MO080 Investigating thyroid disrupting effects of organohalogenated contaminants in White-tailed eagle nestlings

M.E. Løseth The Norwegian University of Science and Technology / Biology; G.S. Eggen, N. Briels, Norwegian University of Science and Technology / Biology; T. Nygård, T.V. Johnsen, J.O. Bustnes, Norwegian Institute for Nature Research NINA; D. Herzke, NILU -Norwegian Institute for Air Research / FRAM Centre Tromso; G. Poma, G. Malarvannan, University of Antwerp Toxicological Center; A. Covaci, University of Antwerp, Toxicological Center / Toxicological Centre Dep of Pharmaceutical Sciences; B.M. Jenssen, Norwegian University of Science and Technology / Biology; V. Jaspers, Norwegian University of Science & Technology / Biology. White-tailed eagles (WTE; Haliaeetus albicilla) can accumulate a wide range of organohalogenated contaminants (OHCs), due to their apex trophic position. Their diet consists mainly of fish and seabirds, thus long food chains and a high potential for biomagnification of OHCs. The nestlings can therefore be exposed to high levels of certain OHCs through maternal transfer to the eggs, and later through diet. Concentrations of per- and polyfluoroalkyl substances (PFASs) have recently been shown to exceed those of other legacy OHCs in this species and accordingly required closer attention. Several of these POPs have shown to interfere with endocrine systems in birds, and especially the thyroid system. The thyroid system is important for birds' thermoregulation, metabolism, growth and development. Assuring appropriate concentrations and actions of the two major thyroid hormones thyroxine (T) and triiodothyronine (T) in the circulatory system is therefore especially important in nestlings. The aim of the present study was, for the first time, to investigate the effect of POPs and PFASs accumulation in plasma on thyroid hormones (TH) of nestling white-tailed eagles. We also included the body mass and age to assess influence of biological variables on the TH. Blood plasma samples were obtained from 70 nestlings of white-tailed eagles from two archipelagos in Norway, Smøla (n = 35) and Steigen (n = 35), in the summer of 2015 and 2016. In total, 14 polychlorinated biphenyls (PCBs), 7 organochlorinated pesticides (OCPs), 5 polybrominated diphenyl ethers (PBDEs) and 8 PFASs were quantified in over 50 % of the plasma samples at each location and each year. Our results show higher OHC concentrations in Steigen [median and range; ? PCBs: 5.1 ng/ml (1.5 – 59.1 ng/ml), ? OCPs: 4.2 ng/ml (1.3 -52.2 ng/ml, ? PBDEs: 0.3 (< 0.1 – 2.6 ng/ml) and ? PFASs: 20.8 ng (7.2 - 52.9 ng/ml)], than Smøla [median and range; ? *PCBs: 3.9 ng/ml (0.8-34.7 ng/ml), ? OCPs: 2.4 ng/ml (0.9 – 15.3 ng/ml), ? PBDEs:0.2 $(<0.1-1.5 \text{ ng/ml})^7$ and ? PFASs: 10.9 ng (4.6-46.7 ng/ml)]. The analyses of thyroid hormones have been carried out and the results will be presented at the conference, along with biological parameters and OHCs.