The Marsh Harrier in Kent
and the 2005 breeding survey

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Introduction

The Marsh Harrier *Circus aeruginosus* became extinct as a breeding species in Britain in 1899. Re-colonisation commenced in 1927, but numbers fell again until there was just a single pair in Suffolk in 1971, followed by a dramatic recovery (Underhill-Day, 1998). In Kent, Ticehurst (1909) knew of no breeding records and gave details of just 14 birds between some time shortly before 1816 and 1906, including a series of spring records of a single bird in the Dungeness area between 1899 and 1906. A pair bred on Preston marshes in 1942 as did another on the Stour marshes in 1946 (Taylor *et al*, 1981), while a pair was thought to have nested successfully at Stodmarsh in 1952 (Harrison, 1953). Although there were occasional records of summering individuals between the 1950s and the 1970s, there was no suggestion of further breeding in Kent until a pair did so on the Isle of Sheppey in 1983 and again in 1984. Since 1989 it has done so annually in increasing numbers (Rowlands, 1999). The breeding population has been monitored each year, but in 2005, as part of a national breeding census of this species, particular effort was made to locate as many breeding females as possible.

This species has long been known as a winter visitor to Kent (Taylor *et al*, 1981), but since 1990-91 over-wintering birds have become much more numerous (Oliver, 2005). This paper updates the information in Rowlands (1999.), reports the results of the 2005 breeding survey and, since the wintering population bears some relationship to the breeding population, briefly summarises the increase in winter numbers. It does not deal with the Marsh Harrier's status in Kent as a migrant.

Methods

As part of the national survey observers were asked to complete a form for each potential or confirmed breeding attempt, giving details of nesting habitat and, where known, of productivity and causes of failure. Observers were not required to visit nests. Birds were assessed as having bred if young were seen or if food was seen to be taken to a nest. Breeding was treated as possible provided a food pass between male and female was seen, but if only display or carrying of nest material was seen, birds were treated as non-breeding. This is a more stringent test than used in Kent since 2000, as birds seen only carrying nest material were then recorded as possibly breeding rather than non-breeding (though these could have included birds that merely summered and built feeding platforms). Such records are separately identified for 2005 and included in the total of possible breeders for comparison with earlier Kent data, but excluded for comparison with the national data for 2005. Survey effort varied after 2000. It was much less during the foot-and-mouth restrictions of 2001 and was probably less intense from 2002 to 2004 than was the case in the years prior to 2001.

Estimates of winter numbers have been based on counts at roosts. These have been carried out on a co-ordinated basis along the Swale since 2001-02 (Oliver 2005). Counts at other roosts have been obtained from Kent Bird Reports or direct from observers.

The breeding population

After the first pair in 1983, pairs nested again on Sheppey in 1984 and 1989. Numbers then increased to five nests in 1991, 14 by 1994 and 21-24 by 1997 (Rowlands 1999). Data for 1998 to 2005 are given in Table 1 and an analysis of the 2005 results forms Table 2. From 1998 to 2003, numbers on Sheppey were stable at 24 nests apart from 28 in 1999. Numbers could, in fact, have increased in that period, but been masked by the reduced survey effort. There was an increase to 29 in 2004, but the survey in 2005 revealed at least 41 confirmed or possible nests on Sheppey. The first recorded nesting away from Sheppey since 1946 was in 1998 and by 2004 there were ten nesting attempts at five localities in addition to Sheppey. The survey in 2005 revealed much larger numbers with 21 attempts at nine localities, giving the remarkable total for the county of 48 nesting attempts that produced at least 99 flying young. Depending on the criteria adopted, there were in addition between six and 14 possible nesting attempts and a further 11 pairs or females present during the breeding season, but for which there was no satisfactory evidence of attempted nesting (Table 2). Because of the density of nesting birds on Sheppey it was impossible to identify any cases of bigamy; none was reported elsewhere in the county.

	Sheppey	Elsewhere (sites)	Total
1998	24	2 (1)	26
1999	28	2 (2)	30
2000	24	6 (3)	30
2001	24	8 (3)	32
2002	24	8 (3)	32
2003	24	10 (6)	34
2004	29	10 (5)	39
2005	41	21 (9)	62

Table 1. Number of Marsh Harrier nests recorded in Kent, 1998-2005 and number of sites occupied away from Sheppey.

	Sheppey	Elsewhere	Total
Successful nests	27	14	41
Failed nests	4	2	6
Bred, result unknown	1	-	1
	32	16	48
Possibly bred [(a)]	3	3	6
	35	19	54
Possibly bred [(b)]	6	2	8
	41	21	62
Additional pairs/females	9	2	11

Table 2. Number of Marsh Harrier nests in Kent, by category, in 2005.
(a) national criteria. (b) further possible nests using Kent criteria.

Nesting habitat

Of the 62 confirmed and possible nests, habitat was reported for 58 and the number and distribution of these by habitat is shown in Table 3 together with comparable data for Sheppey for 1997. Reeds have consistently been the favoured habitat. On Sheppey, all nests until 1994, when rape was first occupied, were in reeds, followed by wheat and other habitats from the following year. Compared with 1997, a similar proportion was in reeds in 2005 (50% and 51% respectively), but with proportionately more in rape and less in wheat. The other habitats used in 2005 were grass and beans, each of which held a single nest. So far as is known most nests away from Sheppey were in reeds until 2005, when there were three in rape and one in wheat, reducing the proportion there in reeds to 79% and 61% for the whole county.

	Sheppey				Elsewhere		Total	
	1997		2005		2005		2005	
Reeds	10	*50*	20	*51*	15	*79*	35	*61*
Rape	5	*25*	11	*28*	3	*16*	14	*24*
Wheat	5	*25*	5	*13*	1	*5*	6	*10*
Other			3	*8*			3	*5*
Total	20	*100%*	39	*100%*	19	*100%*	58	*100%*

Table 3. Number and *percentage* of Marsh Harrier nests in each habitat. Data for 1997 derived from Rowlands (1999).

Population density

The suitable marshland habitat on Sheppey, excluding tidal saltings, is about 3,000 hectares, so the average density of the 41 confirmed nests was approximately one nest per 73 hectares. In fact, the nests were not distributed evenly and two areas supported very high numbers. One stretch of fresh water fleet with dense reed-beds *Phragmites* contained eight nests (seven successful) in a length of 2.2 kms, while another 2.4 km stretch of the same fleet that had a much more patchy distribution of reeds held six nests of which five were successful. Taking these two stretches of the fleet together, the mean distance between nests was 300m. It was not practicable to measure the area of the available reed beds, but the area of that part of the fleet used, including open water, was approximately 31.5 hectares, giving a density of one nest per 2.2 hectares. Because nests were not visited, it was impracticable to measure individual inter-nest distances, but in previous years two pairs nested regularly at either end of a reed-bed approximately 120m. long and 10m. wide in a dyke beside a sea-wall. Neither Underhill-Day nor Rowlands gave data on densities, but Burneleau (1994) reported 29 nests in an area of 20.5 sq. kms. in Charente Maritime, giving a density of one nest per 70 hectares, virtually the same as on Sheppey. Some of the nests in Charente-Maritime were only 50m apart. No data was received on density away from Sheppey.

Productivity

Rowlands noted that productivity declined as the population expanded between 1983-97, from a peak of 3.4 young per known nest in 1992 to only 1.4 in 1997. The latter was thought to be at least partly the result of human persecution. In 1996 the figure was 2.5 and the mean for 1983-97 was 2.4. In 2005 reported productivity almost certainly understates the true figure as the number of young fledging from successful nests was in many cases uncertain and was reported as a range. Here, calculation of productivity has in all cases been based on the lowest reported figures. At 1.6 per known nest (Table 4), productivity was much lower than the mean of 2.4 for 1983-97. It was also lower per successful nest - 2.4 compared with 3.0 in the earlier period. Rowlands found that reed nests were the most productive and although that was also true in 2005 in terms of young per known nest where it was 1.9 compared with 1.3 or less in other habitats, productivity per successful nest was similar across all habitats, the most productive being rape at 2.6 young per successful nest. Somewhat surprisingly, productivity in the densely populated fleet on Sheppey (see above) was lower than the average for all reed-bed nests at 1.8 young per known nest and 2.2 young per successful nest.

		Total	Reeds	Rape	Wheat	Other
2005	young per successful nest	2.4	2.4	2.6	2.5	2.2
	young per known	1.6	1.9	1.3	0.8	0.7

	nest					
1983-97	young per successful nest	3.0	2.7	0.7	2.0	3.0
	young per known nest	2.4	not available			

Table 4. Productivity of Marsh Harriers in Kent. Data for 1983-97 from Rowlands (1999).

The winter population

The Marsh Harrier has long been known as an occasional winter visitor to Kent. Ticehurst reported five killed on the Gravesend marshes in 1871-72 and Harrison details a number of winter records in both north and east Kent. Taylor *et al* (1981) described winter records as 'sparse'. Presence throughout the winter was first reported in the severe weather of 1978-79 when single birds remained on both Sheppey and at Stodmarsh. Others did so in several subsequent winters and regularly from 1988-89, with the first communal winter roost reported in 1990-91. Since then wintering numbers have increased in line with the breeding population. From 2001-02, when co-ordinated counts commenced, the winter peak was equivalent to between 53% and 68% of the following year's breeding population (Oliver, 2005). The peak winter count in 2005-06 increased further to 74, though the breeding population in this area may have declined in 2006 (see later). Adult males at first accounted for 10% of the Swale winter population but from 2003-04 this doubled to 20%. Counts at other roosts in Kent were not made on co-ordinated dates, but in January 2006 reached 18 at Stodmarsh and 19 at Walland.

Discussion

The increase in the Kent population of Marsh Harriers has been remarkable. From one nest in 1989, the number of confirmed or possible nests had increased to 24 by 1995 and then more than doubled to 54 by 2005 or up to 62 if birds seen only seen carrying nest material are also treated as possible breeders. Likewise, the number of sites occupied (taking Sheppey as a single site) has increased from one to ten. Taking the conservative figure of 54 confirmed or possible nests in 2005, the average annual increase since 1995 was 8.5%, slightly lower than the national rate of 8.9%. The rate of increase varied considerably within Kent. There was a period of four years on Sheppey with no observed increase (though it is possible there may in fact have been some increase, see above), while for the whole county the total increased by only 13.3% between 1999 and 2003. By contrast, the apparent increase between 2004 and 2005 was 38% on Sheppey and 59% for the whole county. Such a sharp increase suggests that this was, at least partly, attributable to greater observer effort in the survey year. In a core area on Sheppey, observer effort was consistent between 2004 and 2005. Using the Kent criteria there were 13 confirmed or possible nests in this area in 2004 and 21 in 2005 – an increase of 61%. Elsewhere in Kent (including the non-core area of Sheppey) numbers increased by 55% from 26 to 40. While these rates are remarkably similar, it should be noted that the increase in the rest of Sheppey (20%) and elsewhere in Kent (110%) were very different. Never the less these comparisons lend some support to the suggestion that, at least on Sheppey, there was indeed a sudden and very substantial increase between 2004 and 2005. Interestingly, data for the same core area in 2006 revealed a decline of 14%. The increase in Kent has paralleled that in Britain as a whole as the Kent population accounted for 15% of the national total in both 1995 (Rowlands, 1999) and 2005 (Underhill-Day, *pers. com.*).

There is no firm evidence to explain the recent prosperity of the Marsh Harrier in Kent. An underlying reason is almost certainly the steady reduction in the persecution of birds of prey during the twentieth century, but its increasing willingness to nest in agricultural crops must also have been important. Cramp & Simmons, (1979) make no mention of this as a nesting habitat, but by the time of the 1995 survey, 20% of known nests in Britain where habitat was recorded were in crops (Underhill-Day, 1998). Changes in availability of suitable reed-bed habitat seem unlikely to have played a major part. While there has been some increase in Kent in the area of such habitat, mainly in reserves, many of the harriers nest outside those protected areas, especially in north Kent. Underhill-Day (2002) thought it likely that the increasing English population had been augmented by recruitment from abroad. In the absence of relevant studies of prey populations it is not possible to say whether there has been any increase in their abundance or availability, but neither seems likely. Oliver (2005) suggested that increased availability of both game birds and the concomitant increase in brown rats feeding on grain put down for both game birds and wildfowl, might have supported the increasing winter population on Sheppey, but these sources would be less available in the breeding season. Underhill-Day (1985) found that mammals and small adult birds formed the bulk of harrier prey in the spring. In any case anecdotal observations suggest that the main prey brought to nests on Sheppey is young lagomorphs, young birds and frogs (*pers. obs.*). It seems unlikely that the increased numbers wintering can have had any direct influence on the increase in the breeding population. Rather, it seems more likely that the increasing wintering population has been a direct consequence of higher breeding numbers.

As noted by Rowlands, Marsh Harriers on Sheppey have almost certainly suffered from human persecution (birds poisoned with agricultural poisons at baited rabbit carcases were found in the 1990s) and there has since been evidence of egg-collecting. There have also been alleged cases of removal of young birds from nests. It is clear though, that in present conditions, the Marsh Harrier population is well able cope with such losses and the periodic nest failures associated with prolonged wet weather in the nestling period, as well as losses from harvesting operations. One must not be complacent, especially with what is still a scarce species, but the future looks encouragingly bright for this species in Kent. There remain suitable areas of habitat not yet utilised and the likelihood of further increases in both the breeding and wintering populations seems high.

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