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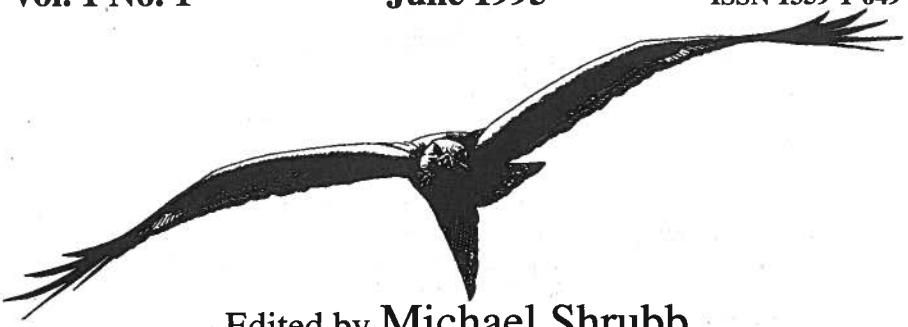

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AUTUMNAL NEST BUILDING BY GOSHAWK *Accipter gentilis*

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INTRODUCTION

During the late 1970s and through the 1980s Goshawks (*Accipiter gentilis*) bred at low density within a 325,000 ha study area in Wales (Toyne, 1994). Since 1990 they have expanded their range and numbers to become fairly common within this locality (Toyne, 1994). The study area was c.50% forested and covered the altitudinal range 90-400m. Survey work normally commenced with the checking of previously occupied nesting territories between January and March. From March to June potential new nesting territories were surveyed, as by this time adequate field evidence of occupation can be found. This paper presents observations on the general timing of nest building by Goshawks and one rare record of autumnal nest building.

RESULTS

Goshawks are sedentary within the study area and were seen displaying above their nesting territories during December to March. During this period territories were visited by immature birds and displays by established hawks were seen as a territorial defence strategy.

Most nests were found in March through to May. As most nest building occurred prior to this we can only give the general timing of nest building with records of the earliest nests found. The majority of new nests were built between January and March. Preferred nest trees were larch (*larix sp*), although Douglas Fir (*Pseudotsuga meneziesii*), Norway and Sitka Spruce (*Picea abies and P. sitchensis*), Scots Pine (*Pinus silvestris*) and Beech (*Fagus sylvatica*) have been used (Toyne, 1994). When an old nest was re-used, refurbishment with larch twigs or green sprigs of Douglas Fir or Scots Pine (Sitka Spruce was rarely used) occurred in early March. The main period for nest building was not studied. In March 1994 when a refurbished nest was blown out during a storm a substantial new nest was built in less than one week. In 1990 and 1991 the first newly-built nests were located in mid-February, in previously occupied nesting territories. However, in 1992, the first nest was found in mid-January at a nesting territory where the pair were displaying the previous December. The earliest record of nest building was November 1992, in an old-established territory (used 1981-89). Observations indicated that this territory was unoccupied until an adult male was trapped on Sept. 22nd 1992 and then, on Oct. 7th, a 2-year old female, born c.26km away, was also caught. Throughout November a fresh, larch stick nest was slowly built in a larch at the old nest site. Subsequently 3 eggs were laid but failed during incubation and moulted feathers (N = 2) found at the site were inconclusive in identifying the female as the October bird, as she was undergoing her third moult (see Opdam & Muskens 1976). Nor was the male occupant identified. However these observations suggested that a male was attracting females to his territory in October and possibly earlier, as males build most of the nest (S. Petty *pers. comm.*).

Autumnal nest building in Finland was thought to be a functional response occurring after higher than average October temperatures (Sulkava and Sulkava, 1981). To see if air temperature could partly explain this record of early nest building we compared September-November 1992 temperatures with previous years (Table 1).

There were no significant yearly differences in the mean daily air temperatures for the September-November period (Friedman's Two-way anova: $Chi^2 = 1.3810$, d.f. 5, ns.; 1989 data omitted). It was doubtful whether higher than average November temperatures could explain this early nest building as the maximum daily air temperature (13.1 °c on Nov. 6th)

was within the range of previous records (Table 1) and there was no significant difference in November (1986-1992) air temperatures (Kruskal-Wallis-corrected for ties: $Chi^2 = 6.000$, d.f. 6, ns.).

Table 1. Mean air temperatures in autumn in °centigrade in the Welsh Goshawk study area. A = daily means, B = means of daily maximum and minimum temperatures, C = daily maximum in November. No data for October 1989.

	September		*October*		*November*		
Year	*A*	*B*	*A*	*B*	*A*	*B*	*C*
1986	9.6	5.1-14.1	9.5	6.3-12.7	6.5	3.3-9.7	13.2
1987	11.9	8.0-15.7	8.0	4.6-11.4	5.1	2.6-7.5	12.2
1988	11.3	7.6-15.1	8.8	5.9-11.7	4.7	1.2-8.2	12.4
1989	12.3	8.3-16.4			5.7	3.0-8.4	15.9
1990	10.7	6.5-15.0	9.9	6.9-13.0	5.1	2.1-8.0	13.7
1991	12.7	8.3-17.2	8.3	5.1-11.5	5.4	2.8-8.0	11.8
1992	11.6	8.2-15.0	6.3	3.3-9.3	6.5	3.8-9.1	13.1

DISCUSSION

This early record of a hen displaying in October and subsequent nest-building suggested that some goshawks move or are attracted into new/established nesting territories in autumn. Other raptors such as Common Buzzard (*Buteo buteo*) were also seen displaying on dry, sunny days in autumn. Goshawk nest building was rarely recorded in autumn in Wales as it was not checked for and, in Europe, it is normally thought to start in January (Brüll 1964, Fischer 1980). In a lowland area of Britain, where the median first egg-laying date for goshawk occurred 8 days before this study, nest refurbishment was found once in both September and October and commonly recorded in February (Anon 1988, 1990). Anon (1988) does not record the timing of actual nest building apart from stating that "nest building increased through March". Whether changes in autumn weather influence nest building remains unclear and clearly one cannot draw general conclusions from single cases. However, nest building and displaying by single birds were interpreted as actions to attract prospective mates and when by paired birds were seen as advertisements of their occupancy of a new or established nesting territory.

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