cause of death in harbour porpoises (*Phocoena phocoena*) stranded on the coast of Belgium and northern France between 1990 and 2008

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Since 1990, the Marine Animals Research & Intervention Network (MARIN) investigates the marine mammals that strand on the coastline of Belgium and northern France. One aim of this work is to determine the cause of death, including pathological and toxicological factors and the biology of the animals. In harbor porpoises (*Phocoena phocoena*), death appeared to be caused by infectious diseases (37% of stranded animals), characterized by severe parasitosis and pneumonia, and trauma (23%), mostly due to bycatch in fishing gear. For about 40% of the stranded animals no cause of death could be determined or ascribed to another cause such as a tumor, starvation or still-born.

Most porpoise strandings occurred in winter, with a peak in by-catches in March and April. More males stranded (57%) than females (42%) and more juveniles (77%) than adults (23%). Most of the bycaught animals were juveniles. Compared to the bycaught porpoises, the animals that had died of an infectious process had a thinner blubber layer (emaciation) and the histological investigation showed a marked lymphoid depletion (spleen, thymus and lymph nodes). The total PCB concentration was determined in the blubber of selected individuals. The concentration was higher in males ($61,7 \pm 44,1 \mu\text{g/g lw}$) than in females ($15,2 \pm 12,6 \mu\text{g/g lw}$) and higher in adults ($66,2 \pm 44,0 \mu\text{g/g lw}$) than in juveniles ($15,5 \pm 10,4 \mu\text{g/g lw}$). The age variation can be explained by the process of biomagnifications, while the sex variation can be due by the mother-calf PCB transfer during gestation and lactation. Finally, the animals that had died of infectious disease ($49,9 \pm 43,2 \mu\text{g/g lw}$) were more contaminated than by-caught porpoises. ($12,4 \pm 4,1 \mu\text{g/g lw}$). Similar associations between PCB concentration and cause of death was reported for porpoises stranded on the coastlines of the United-Kingdom and Germany