



## **Behavioural plasticity in wintering Mediterranean ospreys revealed by stable isotopes analyses and GPS tracking.**

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To infer wintering ecology in Mediterranean ospreys (*Pandion haliaetus*) we relied on a dual and complementary approach, using both GPS tracking and multi stable isotope tracer approaches. A control sample of feathers from 80 individuals (mostly chicks) was collected over a large latitudinal gradient (from Lapland to Africa) to assess the variability of carbon, nitrogen and sulphur stable isotope ratios between breeding sites and habitat types across the Western Palearctic. Then, C, N and S isotopic compositions from an experimental set of 18 Mediterranean adults were examined to infer wintering ground locations and habitat types used during the inter-breeding period. Additionally, 12 adult ospreys were fitted with GPS devices and tracked during migration and the wintering season. By combining the two techniques we evidenced a partial migratory population with 41.7% of tagged individuals being resident and 58.3% that actually migrated. Ospreys spent the winter at temperate latitudes and showed a high plasticity in habitat selection. They made use of marine bays, coastal lagoons/marshland and inland freshwater sites. Movements and home range areas were reduced during the season. Wintering grounds were largely spread over the coasts of different countries of the basin, rather than concentrated in one single area. Such behavioural plasticity in the choice of location and habitat type suggests the implementing of broad-scale approaches for the protection of important areas for ospreys in winter. To contribute at assuring a right level of conservation of the osprey populations in the Mediterranean basin, a harmonization of the management protocols of wetland sites among countries is necessary.