THE RETURN OF THE COMMON BUZZARD TO WARWICKSHIRE AND IT'S POSSIBLE USE AS AN INDICATOR FOR THE RETURN OF THE COMMON RAVEN AND THE RED KITE

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By M.C Smith

Introduction

The Common Buzzard (*Buteo buteo*) is Britain's most abundant diurnal raptor (44,000 pairs). There are now more buzzards in the United Kingdom than Eurasian Sparrowhawks (38,600 pairs) or Common Kestrels (35,400 pairs) (Baker *et al*, 2006).

It is difficult to go anywhere in the country without hearing their plaintive mewing cries but in Warwickshire this is still a somewhat recent phenomenon. Only 10-20 years ago the sight of a buzzard in Warwickshire was a rarity. The buzzard is a key example of how in a relatively short time a species can re-establish itself and perhaps offers some insight into the possible future success of the Red Kite (*Milvus milvus*) and the Common Ravens (*Corvus corax*) ability to recolonise lost territory.

The Decline

In Britain's early pre-history the buzzard was common; between 1100 and 1799 AD it was at its strongest. It was in this time that feudal Britain was undergoing an agricultural revolution. Large woods and forests were fragmented into small copses as the need for land, building supplies and fuel increased. Fields and enclosures encouraged their main prey, rabbits, to flourish and by 1544 buzzards were regarded as being "everywhere". They were even eaten and used in medicine (Moore, 1957).

Like most birds, especially the raptors, the buzzards change in fortunes came in the 1800's and the Victorian age. This was a time of innovation, discovery and the

separation of the town and country. Whilst this was perhaps the heyday for many of Britain's greatest naturalists and ecologist's egg and specimen collecting typified the Victorians approach to ecological research. Estates began to exploit the profit and sport derived from game birds and with the development of better guns gamekeepers were now able to keep all predators and suspected predators away from the game in a more effective way. A realisation that birds were at particular risk failed to halt the persecution of many species despite the establishment of the RSPB or the Wild bird Protection Act of 1880 (Moore, 1957).

Through both world wars the buzzard continued to struggle even though many gamekeepers went to the frontline. During the Great War the buzzard was practically extinct in all but Wales and the South-west. The end of World War II offered a chance of recovery as a major resurgence in agriculture and mechanisation resulted in a healthy rise in rabbit numbers. In 1947 buzzards managed to nest in 3 locations in Warwickshire (Norris, 1947) (Figure 1) and nationally the population was estimated at 12,000 pairs (1949) the highest it had been in 100 years (Moore,

1957).

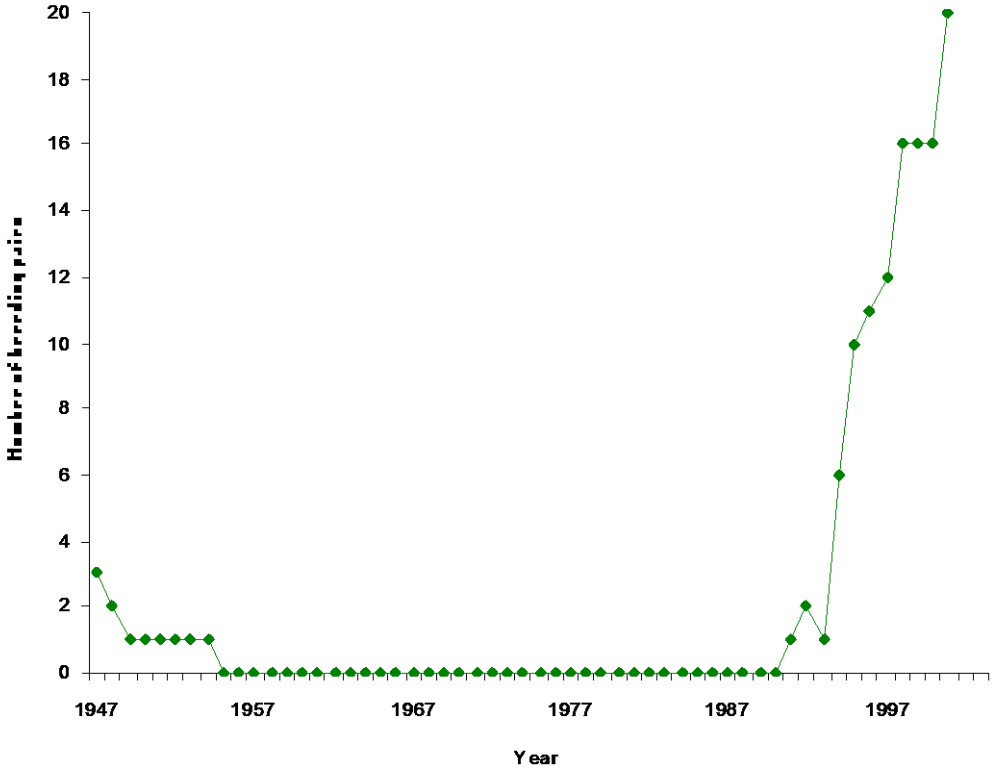

Figure 1. Number of Breeding Pairs of the Common Buzzard in Warwickshire. (After: West Midland Bird Club Annual Reports, Norris, 1947)

The threat posed to agriculture by the rising rabbit population however, was met with the introduction of myxamitosis. This disease had a devastating effect on rabbits that would last well in to the 1980's. So rapid was the fall in numbers and so dependent are buzzards on rabbits for food that there was an almost immediate drop in buzzard numbers by up to 50%. Small populations that had managed to establish themselves in Derbyshire, Northamptonshire, Oxfordshire, Berkshire, and Buckinghamshire were wiped out whilst in Warwickshire the last pair to breed for 36 years was seen in 1955.

To further ensure that buzzards were unable to regain a foothold again the use of DDT and other pesticides throughout the 1950's and 60's caused egg thinning resulting in an increase in clutch failure and the disruption of food chains. These pressures in agricultural Britain forced the buzzard back into the more pastoral strongholds of Wales and the South-west (Sharrock, 1976).

Recovery

The first glimmer of hope for all of Britain's raptors came in 1966 when pesticides such as dieldrin and aldrin were banned. This action relieved the strong pressures that existed lower down the food chain and enabled food webs that supported more top predators to become re-established. DDT however was not banned until 1984. Further legal protection for many species came in 1981 with the Wildlife and Countryside Act.

Throughout the 1970's buzzard numbers continued to build and by 1983 the population had regained its post-war level of 12-15,000 pairs. Curiously though these gains remained in their core strongholds in Wales and the South-west. It was a mystery at the time that there seemed to be an unwillingness to disperse from these regions reaching incredibly high densities (Walls, 2004).

This state of arrested development continued up until the late 1980's and early 1990's when populations must surely have breached the carrying capacity of these regions. Once the eastward spread began populations of buzzards began to explode. Data from the Common Birds Census between 1967 and 1999 reported a 300% increase in buzzard records (Brown and Grice, 2005).

Return to Warwickshire

The key to buzzard colonisation is the establishment of the first breeding pair in a region. Whilst this may seem obvious at first it is important to note that Buzzards have strong philopatric associations and juveniles rarely travel far from natal sites in their first year, those that do normally return to their nest site in spring (Walls *et al*, 2004). Therefore despite large seasonal movements the establishment of new territories tends to be close to natal sites, this creates a creeping expansion rather than deep strikes in to new territory and the establishment of satellite populations that other species might do.

1988 - 1991

1998 - 2001

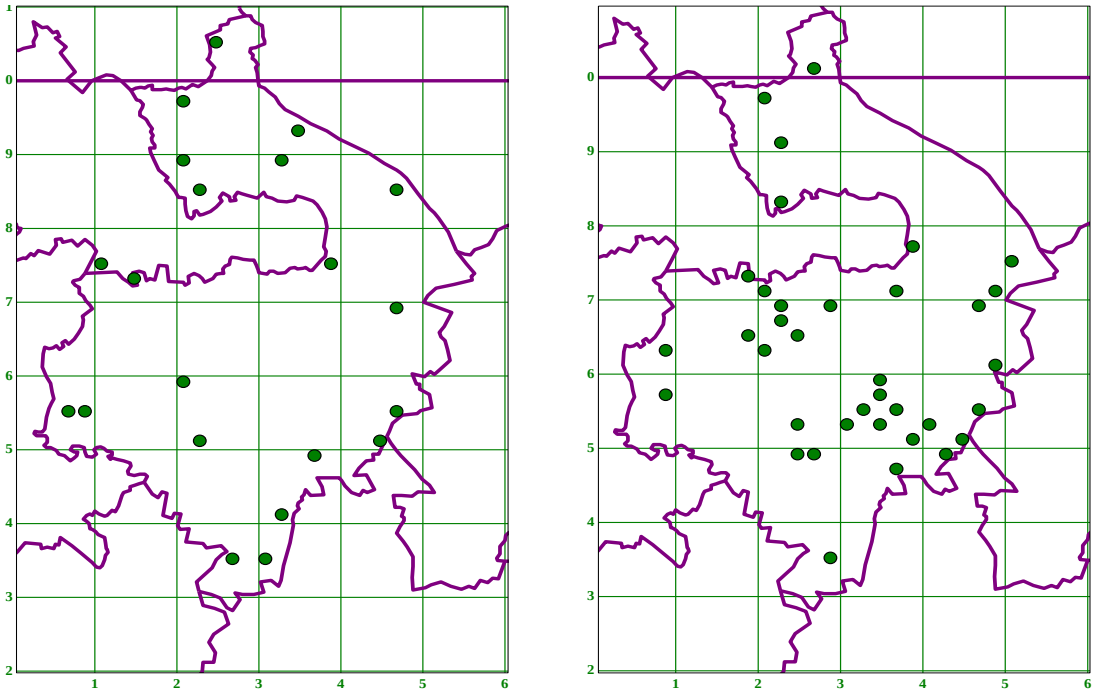

Figure 2. Distribution of breeding pairs of Common Buzzard (West

During the late 1980's buzzards began to be recorded in the south and west of Warwickshire (Figure 2). Numbers increased between 1988 and 1991 with sightings spread throughout the county. The first pair to breed did so in 1991 managing to raise a single fledgling.

Buzzard density in neighbouring rural counties such as Oxfordshire and Northamptonshire increased at a faster rate than Warwickshire despite being bordered by strong breeding populations in Worcestershire and Staffordshire (Figure 3 and 4). Worcestershire in fact seems to have served as the source of migrants for much of the recolonisation of the midlands.

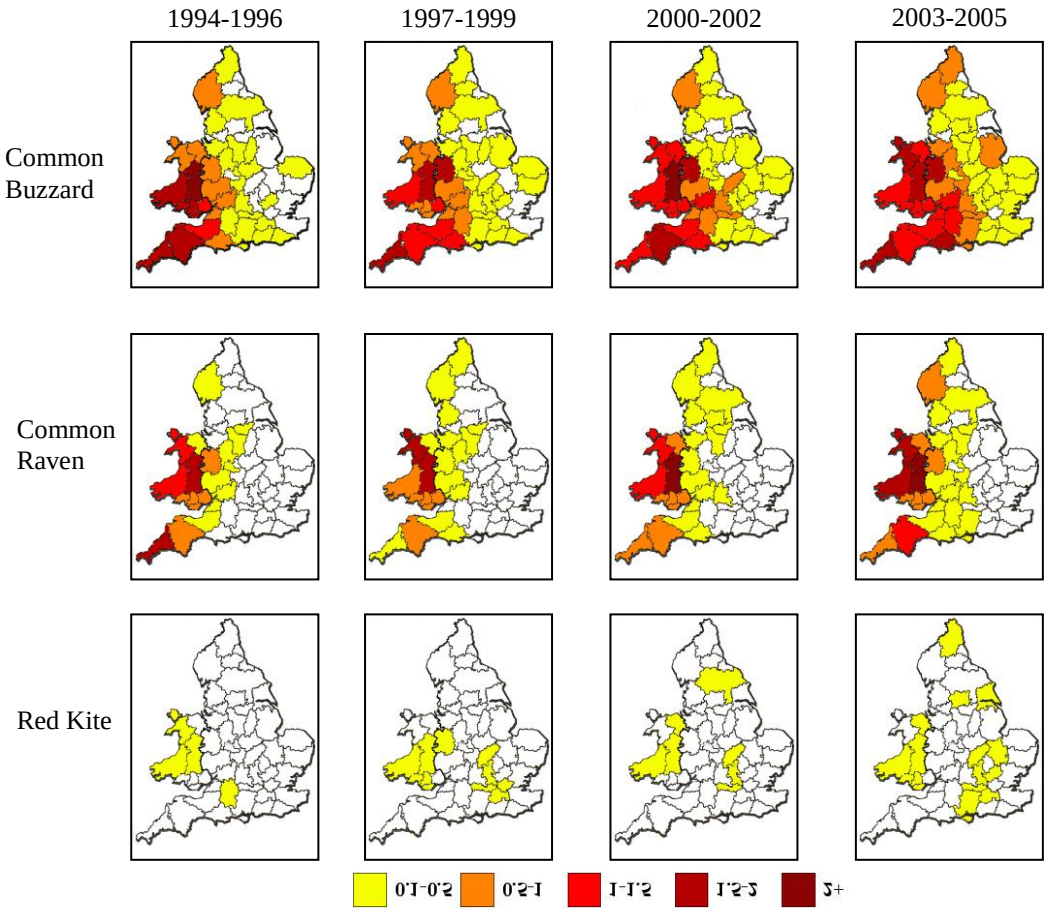

Figure 3. Graphs representing density of individuals per km^2 based on Breeding Bird Survey data.

Warwickshire, with its many small woods embedded in a farmland matrix would appear to be ideal buzzard habitat however it took awhile for them to fully establish themselves. Between 1991 and 2001 the number of confirmed and recorded breeding pairs rose from a single pair to 26 (Figure 1). In the heart of the county at least 9 pairs now nest successfully within 2 miles of Warwick town centre.

A question of density, territory and population.

The fact that buzzards seem to need to reach a critical mass before expanding their range is not well documented but all species will have a maximum density that is

sustainable for any given area, dependant on the carrying capacity.

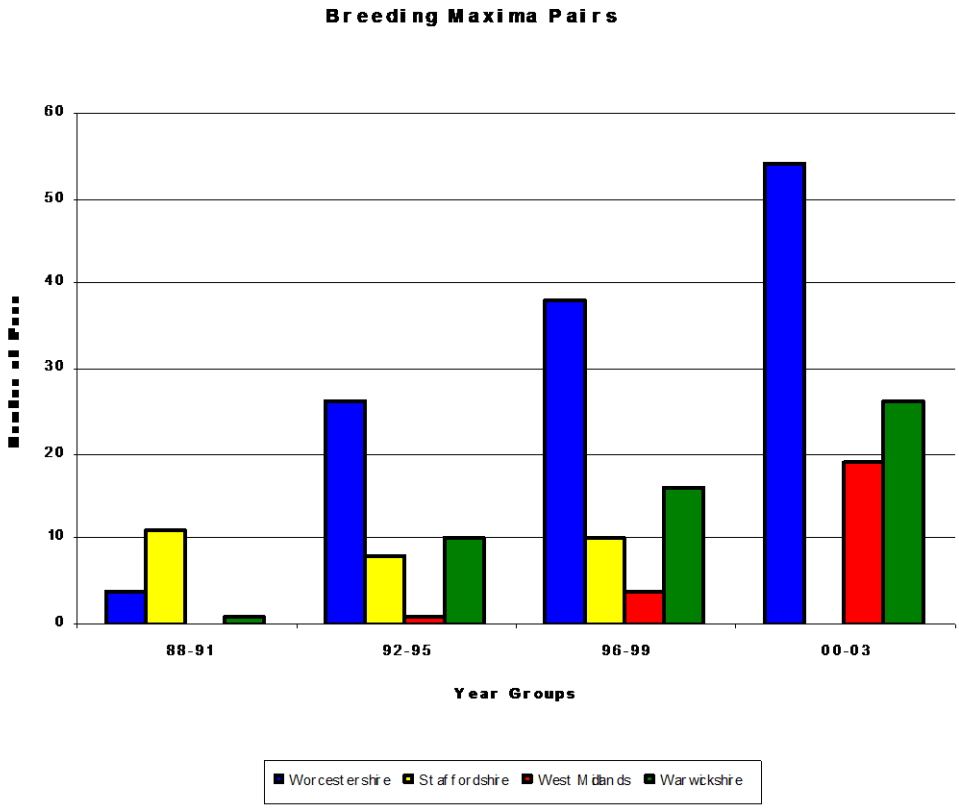

Figure 4. Maximum number of Breeding Pairs of the Common Buzzard in each county. (West Midland Bird Club Annual Reports

Mean buzzard densities in Britain currently range from 0.22 – 0.81 individuals per km^2, which despite being such a large range is among the highest in Europe (Simm *et al*, 2001). In the rich woodlands of central Europe density can reach 0.78 per km^2 but extraordinary figures of 0.96 per km^2 in Devon (1961) and 0.82 per km2 in Wales (1982) have been recorded. These figures were recorded when the buzzard was at its lowest in the country and these values represent the strength of these strongholds prior to the slow recolonisation of England.

Density is related to territory size and by implication resource availability. Buzzard territories have been found to extremely variable. The mean size is 1.2 km^2 (120 ha) but ranges from as little as 0.39 km^2 to 2.27 km^2. Even at low densities territories rarely exceed 1.8-1.9 km^2 (185ha) although in upland Wales territories can extend over 3.2 km^2 (Simm *et al*, 2001). These estimates compare favourably with those

recorded on the continent where German buzzards hold territories of between 1.3 and 1.6 km^2 (Simm *et al*, 2001; Kruger, 2004).

There is considerable margin for error in assessing density and territory size as a means to estimate population size. Whilst buzzards maintain territories all year round most population studies are made in the breeding season. Tubbs (1974) showed that breeding density is approximately 1 pair per 8.1 km^2 a value far higher than the estimates of territory size. This discrepancy makes sense when you understand that breeding pairs only make up 25% of the total population a fact established in the mid-1990's by research at the Centre of Ecology and Hydrology. They compared population estimates gained by conventional ringing techniques at the nest with those gained using radio tagging. They discovered that density estimates were 223% higher using the radio tagging method than those ringed at the nest site. Standard methods failed to account for the large numbers of non-breeders that still may maintain a territory but did not breed (Walls *et al*, 2004).

In Warwickshire the Breeding Bird Survey estimates buzzard density at 0.51 individuals per km^2, unfortunately the sample size is so small as to probably be a major under estimate, but with a correction for the number of non-breeders one can set a minimum population estimate for the county of approximately 1320 individuals.

Can Buzzards be an indicator for other species?

In recent years there has been an increase in sightings in Warwickshire of two other species that suffered the same fate as the Buzzard, the Common Raven and the Red Kite.

All three species hold similar habits and life strategies. Buzzards tend to be more predatory than Ravens or Kites who are primarily carrion eaters and scavengers. The Raven whilst not a raptor seems to be following a similar pattern to the buzzard in its return to England. Like the buzzard once the pressures of persecution were relaxed and England was once more a suitable habitat they began to spread out from Wales, the Southwest and down from Cumbria. In the midlands a strong population was established in Worcestershire that had breeding pairs in 1989. The first ravens to

breed in Warwickshire did so in 1999, at this point there were 23 sightings throughout the county and more than 66 in Worcestershire. Staffordshire maintains a healthy population that supplied a source of immigrants to the north of the county but the conurbation of Birmingham and Coventry poses too great a barrier to movement to the rest of the county (Figure 5).

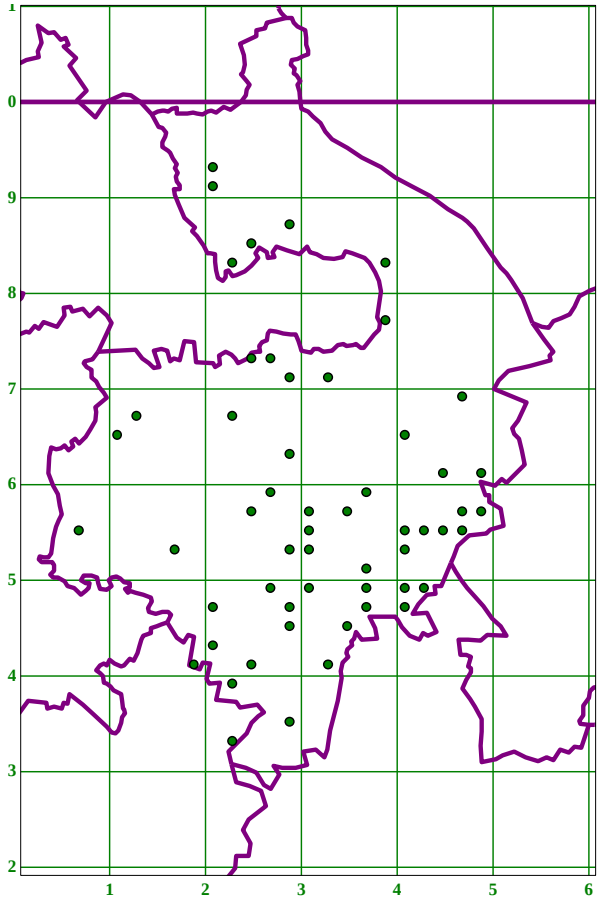

Figure 5. Distribution of Common Raven Sightings 2000-2003 (West Midlands Bird Club Annual Reports).

Whilst it is likely that Worcestershire is the source of colonists to the county it is on the higher ground of the southeast of the county that they are strongest. This illustrates the selective nature of the raven preferring to colonise prime habitats before moving into what could be considered sub-optimal areas. Comparison of current raven density with those of the buzzards shows that there is a significant correlation ($p=0.05$) between the density of ravens in 2003 and that of the buzzard in 1994. This rough estimate places the ravens recolonisation and dispersal approximately 7-8 years behind that of the buzzard (Figure 3). There are currently 10 recorded pairs of raven breeding in Warwickshire suggesting that if the same expansion as the buzzard were

to run its course that they could be as ubiquitous by 2016. This however is unlikely; whilst the raven is unlikely to compete with many species for food it is selective on nest sites. Ravens require very tall trees or rock faces on which to nest and this therefore will limit their continued spread in the county more so than the more generalist nesting strategy of the buzzard.

Red Kites were extinct in England by 1871 and were last seen in Warwickshire in 1875. They exhibit some of the same characteristics of the buzzard. They too are philopatric to their natal site and also show the same inability to spread from Wales that the buzzard did in the 1980's. The Red Kite has been the subject of long term reintroduction programmes with projects in Wales, Southern England, Yorkshire and the East Midlands (Wootton, 2000). In terms of the return to Warwickshire it is the Chiltern population that is the most important. Whereas the buzzard colonised from Worcestershire it seems the Red Kite are moving up along the M40 corridor rather than out from Wales (Figure 6). They have yet to breed again in Warwickshire but with a pair nesting only 6km from the Oxfordshire border it is only a matter of time (WMBC).

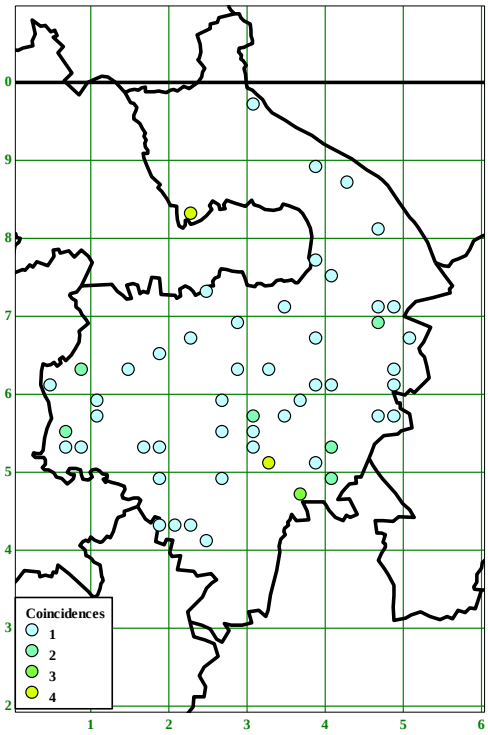

Figure 6. Distribution of Red Kite sightings 1991 - 2003 (West Midlands Bird Club Annual Reports).

National numbers are still too low to estimate yet if they will follow the same pattern as the buzzard. They have similar life strategies and given the Red Kites wider diet and social wintering behaviour it is highly likely that the Red Kite could do even better than the buzzard. The habitat on the Oxfordshire border is ideal for Red Kites and as with the buzzard once pairs begin to nest it is likely their numbers in the county will expand quickly.

Conclusion

The Common Buzzards return to Warwickshire is a case study in the natural reestablishment of a species. Whilst ravens are similar in habitat and behaviour their continued expansion has already followed a similar pattern to the buzzard that enables a simple extrapolation of future dispersal. Red Kites are still too low in numbers to be able to see if they will follow similar patterns. With the reliance on reintroduced populations in the Chilterns and the East Midlands the pattern of arrival is already different but once in the county the pattern seems to be similar to that of the buzzard – the establishment of a strong population in the pastoral upland regions before spreading into the rest of the county.

With any luck by 2020 the whole of Warwickshire will be home to healthy and sustainable populations of all three species.

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