

Kestrel monitoring in your *Raptor Patch* – a guide to the essentials

This guide takes you through the Kestrel monitoring year highlighting some of the things to be doing and to be looking out for. It assumes little prior knowledge and links to (or references) more detailed resources for those that wish to learn more.

Introduction

Kestrels may breed in almost any habitat with sufficient prey and nest sites including urban, industrial and suburban areas, parkland, open moorland with trees and crags, upland grassland, young conifer plantations, heaths, wetlands with trees and all types of farmland, quarries, saltings and dunes. The only habitats that they tend to avoid are large, dense forests (without any clear-felled area), treeless wetlands and montane areas above 480 m. Kestrels feed on small mammals, reptiles, insects and birds. A breeding pair generally occupies an area of 1–10 km², though the extent of the area that is defended is highly variable. The size of the home range varies with the abundance of prey.

Winter

Check out your *Raptor Patch* to identify suitable nest sites where Kestrels might breed. Kestrels are quite catholic in their choice of nest site and like other falcons do not build their own nest. However, unlike other Scottish falcons, Kestrels regularly breed in natural and man-made cavities. Identify rock ledges, holes in vegetated cliffs, tree holes, nest boxes, old stick nests of other birds and sheltered sites on buildings and other infrastructures. Kestrels have been recorded ground nesting in tree-less areas, though this is incredibly rare (except in Orkney). Consider recording any potential nest sites on your field map as places to come back and check in the breeding season if you are able to establish occupancy.

In good vole habitat, breeding Kestrels may remain on their territories all year round. However, many birds move away from their nest site in winter so seeing birds in your *Raptor Patch* outside of the breeding season does not mean that they will necessarily stay to breed – but you can hope!

Late March to April

From March to late April Kestrels will start to occupy their nesting territories. Now is the time to **check for occupancy** of breeding territories. Vantage point watches of 30 minutes or longer can be useful for identifying birds occupying territories. You should particularly look out for pairs performing display flights, which can involve both the male and female circling and chasing each other high into the sky, males repeatedly mock-attacking the female both in flight and when she is perched, and also pairs “playing” with objects. Kestrels are very vocal when displaying, so learning to recognise Kestrel vocalisations is likely to help considerably with Kestrel fieldwork. Birds will also alarm if other raptors or corvids enter their nesting area, so listen out for their [alarm call](#) which might reveal their nesting area. During this period the female tends to hang about the prospective nesting area, mostly perching for long periods, and is provisioned by the male who does most of the hunting. Note the locations of any such behaviours on your field map.

In addition to vantage point watches, spend some time walking through your *Raptor Patch* keeping an eye and ear out for Kestrels. If you are searching an area on foot you should attempt to get within 100 m of every part of your *Raptor Patch*. Kestrels will often [alarm call](#) if you walk close to the nest location during the breeding season so this is a legitimate way of locating nesting areas. However at this stage you should not go into an area if you have already observed display behaviour as this may cause the birds to move location. Note the locations of any behaviours on your field map.

Birds seen in this period could be migrants moving through an area and care should be taken when considering occupation.

Evidence for occupation – Territorial behaviour witnessed on at least two different days more than a week apart, agitated behaviour or anxiety calls given by the adults, courtship and display behaviours and a pair seen in suitable nesting habitat during the breeding season all indicate that a territory is occupied. Observations on multiple occasions provide stronger evidence.

May

Time is best spent during this period **locating active nests**. Visit the areas where you have confirmed occupancy and watch carefully for active nests. If you identified any potentially suitable nest sites during the winter check these first. Locating active nests can be challenging during incubation (it is much easier later on once the young are being fed and are more vocal), however, the quality of information from nests located at the start of the breeding attempt is much greater in terms of the SRMS being able to report on breeding success. Vantage point work covering a good sized area (e.g. watching from a relatively high point over an area of 1 km² or more) can enable you to pick up males coming into nesting territories with food for incubating females. Males usually bring food to a perch (usually a nearby tree or ledge) for the female to collect. Again listen out for [vocal clues](#) as the male calls off the female when he arrives and the female often responds with a call as she departs the nest. At an early stage of incubation the male will sometimes sit on the nest to cover the eggs while the female feeds and then they will swap over again on the females return from feeding.

Kestrels do not build a nest, typically restricting their preparation to scratching out a scrape at the nest site, which can be on a ledge in a cliff face, a ledge in a building, a stick nest of another species, or a hole in a tree. Kestrels will also readily use nest boxes. An active nest may have pellets, or occasionally moulted feathers below it and down on the edge. Incubation is carried out almost entirely by the female, with the male taking over for the short periods while she leaves to feed. An incubating female may flush off the nest if you pass nearby revealing a nest location, but if incubation is at a late stage she might just sit tight.

In addition to the behaviours, calls and field signs that you were looking out for on your Late March to April visit also look out for and record the following:

- Incubating females sitting on nests
- Pellets below nest sites
- Moulded feathers below nest sites
- Adult delivering food to a nest site

June

During the June visit to your *Raptor Patch* you should visit all of your known nests to **check for Kestrel young**. The nest site becomes more obvious at this time with the accumulation of droppings which the young jettison from the edge of the nest onto the area around the nest and below. Young can be very **noisy** when the adult comes in with prey, especially when they are hungry and can see the adult approaching.

If you are lucky enough to be able to see into the nest then try to count the nest contents (number of eggs and/or small chicks) and estimate the ages of any chicks that you see (you may find the reference photos on <http://srms.piwigo.com/> helpful with this). However it is possible that you will not be able to count nest contents accurately, if at all. You should however be able to infer that eggs have hatched - watch for adults carrying food to the nest or feeding young.

June is also a good time to find new nests which you have not located on previous visits or were late first attempts, or in cases where an earlier breeding attempt might have failed this is a good time to detect relays.

Evidence for breeding – Active nests are an indication of breeding. Whether or not a nesting attempt is considered successful is determined by whether or not chicks successfully fledge.

Evidence for non-breeding – If there is no evidence of an active nest or fledged young despite several visits to a previously occupied nesting territory at appropriate times, this provides good evidence for non-breeding.

July and early-August

During the July and August visits to your *Raptor Patch* you should visit all of your known nests to **check for fledged Kestrel young**. Fledged young will usually stay within the vicinity of the nest site for 1-2 weeks after fledging when they are noisily hanging around and constantly keeping in contact. You need to be looking out for evidence that the young can fly. The young hang about the nest area once they fledge often returning to the actual site itself. There is usually a lot of noise with contact calls and loud, excited exchanges when the adults return to deliver food. Fledged young on rock faces, quarries and buildings are relatively easy to count and keep tabs on. In contrast, assessing brood size in woodland sites requires much more concentration as the young are typically more difficult to locate, and to keep track of when they change position. As in June, if young are still present in or nearby the nest and you are able to see them from a suitable vantage point, try to count them and estimate their age (you may find the reference photos on <http://srms.piwigo.com/> helpful with this). This is the most challenging piece of the jigsaw to complete but it is the most valuable and the most rewarding part of the fieldwork.

Evidence for fledging – Counts of large chicks in the nests can be used as an estimate of fledged brood size because their survival rates are high at this stage.

Additional information

You may find the following resources useful if you wish to learn more about Kestrels:

- *Kestrels*, from *Raptors: a Field Guide to Survey and Monitoring* by Hardey et al (2013). The Stationery Office. [Available online here](#).
- Village, A. (1990) *The Kestrel*. T. & A.D. Poyser, London.
- Riddle, G.S. (1990) *The Kestrel*. Shire Natural History series.
- Riddle, G.S. (1991) *Seasons with the Kestrel*. Blandford Cassell.
- Riddle, G.S. (2011) *Kestrels for Company*. Whittles Publishing.

Monitoring Kestrels – at a glance

We recommend that you undertake six breeding season visits, one per month, to your *Raptor Patch* between March and August. During the winter we would recommend that you also visit your *Raptor Patch* to identify potentially suitable nest sites.

The table below shows the optimum timing for visits to your *Raptor Patch* during (red) and outwith (blue) the breeding season and how these visits are timed to coincide with when Kestrels are likely to be undertaking key activities in their annual cycle (grey). Cells marked with an “X” indicate peak periods for particular Kestrel activity within the wider range.

Aim of monitoring visit and key breeding activities of Kestrels	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Visit: To search for potential nest sites												
Occupation of home range												
Territorial display												
Visit: To check for occupancy												
Occupation of home range												
Territorial display												
Visit: To check activity at known nests												
Courtship												
Egg laying												
Incubation												
Visit: To check for young												
Hatching												
Young in nest												
Visit: To check for fledged young												
Fledging												
Juvenile dispersal												