

TP002 Comparison of metal exposure and egg characteristics in great tits inhabiting four metal-polluted environments in Europe

S. Espin, University of Murcia / Health Sciences Department - IMIB Arrixca UM - Faculty of Veterinary; P. Sánchez Virosta, University of Turku / Biology; E. Belskii, Institute of Plant and Animal Ecology, Ural Branch, Russian Academy of Sciences; R.A. Costa, Universidade de Aveiro; M. Eens, University of Antwerp / Department of Biology; R. Hargitai, J. Török, Eötvös Loránd University; S. Ruuskanen, University of Turku / Department of Animal Ecology; T. Eeva, University of Turku / Department of Biology. Metal-polluted environments represent an important challenge for passerines and may affect the maternal investment into egg quality. Toxic metals may impair the eggshell structure as they can alter Ca absorption and the homeostasis and function of Ca. Great tits (*Parus major*) lay white eggs speckled with brown protoporphyrin pigment spots. Toxic metals may also affect this eggshell spotting pattern by depressing the heme synthesis and inducing protoporphyrin accumulation in blood, which may increase its deposition on eggshells in polluted areas. Our aim is to assess the effect of metal exposure on early-stage reproduction in free-living great tits inhabiting different metal-polluted environments in Europe. For this purpose, we carried out an extensive sampling in 2016 to collect eggs and nestling feces for assessing metal exposure in great tits breeding in industrial/urban sites and control environments in Belgium, Finland, Hungary and Portugal. We evaluate different egg characteristics that can be sensitive to metal effects such as eggshell thickness and pigmentation pattern. Generally, nestlings in the industrial/urban environments showed higher metal concentrations in feces, except for Portugal. Nestlings in Belgium were exposed to the highest metal levels. The eggshell index was slightly lower in the polluted site compared to the control site in Belgium while the opposite trend was found in Hungary, maybe due to the better Ca availability in the Hungarian polluted site. Although birds in industrial/urban environments were exposed to higher metal levels, the current pollution load is not affecting the eggshell quality. Eggs in the polluted environments showed higher spot intensity in Belgium, Hungary and Portugal, whereas neither effects on spot distribution nor size were found. Ca levels and toxic metals showed an interactive effect on spot intensity, suggesting that eggshell protoporphyrin-spotting intensity may be affected depending on the balance between metal pollution and Ca availability.

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