



10th Conference of the European Ornithologists' Union 27–30 August 2011, Riga

Programme and Abstracts

Edited by Leonida Fusani,
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Latvian Ornithological Society
Riga, 2011

LITTLE OWL (*ATHENE NOCTUA*): NUCLEAR AND MITOCHONDRIAL DNA ANALYSIS REVEALS DIVERGENCE OF SOUTHWESTERN AND CENTRAL EUROPEAN SUBSPECIES

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We utilized mitochondrial and nuclear DNA to study the phylogeography of little owls (*Athene noctua*) across Europe. Data from 326 individuals distributed among 22 sites were used to assess geographical distribution of the European subspecies, i.e., the widely accepted *vidalii*, *noctua* and *indigena*, and the questioned *sarda*-species. On the basis of the sequences of two mtDNA markers (CRI D-Loop 494 bp and COI 679 bp), we found a major difference between a first haplogroup, distributed in the North-West (from Iberia to Denmark and Czech Republic) and three other clades, distributed in the South-Eastern part of the study area. In particular we found a second group distributed in the Balkans and a third located in Sardinia, while in Italy there was a mixture between a fourth haplogroup of South-Italy and both the North-West and the Balkan clades. All individuals sampled in Sardinian differed clearly from other haplogroups. The combined analyses of the 13 nuclear microsatellite loci corroborated these results. Both mitochondrial and nuclear markers showed that interaction across contact zones generate a mixture of genotypes not only in Italy, but also in Central Europe. The apparent position of the contact zones differs substantially from the subspecies distribution reported in literature. DNA data are consistent with the phylogeographic hypothesis that this species survived the Pleistocene glaciations in three major refugia located in Iberia, South Italy, and the Balkans. Expansion patterns indicate that little owls from the Iberian refugium were the predominant source of postglacial colonization of northern Europe, while expansion out of South-Italy and Balkans had more limited effects.

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