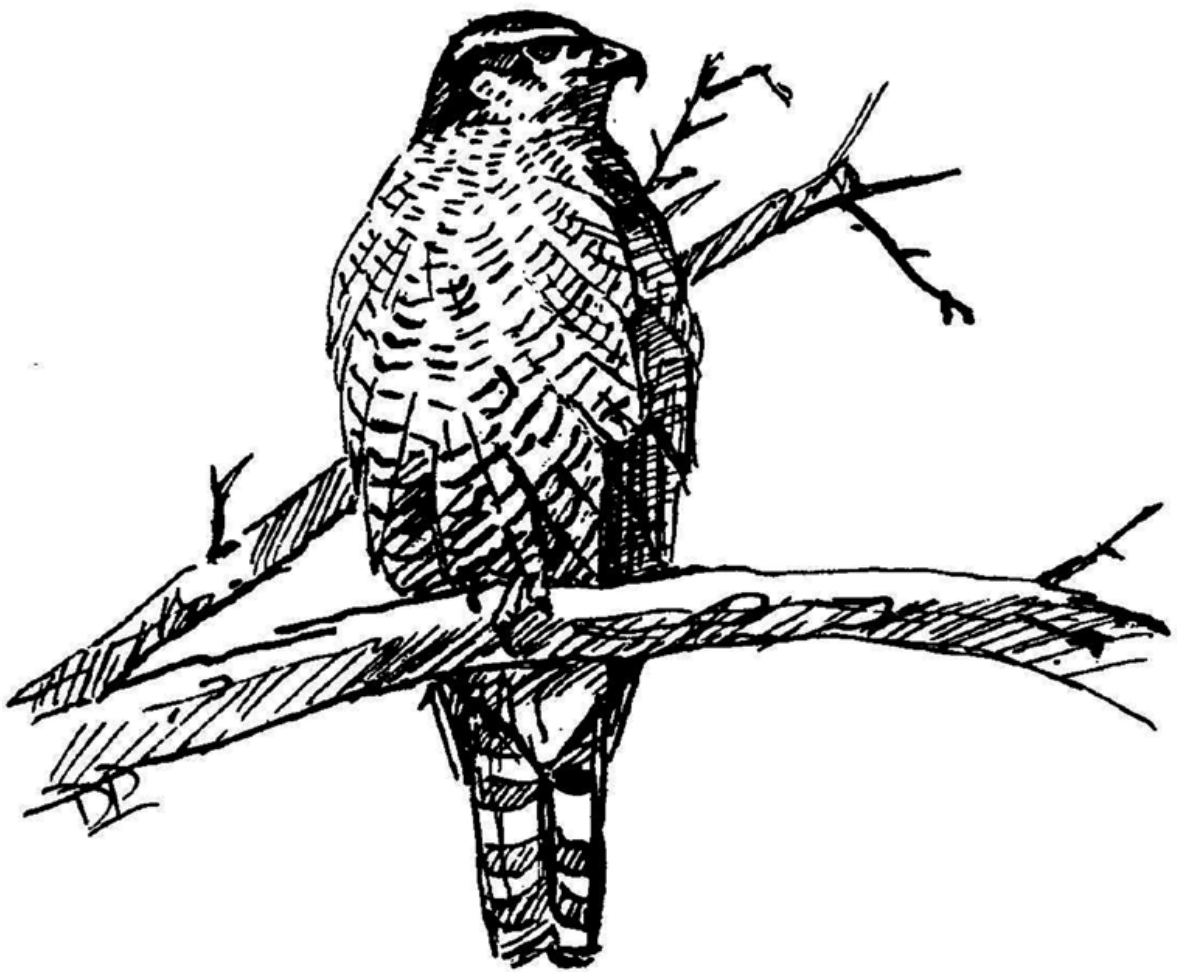


Part 2



Species accounts

INTRODUCTION TO SPECIES ACCOUNTS

This section provides detailed information on survey methods for 22 species of birds of prey that breed regularly (or have done so in the past) in Britain and Ireland. Five additional species that occur irregularly are also considered briefly. The species accounts are based on the published literature (references cited in the text) and the accumulated knowledge of the authors and raptor specialists who have been carrying out survey work on chosen species for many years. Unpublished information/personal communications from the authors and specialists is not usually referenced individually in the text, but a list of all the advisers is included in the acknowledgements.

For each of the 22 regularly occurring species, accounts follow the same standard section headings. Further information on each heading is provided below (numbers refer to the corresponding section numbers in each species account).

1. INTRODUCTION

This contains a brief description of the breeding and wintering status of the species in Britain and Ireland, gives notes on identification and differentiating between the sexes and age classes in the field, and the age of first breeding. If a species monograph or similar comprehensive reference is available, details are provided as a starting point for further reading.

Annual cycle

The table provides a summary of current knowledge of the seasonality of home range occupation and breeding for the populations in Britain and Ireland. Any major reasons why this seasonality is difficult to establish for some species are noted. This information is used to derive appropriate visit schedules for surveying each species.

2. HABITAT, HOME RANGE, NESTS AND BREEDING

Brief information is provided on the habitats used for breeding, the extent to which territoriality occurs and the likely size of home ranges (i.e. the density of pairs likely to be found within breeding habitats); emphasis is placed on information that is important for designing and planning survey work. The section on nest sites describes their usual (and range of likely) locations and the extent of fidelity to individual nest sites from one year to the next. The usual construction (if any) and size of nests, and the extent to which the nests of other species are used, is described in the section on nests. Subsequent sections on clutch size and incubation, and brood size and fledging, give brief details of basic breeding biology (laying dates and laying intervals, clutch sizes, tendency to relay, incubation schedule, role of the sexes, feeding rates (where known), length of the nestling period, and post-fledging dependence of young on their parents for food). The emphasis throughout is on information from Britain and Ireland, but if this is lacking, or if there is a need to highlight major differences between British, Irish and mainland European populations, additional material from elsewhere is included.

3. SURVEY TECHNIQUES

The techniques that are recommended when checking for home range/territory/nest site occupancy, establishing whether breeding has occurred, and for finding nests (where appropriate) and measuring the annual breeding success/productivity of each breeding attempt are described. The recommendations are based both on the published literature

(for which references are cited in the text) and the views of the authors and advisers. The section begins with a 'CAUTION' about any known or suggested sensitivities of the species to disturbance at specific stages of the breeding cycle, any particular risks to the birds that may result from survey fieldwork, and any specific risks to the fieldworker (see also Section 7.10 of the Introduction for further information on health and safety). Recommended distances for viewing nesting areas so as to minimise the risk of disturbance are included where information is available. For many species these are based on alert distances (the distance between an approaching disturbance source and a bird at which the bird raises its head in an alert posture) as identified by Ruddock & Whitfield (2007) and Whitfield *et al.* (2008b) from a survey of expert opinion.

3.1 Breeding season visit schedule

This section describes the recommended number and timing of visits to be made to each part of a survey area to ascertain whether or not birds of a given raptor species are present (i.e. an area is occupied) and whether or not breeding takes place. It begins with a statement about any legal considerations that must be addressed if nest visits are planned, indicating whether the species is identified for special protection in Great Britain (Schedule 1 of the Wildlife and Countryside Act 1981, as amended), Northern Ireland (Schedule 1 of the Wildlife (Northern Ireland) Order 1985), the Republic of Ireland (Schedule II under Section 32 of the Wildlife Act 1976, as amended) or the Isle of Man (Schedule 1 of the Wildlife Act 1990 (Variation of schedules) order 2004), and thus whether any specific licensing is required for nest visits (see Section 7.1.1 of Introduction for further details). Additional text explains any specific difficulties in defining a schedule of survey visits and which of the (generally) four recommended visits are considered essential. The table describes the recommended timing and aim of each visit, usually: Visit 1 — to establish occupancy of a home range/nest site; Visit 2 — to check for breeding by locating active nests or follow up sites not found to be occupied during Visit 1; Visit 3 — to check for successful hatching; and Visit 4 — to measure breeding success by counting fledged young). Species-specific variations on this schedule are described, to take into account, for example, the ease with which the required information can be obtained for each species and any particular sensitivities to disturbance.

3.2 Signs of occupancy

Methods for confirming whether home ranges, nesting territories and/or nest sites are occupied in any given breeding season are described (see Section 4.4 of Introduction for general definition of occupancy). Guidance is provided on whether the species should be surveyed by locating home ranges, nesting territories or individual nest sites (see also Sections 4.1 and 4.2 in Introduction for further information on definitions of territorial units). The recommended survey techniques are then described, including the timing of visits (seasonality and time of day), length and timing of watches (if required), and behaviour(s) to look out for to provide evidence of occupancy (including details of any aerial displays). For some species, active roost sites may provide evidence of occupancy, so brief details of how to recognise and locate these are given. We also provide a section on the recognition of signs left by each bird of prey species (faeces, pellets, kills, plucks, etc.) and the extent to which these can be used (alone or in combination with other evidence) to provide evidence for occupancy (see also Section 5.2 of Introduction for general information on the use of tell-tale signs to identify raptors). Finally, in this section, we summarise the criteria that, alone or in combination, allow confirmation of occupancy in any given year.

3.3 Evidence for breeding

This section describes how to establish whether breeding has taken place in any given home range or territory, by outlining methods for locating active nests (together with any

sensitivities that must be considered) and describing behavioural signs that can indicate that a breeding attempt is ongoing, even if a nest is not found. Guidance is also provided on establishing whether successful fledging has occurred, and on measuring the productivity of each breeding attempt by counting the number of young that fledge. Productivity can be difficult to measure for some raptor species (see Sections 4.5 and 4.6 of Introduction); hence, for each species, information is provided on the stage at which counts of young can be used as an estimate of the number that are likely to fledge, and methods that can be used to establish the minimum number that have fledged successfully.

3.4 Evidence for non-breeding

In many groups of birds, including raptors, not all individuals or pairs that are capable of breeding do so every year. The proportion that do not breed in any given year is probably related to annual fluctuations in the availability of prey, with a higher proportion of birds breeding when feeding conditions are favourable. Non-breeders that do not occupy home ranges during the breeding season are very difficult to survey (see Section 3.3 of Introduction) and are not considered further in the species accounts. The recommended timing of first visits for each species is determined to maximise the likelihood of recording individuals that are present at breeding sites early in the season but that do not go on to lay eggs. Even so, it can be difficult to distinguish between non-breeding and failure during the early incubation period. Frequent visits to the nesting range around the time of laying and early incubation may be required to locate an active nest, establish whether eggs are laid, or observe other behaviours indicative of breeding; this is not always appropriate, given the sensitivities of some species to disturbance in the early stages of breeding. The visit schedule provided for each species in Section 3.1 of each account is designed primarily to assess whether territorial units are occupied, and to determine the success of breeding attempts; further visits (generally during the Visit 2 period) are likely to be required if the aim of the study is to determine rigorously the proportion of pairs that do not breed.

3.5 Ageing and sexing young

This section describes any available information that can be used to determine the age and sex of chicks, including descriptions of appropriate body measurements, plumage or other characteristics (see Sections 6.5.2 and 7.8 of Introduction for further details including guidance on taking some of the most widely used body measurements of raptor chicks). Growth curves are provided where we have managed to source data for a particular species, but it should be noted that many of these are based on data from a small number of broods and/or data for one specific population/race. In most cases, the information provided should be used as a guide only, and in fact the collection of further data on nestling growth would be very valuable for most species breeding in Britain and Ireland.

3.6 Use of egg density measurements

For a small number of species, nomograms of egg density are provided. These can be used to estimate the hatching date of any egg measured in the field (see Introduction, Section 6.5.1). This can help in planning the timing of subsequent survey visits to a nest to record hatching and/or fledging success. It has been possible to source appropriate data for only two of the species considered in this field guide, and in each case the collection of further data on larger samples of eggs would be of great value. For this reason, the information provided should be used as an approximate guide only.

4. SURVEYS OUTSIDE THE BREEDING SEASON

This field guide focuses primarily on methods for surveying breeding populations of raptors. For most species, surveys during the breeding season, when the ranges of individuals that attempt to breed are limited through attachment to a nesting area, provide the best opportunity to estimate population size in a given area. There are a number of reasons for survey work outside the breeding season, however, such as: assessing the size of wintering populations where a species is not sedentary throughout the year; assessing habitat use by a particular species during the winter months; or monitoring changes in the use of a wintering area by a particular species or assemblage of species. For raptor species that occur in Britain and Ireland during the winter months, we have therefore provided some brief suggestions for appropriate survey methods that could be used outside the breeding season.