

## VISIBLE MIGRATION OF RAPTORS OVER BUSKETT — AUTUMN 1975

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The period 1969-1973 has received adequate coverage by Beaman and Galea (Ref. 1). The present contribution deals with the autumn passage of 1975.

Observations were made between 13.00 hrs and sunset (circa 19.00 hrs) on twenty-seven days in September and six days during the first two weeks of October. Visits in October were made whenever the opportunity presented itself, and not when the weather appeared favourable. Birds were observed through 8x30 binoculars from the vantage-point used by Beaman and Galea. The relevant statistics for the various species are tabulated (Table 1).

Honey-Buzzards accounted for 48.16% of the total number of raptors observed, rather close to 47.2%, the mean for 1969-73, calculated from Beaman and Galea's data. However, as the present author could not cover October exhaustively, this value is suspect and becomes even more so when one considers the markedly sporadic nature of falcon passages in mid-October.

The numbers of some species were comparable to or even greater than the typical autumn passage, both in absolute numbers and in relation to Honey Buzzard numbers. Of particular interest are the figures for Black Kites, Short-Toed Eagles and Hobbys (Table 2). Several explanations are possible. Species may have been partially overlooked. Alternatively, if one regards the probable frequency of occurrence of a given species as depending on a sum of contributions from various parameters, interspecific variation of the weighting factors for each contribution could account for the observed anomalies. The variation could, of course, be random, especially in the case of the Black Kite where the tendency to form small parties is more evident.

The paucity of raptors, Honey Buzzards in particular, during September and early October 1975 is evident. In terms of the theory of Beaman and Galea, the number and distribution of days with a southerly wind accounts for the kurtosis (damping) of the frequency distribution. Wind direction was south-west on only one day and of the eleven remaining days with a southerly wind, nine occurred before 15/9/75. Moreover, during late September, an eight-day calm period occurred. This would, according to the theory of Beaman and Galea, have resulted in whatever movement there was over the islands occurring generally at higher altitudes and no concentration of raptors would be observed in such conditions. In the presence of fairly cold air aloft, mild local thunder storms are possible and it is significant in this respect that higher numbers were observed under these conditions than on other calm days.

Although a large passage occurred during mild south-westerly and the number of sightings during north-westerly winds accounted for only 8.05% of the total, correlation between southerly winds and number of *P. apivorus* sighted was poor—56.4% of the reported passage occurred during the eight day-calm. This anomaly may be ascribed, at least in part, to the uneven distribution of wind direction over the period under study.

Analysis of the frequency distributions for skewness may well provide corroboratory evidence for Beaman and Galea's theory. My data for *P. apivorus* in 1975 show a positive skew (Karl Pearson's Index = .05609), i.e. the mean

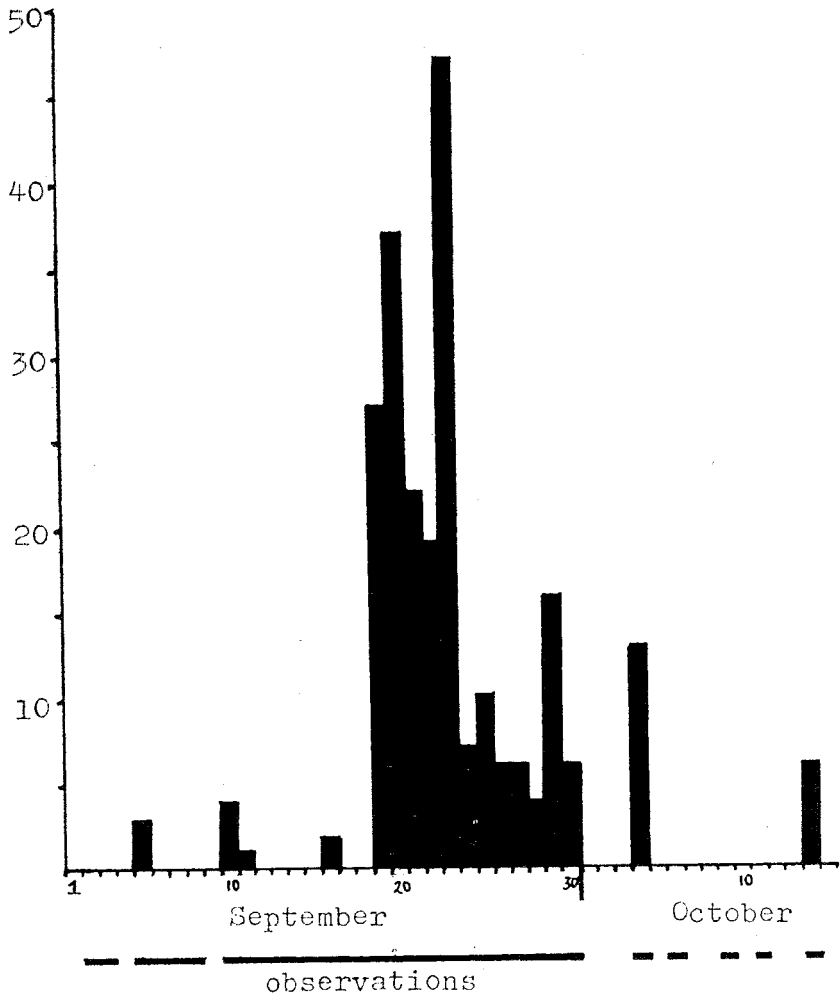
occurs at a higher value than the maximum, showing that more birds are seen after than before the maximum. Although my data for 1974 are less extensive, a positive skew is also observed (K.P. Index = .0779). This could be interpreted as due to a gradual deterioration in weather conditions as the season progresses, resulting in an artificially increased visible migration. The influence of atmospheric pressure on the number of raptors sighted has hitherto only been implied. In the present study 87% of the observed passage of *P. apivorus* in 1975 occurred when the pressure was above the mean for the period in which observations were made. A positive partial correlation coefficient ( $r$ ) of .4456 was obtained. However, with the sample size employed (32) this value is not large enough to show correlation. Although correlation between *P. apivorus* numbers and atmospheric pressure cannot be assumed at the present time, further investigation along these lines should be undertaken.

The concentrating effect of the higher ground of west Malta has previously been reported (Ref. 1). Its greater importance in autumn may be ascribed to the shifting effect of Gozo. Even if one assumes that most raptors approaching the Maltese Islands in autumn do not make for the nearest land (Gozo), any Gozitan contribution to the sightings in Malta is more likely to increase observed numbers in west than in east Malta by virtue of Gozo's lying to Malta's north-west.

The fairly regular sightings of Lesser-Spotted and Booted Eagles in autumn is interesting. The latter species is most likely to reach Malta by crossing the Adriatic. Sightings have generally occurred during heavy passages and the birds were usually in company with other raptors. Autumn recoveries of broadwings ringed on the breeding-grounds shed little light on the matter. There are nine recoveries in this class (Ref 3-6) and of these birds three were ringed in the East Baltic countries or Finland. Although these birds may well have crossed the Adriatic the sample size is much too small for any conclusions to be drawn. More observations on the Adriatic coasts of Central Italy and Yugoslavia are required to determine the extent to which broadwinged birds of prey cross the Adriatic.

The annual shooting of raptors migrating over Malta does not appear to have been evaluated quantitatively to date. The author kept a record of the daily kills observed for all days on which observations were made. The daily percentage kills (based on total numbers seen) ranged between nil and 25%. The highest percentage kills occurred on rainy, overcast days. A total of 38 raptors were shot down within view. This amounts to 7.7% of the total observed raptor passage. Although it would not be suspected from the above statistics, Buskett is, in fact, a bird sanctuary. These observations refer to a relatively small area of these islands and it is significant that of 33 autumn recoveries of raptors ringed abroad (Ref. 3-6), only 3 were shot at Buskett, suggesting that many more birds are shot elsewhere in the islands. It should be noticed that the above data for Buskett refer to one of the lowest raptor passages on record.

**CONCLUSION:** There is clearly much need for observations in Gozo. Birds arriving there would have had less opportunity to soar above the visible range and observations are less likely to suffer from the distortions postulated by Beaman and Galea. The relationship between the various parameters and the observed numbers will ultimately be established only by multiple correlation analysis of data obtained from combined visual/radar studies. An individual



Histogram of *P. apivorus* numbers against time: 2.9.75 — 14.10.75.

analysis for each species is, of course, necessary. More observations on the Adriatic coasts of Italy and Yugoslavia are required to determine the extent to which broadwinged birds of prey cross the Adriatic.

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**Table 1**

<i>Species</i>	<i>No. seen</i>	<i>Range</i>	<i>Mean date of appearance</i>	<i>Standard Deviation</i>
Osprey	3	11/9 to 23/9	18.33/9	
Honey Buzzard	236	5/9 .. 14/10	24.35/9	5.8656 days
Black Kite	20	19/9 .. 4/10	21.50/9	4.5000 ..
Sparrow hawk	1	29/9		
Buzzard	3	19/9 .. 23/9	21.67/9	
Booted Eagle	1	23/9		
Lesser Spotted Eagle	1	23/9		
Short-toed Eagle	5	23/9 .. 14/10	4.00/10	8.9666 ..
Hen Harrier	1	21/9		
Marsh Harrier	12	16/9 .. 4/10	21.83/9	4.1399 ..
Egyptian Vulture	1	22/9		
Peregrine	1	4/10		
Hobby	115	5/9 .. 30/10	19.53/9	8.5631 ..
Eleonora's Falcon	7	5/9 .. 30/10		
Lesser Kestrel	29	3/9 .. 4/10	23.59/9	
Kestrel	30	19/9 .. 14/10	26.03/9	
Unidentified Broadwings	8	20/9 .. 14/10		
Unidentified Falcons	15	20/9 .. 14/10		

**Table 2**

<i>Species (x)</i>	<i>Range of Annual Totals</i>	<i>Total in this study</i>	<i>x/Honey B. (Ref. 1)</i>	<i>x/Honey B. (this study)</i>
Black Kite	7 — 20	20	1.5 — 2.2%	8.5%
Short-toed Eagle	2 — 11	5	.36 — 1.3%	2.1%
Hobby	139 — 233	115	17 — 51%	65.6%