

The Re-introduction of the Red Kite *Milvus milvus* into Scotland

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The Red Kite *Milvus milvus* is a medium-large bird of prey whose range is primarily European, although some sub-populations are found in Northern Africa and western Asia. Part of the population (mostly in the northern part of the range) is migratory (Cramp *et al.* 1980).

Throughout its range the Red Kite needs woodland in which to nest and roost, but hunts primarily over open fields, moor and unimproved pasture, usually while on the wing. Although the Red Kite will tolerate a variety of habitats, it flourishes in areas characterised by a diverse mosaic of woodland, improved and unimproved pasture, and moorland. Throughout most of its range it is primarily a lowland bird (Cramp *et al.* 1980).

Prey includes small mammals such as voles (*Microtus* sp., *Clethrionomys* sp., *Arvicola* sp.), birds up to the size of Wood Pigeons (*Columba palumbus*), stranded fish, amphibians, reptiles, insects and carrion. It will also pirate food from other birds and rob nests. It will feed on offal and will scavenge garbage from refuse-tips.

During the 20th century, the species' range has contracted in many places, mostly due to human persecution. However, in some countries, such as Sweden, the population is on the increase, due largely to increased protection in good habitat.

The Red Kite in Britain

The fortunes of the Red Kite in Britain have varied throughout the ages, closely connected with the activities of humans. Prior to the development of agricultural methods, the kite was probably limited to areas with naturally occurring open lands, including damp river valleys, swampy land, estuaries and some coastal areas. With the development of agriculture from slash-and-burn to more settled farms, kites found more and more land over which they could hunt.

By the Middle Ages the population was probably at its peak, taking advantage of not only an expansion of its nesting habitat, but also the fact that in England and Wales it was protected by royal decree in recognition of its importance as a street cleaner.

The esteem in which it was held in England and Wales was not matched in Scotland. In 1457, James II of Scotland decreed that the kite, along with other predatory birds, should be destroyed. This and later laws, in 1532, 1566, 1572 and 1598, signalled the beginning of the decline of the Red Kite throughout Britain, placing it among 'vermin' to be controlled (Lovegrove 1990).

In 1879 the Red Kite became extinct as a breeding bird in Scotland. Extinction in England occurred about the same time. By the beginning of the 20th century, the British population was reduced to about six breeding pairs, all confined to the hills of mid-Wales.

Today, the Red Kite remains one of Britain's rarest birds. It is one of only three British bird species listed in the World Checklist of Threatened Birds (Collar & Andrew 1988), and is included in the Red Data Book. Its breeding range is still limited to the hills of mid-Wales. However, the location of this present population of, today, 70-80 breeding pairs is due not so much to the fact that mid-Wales is an ideal habitat as to the relative lack of persecution in the area compared to other parts of Britain in the last century.

Still, persecution persists. Egg collecting remains a problem; despite high security, in some years nearly 10% of nests are robbed. Also, birds are poisoned and shot.

The re-introduction in Scotland

As a consequence of persecution, the cold, wet weather and relatively poor habitat, the productivity of the Welsh Red Kite population has been very low. So, although it looks to be relatively secure within Wales, the natural recolonisation of other parts of Britain from this nucleus seems unlikely in the foreseeable future. Recolonisation of the United Kingdom by the continental Red Kite population is also unlikely because Britain does not lie on any direct migration routes of that population.

Given this state of affairs, in 1988 the Royal Society for the Protection of Birds (RSPB) and Joint Nature Conservancy Council (JNCC) examined the possibility of re-introducing the Red Kite into England and Scotland. Before any re-introduction of kites (or any other species) could be supported, certain conditions needed to exist:

1. There should be good historical evidence that the re-introduction was taking place in an area of former natural occurrence.
2. There should be a clear understanding of why the species was lost. In general, only those populations lost through human agency should be considered for re-introduction.
3. Any natural recolonisation of an area by an extant population would be unlikely to occur.
4. The factors causing the extinction should no longer be in force.
5. There should be sufficient suitable habitats to support the re-introduced population.
6. The re-introduced individuals should be from a population as close as possible to the extirpated one.
7. The loss of the individuals from the donor population should not negatively affect that population.

The situation of the Red Kite in Britain in 1988 fitted these conditions.

Attempts at such re-introduction had been made before, in the 1920s and the 1950s (Bannerman 1956; Lovegrove 1990). Both were largely unsuccessful. To avoid any repetition of past mistakes and ensure a high probability of success, detailed research was undertaken. This identified an area for the re-introduction, a likely donor population, and detailed the process itself. The success of the re-introduction of the White-tailed Eagle (*Haliaeetus albicilla*) into Scotland had proved that reintroduction could be accomplished with the resources available to the RSPB and the JNCC. With this as a backdrop, the decision was taken to proceed. The background to the Red Kite projects in England and Scotland has been detailed by Pienkowski and Evans (1991) and by Evans and Pienkowski (1991).

The re-introduction site in Scotland was chosen in the Highlands, in an area characterised by a mosaic of relatively small farms and villages. The land use is primarily agricultural, but no one agricultural product predominates; livestock, cereal and root crops and forestry are all part of the landscape. Large areas are lowlands, but there are upland areas as well. The latter are primarily covered in heather (*Calluna vulgaris*) and grass (e.g. *Molina caerulea*), but also strips of birch (*Betula pendula*) and plantation forestry (mostly Sitka spruce, *Picea sitchensis*). This mosaic provides good habitat for potential prey (both mammalian and avian) for the kites. The main urban area is Inverness, a city of 40,000 people.

The ideal donor population was identified as breeding in the area of Scania in southern Sweden. There the population was and is expanding rapidly, and has grown from 50 pairs in 1980 to 150

in 1986, and to 200 pairs in 1989 (Lovegrove 1990). The landscape of this part of Sweden is very similar to that found in the reintroduction area in the Highlands.

Details of release

Pre-release

In 1989, the Swedish National Environmental Protection Board, WWF-Sweden and Skanes Ornitologiska Forening were approached to provide the birds for re-introduction. In June of that year ten Red Kite chicks were collected under CITES licence and transported to Britain by the Royal Air Force. This was the first flight by the RAF to Sweden since the war because of Sweden's status as a neutral country. In 1989, six kites were released in Scotland, in 1990 19 kites, and in 1991 a further 20.

Upon arrival in Britain, the kites were isolated at the release site in two large quarantine aviaries for the mandatory 35 days. These aviaries were purpose-built, giving the birds adequate shelter from the weather and predators, as well as enough room to exercise their wings during the fledging period.

The release cages were constructed of plywood and wire netting, and contained a variety of perches. Each had a food delivery hatch through which the birds were fed. The approach to the cages was such that the kites could not see the people who fed them and monitored their development, thus avoiding the possibility of their becoming accustomed to or imprinted upon their keepers. Access could be gained by a door, and the wire-mesh front could be opened from behind the cage, out of sight of the fledgling kites.

The kites were fed on a variety of food, primarily rabbits, and fish from a local fish farm. For the first few days food was chopped up before being placed in the cage. By the end of their pre-release time, whole dead rabbits were being placed in the cages. The kites ate about one-third of a rabbit each per day.

Four to five days prior to release, the birds were weighed, measured and ringed with British Trust for Ornithology rings. They were also fitted with coloured, numbered wing tags; different colours denoted the year of release. Birds were also fitted with tail-mounted radio transmitters. The adjustment of the birds to the transmitter was monitored for two days prior to release.

Post-release

Birds were released at approximately 55 to 65 days of age by opening the cage front remotely from the rear of the cage at night. The 'branching out' of the kites into the trees in front of the cages could be monitored from a hill about 600m away.

All the kites left the cages the morning after the cage doors had been opened. They perched in the surrounding trees and made their first longer flights very soon after release. Food was provided on top of the release cages. This ensured that it was visible and orientated the birds to the release site itself. After one week the kites tended to forage mostly by themselves with only occasional visits to the feeding station.

For the first days post-release, the kites would return to the release site to roost at night. Gradually, as they became more excursive, the kites began to roost in neighbouring woodlands. However, they stayed in the release area for about the first six weeks.

Movements of kites

In the ensuing months attempts were made to follow the movement of all the kites, primarily by searching for the radio-tagged birds by car, using a scanning radio receiver programmed to the frequencies of the kites' transmitters. As winter approached, some of the kites moved farther afield. Those that did so started leaving in the first weeks of September. Their movements were mainly monitored using radio telemetry, but in some cases reports by the public of colour-marked birds were used. Searches for radio-tagged birds were also conducted from a light aircraft, flying at about 5,000ft. This was a much more efficient way of searching for individuals which had moved out of the immediate area, but was limited by the weather, particularly in western parts of the country.

As in the donor population, only a proportion moved away from the release area. Generally, those that moved did so to the south, mostly into Perthshire and southern Scotland. Some moved

greater distances than others (See Figs. 1-3) Notable movements include:

- a 1989 release travelled to Orkney before wintering in Lanarkshire in 1989-90, again in 1990-1991, and possibly again in 1991-1992
- a 1990 release moved to Argyll and then was found poisoned on 9 February 1991 in County Longford in the Republic of Ireland
- a 1990 release was found dead on 8 December 1990 at Kilmacthomas, County Waterford, Republic of Ireland
- a 1990 release moved to east Sutherland, wintered in Yorkshire, and returned to the release area in 1991
- a 1991 release left on 6 September 1991. It was recorded in Perthshire, and in late October in County Down, Northern Ireland. A bird marked with yellow wing tags (which could refer to this bird) was seen in County Cork, and County Kerry in the Republic. In December 1991, this bird was found dead in Cornwall. It had been poisoned (Fig. 1, Kite J)
- a 1991 release left the area on 11 September. It was found in Grampian, then in Argyll in October. In November and December this bird was in Morayshire before going missing (Fig. 2, Kite Y)
- a 1990 release spent its first winter in Perthshire and returned to the release area for the summer of 1991. It was located in Perthshire in the autumn of 1991, but since December 1991 has been in Inverness-shire (Fig. 3, Kite T).

Thus far, no known nesting has occurred. In other populations, Red Kites can breed as early as two-three years of age. This statistic suggests that this year, 1992, could be the first year one might expect a breeding attempt. Because this re-introduced population is reproductively inexperienced, it is perhaps overly hopeful that the birds will breed at this relatively young age and more realistic to expect breeding in the years to come.

Figure 1. Red Kite released in 1991. This bird left the release area on 6 September 1991. It was recorded in Perthshire, and in late October in County Down, Northern Ireland. A bird marked with yellow wing tags (which could refer to this bird) was seen in County Cork and County Kerry in the Republic. In December 1991, this bird was found dead in Cornwall. It had been poisoned.

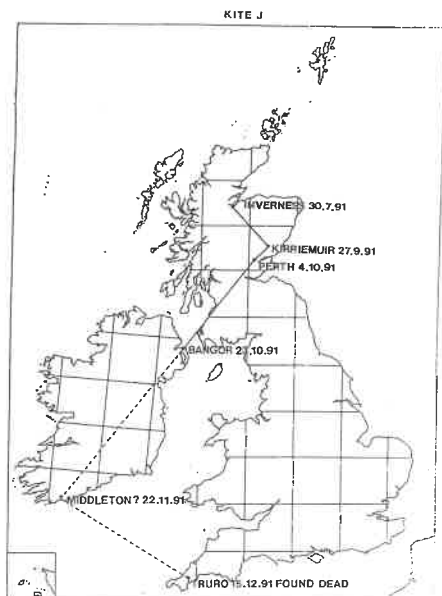


Figure 2. Red Kite released in 1991. This bird left the release area on 11 September. It was found in Grampian, then in Argyll in October. In November and December of 1991 it was in Morayshire before going missing.

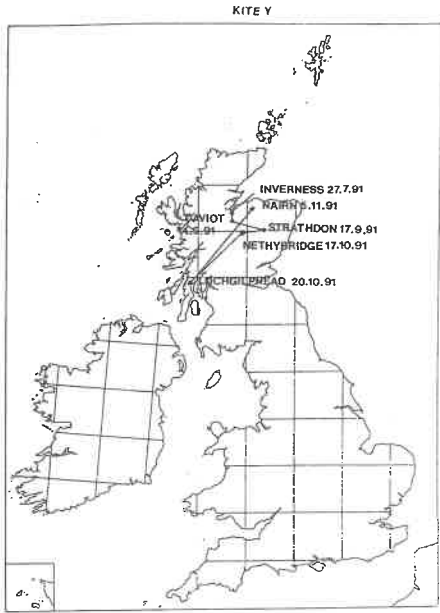
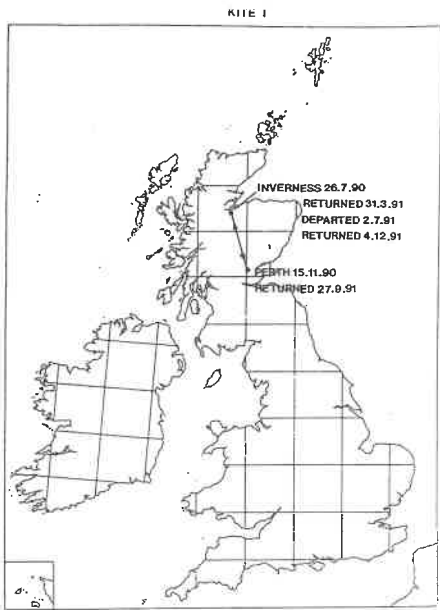


Figure 3. Red Kite released in 1990. It spent its first winter in Perthshire and returned to the release area for the summer of 1991. It was located in Perthshire in the autumn of 1991, but since December 1991 has been in Inverness-shire



Survival of Red Kites released in Scotland

Table 1 summarises the release and survival of Red Kites in Scotland; at 1st Jan 1992 50% of the birds released in 1989 were known to be alive. We know that at least 73.6% of those released in 1990, and 80% of those released in 1991 have survived. It must be emphasised that these statistics should be taken as minima since a proportion of the released birds are unaccounted for.

The main cause of mortality has been poisoning, accounting for four of the five known deaths. Four out of 45 birds (8.8%) have been poisoned.

Table 1. Red Kite release and survival statistics in Scotland 1989-1991 (at 1.1.92).

	1989	1990	1991
Total Number of Birds Released	6	19	20
Accounted for Alive	3	14	16
Dead (Poisoned)	1(1)	3(2)	1(1)
Unaccounted for	2	2	3

CONCLUSIONS AND FUTURE PROSPECTS

It is still too early to be certain that the re-introduction of Red Kites will result in the first breeding of this species in the wild in Scotland in over 100 years. However, the initial signs point to success. The project has demonstrated that:

1. translocation of Red Kites from a suitable donor population in Sweden is practicable. No obvious detrimental effects (to either donor or introduced population) have resulted.
2. the release methods employed are a practical way of creating a population centre from which breeding may eventually take place.
3. the Highlands of Scotland are capable of supporting the released individuals. It is likely that this same area will be suitable for a breeding population.
4. birds that disperse widely can re-find release areas. It is hoped that in the near future the Red Kite will be re-established as a breeding species from this nucleus of individuals.

Releases of Red Kites in Scotland will continue for at least two more years. This will ensure that a variety of age classes will be represented in the core population. The establishment of a breeding population in Scotland, and good reproductive success within that population may take some years to achieve since Red Kites take several years to reach sexual maturity, and because this nucleus of birds is reproductively inexperienced. It is hoped that a breeding population will finally be established which will produce at least as many fledglings as are being brought in from Sweden at this time (20-25 individuals). Once established, it is expected that production in Scotland will exceed that of the Welsh kite population. This is not an unreasonable expectation since in the release area the weather is drier, the average altitude lower, and the land generally more productive than that in which Welsh kites breed.

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Postscript. In 1992 subsequent to the presentation of this paper, a reintroduced pair of Red Kites successfully reared a chick in Scotland.

