

# Estimation of Houbara Bustard, *Chlamydotis macqueenii*, population density in the central Iranian steppes

(Aves: Otidae)

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**Abstract.** Iran hosts both resident and migratory populations of the vulnerable Houbara Bustard, *Chlamydotis macqueenii*, especially in the region of Yazd where resident birds occur. For investigation of its density and abundance, 8000 ha of the Harat area in Yazd province were studied from February to March 2006. The distance sampling method (line transect) in different plant communities, with a completely randomized sampling design, was used. In total, 766 km of transects were surveyed and 147 individuals were counted. Based on distance sampling analysis we found that the Houbara Bustard density is 0.87 individual per km<sup>2</sup>. The highest density was recorded in *Seidlitzia rosmarinus* and *Artemisia sieberi* plant communities.

**Key words.** Distance sampling, line transect, Harat, density estimation, Asiatic Houbara Bustard.

## Introduction

The Asiatic Houbara is a flagship species in the Middle East. Following degradation of its habitat, poaching and the practice of falconry, Houbara populations have been diminishing across their entire range (BAILY et al. 1998, TOURENQ et al. 2005, RIOU et al. 2011). In 2004, the IUCN status for this species was changed to vulnerable (IUCN 2004). The species is distributed from the Sinai desert east of the Nile Valley to Mongolia. The population of this bird in the mid-1990s was estimated to be in the range 39,000-52,000, of which over 75% were in Kazakhstan and 15% in Uzbekistan (GORIUP 1997). In recent discussions, however (IUCN 2011), a reliable estimate for the number of Houbara in the Middle East and Central Asia has not been considered achievable (without huge limits on confidence). Investigations of Houbara density have been carried out across the Asian range in Kazakhstan (GUBIN 1992, TOURENQ et al. 2005, RIOU et al. 2011), China (GAO et al. 1997, COMBREAU et al. 2001, YANG et al. 2003), parts of the Asian range (COMBREAU et al. 2001, 2011a-b, JUDAS et al. 2009), Pakistan (MIAN 2003, NADEEM 2003), and in part of the African range in Morocco (HINGRAT et al. 2007). MANSOORI (2006) studied trends of bustard numbers from 1993 to 1999 at the five important breeding areas in Iran (including Ferdous, Harat and Marvast, Jazmoorian, Bahram-e-Gur and the Monde plains) and concluded that the Jazmoorian habitats held the largest number of birds.