

Spatial variation in the concentrations of mercury and persistent organic pollutants in free-ranging bottlenose dolphins from South Florida

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The bottlenose dolphin (*Tursiops truncatus*) is a major apex predator and the most common cetacean species found in nearshore waters of South Florida, including the Lower Florida Keys (LFK) and the Florida Coastal Everglades (FCE). The objective of this study was 1) to assess contamination levels of total mercury (T-Hg) in skin and persistent organic pollutants (PCBs, PBDEs, DDT, HCH, HCB, DLCs and PCDD/Fs) in blubber samples of bottlenose dolphins from the LFK (8 males and 16 females) and from the FCE (13 males and 9 females). Pollutants were analysed by the mean of Direct Mercury analyser (for T-Hg), GC-ECD (POPs) and GC-MS (DLCs and PCDD/Fs). The PCBs were the main compounds found in bottlenose dolphins from the LFK and FCE. The most present congeners were the CB no. 28, 52, 101, 138, 153 and 180 (Σ PCBs LFK males: 13420.5 ng.g⁻¹ lipids, Σ PCBs LFK females: 9683.4 ng.g⁻¹ lipids, Σ PCBs FCE males: 5637.9 ng.g⁻¹ lipids, Σ PCBs FCE females: 1426.9 ng.g⁻¹ lipids). PCBs concentrations were significantly higher in individuals from the LFK than those from the FCE but significantly lower than those from other locations in the south-eastern US. Unlike organic pollutants, T-Hg concentrations were significantly higher in FCE male dolphins (LFK: 2936.0 ng.g⁻¹ dw, FCE: 10048.3 ng.g⁻¹ dw). These high concentrations were the highest recorded in the south-eastern US and are most likely due to the presence of mangrove ecosystems. This study highlights the complexity of contaminant dynamics (inorganic vs. organic), even at small spatial scales.

Keywords: *Tursiops truncatus*; mercury; POPs; Florida