

COLD FRONTS AND HONEY BUZZARD MIGRATION ACROSS LARGE BODIES OF WATER

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Some unusually large falls of Honey Buzzard *Pernis apivovus* have coincided with the approach of fronts. Such situations are discussed below.

Following observations in Malta by Gibb (1951), Brown and Amadon (1969) suggested that Honey Buzzards might utilise the thermals which precede fronts in order to cross the Mediterranean. In relation to this hypothesis, the use of frontal thermals by a single White Stork *Ciconia ciconia* is of interest. This bird was seen utilising thermals below convective cloud in a very weak front which crossed the islands on the 2nd September 1976. The bird drifted downwind as it proceeded along the front. The regular use of fronts by migrant soaring birds attempting to cross the Mediterranean is unlikely. The dangers of using an active front have been pointed out elsewhere (Thake 1977). Moreover, the birds in question would be drifted several hundred kilometres eastward, as they would be unable to correct for drift while using the front.

Recent observations in Malta have produced three separate instances where approach of a frontal system was associated with unusually high totals (1/10/73, 19/9/74, 11/9/76). A few other less marked cases occur. In each case, the raptors were seen well before the arrival of the front. On each of these occasions, the highest totals were logged at Buskett, as usual. A characteristic of such falls however, was the fact that sizable totals were also recorded elsewhere, principally on the higher ground of west Malta but also further north.

A synoptic chart for one of these dates is shown in Figure 1, which illustrates the approach of a front on the 1st October 1973, when 410+ raptors (including 320+ Honey Buzzards) were recorded. The front was very slow moving and was slowed down still further by the development of frontal waves. Anticyclonic conditions over the Central Mediterranean were replaced by Sirocco (Xlokk) conditions later in the day due to the development of a lee depression on the front, south of the Atlas mountains. Thus on the 1st October the sea breezes which were prevalent in the morning were gradually supplanted by a south south easterly gradient wind which increased in strength throughout the day. The position of the front did not change appreciably in the course of the day.

The interpretation of these high totals remains unclear. Basically, the high totals could be due to some effect of the southerly winds generated by the approach of the front, or to the birds' fear of the approaching front. Four distinct possibilities exist. It should be noted that these possibilities are not mutually exclusive and all may occur to a certain extent.

(1) Honey Buzzards respond to the increased strength of the contrary wind by following the coast to a greater extent than usual. The large totals at Buskett would thus be due to an accentuated leading line effect. The fact that many Honey Buzzards are also seen in the north of Malta on such occasions seems to contradict this hypothesis.

(2) A contrary gradient wind over the Sicilian channel slows down the stream of migrants, which arrive in the vicinity of Malta later in the day, when they are less willing to embark on a second sea crossing. An implicit assumption in this argument is that the distribution of intensity of migration with time of day is shifted earlier with respect to the distribution of sightings at Buskett. This assumption is reasonable but there is no evidence to support it.

(3) A contrary wind over the Sicilian channel increases the proportion of Honey Buzzards which converge on the islands. Very little is known about convergence on the islands. There is some evidence that differential convergence is not responsible for the day to day variation of totals (Thake 1981). Convergence might, however, occur on a scale small enough not to be affected by day to day changes in visibility.

(4) Honey Buzzards recognise approaching fronts by the presence of a cloud bank due west, accompanied by a southerly wind which is increasing in strength. It would be uneconomical of both time and energy for Honey Buzzards to flee from every cloud bank which appears on the horizon. Having established that a front is approaching, they make for the nearest land. This hypothesis is weakened by the fact that in some cases (see Fig.1) the front in question was probably too distant to be seen by the birds.

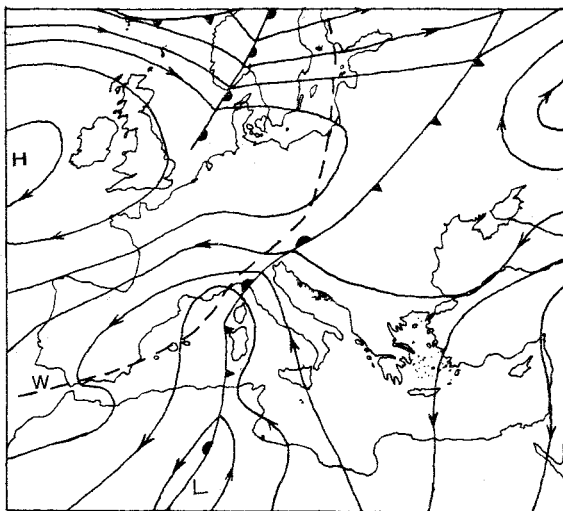


Fig.1. Synoptic chart for 0000 GMT on the 2nd October 1973, approximately 7 hours after the end of a large passage of Honey Buzzards. The dashed line shows the position of the principal front at 0000 GMT on the 30th September. Drawn from the Täglicher Wetterbericht kindly supplied by the Deutscher Wetterdienst.

According to a recent model of flocking (Thake 1980) a decrease in the motivation to migrate should result in an increased flock size due to increased flocking. All the above possibilities envisage a reduction in the motivation to migrate and increased flocking would be expected to occur, if the model is realistic. The anomalously high flock size observed on such occasions is difficult to explain in any other way. The explanation offered in a previous paper (Thake 1977) cannot account for the other cases under discussion.

Further observations are required in spring, when the southerlies ahead of the approaching front would be tail winds. If high totals are also recorded in such situations, this would represent a response to the front and not to contrary winds. Malta is perhaps unsuitable for such an investigation because of the meagre spring passage. Observation from Pantelleria covering several spring migrations are clearly required, preferably in conjunction with observations at Cap Bon. Pantelleria experiences a much more intense spring passage than Malta.

Our present knowledge might be summarised as follows : When a cold front approaches a well developed anticyclone over the central Mediterranean at around mid-day, high totals of Honey Buzzards are recorded. Although there is evidence that normal migration is being disrupted, it is not clear whether this is due to discovery of the front by the birds, or to some effect of the southerly winds which precede the front.

References

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