

# Population structure, migratory connectivity and inference on gene exchange mechanisms in the Asian Houbara Bustard *Chlamydotis macqueenii*: a summary of recent findings

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**Abstract.** The phylogeographic structure of Asian Houbara revealed by genetic analysis suggests some level of differentiation between south and east Arabian resident populations, Sinai populations and the main bulk of Central Asian migrant and resident populations. Satellite tracking in southernmost populations failed to reveal population exchange with northern population and explains partly the genetic structure observed. Although central Asian birds show population specific migratory patterns and strong philopatry, possibilities of dissemination of genetic material between migrant populations and between migrants and residents exist in year-old birds and in adult birds during migration and could contribute to explain the absence of genetic differentiation between Central Asian populations.

**Key words.** Phylogeographic structure, satellite tracking, Macqueen's Bustard, phylopatry.

The identification of biologically relevant management units is critical to the design of an appropriate conservation strategy for the Asian Houbara Bustard *Chlamydotis macqueenii* at a time when large-scale conservation projects are put in place. A population genetic study using samples collected from throughout the range of the Asian Houbara has revealed a phylogeographic structure suggesting the existence of three separate groups: a Central Asian group of migrants and residents closely related to a resident population from Egypt-Sinai, and a third, relatively differentiated resident population from Yemen (RIOU et al., in prep). This indicates some level of genetic isolation of southernmost populations and gene flow among Central Asian populations. Population genetic analysis suggests that the ancestral form of the houbara is the North African species *C. u. undulata*, that can currently be considered a single Conservation Unit (LESOBRE et al. 2010a), and that the colonization of the Arabian Peninsula and differentiation of *C. macqueenii* occurred from 32.8 to 36.1 thousand years ago (PITRA et al. 2004). More recently, at the end of the last glacial period, Asian Houbara may have colonized advancing steppes and arid lands towards the north and developed migratory behaviour (RIOU et al., in prep).

Using satellite tracking techniques (92 adults and 21 juveniles) we evaluated the resident or migratory character of Asian Houbara, the extent of migratory connectivity between populations, natal dispersal, and fidelity to breeding sites in order to identify the possible mechanisms underlying exchanges of genetic material between populations. Residency was confirmed in all of the 11 individual south-eastern Arabian Houbara that were tagged, with