Spring Migration through the Central Mediterranean: General Rules and Annual Variations

Alberto Massi, Alessandro Montemaggiori, Andrea Pilastro and Fernando Spina

Instituto Nazionale per la Fauna Selvatica, Via Ca' Fornacetta 9, I-40064 Ozzano Emilia, Italy; Dipartimento di Biologia, Università di Padova, Via Trieste 75, I-35121 Padova, Italy.

Every year vast numbers of songbirds regularly fly across the Mediterranean on their northward journey to the breeding quarters. Spring migration differs for several aspects from the rather slow post-breeding movements of Palearctic migrants to the African winter quarters, which involve a large proportion of juveniles following their endogenously controlled program (1). Birds which head to their nesting grounds in spring perform a much faster migration (2), also explained by the selective pressures in favor of an earlier arrival to their territories (3). Aim of this presentation will be to illustrate how, given the observed inter-annual variability, spring migration takes place within schemes which seem to be pre-determined and respond to general control mechanisms. Since 1988, the Istituto Nazionale per la Fauna Selvatica, Italian National Ringing Scheme, has launched and coordinated a large scale project on spring migration across the Mediterranean, named "Progetto Piccole Isole". The project is based on continuous mist netting of songbirds resting on up to 17 small to medium-sized islands in the western and central Mediterranean, between mid-April and mid-May. The involvement of over 400 volunteers resulted in nearly 200 000 birds ringed belonging to 184 species. Some examples derived from this large data set will be presented to illustrate different aspects of spring migration which suggest that determining factors may also be important for the control of this still poorly known phenomenon. Species investigated are long-distance trans-Saharan migrants as Common Redstart *Phoenicurus phoenicurus*, Whinchat *Saxicola rubetra*, Icterine Warbler *Hippolais icterina*, Garden Warbler *Sylvia borin*, Wood Warbler *Phylloscopus sibilatrix*, Willow Warbler *P. trochilus*, Spotted Flycatcher *Muscicapa striata*, Pied Flycatcher *Ficedula hypoleuca*, Woodchat Shrike *Lanius senator*. Within single species, general features of spring migration result in a regular pattern of movements and differential passage of age and sex classes. Physical conditions of migrants will be described on the basis of patterns of fat accumulation in different species, as well as by analyzing the differences in fat reserve levels on the islands along the South-North gradient. Both body mass and fat score values tend to decrease with increasing latitude. The analysis of the variation between years and species of the physiological conditions of migrants at different stages of sea crossing suggests the existence of specific strategies to overcome important barriers as the Sahara and the Mediterranean. These results will be compared to the existing information from areas south and north of the Sahara, and used to estimate potential flight ranges of single species resting on the different islands.

Literature: 1. BERTHOLD, P. (1986): Acta XIX I. O. C.: 215—249; 2. HEDENSTROEM, A. & PETTERSSON, J. (1986): Ornis. Scand. 17: 182—185, 3. KETTERSON, E. D. & N. V. Jr. (1983): In: Current Ornithology 1: 357—402.