



Guidance

The use of helicopters and aircraft in relation to disturbance risks to Schedule 1 & 1A raptors and wider Schedule 1 species

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1 Purpose

This guidance is intended for anyone, including SNH staff, planning aerial work in the vicinity of specially protected bird species. It summarises issues arising from the use of helicopters and other aircraft in areas known to support bird species listed on Schedules 1, and 1A of the Wildlife & Countryside Act 1981 (as amended). It provides guidance on the likelihood of disturbance, and provides information to use as the basis for Method Statements for planning work.

2 Legal context

2.1 Species protection

All wild birds receive a level of protection under the Wildlife & Countryside Act 1981 (as amended). Some more vulnerable species are listed on Schedule 1 of the Act and receive enhanced protection against disturbance during the breeding season whilst species listed on Schedule 1A receive enhanced protection against harassment *at any time*. The species covered by Schedule 1A changed in 2013 and guidance was produced on the implications of this (SNH 2014). It is important, therefore, to understand this protection before planning any work in areas known to support the listed species. Reference to this protection, and action being taken to avoid an offence, should be included in Method Statements for any aerial work.

2.2 Licensing

SNH is the licensing authority for the Wildlife & Countryside Act 1981 (as amended). This enables SNH to issue licences to allow people to carry out activities that would otherwise constitute an offence. It is important to note that licences can only be issued for specific purposes defined in the legislation and where there is no other satisfactory solution. Licences should also ensure that the actions permitted will not affect the conservation status of the species in question. An application for a licence for any aerial work in the vicinity of a protected species would, therefore, need to satisfy these conditions.

Given the above, licences will only be granted in exceptional circumstances. Where possible we would expect operations to be timed to avoid the breeding season. This will be the vast majority of cases. Where activities cannot be avoided, or timed to avoid the breeding season, we would expect that specific flight protocols are applied around nest sites to avoid disturbance (see section 4). This will include the use of appropriate buffer distances. SNH licensing team should be consulted as early as possible if a proposal is likely to require a licence.

3 Background

Helicopters are widely used in Scotland for a variety of tasks, including for development and land management projects (e.g. aquaculture smolt transfer, path/track building and repair, power line construction and maintenance, transfer of materials for forestry planting/management); filming/photography; aerial surveys (e.g. forestry disease, deer counting); chemical spraying (e.g. bracken spraying, aerial fertilising of forestry) and, to a lesser extent, recreation/tourism. Aircraft, including gliders, microlights and civilian planes, are also used for a number of purposes, including aerial survey, filming, recreation and tourism. Military exercises (which can include a wide range of aircraft types) can also be conducted in areas supporting protected species. With technological advances unmanned 'drones' are now starting to be used for environmental surveys (e.g. habitat surveys) and,

whilst there is little empirical information on what population impact all of these may have, the evidence does suggest that they can cause disturbance.

SNH has previously published guidance on the disturbance distances of a range of species (Ruddock & Whitfield, 2007). It identifies two forms of disturbance: Alert disturbance (AD), which is the point at which the bird changes its behaviour, and Flight Initiation Disturbance (FID), which is the point at which the bird moves away. Ruddock & Whitfield outline the general principles of these reactions and the ways in which they have been quantified. The document acknowledged the limitations of the scientific literature and expert opinion on which their own conclusions were based. It does, however, provide the only consolidated source of disturbance distances from which to inform 'safe working distances' in the vicinity of these species.

The Ruddock & Whitfield recommendations were made largely on ground-based disturbance methods. A sift of the published scientific literature revealed that there is limited empirical data to support evidence-based buffer distances for aerial disturbances. We therefore sought expert views to better understand this issue in a Scottish and UK context. Our focus was primarily on white-tailed eagle, golden eagle, red kite and hen harrier, and views were sought from key members of the Scottish Raptor Study Group, RSPB staff with extensive white-tailed eagle knowledge, SNH staff, UK Red Kite Group members, and Forestry Commission Scotland staff. These sources provided additional information relating to osprey and peregrine, so both are included in Table 1 of this guidance.

In the absence of specific aircraft guidance the distances in Ruddock & Whitfield should be followed for other Schedule 1 species where activities involving aircraft may cause disturbance in the breeding season. As noted in this guidance such activities should be avoided in the breeding season if possible.

3.1 The effect of disturbance

Raptors may react to aerial disturbance in a number of ways. They have been recorded watching nearby aircraft, 'flattening' or 'clamping down' on nests (usually in incubating or brooding birds) and standing up on nests with eggs or chicks. Birds may also be flushed from the nest, and may delay returning to the nest or a change-over between the pair during incubation or brooding being disrupted. This can result in the nest being unattended for an extended period, and the eggs or young chicks being vulnerable to the effects of weather (chilling or overheating), starvation or predation. Breeding birds may also be panicked off a nest and, in the process, dislodge eggs or young leading to a breeding failure. Flushing may not always be obvious; some raptors (especially golden eagles) can slip unobtrusively off a nest, and may not be encountered until they are some distance away.

Behaviour of young in nests is not well studied but there is evidence to suggest that they can 'flatten' on the nest or exhibit startled/panic behaviours. This latter reaction can lead to premature fledging in older chicks which risks injury and potential abandonment by the parents, although the latter is probably rare.

Less commonly, territorial adults can show defensive or aggressive reactions to aircraft by treating them as an intruder. This can manifest as circling or mobbing (birds have sometimes been heard using alarm calls) or 'shadowing' (following the aircraft's movements by flying alongside or above) the aircraft. In more extreme cases birds may attack the aircraft (e.g. Gregory, 1985). This most often leads to the injury/death of the bird, but aircraft have also been damaged or brought down in such incidents. Video evidence from cameras on drones in the USA has shown raptors will attack the drone as an intruder if it used irresponsibly close to a nest.

In some cases, disturbance by helicopters has led to raptors shifting nest site the following year even if they have bred successfully despite disturbance (Platt, 1977).

There is evidence that birds may habituate over time to aircraft activity (Grubb *et al.*, 2010), but where it remains irregular or sporadic, or where background levels increase over time, there is a greater risk of disturbance (e.g. Drewitt, 1999). There is, however, individual variation between birds, and some will tolerate more disturbance than others.

3.2 Types of disturbance

Aircraft may disturb birds both visually and audibly. Drewitt (1999) concluded that helicopters disturb more than fixed wing aircraft although there are a number of factors that can affect the level of disturbance. These include the timing and frequency of flights; type of aircraft (e.g. different helicopters have different noise signatures); existing level of aircraft flight activity; height and speed of flight; type of flight (e.g. single pass or repeat passes) and distance from nests and roosting areas.

Flights less than 500m in altitude are considered to present a higher risk of disturbance to birds (Drewitt, 1999). Many flying operations typically involve flights between 100-300m in altitude, e.g. material transfer and surveys. Low flying military jets are often considered to be less of an issue due to the speed at which they pass. There is some evidence from the USA that raptors can habituate on military training grounds and also evidence that their reaction to the sonic boom of a passing jet is similar to that of a natural thunder clap (i.e. very little reaction). In contrast there are also cases of birds flushing from nests, chicks showing a startle reaction, and individual birds panicking in response to military jets, although these have usually involved a relatively close approach.

Most recorded incidents of flushing from nests have occurred due to a combination of the aircraft being relatively close to the nest (most within 300m), sudden appearance over a ridge or cliff, lingering near corries or ridges and/or repeated passes. Noise effects in more enclosed glens or corries and visual disturbance may also contribute to disturbance, but there is limited direct evidence for this. Noise transmission may be influenced by the local topography or wind speed/direction, so it should not be assumed that birds will already be alert to the presence of the craft in the area.

Other raptor disturbance behaviours related to aircraft have been recorded in literature at distances out to 800-850m (e.g. Grubb & Bowerman, 1997).

Aerial surveys for raptors in North America use methods to minimise the risk of disturbing birds. These include a slow and obvious approach from as far out as possible and minimising the time spent close to a nest. This greatly reduces flushing or defence/aggressive responses, although does not eliminate them altogether.

There is some evidence for raptor nests failing due to aircraft disturbance but few confirmed records because of the relatively low intensity of nest monitoring and inability to rule out other factors. It has, however, been suspected as being a more regular causal factor in breeding failures than the confirmed incidents suggest. Obvious disturbance of flushed birds is much more often reported, although many of these birds have gone on to breed successfully.

Bird strike is also a risk in lower level flying. These may result from defensive/aggressive reactions and are probably not widely considered by the operators/pilots in their risk assessments. More typical bird strikes for raptors have also been recorded.

4 Recommended Best Practice

Forward planning is crucial to identify the general level of risk and any action required before any activity takes place.

- i. **Collate information on known raptor territories and roosts in the area of the planned work.** Information and advice on known raptor territories and some roosts is available from SNH and RSPB, although more detailed information is often held by the Scottish Raptor Study Group (SRSG) branches. These organisations may not, however, hold up-to-date information on all raptor ranges and nest or roost sites. For example, only around 50% of golden eagles are monitored annually and there are large geographical gaps in coverage. Both eagle species can have more than one nest site and these can be several kilometres apart, whilst other species can have alternative nest sites, or move around annually. Estates may also know of nest sites but, again, they may not be aware of all alternative sites.

Although this may have gaps, we would expect operators to be able to demonstrate their efforts to collate the best available information on which plans are based.

- ii. **Prepare a flight map showing exclusion areas.** The map should include not just the area in which the activity will occur, but also any flight routes in or out of the area where necessary (e.g. an aerial survey may cover two or more specific locations, but travelling between them may also need to be considered). It is important to note that Schedule 1/1A raptor nest and roost site data are treated as environmentally sensitive data and maps will need to be confidential documents. They must not be shared more widely than is absolutely necessary.
- iii. **Plan flight activity to avoid active nest sites in the breeding season.** Where flight activity round known nest sites cannot be avoided, advice should be sought from SNH and safe working distance buffers applied. We advocate the use of the safe working distances in Table 1 and more widely the disturbance distances published in Ruddock & Whitfield (2007). These have been adopted by others (e.g. Kortland *et al.*, 2011) and are applied to all likely disturbance types.

The information on the current status of nest sites or territories will be poorest in the early part of the breeding season, from March-April, as active nest sites will not always be known at that time. Large-scale activities affecting several territories should avoid this period if possible due to the risk of having inaccurate information.

The safe working distance for both golden and white-tailed eagles is relatively large. Where activities cannot avoid areas with high densities of territorial eagles during the breeding season, including within Special Protection Areas designated for golden eagles, careful planning and assessment will be required to avoid infringing safe working distances and to ensure that the activity is not compromised. For example, a deer count or other aerial survey which is severely constrained may lead to a poor quality count/survey and subsequent inappropriate management of the site. In these cases, activities should be discussed with SNH to identify the appropriate course of action.

- iv. **When preparing flight plans, consider both horizontal and vertical distances from nests.** Disturbance distances have normally been applied laterally but, where there is a need to fly safely over a nest or roost site, consideration should also be given to vertical distances. As a general rule, any flights over nests should be at least 500m in altitude above the sensitive location. Roost disturbance can be avoided by avoiding flying late (2hrs before dusk) or early (2hrs after dawn) in the day.
- v. **Where protected species are involved, discuss any changes to the plan with SNH.** Plans may be subject to change due to the effects of weather, e.g. low cloud, strong winds or poor visibility. Where these necessitate changes, these can be discussed with SNH. Legal protection does apply for some species at all times and operational needs do not necessarily provide protection against prosecution should an offence be caused.

SNH can advise on the risk of any planned activities but legal judgements can only be made by the courts.

- vi. **Ensure any mitigation plans are relayed to the aircraft operator and the pilot.** If the operator or pilot changes during the activity, ensure they are fully briefed on any restrictions before the new operator or pilot starts the activity.
- vii. **Where unexpected nests or birds are detected within the safe working range being applied, action must be taken immediately to avoid infringement of the law.** Where an activity discovers a new pair, or a reoccupied range, and the aircraft activity is within the safe working distance, we recommend that the activity is stopped immediately and advice sought from SNH if it is an activity that requires repeat flights. If the activity is a one-off flight passing through or part of a survey visit, the immediate area should be vacated as soon as possible with the appropriate safe working distance applied for any future flights. Advice should be sought from SNH as necessary. Where flying raptors are encountered, the aircraft should give them a wide berth and the pilot should be aware of potential close approach by birds.

5 Exceptions

SNH may, on occasion, have to assess prioritising one designated interest over another, e.g. an essential deer count on a Special Area of Conservation (SAC) which is in unfavourable condition due to grazing pressure but is also a golden eagle Special Protection Area. Such cases will require careful case-by-case assessment relating to favouring one Natura designation/qualifying interest over another.

6 References

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Table 1 – Summary of sensitive periods, disturbance evidence and safe working distances.

Species	Breeding Season	Roost Behaviour	Scottish/UK Disturbance Evidence	Safe Working Distance L= lateral A = altitudinal
Golden Eagle	February-August inclusive	Roost singly at or near nest for territorial birds	Alert and flushing instances recorded; nest failures suspected; defensive/aggressive reactions recorded.	1000m (L) 500m (A)
White-tailed Eagle	February-August inclusive	Form communal roosts, although territorial pairs may roost singly at or near nest sites.	Alert and flushing instances recorded; nest failures suspected; defensive/aggressive reactions recorded.	500-750m (L) 1000m (A)
Red Kite	March- July inclusive	Form communal roosts, although territorial pairs may roost singly at or near nest sites	Little evidence of a significant issue but possibly under-recorded. Birds have nested adjacent to aerodromes seemingly without issue. Several typical bird strikes recorded.	300m (L) 500m (A)
Hen Harrier	April-August inclusive	Form communal roosts, although territorial pairs may roost singly at or near nest sites	Little evidence of a significant issue but possibly under-recorded. One incidence of suspected nest desertion. Ground nesting nature may mean that it is less susceptible to disturbance unless prolonged activity takes place in close proximity.	500-750m (L) 500m (L)
Osprey	April-August	Roost singly at or near nest for territorial birds	Little evidence of a significant issue but possibly under-recorded. Evidence in literature from USA of alert and flushing responses and of defensive/aggressive reactions,	500-750m (L) 500m (A)
Peregrine	March-August inclusive	Roost singly at or near nest for territorial birds	Alert and flushing instances recorded.	500-750m (L) 500m (A)