



Hobby

Falco subbuteo

1. INTRODUCTION

The main breeding range of the hobby (Eurasian hobby) in Britain and Ireland lies in England, south of the Mersey/Humber line and extending into the borders of Wales. The British population has increased significantly in recent years and the species has spread north and west from its original stronghold in central southern England (Clements, 2001). A few pairs have bred in Scotland as far north as Highland Region (Ogilvie & RBBP, 2004; Etheridge, 2005; Crooke, 2007). Hobbies do not breed in Ireland, although occasional vagrants have been reported there. British and mainland European populations are completely migratory. British birds winter in Africa, although the exact area is uncertain (Chapman, 2002). The sexes are not easily distinguished in the field. Juveniles resemble adults but are browner with buff underparts; they retain some of this plumage into their second calendar year. Male and female hobbies can breed at one year old but most do not do so until two years.

For further information on the biology and ecology of this species, Chapman (1999) provides a comprehensive account.

2. HABITAT, HOME RANGE, NESTS AND BREEDING

2.1 Habitat

Hobbies breed in open lowland areas with mature trees, either in groves, in clumps, in lines or at woodland edges (Sergio *et al.*, 2001); areas that support good numbers of large flying

Annual cycle

Breeding Activity	Peak Period	Range	Duration (days)
Occupation of home range		April to early May	
Territorial display		Mid-April to May	
Courtship		May	
Egg laying	Mid-June	Late May to early July	1 to 6
Incubation	Mid-June to mid-July	Late May to early August	28 to 34
Hatching	Mid-July	Late June to early August	
Young in nest	Mid-July to mid-August	Late June to early September	26 to 41
Fledging		Late July to early September	
Juvenile dispersal		Late August to mid-October	

insects. Their favoured habitats include heaths, open woodland, and mixed farmland with woods and grassland. They also breed at lower densities in intensive arable farmland and in urban and suburban areas (Clements, 2001). Nesting territories are often near wetlands and on chalky or sandy soils. They are usually found below 400 m ASL although hobbies have been found breeding up to 1,900 m ASL in sub-alpine meadows in mainland Europe.

2.2 Home range

Hobbies take up occupation of their home ranges, which are often in traditional use, in April and May. These are normally occupied by a pair but immature birds may attach themselves to a pair and help to raise the young (Chapman, 1999). Breeding densities in Britain vary from 1–6 pairs per 100 km² and, in mainland Europe, from 0.5–29 pairs per 100 km² (Clements, 2001; Sergio *et al.*, 2001). Average nearest neighbour distances of 1.5–8.8 km have been recorded from England and Europe, although neighbouring pairs may nest as close as 200 m apart (Sergio *et al.*, 2001). Home ranges may be large (relative to the size of the bird), as hobbies often forage 3–6.5 km from the nest (Chapman, 1999; Sergio *et al.*, 2001), and the home ranges of neighbouring pairs probably overlap extensively. The nesting territory (within 100–500 m of the nest) is defended vigorously against other hobbies (Chapman, 1999), by both sexes. This aggressive behaviour varies considerably between different adults (Sergio *et al.*, 2001) and with the stage of breeding (particularly for females), increasing from incubation to fledging (Sergio & Bogliani, 2001). Parr (1985) estimated the nest areas (the area within which the nest site of a pair of hobbies was located over a number of years; equivalent to the nesting range as defined in Section 4.2 of the Introduction) of hobbies in southern England to be 250–1,600 ha in size; such areas may contain 2–8 nest sites (Sergio *et al.*, 2001). The previous year's nest site may occasionally be re-used (up to 8% in different studies); new nest sites are generally within 1 km of this (but can be up to 4 km away).

2.3 Nest Sites

Hobbies breed in nests built by other species, particularly those of crows built in the previous or current spring (Sergio *et al.*, 2001) but also nests of raven, buzzard and kite, as well as squirrel dreys. The nests are usually in trees but, in recent years, nests on electricity pylons have also been used (Catley, 1994; Chapman, 1999; Sergio *et al.*, 2001). The variety of tree species used probably reflects local availability and the species chosen by the nest builders; usually, most of the hobby nests in a given locality are in one main tree species (Sergio *et al.*, 2001). Nests used by hobbies are generally in single trees, small clumps of trees, lines of trees, small open woodlands or in trees on the edge of larger open forests; they are invariably within 300 m of an open space. Hobbies may avoid breeding near goshawks. Nests are normally in the crown, upper branches or fork of a mature tree (12–32 m tall), at an average height of 15 m (range 4–32m, Chapman, 1999). Hobbies will use artificial nests (e.g. they used basket nests when crow nests became scarce in Berlin; Chapman, 1999).

2.4 Nests

Hobbies do not add any material to the used nest in which they breed. Some of the lining may be removed but pine cones and needles are not (Nethersole-Thompson, 1931a).

2.5 Clutch size and incubation

Hobbies lay from late May to early July (Fiuczynski & Nethersole-Thompson, 1980; Sergio *et al.*, 2001). This late breeding may be timed so that the nestling period coincides with a late summer peak of flying insects and newly fledged passerines and swifts. Laying dates can vary significantly between years. Clutch size is usually 1–4 eggs laid at two or sometimes 3-day intervals (Cramp & Simmons, 1980). The BTO Nest Record Scheme gives an average clutch size of 2.7 (n=93).

Single egg clutches normally fail to hatch. About half of pairs that fail early with eggs will lay a repeat clutch within 2–3 weeks (Nethersole-Thompson, 1931a), usually smaller than the first (normally two eggs, Chapman, 1999) and in a different nest (often close to the original nesting site but may be up to 1 km away). Incubation begins with the second egg, lasts for 28–34 days per egg and may vary with clutch size (Sergio *et al.*, 2001). The female carries out most of the incubation, relieved occasionally by the male when she is off the nest (mean 1.3 hours per stint on 8 days during incubation, Parr, 1985). The male begins to feed the female from about 20 days before egg laying and continues throughout incubation. Average delivery rates are 2.3 (range 0–4.0) items per day prelaying and 2.6 (0–4.6) per day during incubation (Parr, 1985).

2.6 Brood size and fledging

Hatching is asynchronous with an average age difference of 4.5 days between the oldest and youngest chicks in broods of four (Fiuczynski & Nethersole-Thompson, 1980). The male provides all or the majority of the food for the young and the female throughout the nestling period and into the post-fledging period (Parr, 1985; Chapman 1999). The female broods the young for 8–13 days after hatch and subsequently guards them; taking prey from the male and distributing it to the young. She may undertake some hunting trips in the late nestling and post-fledging period. Prey delivered to the chicks consists of small birds, insects and sometimes bats. Males in three study areas in southern England never regularly provisioned the female and young with insects; providing an overall mean of 5.9 deliveries per day (2.3–11.4) during the nesting period (Parr, 1985). In the east Midlands, an average of 4–7 avian prey items was delivered per day (Chapman, 1999). Outside Britain, much higher delivery rates of insect prey have been recorded (7–45 visits per hour, though feeding may be interrupted for 5–6 hours in wet weather; Sergio *et al.*, 2001). The young fledge at 26–41 days (average of 31 days; Sergio & Bogliani, 1999). The little information available on the post-fledging period suggests young stay close to the nest (perhaps within about 50 m) for 1–3 weeks, after which their range gradually increases to 1–2 km from the nest site; they continue to receive food from the male and may be accompanied by the female (who may also feed them or compete for food from the male) until becoming independent at 16–46 days after fledging (Chapman, 1999; Sergio *et al.*, 2001). Fledged young and the female may depart the nesting area before the male, although there is no evidence they migrate together (Newton, 1979). Cases of adults departing before fledged young, and the adoption and feeding of those young by foster parents (in addition to their own fledged young) have been recorded (Dronneau & Wassmer, 1989; Sergio *et al.*, 2001).

3. SURVEY TECHNIQUES

CAUTION *To minimise disturbance, intensive nest searches are best carried out at a time when young are likely to have hatched. Nest inspections should be avoided during incubation, unless a specific aim of a study is to collect information on clutch size, as disturbance at this time may flush birds from eggs, increasing the risk of nest predation and territory abandonment. Appropriate health and safety precautions should be taken if climbing to nests (see Section 7.10 of Introduction). Nest visits should be avoided once young are older than about 25 days, as this may cause premature fledging.*

3.1 Breeding season visit schedule

The species is listed on Schedule 1 in Great Britain and the Isle of Man (see Section 7.1.1 of Introduction). To establish occupancy and the presence of a breeding pair, it is recommended that all four visits are made (as detailed below). A minimum of three visits is recommended to confirm that a nesting range is unoccupied. It is suggested that visits are timed around dawn

and/or dusk to coincide with the periods when hobbies are most active and/or conspicuous. Minimum recommended observation times are 3 hours beginning at sunrise or from three hours before sunset until sunset. Great care should be taken during Visit 2 as hobbies are sensitive to disturbance during early incubation. In the Netherlands, fieldworkers avoided visiting hobby nests because aggressive calls from the adults attracted predatory goshawks (Sergio et al., 2001).

Visit 1	April to May	To check for occupancy, sunrise to late morning
Visit 2	June	Observations can be carried out from vantage points to locate active nest sites. Initial checks for active nests, taking care as hobbies are sensitive to disturbance during early incubation.
Visit 3	July to mid-August	To search for active nests and check for young (hobbies become more demonstrative as young grow), sunrise to late morning and afternoon until sunset
Visit 4	Mid-August to September	To check for fledged young, sunrise to late morning and afternoon until sunset

3.2 Signs of occupancy

3.2.1 Locating home ranges

During May, hobbies may congregate over open water, wetlands and forest clearings to 'hawk' for insects. Watches for birds hunting cooperatively can reveal the presence of hobbies in an area, although some such birds may be non-breeders. In the early stages of nesting, hobbies can be secretive and difficult to detect (Clements, 2001), although they become more obvious when the young fledge. Home ranges can be located by scanning for displaying, soaring and hunting birds around suitable nesting areas (Fuller *et al.*, 1985) in April and May. If it is still there, the nest used in a previous year may be visited by hobbies returning the following spring, and can be a useful starting point for early visits to the nesting range. Although birds may move some distance to occupy a new nest, sightings in the vicinity of an old nest can provide supporting evidence for occupation. In open country, fieldworkers should also scan for the male on his lookout perch; this will generally be on dead branches beyond the canopy of a tree or high on a pylon and within sight of the nest. Birds perched on pylons can be less visible as they may be hidden by the metal structure.

Aerial displays are rare but spectacular, particularly those of males (Cramp & Simmons, 1980). Males that display before the arrival of females make low circles over the treetops and high soaring flights over the nesting area, often accompanied by calling. With the female present, the male flies in and circles around her, calling, and both birds make display flights which may include chasing, diving together, and the male diving at the female (accompanied by calling). There may be an initial burst of such flight activity when the pair first arrive back, then the birds seem to disappear for 3–5 weeks (they may spend some of this intervening time soaring very high over the area) and only reappear shortly before laying. Food-passes from male to female may be elaborated into aerial displays, or may take place on a perch (Cramp & Simmons, 1980).

During the main part of the breeding season, hobbies are most likely to be seen close to the nest site early in the morning and late in the evening and are in fact surprisingly crepuscular. They are often located by sound rather than being observed in flight, so familiarity with the calls, in particular alarm and contact calls (versions of the 'kew kew kew' call featured on the CD accompanying this book), is important. Hobbies are most vocal at dawn when the members of a pair may duet, particularly prior to egg-laying; although dusk can be better as fewer other

birds are calling. Hobbies can move between arrival and egg laying in search of a suitable nesting area and the vocalisations can be used to follow pairs as they settle (several visits will be needed). Later in the season, fledged young are particularly vocal at dusk. Hobbies may also be more visible at dusk as they hawk for insects if weather conditions are good.

If possible it is recommended that observers work together in groups to locate hobbies, each one at a different vantage point and maintaining contact by radio or mobile phone. Vantage points should be spaced approximately 500m apart, depending on the terrain and the visible area. At this spacing, any calls should be heard by at least one observer. After covering an area, the search can be extended.

Within possible nesting ranges, large, mature trees should be checked for roosts, pellets, feathers from kills (such feathers will be scattered as prey are plucked at a considerable height), specks of 'whitewash' and rarely (as adult birds generally moult over-winter) moulted hobby feathers. Checks should also be made for fledged young in August (see 3.3.2).

3.2.2 *Locating roosts*

On arrival at the breeding grounds, hobbies generally roost high up in mature trees, within 1 km or further from their future nest; the male and female may roost together or separately (Cramp & Simmons, 1980). Thus the location of a roosting bird or birds can give supporting evidence for occupation of a home range but may not assist in locating the nest.

3.2.3 *Recognition of signs*

Hobby pellets are 20–26 mm in length, 10–15 mm wide, and generally rounded in shape. In the early part of the season, they tend to consist mainly of shiny insect remains, with increased amounts of passerine remains after the young hatch (Cramp & Simmons, 1980; Sergio *et al.*, 2001; Brown *et al.*, 2003). They are difficult to distinguish from kestrel pellets. Prey remains may be difficult to find as hobbies pluck their prey in trees.

3.2.4 *Evidence for occupancy*

Observations of adult hobbies apparently holding territory (e.g. courtship display, aggressive behaviour towards conspecifics) in a given area on more than one occasion can be used as evidence of occupancy. As hobbies may move around early in the season before selecting a nest it is recommended that occupancy is confirmed by the presence of an active nest.

3.3 Evidence for breeding

3.3.1 *Locating active nests*

Once the presence of an occupied nesting territory has been established, vantage point watches should be carried out to look for males bringing food to an incubating female and listen for calls between the pair as food is exchanged. Watches should last for up to 4 hours based on the rates at which males feed females (Section 2.4). It may be possible to watch the birds back to the nest after a food pass. Once the young hatch the male food delivery rate increases (Section 2.5) and a 2 hour vantage point watch near a suspected nest site should confirm breeding. Defensive behaviour of adult hobbies towards corvids or large raptors which might predate a nest can also reveal its location.

If vantage point watches have not revealed a likely nest location, all mature trees and electricity pylons should be searched for nests that could be used by hobbies, particularly those of corvids. If flushed from small chicks, an adult may not alarm but will be reluctant to leave

the area. With larger young, alarm behaviour from the adults will indicate the presence of an occupied nest which may have faecal droppings or down on it. Woodpigeons may nest in association with hobbies (within 5-40 m, sometimes in the same tree). In the Netherlands and Italy, studies have reported respectively 89% and 65% of hobby nests with associated woodpigeons (averages of 5.4 and 1.1 woodpigeon nests per pair; Bijlsma, 1984; Bogliani *et al.*, 1999). This phenomenon has also been noted in Britain (Chapman, 1999) and Germany. Woodpigeons appear to benefit through a reduced risk of nest predation (Bogliani *et al.*, 1999) although it is less clear if there are any particular benefits to hobbies. Fieldworkers searching for hobby nests should pay attention to sudden outbursts of woodpigeon activity. Appropriate health and safety precautions should be taken if nest inspection visits are undertaken (and noting that special permission will be required for electricity pylons).

3.3.2 Evidence for fledging

Recently fledged hobbies can be recognised from a fair distance by their blue cere and eye ring, especially when perched. Fledged young become progressively more vocal and active, making them easier to find. Counts should ideally be made at the nest site within 10 days of fledging, noting that the young tend to be less active in the middle of the day. Earlier counts may also be possible, for example, if large young leave the nest and move onto neighbouring branches prior to fledging, but these counts can be difficult, as the young may be hidden behind branches and leaves.

Systematic searches for nests are often successful in mid-August to late September (visit 4) and this can be a good time for locating new nesting territories which may have been missed earlier in the season. Fledged young will often flush when an observer is about 20m from a nest. On warm days with little or no wind, both adult and juvenile hobbies will hawk for insects and gradually gain height. A vantage point with a good 360° view can detect these birds. Watches should be made from mid morning. The bulk of this activity will be within 500m of the used nest. If the young are located as they rise or as they return, the nesting area can be established.

3.4 Evidence for non-breeding

If no evidence of an active nest or fledged young is found in an occupied nesting territory during visits at the appropriate times, this suggests that breeding has not occurred. Non-breeding birds display less frequently and generally leave the territory part-way through the breeding season but may remain on site until mid-August. Unpaired hobbies may also hold territories.

3.5 Ageing and sexing young

Hobby chicks can be aged approximately using their wing length (Bijlsma, 1997; Figure 35). Some young can be sexed after the age of 21 days (wing length >148 mm) using weight (Bijlsma, 1997; Figure 36): in general any chick weighing 230 g or less without a full crop is a male, and 260 g or more, a female. The wide variation in mass with age (at least in part due to variation in crop fullness at the time of measurement) means that chicks weighing 231–259 g generally cannot be sexed using existing measurement criteria. The patterning on the undertail coverts may be used in conjunction with mass, as an indicator of sex: females have well defined stripes on the undertail coverts, while males have either faint stripes or no stripes (Bijlsma, 1997). This difference may not be reliable, however, due to the amount of variation within each sex in the patterning of the undertail coverts (Ristow, 2004).

With experience, the calls of chicks can be used as a guide to sex, particularly when both sexes are present in a nest, as males have higher pitched calls. It is best to listen to the calls before

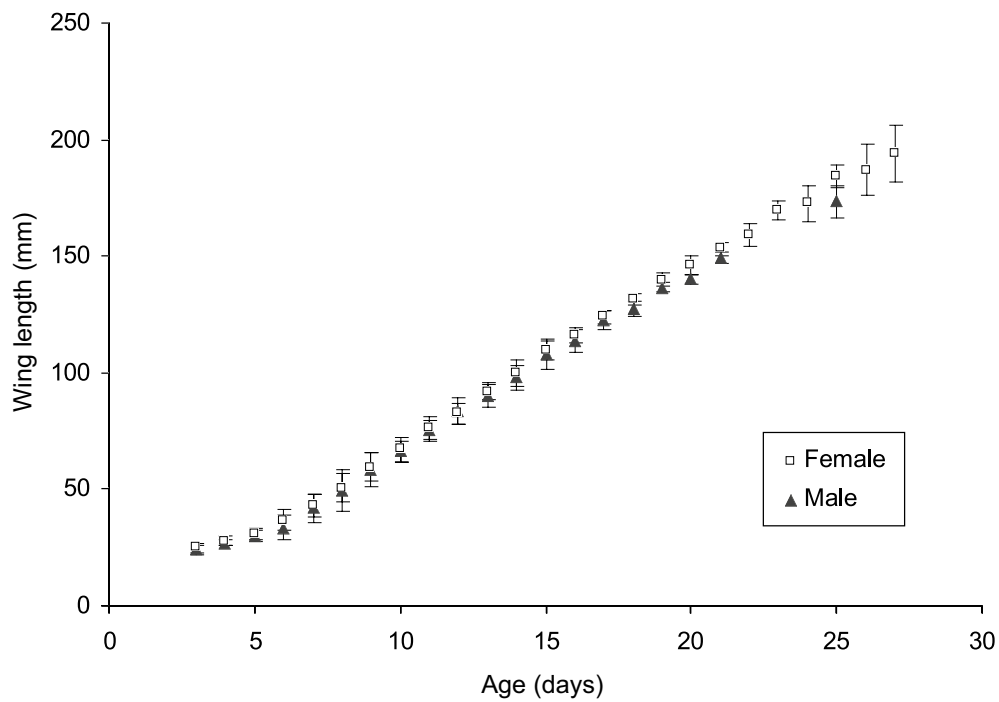


Figure 35. Increase in mean wing length (with 95% confidence limits) of hobby chicks with age. Data from 1–4 nests per year over 13 years and three study areas; each point based on measurements from 5–10 males and 5–9 females (from Bijlsma, 1997).

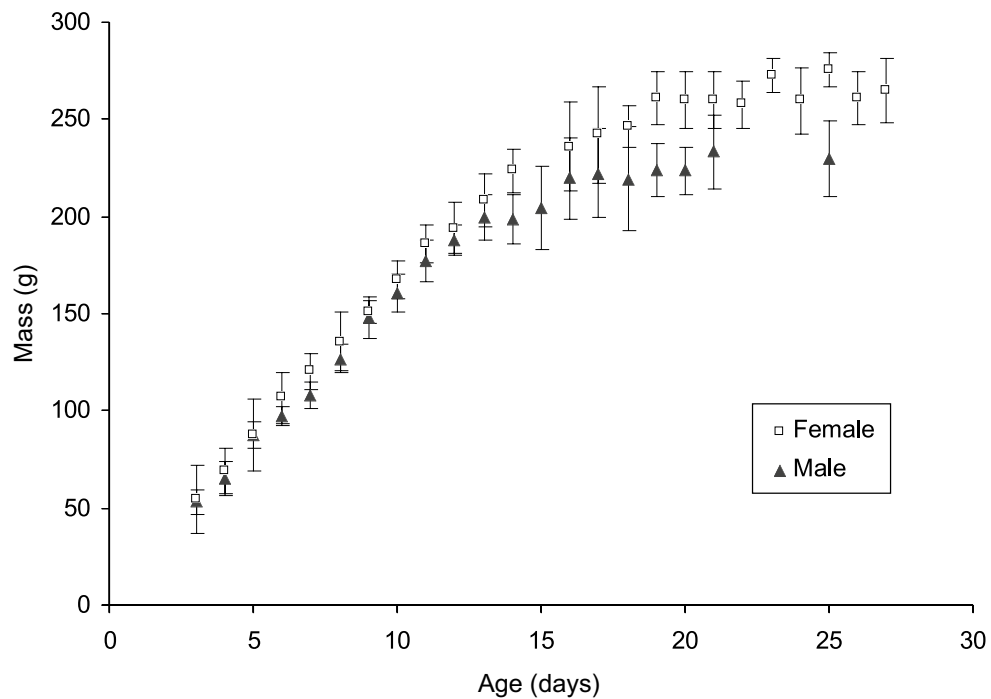


Figure 36. Increase in mean mass (with 95% confidence limits; usually measured in the evening) of hobby chicks with age. Based on 1–4 nests per year over 13 years and three study areas; each point based on measurements from 5–9 males and 5–8 females (from Bijlsma, 1997).

handling chicks, as the pitch of female calls may rise during times of stress. Moving the face or a hand towards the young before removing them from the nest may initiate a bout of calling; chicks which are identified as male and female should then be separated immediately to avoid confusion during handling. Small chicks (less than about 14 days old) are much less vocal and care should be taken with chicks likely to be older than about 25 days, as they are prone to jump from the nest.

Photographs of hobby chicks at different stages of development are shown in plates 70–72.

4. SURVEYS OUTSIDE THE BREEDING SEASON

The species does not occur in Britain or Ireland during the winter.