

81. GROUND-SPEED OF MIGRATING RAPTORS AS REVEALED BY A SURVEILLANCE RADAR

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Gliding speed of raptors was supposed to be influenced by the birds morphology and weather conditions. However, a recent study showed that flight speeds of various gliding raptors converge to a narrow range. We compared ground-speed (resulting from gliding and sustained flight) of migrating raptors using a Marine Surveillance Radar set horizontally alongside visual observations. Fieldwork was carried out in spring 2014 in a mountainous area some kilometres inland of the Strait of Messina (Southern Italy). The radar echoes were associated to the bird species and the flock size identified by the observers. The screenshots were processed as video frames with radR 2.5.1 package in R software. RadR allows to assign coordinates and time to the echoes which can then be imported into a GIS software for movement analyses. We compared the ground-speed calculated on 30 tracks of different species of raptors (honey buzzard, Montagu's harrier, marsh harrier and black kite) and found no significant differences between species despite honey buzzards being slightly faster than *Circus* spp. A GLM was run to explain ground-speed variation in relation to wind speed and direction (and their interaction), air pressure, time of the day, flock size, and species. The results show that ground-speed increases at midday and in the afternoon probably because of the stronger thermal activity. On the other hand, ground-speed decreases with the increasing strength of lateral and tail winds. This result is in agreement with a recent study suggesting that raptors adjust their gliding speed according to the risk of grounding or switching to costly flapping-flight as a consequence of risk-sensitive behaviour.