## POPs in free-ranging pilot whales and sperm whales from the Mediterranean Sea: influence of ecological factors

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The pilot whale Globicephala melas and the sperm whale Physeter macrocephalus are large toothed whales, which permanently inhabit the Northwestern Mediterranean Sea, where they feed mainly on cephalopods. Here they are subjected to numerous anthropogenic threats such as exposure to high levels of contaminants. Selected persistent organic pollutants POPs (29PCBs, 15 organochlorine compounds, 9 PBDEs and 17 PCDD/Fs) were analyzed in blubber biopsies of 49 long-finned pilot whales and 61 sperm whales sampled in NWMS from 2006 to 2013.  $\delta^{13}$ C,  $\delta^{15}$ N values and POPs levels were assessed through IR-MS and GC-MS respectively. To assess the toxic potency of the dioxin-like compounds, the TEQ approach was applied.  $\delta^{15}$ N values were 12.2±1.3‰ for sperm whales and 10.5±0.7‰ for pilot whales, positioning sperm whales at higher trophic levels.  $\delta^{13}$ C instead was similar and amounted to -17.3±0.4‰ and -17.8±0.3‰ respectively. Pilot whales presented higher concentrations than sperm whales for ΣPCBs (38666±25731ng.g<sup>-1</sup> lw and 22849±15566ng.g<sup>-1</sup> lw respectively),  $\Sigma PBDEs$  (712±412ng.g<sup>-1</sup> lw and 347±173ng.g<sup>-1</sup> lw respectively) and  $\Sigma DDTs$ (46081±37506ng.g<sup>-1</sup> lw and 37647±38518ng.g<sup>-1</sup> lw respectively). Each species was characterized by large inter-individual variations that could probably be more related to sex than trophic level, with males presenting higher contaminant burden than females. The PCA analysis confirmed how p,p'DDT and p,p'DDE were influential in differentiating the two species, as a consequence of their migratory behavior and distribution. Pollutant concentrations of our species were significantly higher than both their Southern Hemisphere and North Atlantic counterparts, possibly due to the particular Mediterranean geomorphology, which influences pollutants distribution and recycle. Dioxin-like PCBs accounted for over 80% of the total TEQ. This study demonstrated (1) an important exposure to pollutants of Mediterranean toothed-whales, often surpassing the estimated threshold toxicity value of 17000ng.g<sup>-1</sup> for blubber in marine mammals<sup>1</sup>; and (2) how the final pollutant burden in these animals is strongly influenced by numerous ecological factors.

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