

Dinevich L., Leshem Y., Matsyura A. 2005. *Some characteristics of nocturnal bird migration in Israel according to the radars surveillance*. Ring 27, 2: 197-213.

Abstract

The present study is aimed at obtaining radar data on nocturnal bird migration over central Israel to be used for improvement of air traffic safety in complicated ornithological settings. The data obtained, together with the radar monitoring procedure previously developed (Dinevich *et al.* 2004), resulted in establishing a radar network over Israel that forwards information on bird movements to air traffic control stations every 15-30 minutes.

The results of radar monitoring of nocturnal bird migration over central Israel are presented (1998-2002) enabling to determine a number of characteristics which are of importance for air traffic control, including average and maximum flight altitudes, altitudes of maximum bird density, the dominant directions and velocity of bird flights.

The average flight altitude was found to be mainly within the limits of 1800 to 2000 m in autumn and of 2400 to 2900 m in spring. The absolute maximum altitude was estimated at 5700 m in spring and at 5200 m in autumn. Average altitudes of maximum bird density are considerably higher in spring (*ca* 1500 m) than in autumn (*ca* 1000 m). The study of flight directions and speed of over of 20 000 bird echoes showed that the dominant direction of migration was 183° in autumn and 6° in spring. Within the altitude band of 0 to 500 m, deviations from the dominant migratory route were observed, being approximately 135° in autumn and 315° in spring, which can be explained by intensive migration of songbirds from the Mediterranean Sea towards winter-quarters in autumn and back in spring. Cases of reverse migration were relatively rare and were not characteristic for the nocturnal bird migration over central Israel. The average speed of bird flights was found to be around 14 m/s in spring and 13 m/s in autumn, the minimum and maximum flight speed being 8 m/s and 18 m/s, respectively.

L. Dinevich, A. Matsyura, Y. Leshem, George S. Wise Faculty of Life Sciences, Dept. of Zoology, Tel-Aviv University, Ramat Aviv, 69978, Israel.

Key words: radar ornithology, radar meteorology, bird migration.