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Effects of Location and Phase of Flight on the Behavioral Responses of Birds to Aircraft: Preliminary Observations

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Based on an earlier classification of avoidance movements shown by birds to moving aircraft (Kelly *et al.* 2001), we have studied the evading maneuvers of the rook (*Corvus frugilegus*) in relation to the phase of flight of air traffic at Dublin Airport, Ireland. The percentage of individuals which did not show avoidance movements was almost identical for approach/landing and take-off /climb-out movements. However, the nature of the avoiding-response in relation to the phase of flight was different. Thus 78% of responses were "Simple" in the approach/landing flight phase whereas only 5% were in this category during take-off. On omitting the approach data, the difference between take-off and landing was less marked with only 18% being "Simple" in the latter. In the case of the energetically costly "Noose"-type avoidance maneuver, 23% of rooks showed this response to aircraft on take-off as compared to 13% that were landing. Interestingly while "Protean"-type responses were relatively infrequent, they appear to occur with equal frequency during both landing and take-off movements. Recent evidence suggests that there are marked "Protean"-type responses by woodpigeons (*Columba palumbus*) to ascending aircraft during climb-out. These findings are discussed in relation to the numbers of birds present in the different phase of flight zones on the airfield, seasonal factors, and inter-specific differences in the nature and extent of the avoidance responses.