
Nidderdale
Area of Outstanding Natural Beauty

# Birds of Prey in Nidderdale AONB Evidence Report

September 2019

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# 1. Executive Summary

1.1 The issue of wildlife crime, in particular bird of prey persecution, features prominently in comments submitted to the Area of Outstanding Natural Beauty (AONB) and was raised as a key issue in the 2019 Nidderdale AONB Management Plan 2019-2024 public consultation. In response, the populations of a number of key upland bird of prey species in the AONB have been assessed, and known confirmed incidents of persecution have been quantified. Data has been compiled from a wide range of sources and includes the best breeding data currently available up to and including the 2018 breeding season (i.e. data from the 2019 season has not been included as it is not yet sufficiently available). It also shows where there are currently data gaps. Our intention is to repeat this exercise in the future to assess progress against this 'baseline'.

1.2 In the last two decades there has been a significant increase in the population and distribution of buzzard and red kite nationally. In both these species, the population increases are in the main, the re-occupancy of historic breeding ranges following historic declines or local extinction. Although there is no comprehensive monitoring programme for buzzard in the AONB, available records suggest that while widespread in the AONB as a non-breeding species, the breeding population is lower than would be expected given the available habitat. Red kite currently breeds in the very south of the AONB. Persecution incidents in the Washburn Valley and Upper Nidderdale appear to be preventing the expansion of the breeding population into these areas.

1.3 Despite large areas of potentially suitable breeding habitat, there were no successful hen harrier breeding attempts in Nidderdale between 2005 and 2018[1]. Nidderdale is also an important area for wintering hen harrier, with a number of known roost sites. Of the 59 hen harriers that were satellite tagged by Natural England across northern England and Scotland between 2017 and 2017, seven (12%) are classified as 'missing fate unknown' in Nidderdale AONB, or close to its boundary. A further bird classified as 'recovered – persecuted' was recovered from within the AONB. A recent research paper by Murgatroyd *et al.* (2019) looked at the patterns of disappearances of satellite tagged hen harriers and concluded 'that hen harriers

[1] [1] It is understood that breeding was successful in Nidderdale in 2019 (see https://www.gov.uk/government/news/record-breaking-year-for-hen-harrier-breeding), but data is not yet available.

in Britain suffer elevated levels of mortality on grouse moors, which is most likely the result of illegal killing'. They found that this pattern was apparent in protected areas in northern England, including Nidderdale AONB.

1.4 The long-term breeding data for peregrine indicates that the population remains relatively stable in the AONB. There has, however, been a marked difference in site occupancy, with traditional territories on areas not managed for grouse, including at Coldstones Quarry, regularly occupied and successfully fledging young. In contrast there has not been a known successful peregrine nesting attempt on any of the traditional grouse moor sites since 1998. There is no natural explanation for this difference.

1.5 There is no comprehensive monitoring programme for goshawk, merlin or short-eared owl across the whole AONB, so it is not possible to determine the true status or definitive population trends. However, the available data suggest that goshawk has become genuinely rare in Nidderdale AONB, with no recent confirmed breeding records. There are a small number of successful breeding records of short-eared owls reported in the south of Nidderdale AONB each year, but there appear to be large areas of potentially suitable habitat that are not occupied. There are a small number of successful breeding records of merlin reported in the north of the AONB each year, but again there appear to be large areas of potentially suitable habitats that are not occupied. The populations of all three species are judged to be well below the natural carrying capacity of the area.

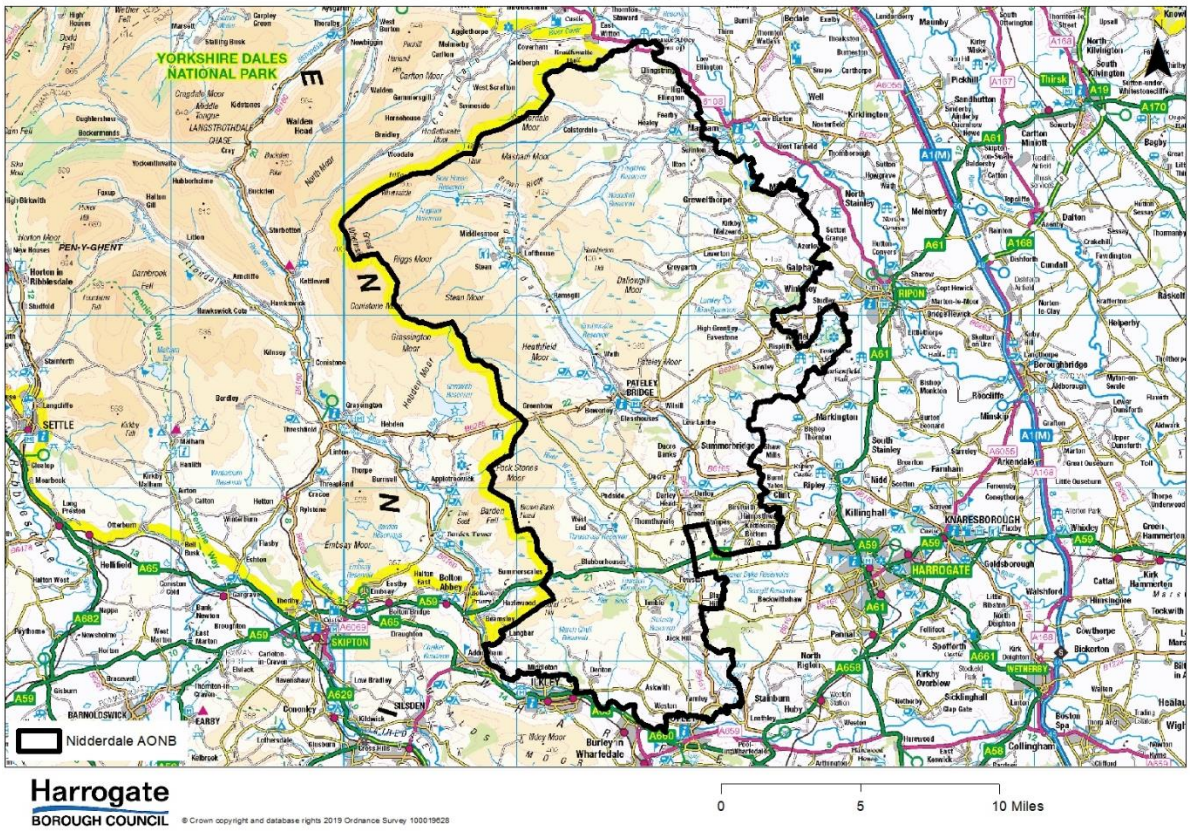
1.6 The collation of breeding data, the number of confirmed persecution incidents, and the absence of some species from large areas of potentially suitable habitat, provide compelling evidence that illegal persecution is limiting the populations of peregrine and hen harrier in the AONB and is preventing the colonisation of all but the very south of the AONB by red kites. The situation with goshawk, merlin and short-eared owl is not clear, but concerns that these populations may be limited by persecution may prove to be justified with further survey effort. The present status of all these bird of prey species mirrors that of adjoining upland areas of northern England.

1.7 To address data gaps there is a need to establish additional robust bird of prey monitoring programmes, including for buzzard, merlin, short-eared owl and goshawk.

## 2. Introduction

2.1 Situated in the heart of the Yorkshire Dales, in North Yorkshire, Nidderdale Area of Outstanding Natural Beauty is one of 46 AONBs in the UK. This 600Km$^2$ of protected working landscape, within which about 16,000 people live and work, is a fantastic place to visit and explore. The special qualities of Nidderdale AONB are embedded in the working nature of the landscape, which supports a wide range of nationally and internationally important habitats and wildlife, including birds of prey. Nidderdale's landscape is diverse, the scenery to the west is dominated by heather moors. To the east, as the landscape broadens and flattens, is a softer more pastoral landscape with historic parks and gardens. The town of Pateley Bridge sits in the middle of the AONB, with Upper Nidderdale to its north and the southern part of the AONB including Washburn Valley, with its string of reservoirs, to its south.

Figure 1. AONB overview map




2.2 There have been long-standing issues relating to the threat to bird of prey populations in the upland areas of the north of England, such as Nidderdale AONB, from land management practices primarily associated with driven grouse shooting.

2.3 The issue of wildlife crime, in particular bird of prey persecution, features prominently in general comments submitted to the AONB (through emails, social media, phone calls, etc.) from both residents and tourists. It was also raised an issue that should be included in the new AONB Management Plan for 2019-2024 during the consultation process, which included distribution of 21,000 post cards across the AONB to gather residents' opinions, an online survey for wider audiences in late 2018, and the issue of a draft AONB Management Plan for formal consultation between 22 February and 22 March 2019.

2.4 In response to this concern, the new AONB Management Plan has a specific objective on birds of prey (Nidderdale AONB, 2019). In publishing this report, our aim is to provide a 'baseline' for this Management Plan objective, setting out the current state of key bird of prey populations and crime incidents in the AONB based on the best information currently available. It also shows where there are currently data gaps. Our intention is to repeat this exercise in the future to assess progress against this 'baseline'.

2.5 There are differing opinions on the status of bird of prey populations in the AONB and the extent of any persecution. Following the approach of the Bird of Prey in the Yorkshire Dales National Park Evidence Report published in 2018 (YDNPA, 2018), this report assesses the status of key upland bird of prey populations nationally and within Nidderdale AONB, and lists the confirmed cases of bird of prey persecution and illegal use of poisons within the area over the last 30 years. This report is intended to be a sister report to the YDNPA evidence report – given the two areas share a boundary, with landownership and management often extending across this boundary, and some of the bird of prey populations are likely to be geographically linked.

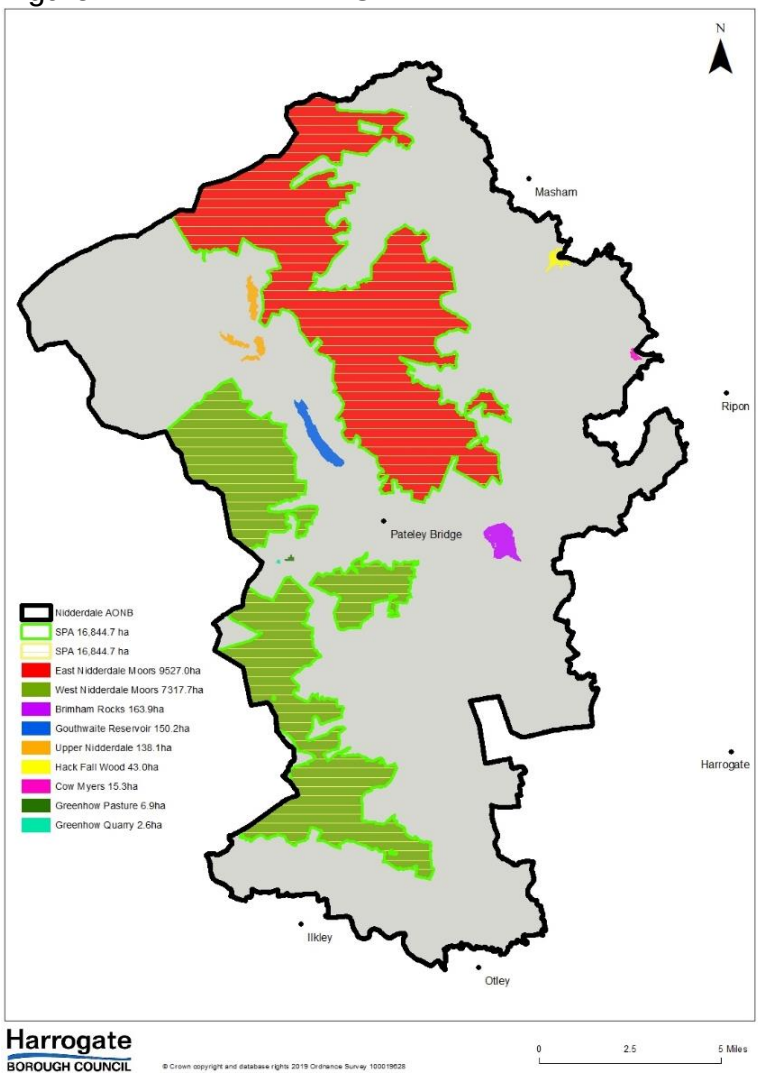
2.6 The species assessments focus on seven key upland species of birds of prey: buzzard, hen harrier, merlin, peregrine, short-eared owl, goshawk and red kite. The first five are species which form part of the rationale for designation of some of the AONB's nationally and internationally wildlife sites – West Nidderdale Moors Site of Special Scientific Interest (SSSI) and East Nidderdale Moors SSSI, which together form part of the North Pennine Moors Special Protection Area (SPA) see Table 1 and Figure 2. The other two species, goshawk and red kite, are, or were, regular breeders in the AONB.

Table 1. SPA/SSSI citations and relevant bird of prey species

| | Hen harrier | Merlin | Peregrine | SEO | Buzzard |
|---|---|---|---|---|---|
| North Pennines Moors SPA (breeding) | X | X | X | | |
| West Nidderdale Moors SSSI (foraging) | X | | X | | X |
| West Nidderdale Moors SSSI (breeding) | | X | | X | |
| East Nidderdale Moors SSSI (foraging) | X | | X | | X |
| East Nidderdale Moors SSSI (breeding) | | X | | X | |

*(English Nature, 2001; Natural England, 1996 & 1998)*

Figure 2. SSSI's in the AONB



2.7 East Nidderdale Moors SSSI includes Colsterdale, Masham, Dallowgill and Pateley Moors. West Nidderdale Moors SSSI includes Heathfield, Pockstones, Blubberhouses, Denton and Askwith Moors.

2.8 In addition to its importance for birds of prey during the breeding season, Nidderdale is recognised as being vital for key species during other times of the year, especially during the winter (data from Yorkshire Dales & Nidderdale Upland Bird Study Group, local naturalist groups and a Natural England Ornithologist (pers. Comm.)). Hence while the species assessments focus principally on populations during the breeding season (mid-March to July), where possible, information about presence of species at other times of the year, e.g. winter roosts, has also been included.

2.9 In assessing the current status of the seven species birds of prey it should be noted that the populations of some species are recovering from a very low level, in some cases local extinction (extirpation). Historical data shows that the increase in population size and associated range expansion of some of these species that has occurred in recent decades, including within the AONB, are the reoccupation of historic breeding ranges or sites, and not necessarily colonisation of previously unoccupied areas (YDNPA, 2018).

2.10 A number of authors (e.g. Holmes *et al*., 2000; Natural England, 2008; Amar et.al., 2012 and Murgatroyd et. al., 2019) have highlighted the difficulty in assessing suspected raptor persecution incidents in the UK as evidence is likely to be removed or hidden, and because incidents are likely to take place in remote locations, where detection and the probability of coming across evidence of crime are very low. Hence this strongly suggests that the number of confirmed incidents may not be a true reflection of the actual number of crimes that are committed.

## 3. Data Sources

3.1 The population and trend data has been collated from a number of sources, including:

- National information sources (Avian Population Estimates Panel (APEP), Rare Breeding Birds Panel (RBBP), Breeding Bird Survey Scheme (BBS), Birds of Conservation Concern (BoCC 4), Risk of Extinction for birds in Great Britain);
- Natural England (designated site citations, conservation objectives and advice, national surveys, and satellite tagging data);
- North and East Yorkshire Ecological Data Centre (NEYEDC);
- Yorkshire Dales & Nidderdale Upland Bird Study Group (a constituent group of the Northern England Raptor Forum (NERF));
- Yorkshire Red Kites (http://www.yorkshireredkites.net);
- Local naturalist and ringing groups (Harrogate District Naturalist Society, Nidderdale Birdwatchers, Wharfedale Naturalists Society, Bradford Ornithological Group and Swaledale Ringing Group); and
- Nidderdale AONB via The Wild Watch project (http://www.thewildwatch.org.uk).

3.2 Rare Breeding Birds Panel (RBBP) data are used to categorise the UK population status as very rare (mean of <30 breeding pairs (bp) per annum); rare (30-300 bp per annum); scarce rare (301-1000 bp per annum) or less scarce (>1000 bp per annum). In addition, a UK population estimate is given, a 15 or 25 year population trend where one can be calculated, and the degree of coverage in 2016 across the country (Holling and RBBP, 2018).

3.3 The Breeding Bird Survey (BBS) scheme monitors the population changes of the commoner bird species across the country, with volunteers collecting data over a series of squares across the UK annually. BBS trends are available for three of the species considered here (buzzard, peregrine and red kite), with data for the others being below the threshold for analysis (i.e. a lack of information which could be due to species scarcity, location in areas of low BBS coverage or their difficulty to detect). The data shows the population changes between the periods 2016-2017, and 1995-2016). The trends are presented as the percentage change over the two periods, with any statistically significant changes highlighted with an asterisk (*) (Harris *et al*., 2018).

3.4 Birds of Conservation Concern 4 (BoCC 4) is the fourth review of the status of birds in the UK, Channel Island and Isle of Man. Using standardised criteria, 244 species were assessed and

assigned to the Red, Amber or Green list of conservation concern. The assessment criteria include conservation status at global, European levels, and within the UK, historical decline, trends in population and range, rarity, localised distribution and international importance (Eaton, *et al*., 2015).

3.5 In 2017 the first formal IUCN assessment of the risk of extinction for birds in the Great Britain was carried out (Stanbury *et al*., 2017). Two hundred and thirty-four regularly occurring species were assessed and classified using the standard IUCN Red List categories – Extinct, Critically Endangered, Threatened (Critically Endangered, Endangered, or Vulnerable) and Near Threatened.

3.6 Data for the key species in the upland area of Nidderdale AONB are collated under the auspices of the Yorkshire Dales & Nidderdale Upland Bird Study Group (a constituent group of the Northern England Raptor forum (NERF)). Data for the Washburn Valley (southern end of the AONB) was provided by Bradford Ornithological Group and Wharfedale Naturalists Society. In addition, the data on red kites has been provided by Yorkshire Red Kites and the data on peregrine at Greenhow Quarry by the Swaledale Ringing Group.

3.7 Data for the key species was obtained from North and East Yorkshire Ecological Data Centre and extracted from the Nidderdale AONB The Wild Watch project records.

3.8 The information on last known fixes of hen harriers within Nidderdale AONB and close to its boundary (within a 2km buffer) have been extracted from the radio and satellite tagging information that has been made publically available by Natural England (Natural England, 2019a; Murgatroyd *et al*., 2019).

3.9 Raptor persecution is one of the UK government's six wildlife crime priorities (NWCU, undated – https://www.nwcu.police.uk/how-do-we-prioritise/priorities/), with an emphasis on hen harrier, peregrine falcon, goshawk, red kite, golden eagle and white tailed eagle. The RSPB has been recording and publicising raptor persecution incidents in a consistent format for many years. This includes data collected by the organisation plus wildlife poisoning incidents gathered by the government's Wildlife Incident Investigation Scheme (WIIS). Data available from https://www.rspb.org.uk/birds-and-wildlife/advice/wildlife-and-the-law/wild-bird-crime/the-birdcrime-report/.

3.10 The Raptor Persecution Priority Delivery Group (RPPDG) for England and Wales has published (February 2018) a map of raptor persecution incidents in England and Wales from 2011 to 2015, and the intention is for these to be updated annually. The maps present the number of confirmed shootings, trappings and poisonings and nest destructions (a narrower set of incident types than the RSPB data) and are available on the MAGIC website http://magic.defra.gov.uk/

3.11 In this report we have included summaries of both the RSPB and RPPDG data, both because the RSPB data covers a longer time period (1987-2017 at the time of writing) and to enable comparison. For the time period where the data is available from both sources (2011-2015) there is close correlation between the two data sets – see sections 13-14 below.

## 4. Legal Protection

4.1 All birds of prey have had full legal protection (as wild birds) in the UK since 1954 (except the sparrowhawk, protected since 1963). In Britain these laws are implemented through the Wildlife & Countryside Act, 1981 (as amended), which makes it illegal to kill, injure or take birds of prey at any time of the year, plus provides protection for their active nests. In addition, a number of species listed on Schedule 1 of the 1981 Act receive enhanced protection making it an offence to intentionally or recklessly disturb adult or young birds at, or near an 'active' nest. Schedule 1 species include goshawk, all harriers, red kite, merlin, peregrine, plus barn owl and hobby.

4.2 Special Protection Areas (SPAs) were established under the European Birds Directive and require member states to protect rare and vulnerable species of birds. The North Pennine Moors SPA (total area 147,246.41 ha), is a series of strictly protected sites classified in accordance with Article 4 of the EC Birds Directive (English Nature, 2001), with 14.5% of the SPA within Nidderdale AONB. The SPA citation information for relevant species is set out in Table 2.

Table 2. North Pennines Moors SPA

| Species | Count | % of GB population |
|---|---|---|
| Hen harrier | 11 pairs - breeding | 2.3% |
| Merlin | 136 pairs - breeding | 10.5% |
| Peregrine | 15 pairs - breeding | 1.3% |

*(English Nature, 2001)*

4.3 The Conservation Objectives for the SPA are:

*'Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:*

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*

- *The populations of each of the qualifying features, and,*
- *The distribution of the qualifying species within the site.'*

With qualifying features including breeding hen harrier, merlin and peregrine falcon (Natural England, 2019b).

4.4 In January 2019 Natural England published supplementary advice for the site (Natural England, 2019c). For all three bird of prey species this sets a target to *'Restore the breeding population…within the SPA to a level that is consistently above [the citation level] whilst avoiding deterioration from its current level….'*

4.5 Natural England also commissioned a data review for the SPA to inform this advice (Holt *et al.*, 2018). This found that *'[T]he annual monitoring being undertaken by dedicated ornithologists under the umbrella of the Northern England Raptor Forum is robust and of high quality and collects detailed information on the feature species.'* To ensure the highest quality future monitoring of the SPA, the report recommends enhanced synergies and channels of communication between Natural England and raptor groups. When assessing data coverage the review highlighted a number of SSSIs where increased resources to enable focused survey work to feed in to an updated assessment would be helpful. For Nidderdale, the key gap highlighted was merlin data for West Nidderdale SSSI.

4.6 Based on the information in the North Pennine Moors SPA citation and the proportion of the SPA which is in Nidderdale AONB (area 21, 342.72 ha = 14.5% of the SPA), we have estimated how many breeding pairs of hen harrier, merlin and peregrine which we would expect – see Table 3.

4.7 However, it must be noted that these are only indicative figures, not intended to be specific 'targets' or 'quotas' for the AONB. As hypothetically the SPA could be in favourable condition without any breeding pairs of these species in the AONB if the numbers of pairs elsewhere in the SPA meet the citation figures. Conversely the carrying capacity of the AONB could be much higher and contribute a higher percentage of breeding pairs to the overall SPA citation figures. However, even with these caveats, the figures are a useful indication of the 'baseline' number of pairs of each species that might be expected. And in recent advice Natural England is clear that for the North Pennine Moors SPA the targets are to restore the size of the breeding populations of all three species within the SPA to a level which is consistently above the number

of pairs stated in the citation whilst avoiding deterioration from their current levels (Natural England, 2019c).

Table 3. Area of North Pennines Moors SPA within Nidderdale AONB

| Species | Count | % of GB population |
|---|---|---|
| Hen harrier | 1.6 pairs - breeding | 0.33% |
| Merlin | 19.7 pairs - breeding | 1.5% |
| Peregrine | 2.2 pairs - breeding | 0.19% |

4.8 As noted above, the general protection under the Wildlife & Countryside Act applies to birds of prey at any time of the year, including during the winter, when hen harriers gather in communal roosts at night. There are currently no designated sites in Nidderdale protected for non-breeding birds of prey. But given the importance of Nidderdale for winter roosting hen harriers (data from Yorkshire Dales & Nidderdale Upland Bird Study Group, local naturalist groups and a Natural England Ornithologist (pers. Comm.)), it may be that in some years Nidderdale's roosts could potentially reach SPA selection thresholds of eight individuals (JNCC, undated).

## 5. Species Assessment: Common Buzzard *Buteo buteo*

### Key information

- **UK population estimate:** 57,000-79,000 breeding pairs (2009) (APEP, Musgrove *et al.*, 2013)
- **Nidderdale AONB population estimate:** currently one to two breeding pairs
- **BBS trends (England):** 2016-2017: 6%; 2006-2016 55*; 1995-2016: 211% * (Harris *et al.*, 2018)
- **RBBP UK:** not assessed (Holling and RBBP, 2018)
- **UK conservation status:** Green list (BoCC4; BoCC3)

5.1 Buzzard are resident all year round and are found in most habitats, particularly woodland, moorland, scrub, pasture, arable, marsh bog and villages. There has been a rapid increase in the population and associated range expansion into central and eastern areas of England, with the buzzard now the commonest diurnal raptor in Britain (Baille *et al.*, 2010). This appears to be as a result of increasing productivity, potentially due to the recovery of rabbit populations from myxomatosis and release from the deleterious effects of organochlorine pesticides (Elliot and Avery, 1991; Clements, 2002).

5.2 There is no systematic monitoring of breeding buzzards in the AONB, but records are available from North and East Yorkshire Ecological Data Centre (NEYEDC), Yorkshire Dales & Nidderdale Upland Bird Study Group, Harrogate District Naturalist Society, Nidderdale Birdwatchers, Wharfedale Naturalists Society and Bradford Ornithological Group. These records indicate that breeding buzzards first colonised the AONB in the late 80s/early 90s, with the first confirmed nest near Lofthouse in Upper Nidderdale. Over the following 10 years their colonisation was rapid, their numbers increased greatly, and they became the most common raptor in the AONB. Between 1995 and 2006 there are records of between seven to 11 pairs per year (an average of 8.6 pairs per year, of which an average of 2.3 pairs per year successfully reared young). Between 2007 and 2013 there are records of zero to eight pairs per year (an average of 4.6 pairs per year), but only five pairs during this seven year period are believed to have reared young. A reduction in observer effort over recent years, could, in part, account for some of the perceived decline.

5.3 While buzzards are still frequently seen in the AONB, including in the pastoral landscape to the east of the AONB and especially outside the breeding season, recent observations suggest that,

breeding buzzards are now less common. Recent records suggest that there is now only one regular territorial breeding pair in the northern AONB with another pair seen occasionally in the Lofthouse area. Although other buzzards are sighted in the northern AONB during the breeding season, the large majority are immature or first year birds that are not holding territory, suggesting, with the caveat noted above about reduced observer effort, that this area of the AONB is not performing as well as previously as a breeding location.

5.4 Overall, given the suitable habitat, prey and nesting sites in the AONB, we would expect a higher and increasing population of breeding buzzard, in line with the national trend and trend observed in the Yorkshire Dales National Park (YDNPA, 2018), as the two regions are geographically adjacent and share similar habitat.

5.5 *Assessment summary – although there is no comprehensive monitoring programme for buzzard, casual records suggest that while widespread in the AONB as a non-breeding species, the breeding population is lower than would be expected given the available habitat. A robust monitoring programme should be established to collect further information to inform future species assessments.*

## 6. Species Assessment: Hen Harrier *Circus cyaneus*

### Key information

- **UK population estimate (excluding Isle of Man):** 550-740 (2010) (APEP, Musgrove *et al.*, 2013)
- **Nidderdale AONB population estimate:** currently no breeding pairs (the SPA citation suggests there should be 1.6 pairs - see Table 3 above)
- **BBS trends (England):** Not assessed (Harris *et al*., 2018)
- **RBBP UK**: Scarce; 575 bp; a 12 year trend: weak decrease -29%; high coverage (Holling and RBBP, 2018)
- **UK conservation status:** Red list (BoCC4) (Eaton *et al.*, 2015)
- **Extinction Risk in Great Britain:** *Vulnerable* (Breeding Population) (Stanbury *et al*., 2017)

6.1 The hen harrier lives in open areas with low vegetation. In the breeding season UK birds are found on the upland heather moorlands of Wales, Northern England, Northern Ireland and Scotland (as well as the Isle of Man). In winter they move to lowland farmland, heathland, coastal marshes, fenland and river valleys. Those found in eastern and south-east England are probably mostly visitors from mainland Europe.

6.2 Following the 2016 National Hen Harrier survey the UK population was estimated to be 545 territorial pairs, but only four territorial pairs were present in England (RSPB, 2017). This represents a decline of 88 pairs (13%) since the 2010 survey and a long-term decline of 204 pairs (27%) since the 2004 national survey.

6.3 Throughout the period from 1971 to 2018 there are three records of successful breeding hen harriers in Nidderdale (records from Yorkshire Dales & Nidderdale Upland Bird Study Group and Harrogate District Naturalist Society). The first of a pair breeding on East Nidderdale Moors in 1971 (Mather, 2001). The second from 2003 when a female paired to a bigamous male reared three young, and the final in 2005 when a pair reared four young.

6.4 In 1993 one female attempted to breed in Nidderdale, paired to a bigamous male (the other female was within the YDNP), but this failed during incubation. Throughout the period 1996-2008 there have been a minimum of 10 nesting attempts in the northern part of the AONB, with pairs of birds displaying and nest building. In 2012 an already failed nest was located in the

northern part of the AONB. During 2009-2011 and 2013-2017 there have were regular spring searches and watches but no further nesting attempts were detected in the north of the AONB. There are no records of successful breeding in the southern/Washburn Valley part of the AONB, but birds have been seen displaying on four occasions between 2004-2010 (Wharfedale Naturalists Society and Bradford Ornithological Group records).

6.5 There have been several assessments of the potential numbers of hen harriers that could be present in northern England. The most recent figures were determined by Fielding *et al.,* (2011) as part of the Hen Harrier Framework commissioned by JNCC, using national data sets to identify key constraints on the distribution and population viability of hen harriers. This analysis also included the use of land cover data to determine the suitability of 10km squares for breeding hen harriers and to estimate potential breeding densities that could occur. Fielding *et al.,* (2011) concluded that there was sufficient habitat to support between 323 and 340 breeding pairs in northern England.

6.6 The framework also suggested regional targets for favourable conservation status as follows:

- Productivity - minimum of 1.2 young fledged per breeding attempt;
- Habitat occupancy - at least 44% of the apparently suitable habitat occupied, and;
- Density - 2.12 pairs per 100 $km^2$ of suitable habitat.

6.7 The English hen harrier breeding population is currently in low figures (10-15 pairs, for example, in 2018 there were 14 nesting attempts of which nine were successful (Defra and Natural England, 2018)) and so is significantly below the potential number of breeding pairs that could be sustained and has failed to achieve suggested favourable conservation status for the region under the criteria for the Hen Harrier Framework. The JNCC commissioned report (Fielding *et al.,* 2011) identified persecution as the main factor limiting population expansion and highlighted that the England population is being constrained by poor juvenile and/or adult survival. This shows no change from the conclusions reached by Natural England (2008) that persecution, both during and following the breeding season, was limiting hen harrier recovery.

6.8 Between 2002 and 2017 Natural England fitted radio and, more recently, satellite tags to 158 juvenile hen harriers before they left the nest to learn more about dispersal and potential causes of mortality. Of these, six birds were still alive in 2017, 16 had died of natural causes and

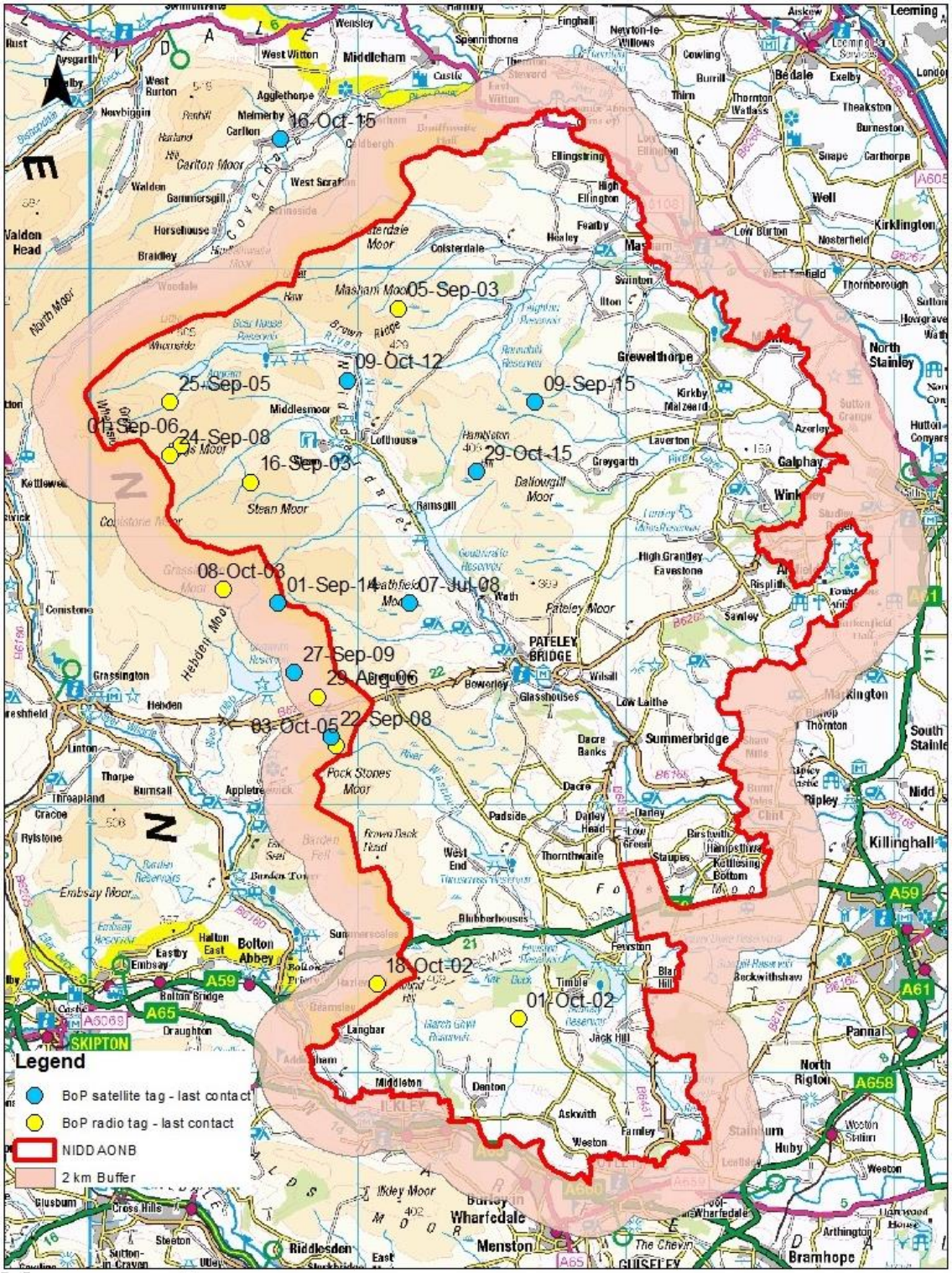
three were known to have been persecuted (Natural England, 2019). The remaining 133 are classed as 'missing fate unknown'.

6.9 From the data released, 17 (17%) of the 99 radio-tagged birds were classed as 'missing fate unknown' in the 'Yorkshire Dales' (Natural England, 2019). Of these, the location of last contact of six of the birds was within the Nidderdale AONB, with the location of last contact for a further four birds being close to (within 2km of) the Nidderdale AONB boundary – see Figure 3.

6.10 In addition, 16 (27%) of the 59 satellite tagged birds were deemed to be 'missing fate unknown' in the 'Yorkshire Dales'. Of these the location of last contact of four of the birds 'missing fate unknown' was within the AONB boundary, with the location of last contact for a further three birds being close to the Nidderdale AONB boundary – see Figure 3. A further bird is classified as 'recovered – persecuted' and was recovered from within the AONB[2].

[2] Note – although the online data shows the last fix of this bird outside the AONB, Natural England have confirmed that this data is wrong and the actual last fix was within the AONB close to where the bird was subsequently recovered.

Figure 3. Locations of last contact of hen harriers tagged by Natural England from 2002-2017



6.11 A paper published in March 2019 by the Fitzpatrick Institute for African Ornithology, Aberdeen University, Natural England and RSPB (Murgatroyd *et al*., 2019) looked at Natural England data from 58 satellite tracked hen harriers and showed the likelihood of harriers dying or disappearing increased as their use of grouse moors increased, including in protected areas in northern England (including Nidderdale AONB and the Yorkshire Dales National Park). The study concluded that 'hen harriers suffer elevated levels of mortality on grouse moors, which is most likely the result of illegal killing'.

6.12 Natural England (2017) uses the term 'Missing Fate Unknown' to describe birds that are no longer transmitting signals for a variety of reasons (e.g. they have left the area, died or the tag has stopped transmitting). Specifically, they define 'Missing Fate Unknown' as including:

I. 'Radio-tagged birds that left the study area. The vast majority of Missing Fate Unknown's are radio-tagged birds; this is not surprising given the mobility of hen harriers and our relatively small study area.

II. Radio-tagged and satellite tagged birds that were recorded after the battery ran out or transmissions had stopped.

III. Satellite tagged birds that died in such a position as to render the transmitter hard to locate and recover. The satellite transmitters depend on light to recharge, and operate on a 10hr on 48 hr off duty cycle. Therefore, when a bird dies there is only a small chance that it would happen whilst the transmitter is transmitting with enough charge to enable transmission of coordinates and a signal to enable retrieval. If the bird dies in the off cycle of the transmitter then it could have travelled many kilometres to its final resting place from the last transmitted coordinates. If this final resting place is in long vegetation, and/or the bird is lying on its back with little or no light available the solar panel will never transmit again and the bird would fall into the Missing Fate Unknown category.'

6.13 The reliability of the satellite tags is very good, with only six percent of tags used in a similar study of Montagu's Harrier in the Netherlands found to have failed (Klaassen, 2016). In each of these cases, Klaassen found that prior to failure there had been irregular transmission periods and, crucially, a drop in battery voltage that distinguished between a likely mortality event and a likely transmitter failure.

6.14 In 2016, Defra published a six point plan identifying the following actions required to English Hen harrier population (Defra, 2016):

I. Monitoring of populations in England and UK;
II. Diversionary feeding;
III. Work with Raptor Persecution Priority Delivery Group (RPPDG) to analyse monitoring information and build intelligence picture;
IV. Nest and winter roost protection;
V. Southern reintroduction; and
VI. Trial brood management scheme.

6.15 The plan lists the following success criteria but there are no timescales identified for delivery:

I. The hen harrier has a self-sustaining and well dispersed breeding population in England across a range of habitats including a viable population present in the Special Protected Areas designated for hen harrier.
II. The harrier population coexists with local business interests and its presence contributes to a thriving rural economy.

6.16 Nidderdale is known to be an important area for wintering hen harrier (Yorkshire Dales & Nidderdale Upland Bird Study Group, Harrogate District Naturalist Society, Wharfedale Naturalists Society and Bradford Ornithological Group records). Satellite data from hen harriers tagged by Natural England show that some areas of the AONB are used as roosts (Natural England Ornithologist, pers. comm). Records indicate that there are at least four current roost sites- three in the southern (more regularly visited and watched part of the AONB) and one in the northern part of the AONB; numbers of birds present at individual sites differ, from one to over 10 (data from Yorkshire Dales & Nidderdale Upland Bird Study Group and local naturalist groups as above).

6.17 *Assessment summary – despite large areas of potentially suitable breeding habitat, there were no successful breeding attempts between 2006-2018[3]. Outside the breeding season a significant number of satellite tagged birds have gone missing in the AONB, contributing to poor winter survival that is constraining the hen harrier population.*

[3] It is understood that breeding was successful in Nidderdale in 2019 (see https://www.gov.uk/government/news/record-breaking-year-for-hen-harrier-breeding), but data is not yet available.

## 7. Species Assessment: Merlin *Falco columbarius*

### Key information

- **UK population estimate:** 900-1,500 breeding pairs (2008) (APEP, Musgrove *et al.*, 2013)
- **Nidderdale AONB population estimate:** currently two breeding pairs (the SPA citation suggests there should be 20 pairs – see Table 3 above)
- **BBS trends (England):** not assessed
- **RBBP UK:** Less scarce; 1,160 bp; 25 year trend (survey) – weak increase +94%; moderate coverage (Holling and RBBP, 2018)
- **UK conservation status:** Red list (BoCC4), Amber list for BoCC3 (Eaton *et al.*, 2015)
- **Extinction Risk in Great Britain:** *Endangered* (Breeding Population) (Stanbury *et al.*, 2017)

7.1 The UK breeding population is at the south-west extremity of the merlin's European range and is thinly scattered across upland moorland. In winter, birds leave upland areas and come down to inland lowland and coastal areas.

7.2 In 2016 there were 33 confirmed breeding pairs in Yorkshire (Holling and RBBP, 2018). The last national merlin survey was undertaken in 2008, with an estimate of 1,162 breeding pairs in the UK. These results indicated that the population in Britain was relatively stable but that there had been local declines in some areas of northern England since the previous national survey undertaken in 1993-94 (Ewing *et al.,* 2011*).*

7.3 The most recent comprehensive survey data for the wider Yorkshire Dales area is taken from the previous national merlin survey in 1993/94, when the population was estimated to be between 60 and 80 pairs (Rebecca and Bainbridge, 1998). Unfortunately there were too few sites visited as part of the 2008 survey to determine a population estimate for the Yorkshire Dales or, to determine any population change between the two surveys.

7.4 There is no systematic monitoring of breeding merlin in Nidderdale AONB. Records have been collated from North and East Yorkshire Ecological Data Centre (NEYEDC), Yorkshire Dales & Nidderdale Upland Bird Study Group, Harrogate District Naturalist Society, Nidderdale Birdwatchers, Wharfedale Naturalists Society and Bradford Ornithological Group.

7.5 In 1998 it was estimated that there were as many as 20 pairs of merlin in the AONB north of Washburn Valley (Mather, 1998). Records for the northern part of the AONB indicate that six pairs were found in 1999 and historically there were at least five pairs in the Masham Moors/Colsterdale area; more recent records reveal one breeding pair on Masham Moor, plus a further pair from within the YDNP, which now nest just within the AONB (Yorkshire Dales & Nidderdale Upland Bird Study Group and Harrogate District Naturalist Society records). A reduction in observer effort over recent years, could, in part, account for some of the perceived decline.

7.6 In the southern part of the AONB records show that historically merlin has bred in four areas – Askwith Moor (breeding up to 2009), Blubberhouses Moor (up to 2015), Denton Moor (up to 2014) and Pockstones Moor; but there are no current confirmed breeding records (Wharfedale Naturalists Society and Bradford Ornithological Group records). These declines in breeding pairs in the AONB are in line with findings from the North York Moors where merlin territories at lower elevations are being abandoned (Smith & NERF *et al.*, 2017).

7.7 *Assessment summary – at two confirmed breeding pairs it appears that the current merlin population level is far below the levels envisaged by the SPA citation. A robust monitoring programme should be established to collect further information to inform future species assessments.*

## 8. Species Assessment: Peregrine *Falco peregrinus*

### Key information

- **UK population estimate (excluding Isle of Man):** 1,500 breeding pairs (2002) (APEP, Musgrove *et al.*, 2013)
- **Nidderdale AONB population estimate:** currently two breeding pairs (the SPA citation suggests there should be 2.2 pairs – see Table 3 above)
- **BBS trends (England):** 2016- 2017: 13%; 2006-2016: -13%; 1995-2016: 50% (Harris *et al.*, 2018)
- **RBBP UK:** Less scarce; 1,701 bp; 22 year trend (survey) – stable +5%; moderate coverage (Holling and RBBP, 2018)
- **UK conservation status:** Green list (BoCC4, BoCC3) (Eaton *et al.*, 2015)

8.1 Peregrines are resident in northern England. The final results of the 2014 UK, Isle of Man and Channel Islands peregrine survey estimates the number of breeding pairs at 1,769 (Wilson, *et al*., 2018). This is 22% larger than the population estimate from the previous survey in 2002. Most of this increase is accounted for by increases in lowland populations, populations in some upland areas have declined (Wilson, *et. al.*, ibid). This gap in the fortunes of lowland and upland peregrines has continued to grow, along with the overall UK population. Likely reasons for the continued success of lowland peregrines include increasing uptake of breeding sites on human structures, abundant prey availability and in many areas, a relative lack of conflict with humans. Factors likely to be limiting upland populations are reported as varying between regions, but include ongoing illegal killing and deliberate disturbance, and food supply (Wilson, *et. al.*, ibid).

8.2 The final 2014 survey results for England (Wilson *et al*., 2016) give a population estimate of 650 breeding pairs, compared to the estimated 470 breeding pairs in the 2002 survey. The results also look at the numbers of breeding peregrine in relevant SPAs. For North Pennine Moors SPA the estimated number of pairs was seven (out of a qualifying 15 pairs), and of the five pairs known to have nested none were successful.

8.3 There is no systematic monitoring of breeding peregrine in Nidderdale AONB, but records are available from North and East Yorkshire Ecological Data Centre (NEYEDC), Yorkshire Dales & Nidderdale Upland Bird Study Group, Harrogate District Naturalist Society, Nidderdale

Birdwatchers, Wharfedale Naturalists Society, Bradford Ornithological Group and the Swaledale Ringing Group.

8.4 Peregrines first returned to the northern part of the AONB in 1980 and have occupied five territories. It is the best studied bird of prey in the AONB and the nature and history of each territory is briefly described below.

8.4.1 **Territory one:** This territory has four sites all within land managed as a grouse moor. It was first occupied in 1980 but has not been seen to be occupied by a pair of birds since 2000, although single males were present in early spring during 2005-2007. The territory was thus occupied by pairs 20 times, successful on eight occasions rearing 18 young, but not since 1998.

8.4.2 **Territory two:** This territory has two sites and is entirely within land managed as a grouse moor. It was first occupied in 1986, but has not been occupied since 2005. This territory was occupied 15 times, but never reared young and apparently only ever hatched young once, in 1992.

8.4.3 **Territory three:** This is another territory within land managed as a grouse moor environment. It appears to have only one site although there may be multiple ledges. This is also the only original historical site mentioned as occupied or at least used (Ratcliffe, 1980) prior to the peregrine population crash of the 1950s and 1960s. There is a suggestion that it may have been occupied in 1996 but this remains unconfirmed. It was certainly occupied in 1997 when three young were reared. This appears to be the only year in which it was occupied, up to and including 2016.

8.4.4 **Territory four:** This territory was also first occupied in 1997 it is a single quarry site with multiple ledges and is entirely outside any grouse moor influence. Since 2009 the Swaledale Ringing Group have monitored the site for the quarry owner Hanson. Data indicates it has been occupied in 14 years and successful on 10 occasions rearing 24 young. The site is still occupied.

8.4.5 **Territory five:** This territory was first occupied in 2005 and is a large natural site with a number of ledges. It is close to, but not on, land managed as a grouse moor.

Unfortunately data for the site is not complete, but it is known to have been occupied in 11 years and successful on 10 occasions rearing a minimum of 15 young, and it is still occupied annually. It is because of this incomplete data that this site is not included in the statistical analysis below.

Table 4. Territory occupancy, success rate and young reared for multi occupation sites

| Territory* | Grouse Moor | Years Occupied | No of successes | Success rate (%) | Young per occupation | Young per success |
|---|---|---|---|---|---|---|
| 1 | Yes | 20 | 8 | 40.0 | 0.90 | 2.25 |
| 2 | Yes | 15 | 0 | 0 | 0 | 0 |
| 4 | No | 14 | 10 | 71.4 | 1.71 | 2.4 |
| 5 | No | 11 | 10 | 91.0 | ** | ** |

*Notes:*
**Territory 3 is omitted as there has only been one occupation.*
***The data is incomplete so these figures cannot be calculated.*

8.5 The data from Territory 1 between 1978-2002 for both the young per occupation and young per success, is typical of grouse moor sites as shown by Amar *et al*. (2012) and much lower than sites away for grouse moors. It appears that there has been no change in the breeding success from the situation in 2004 documented by Court *et al.* (2004) and there is still a marked difference between breeding success on grouse moors and on sites away from grouse moors.

8.6 Territories 1, 2 & 3 have not been successful for over 20 years and are now unoccupied. These findings are in line with other areas in northern England where data published annually by the Northern England Raptor Forum shows that in areas in Durham, Nidderdale, the Peak District and Bowland Fells that are managed for grouse shooting, peregrines are virtually absent from traditionally occupied nest sites (Amar *et al.*, 2012; Downing & NERF, 2009 and 2010; Smith & NERF, 2011, 2012, 2013, 2014, 2015, 2016 and 2017). There is similar evidence from Scotland (North East Scotland Raptor Study Group, 2015).

8.7 The continued absence of peregrines from many traditional nest sites on grouse moors lead Amar *et al.* (2012) to conclude that grouse moors are acting as sink sites; a finding also reported in the Peak District by Melling *et al.* (2018) and supported by the recent paper on the association between disappearances of satellite tagged hen harriers and land managed as grouse moors (Murgatroyd *et al.*, 2019). And in Nidderdale AONB there are concerns that Territories 1-3 may be acting as a sink for peregrines searching for unoccupied territories.

8.8 In the southern part of the AONB (Washburn Valley area) there are no confirmed breeding records, although a pair of peregrines was seen on one of the crags in 2005.

8.9 *Assessment summary - the population remains relatively stable due to the continued occupancy of, and breeding success at sites away from grouse moors. The population is being limited by the number of traditional nesting territories primarily on or adjacent to grouse moors that are no longer occupied. The absence of nesting peregrines from historic breeding sites on grouse moors suggests that these may be acting as population sinks. A robust monitoring programme should be established to collect further information to inform future species assessments.*

# 9. Species Assessment: Short-Eared Owl *Asio flammeus*

## Key Information

- **UK population estimate:** 620-2,180 breeding pairs (2007 - 2011) (APEP, Musgrove *et al.*, 2013)
- **Nidderdale AONB population estimate:** currently two to six breeding pairs
- **BBS trends (England):** not assessed
- **RBBP UK:** Scarce; 620+bp; no trend available; low coverage (Holling and RBBP, 2018)
- **UK conservation status:** Amber list (BoCC4, BoCC3) (Eaton *et al.*, 2015)
- **Extinction Risk in Great Britain:** *Endangered* (Breeding Population) (Stanbury *et al*., 2017)

9.1 Short-eared owls are resident in northern England, favouring farmland, grassland and upland habitats. Since short-eared owl was added to the RBBP list in 2010, the total number of pairs has ranged from 184 (2013) to 465 (2012), with a five-year mean of 281. Low vole abundance in 2016 led to fewer reports and exceptionally low numbers of confirmed breeding pairs. Many traditional sites were unoccupied. In 2016 there were four confirmed breeding pairs in Yorkshire (Holling and RBBP, 2018).

9.2 Assessing populations of short-eared owls is difficult as Calladine *et al*. (2010) found that the proportion of time during when they could be observed during daylight hours was low, and that the seasonal variation in their detection suggests that surveys may only be able to reliably to identify pairs that successfully reach the chick rearing stage.

9.3 There is no systematic monitoring of breeding short-eared owl in Nidderdale AONB but records are available from North and East Yorkshire Ecological Data Centre (NEYEDC), Yorkshire Dales & Nidderdale Upland Bird Study Group, Harrogate District Naturalist Society, Nidderdale Birdwatchers, Wharfedale Naturalists Society and Bradford Ornithological Group.

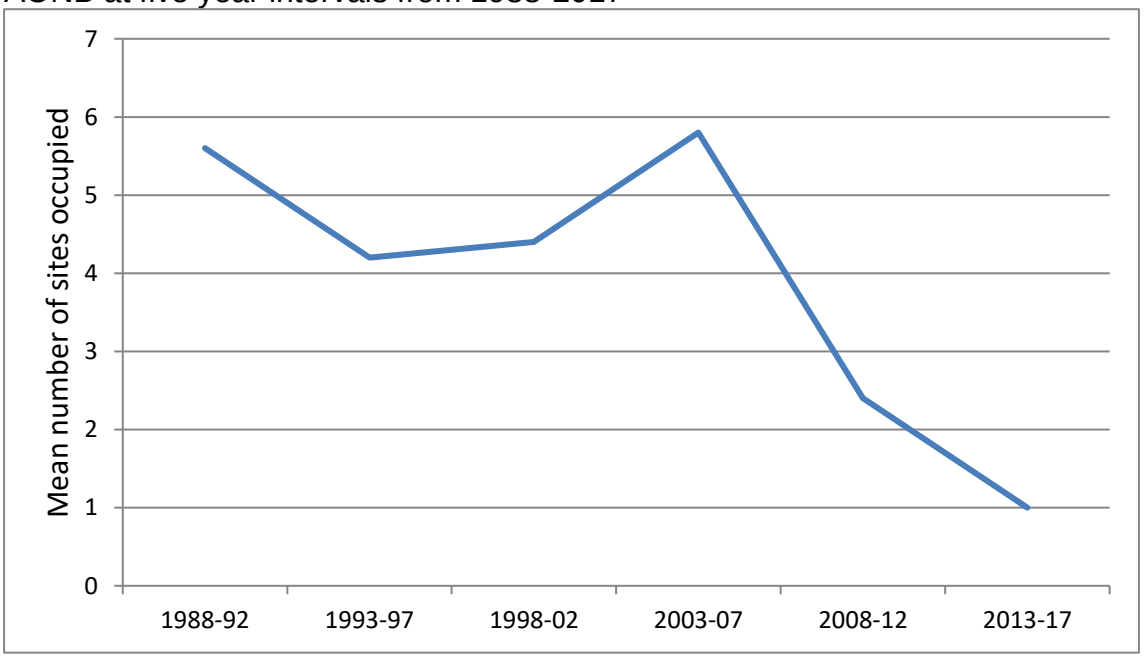
9.4 Without systematic survey work, it is likely that casual visits to areas of potentially suitable nesting habitat may underestimate the number of breeding birds present. In addition, some populations will fluctuate in relation to the cyclic populations of short-tailed field voles *Microstus agrestis* making comparison of breeding success between years difficult.

9.5 While few nests have been located, and none since 1998, records for the northern part of the AONB over the last 30 years show that birds have been seen in suitable habitat in the breeding season almost every year (Yorkshire Dales & Nidderdale Upland Bird Study Group and Harrogate and District Naturalists Society records). This data is summarised below. A reduction in observer effort over recent years, could, in part, account for some of the perceived decline. Given that these owls become more obvious when they have young, these numbers can probably be considered to the minimum number of pairs present and attempting to breed.

Table 5. Short-eared owl site occupancy data

| Years | Total sites | Range | Mean sites per year |
|---|---|---|---|
| 88-92 | 28 | 2 - 12 | 5.6 |
| 93-97 | 21 | 3 - 6 | 4.2 |
| 98-02 | 22 | 3 - 7 | 4.4 |
| 03-07 | 29 | 3 - 8 | 5.8 |
| 08-12 | 12 | 0-7 | 2.4 |
| 13-17 | 5 | 0-2 | 1.0 |

Figure 4. Short-eared owl mean number of sites occupied in northern Nidderdale AONB at five year intervals from 1988-2017



9.6 Records for the southern AONB/Washburn Valley (the area of the AONB where sites are currently checked on a more regular and systematic basis) estimate the population there to be in single figures with three to five pairs reported most years. In 2018 there were two confirmed successful breeding pairs, including, one the first reported in this particular area for approximately 10 years (Wharfedale Naturalists Society and Bradford Ornithological Group records).

9.7 *Assessment summary – The population of short eared owls in Nidderdale AONB has fallen. These results suggest the breeding population is well below the natural carrying capacity given the size of the available habitat and prey availability. A robust monitoring programme should be established to collect further information to inform future species assessments.*

# 10.Species Assessment: Northern Goshawk *Accipiter gentilis*

## Key information

- **UK population estimate:** 280-430 breeding pairs (2006-2010 survey) (APEP, Musgrove *et al.*, 2013)
- **Nidderdale AONB population estimate:** no confirmed breeding records, extremely scarce.
- **BBS trends (England):** Not assessed (Harris *et al*., 2018)
- **RBBP UK:** Scarce; 584 bp; 25 year trend – strong increase +249%; moderate coverage (Holling and RBBP, 2018)
- **UK conservation status:** Green list (BoCC4, BoCC3) (Eaton *et al.*, 2015)
- **Extinction Risk in Great Britain:** *Near Threatened* (Stanbury *et al*., 2017)

10.1 Goshawk tends to be associated with woodlands, particularly areas of woodland and forests with glades and paths to hunt along, but can also be seen hunting over more open countryside. They are resident all year round.

10.2 The 473-705 goshawk pairs reported to RBBP in 2016 is the first time records have been over 700. This is well in excess of the most recent APEP population estimate taken from data from 2006-2010 (APEP, Musgrove *et al.*, 2013). However, the number of goshawks in the UK varies regionally with only 55 confirmed breeding pairs of goshawk recorded in the whole of the North of England in 2016 (20 confirmed breeding pairs in Yorkshire). In contrast, there were 135 confirmed breeding pairs in South West of England, 70 in Wales and 131 in Scotland (Holling and RBBP, 2018). As much of this information relies on raptor specialists checking and monitoring nests using a Schedule 1 licence it is recognised that only a proportion of the population will have been covered (Holling and RBBP, 2018).

10.3 There has been no systematic survey work or any detailed nest studies undertaken on goshawk populations in Nidderdale AONB and so comprehensive data is not available. Records are available from North and East Yorkshire Ecological Data Centre (NEYEDC), Yorkshire Dales & Nidderdale Upland Bird Study Group, Harrogate District Naturalist Society, Nidderdale Birdwatchers, Wharfedale Naturalists Society and Bradford Ornithological Group, but there are no confirmed breeding records.

10.4 A review of records in the AONB from 1979 to 2018 reveals that pairs have occupied three different sites in the northern part of the AONB on 24 occasions between 1979 and 2002 (one 'traditional' site in the heart of the AONB and two sites in the Masham Moors area). The 'traditional' site was occupied by pairs in nine years and may have been successful in 1985 and 2001. One of the Masham sites was occupied for 11 years, the second for five years, but there are no confirmed successful breeding records at either (Yorkshire Dales & Nidderdale Upland Bird Study Group and Harrogate District Naturalist Society records). Since 2003 goshawks have become extremely scarce and hard to see in the northern part of the AONB (Court *et al*., 2006; Smith & NERF *et al*., 2017 & 2018).

10.5 In the southern area of the AONB, around the Washburn Valley, the goshawk records reveal a similar decline (Wharfedale Naturalists Society and Bradford Ornithological Group records). The species was seen regularly in at least four sites in the late 1970s/early 1980s. Since the early 1990s surveys of displaying birds have been carried out, initially from five sites (now four with habitat change having made the Swinsty Reservoir site unsuitable). From 1992-1999 these surveys collected a total of 161 records; from 2000-2009 86 records; and from 2010-2015 eight records. A single goshawk was recorded in late 2017/ early 2018 and a February 2019 survey yielded zero records.

10.6 Although goshawk can be a difficult species to survey particularly at low population density, the lack of records in the AONB indicate that this species is, if present, in very low numbers despite areas of potential suitable breeding habitat. A reduction in observer effort over recent years, particularly in the northern part of the AONB could, in part, account for some of the perceived decline since the early 2000s.

10.7 *Assessment summary – although there is no comprehensive monitoring programme, the lack of records indicate that this species is genuinely rare in Nidderdale AONB, with the population much lower than would be expected given the available habitat. A robust monitoring programme should be established to collect further information to inform future species assessments.*

# 11.Species Assessment: Red Kite *Milvus milvus*

## Key information

- **UK population estimate:** 5,000+ breeding pairs (Yorkshire Red Kite Project)
- **Nidderdale AONB population estimate:** currently nine to 10 breeding pairs
- **BBS trends (England):** 2016- 2017: +7%; 2006-2016: +406% 1995-2016: >18,669* (Harris *et al.*, 2018)
- **RBBP UK:** not assessed (Holling and RBBP, 2018)
- **UK conservation status:** Green list (BoCC4), Amber list for BoCC3 (but criteria for listing was altered and then moved to Green list)

11.1 Red kite favour areas with a mixture of small woods and open habitat. Adult red kites are sedentary birds, and they occupy their breeding home range throughout the year. Although formerly restricted to a small number of birds in central Wales, recent population increases and spread in geographical range are primarily a result of a number of re-introduction projects across England and Scotland.

11.2 The re-introduction of red kites in Yorkshire began in 1999 with 69 young birds from the established Chilterns population brought to the Harewood Estate for release. The project has been very successful, reaching the landmark figure of 100 territorial pairs and over 1000 young birds fledged in the county by 2012 (Simpson, undated).

11.3 There is no systematic monitoring of breeding red kite in Nidderdale AONB but records are available from Yorkshire Red Kites, North and East Yorkshire Ecological Data Centre (NEYEDC), Yorkshire Dales & Nidderdale Upland Bird Study Group, Harrogate District Naturalist Society, Nidderdale Birdwatchers, Wharfedale Naturalists Society and Bradford Ornithological Group.

11.4 There are two known breeding areas in the southern end of the AONB with up to 10 recorded breeding sites. Kites have bred successfully in both areas. Six pairs raised a total of 13 young in 2018, three other breeding attempts failed for unknown reasons (Yorkshire Red Kites).

11.5 There have been reports of several pairs of red kite in the Washburn Valley, but few actual breeding attempts have been recorded (Yorkshire Red Kites, Wharfedale Naturalists Society and

Bradford Ornithological Group). One, in the plantation to the north of Blubberhouses several years ago failed through unknown causes, but more recently a pair raised young in another plantation nearby.

11.6 Further north in the AONB red kite is not systematically monitored, but there is a lot of suitable habitat and birds are regularly seen foraging (Yorkshire Dales & Nidderdale Upland Bird Study Group, Harrogate District Naturalist Society and Nidderdale Birdwatchers). There are no known successful breeding attempts, but it is believed that in recent years there has been at least one, and possibly more, breeding pairs of red kite, with a pair of adults seen close to Pateley Bridge accompanied by recently fledged young.

11.7 There is also a communal winter roost area in the south of the AONB reported to be used by up to 30 birds.

11.8 Molenaar *et al*. (2017) have shown that the population recovery and range expansion of red kites in England is being restricted by second generation anticoagulant rodenticides, illegal use of pesticide and lead ammunition.

11.9 The spread of red kites into the AONB is being restricted by illegal persecution, with 22 confirmed fatalities within the AONB boundary, plus a further three within a 2km buffer of the AONB boundary, between 2000-2018. Twenty-one birds were poisoned and four shot. Nine of these cases were in Upper Nidderdale, 13 in the Washburn Valley, with two cases in the buffer round the south of the AONB boundary and one in the buffer to its north. In particular, the shooting of a kite near Pateley Bridge in March 2017 generated a very significant reaction on social media and large number of comments to the AONB. These red kite incidents represent 32% of the total number of confirmed persecution incidents recorded in North Yorkshire in this period (2008-2013) and 24% of all incidents in the whole of Yorkshire – see section 13 and www.rspb.org.uk/raptormap.

11.10 *Assessment summary – red kite is currently breeding in the south of the AONB. Despite the availability of suitable habitat it appears that the spread of breeding red kite in to the Washburn Valley and Upper Nidderdale is restricted by illegal persecution. A robust monitoring programme should be established to collect further information to inform future species assessments.*

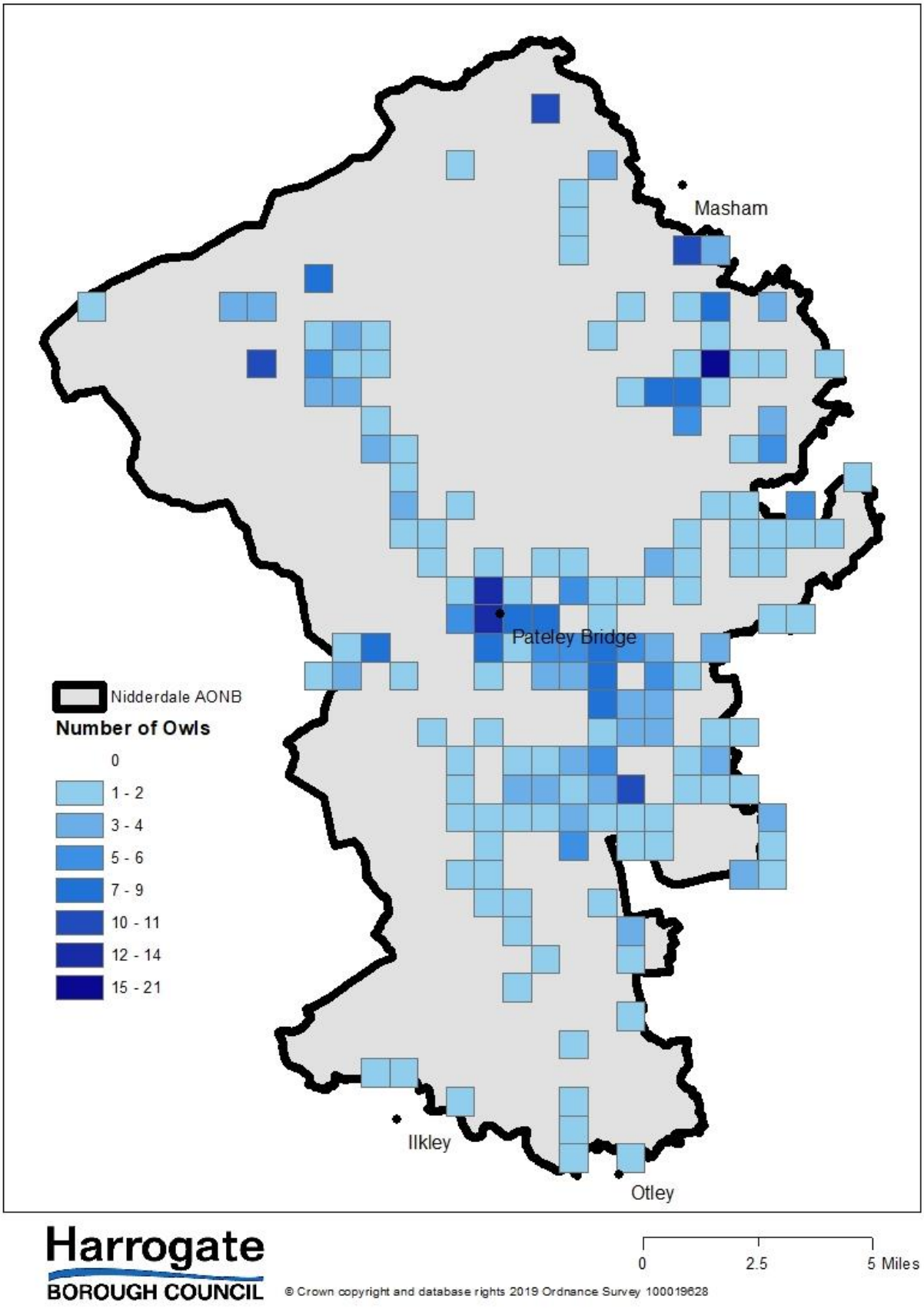
## 12. Other Species

12.1 The national population of marsh harrier (Amber list (BoCC4, BoCC3) (Eaton *et al.*, 2015)) is currently increasing strongly (Holling et. al., 2018). Data suggests that for 22 of the last 25 years marsh harrier has been present in the AONB (Yorkshire Dales & Nidderdale Upland Bird Study Group, Harrogate District Naturalist Society, Wharfedale Naturalists Society and Bradford Ornithological Group records). Historically most of these records were of passage birds, but in recent years there has been a tendency for some birds to summer in the AONB, leading to recent breeding attempts. In 2017 there was a nesting attempt on West Nidderdale Moors in the southern part of the AONB which failed when the nest was destroyed – see section 13. The same year there was also a breeding attempt on East Nidderdale Moors in the northern part of the AONB which failed through unknown causes.

12.2 There are good records for long-eared owl in the southern part of the AONB from 2002-2009, with surveys revealing a minimum of seven to 12 pairs per annum raising between three and 32 young a year. A 2018 survey found at least nine pairs with young.

12.3 As part of The Wild Watch project Nidderdale AONB are collecting citizen science records on four owl species (barn owl, tawny owl, little owl and short-eared owl) using postcards. This has proved hugely popular, eg between March and October 2018 a total of 380 postcards, with details of 405 owls, were submitted. So far, the data seems to show a higher density of owls in the central and upper-east Nidderdale AONB areas – see Figure 5. However, there may be a bias towards towns and other urban areas rather than a representation of where owls are mostly likely to be found, and some records may be the same individual owl being reported multiple times by different people. When the data is analysed fully, the potential bias and duplicated records will be considered to give a more accurate picture of true distribution. For more information see https://nidderdaleaonb.org.uk/owl-watch/

Figure 5. The distribution of total owls in Nidderdale AONB as sent in from the public between March 2018-January 2019




*Note: Owl records are shown to a scale of 1 km squared.*

## 13.RSPB Persecution Data

13.1 The RSPB data used in this report details the number of confirmed raptor persecution incidents within 10km squares which are within the boundary of Nidderdale AONB or within a 2km buffer of the boundary between 1987 and 2017 inclusive. Each incident in the RSPB data has been recorded in one of the following categories:

- Poisoning: Includes confirmed pesticide abuse incidents where there are physical bird of prey victims. It also includes poison baits where evidence and/or intelligence supports that birds of prey are targeted or likely to fall victim. Birds and baits are substantiated by toxicological analysis. Note that birds found to contain background levels of Second Generation Anti-coagulant Rodenticides (SGAR's) have been excluded from this category unless abuse of the substance has been established as cause of death.
- Shooting: Confirmed shot birds of prey and confirmed incidents of attempted shootings.
- Possession of poison: Includes possession of pesticides where the evidence and/or intelligence indicate that birds of prey have been killed by the products or that birds of prey were intended or potential victims.
- Illegal pole/spring trapping: Includes confirmed pole and spring trap incidents.
- Other illegal trapping: Includes confirmed incidents involving trapping by means other than pole or spring traps, such as crow cage and Larsen traps which have been unlawfully set and/or where evidence and/or intelligence indicates that birds of prey are being targeted, such as setting traps with domestic pigeons as bait to draw in birds of prey (‘Hawk traps’).
- Nest destruction: Includes confirmed incidents where an active bird of prey nest or contents has been destroyed.
- Persecution other: Includes confirmed incidents of raptor persecution or attempted raptor persecution that do not fall under any of the other categories. This category can include incidents where other methods of killing or attempted killing have been used, for example stoning, killing by hand or intentionally hitting with a vehicle or; possession of equipment capable of being used to commit an offence. In the latter classification this is included where there is supporting evidence or intelligence of sufficient standard to substantiate that birds of prey are the intended target. This includes, for example, cases of a live eagle owl being used as a shooting decoy, or possession of an electronic calling device which includes bird of prey calls.

13.2 A “confirmed” incident is where the circumstances indicate an illegal act has taken place, and has the highest evidential weighting. These incidents are typically substantiated by evidence such as post mortem examination or toxicological analysis (e.g. shooting and poisoning) or reliable eye-witness evidence.

13.3 The RSPB recording method defines a specific separate incident as either:

- Where any bait, victim, group or baits, victims etc. are found on a different date or sufficiently far apart to be represented by a different six-figure grid reference; or
- Where victims/baits, etc. are found at the same grid reference and on the same date but in circumstances that otherwise separate them (for example, a poison victim that is very decomposed beside a fresh bait - so the bait could not have been responsible for the death of the victim).

13.4 There can potentially be multiple victims of more than one species in relation to one incident. The specific location of each incident is not given, but is detailed at a 10 km square resolution.

13.5 The figures on the RSPB system only reflect known incidents. A number of studies have highlighted the challenges in detecting wildlife crime because of removal of evidence and incidents happening in remote locations (e.g. Holmes *et al*., 2000; Natural England, 2008; Murgatroyd *et al.*, 2019). This means that the rate of detection is unknown and variable, and fluctuations of confirmed incident figures from year to year are to be expected (RSPB, 2017b).

13.6 The confirmed persecution incidents between 1987 and 2017 based on the RSPB recording criteria are shown in Table 6 and Figures 6 and 7.

13.7 RSPB data sources include: members of the public; UK police forces; Health and Safety Executive; Welsh Government; National Wildlife Crime Unit (NWCU); Chemicals Regulations Directorate (CRD); Food & Environment Research Agency (FERA); The Royal Society for the Protection of Birds (RSPB); The Royal Society for the Prevention of Cruelty to Animals (RSPCA); Raptor Study Group Workers; The Agri-Food and Biosciences Institute (AFB NI); Science and Advice for Scottish Agriculture (SASA); Scottish Society for Prevention of Cruelty to Animals (SSPCA); Scottish Agricultural college/ Scotland’s Rural College (SAC/SRUC); Scottish Government Rural Payments and Inspection Directorate (SGRPID); Scottish Natural Heritage

(SNH); Predatory Bird Monitoring Scheme (PBMS); The Zoological Society of London (ZSL); and UK veterinary practices, rescue centres and Wildlife Rehabilitators.

Table 6. Confirmed RSPB raptor persecution incidents in 10km squares occupied by Nidderdale AONB (and where specified, within 2km buffer of the AONB boundary) between 1987-2017

| 10k Grid Ref | Within AONB boundary | Within 2km buffer | Year | Incident offence type | Further details |
|---|---|---|---|---|---|
| SE17 | X | | 1987 | Poisoning | Species involved: Peregrine falcon x 1. Tested positive for: Alphachloralose |
| SE17 | X | | 1995 | Pole/spring trap | Species targeted: Birds of prey |
| SE18 | | X | 1999 | Poisoning | Species involved: Buzzard x 1. Tested positive for: Alphachloralose |
| SE17 | X | | 2000 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose |
| SE06 | X | | 2000 | Shooting | Species involved: Sparrowhawk x 1 |
| SE24 | | X | 2001 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose |
| SE07 | X | | 2002 | Poisoning | Species involved: Buzzard x 1. Tested positive for: Alphachloralose |
| SE17 | X | | 2002 | Poisoning | Species involved: Red kite x 1; poison bait (rabbit) x 1. Tested positive for: Alphachloralose |
| SE16 | X | | 2004 | Pole/spring trapping | Species involved: Peregrine falcon x 1 |
| SE24 | X | | 2007 | Poisoning | Species involved: Red kite x 2; fox x 1; carrion crow x 1; poison bait (rabbit) x 1. Tested positive for: Mevinphos |
| SE07 | X | | 2007 | Possession of poison | Species targeted: Birds of prey. Possession of: Alphachloralose |
| SE17 | X | | 2008 | Poisoning | Species involved: Red kite x 1. Tested positive for: Aldicarb, bendiocarb, carbofuran |
| SE06 | | X | 2008 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose |

| 10k Grid Ref | Within AONB boundary | Within 2km buffer | Year | Incident offence type | Further details |
|---|---|---|---|---|---|
| SE24 | X | | 2009 | Poisoning | Species involved: Red kite x 1. Tested positive for: Carbofuran |
| SE16 | X | | 2009 | Trapping (other) | Species involved: Sparrowhawk x 1 |
| SE24 | X | | 2009 | Shooting | Species involved: Red kite x 1 |
| SE14 | X | | 2010 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose |
| SE15 | X | | 2010 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose |
| SE14 | X | | 2010 | Poisoning | Species involved: Red kite x 2. Tested positive for: Carbofuran |
| SE17 | X | | 2010 | Shooting | Species involved: Buzzard x 1 |
| SE06 | | X | 2010 | Poisoning | Species targeted: Birds of prey. Species involved: Poison bait (chick) x 13. Tested positive for: Mevinphos |
| SE27 | X | | 2011 | Poisoning | Species involved: Buzzard x 1. Tested positive for: Alphachloralose, carbofuran, isophenphos |
| SE14 | X | | 2011 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose |
| SE17 | X | | 2012 | Poisoning | Species involved: Red kite x 1; poison bait (rabbit) x 1. Tested positive for: Bendiocarb, carbofuran, isofenphos |
| SE14 | X | | 2012 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose |
| SE17 | X | | 2012 | Shooting | Species involved: Hen harrier x 1 |
| SE15 | X | | 2013 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose |
| SE17 | X | | 2013 | Pole/spring trapping | Species targeted: Birds of prey |
| SE17 | X | | 2013 | Pole/spring trapping | Species targeted: Birds of prey |

| 10k Grid Ref | Within AONB boundary | Within 2km buffer | Year | Incident offence type | Further details |
|---|---|---|---|---|---|
| SE05 | | X | 2013 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose |
| SE15 | X | | 2015 | Poisoning | Species involved: Red kite x 1. Tested positive for: Carbofuran |
| SE06 | | X | 2015 | Other | Species targeted: Birds of prey. Confirmed possession of items capable of being used to commit an offence (Bird of prey related) |
| SE17 | X | | 2016 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose, aldicarb, bendiocarb, carbofuran, isofenphos |
| SE16 | X | | 2016 | Poisoning | Species involved: Red kite x 1. Tested positive for: Alphachloralose, aldicarb |
| SE15 | X | | 2016 | Shooting | Species involved: Red kite x 1 |
| SE15 | X | | 2016 | Shooting | Species involved: Red kite x 1 |
| SE07 | | X | 2016 | Other | Species targeted: Birds of prey. Confirmed possession of items capable of being used to commit an offence (Bird of prey related) |
| SE14 | | X | 2016 | Shooting | Species involved: Sparrowhawk x 1 |
| SE26 | X | | 2017 | Shooting | Species involved: Buzzard x 1 |
| SE15 | X | | 2017 | Nest destruction | Species involved: Marsh harrier |
| SE15 | X | | 2017 | Shooting | Species involved: Marsh harrier |
| SE15 | X | | 2017 | Shooting | Species involved: Marsh harrier |
| SE16 | X | | 2017 | Shooting | Species involved: Red kite x 1 |

13.8 The persecution data reveals that 43 incidents have taken place in the Nidderdale AONB (including 2km buffer) from 1987 – 2017, affecting 37 individuals. Eight-one percent of all incidents took place within the AONB boundary, the remaining 19% in the 2km buffer.

Figure 6. Number of confirmed RSPB raptor persecution incidents from 1987-2017 in Nidderdale AONB with a 2km boundary around the outside

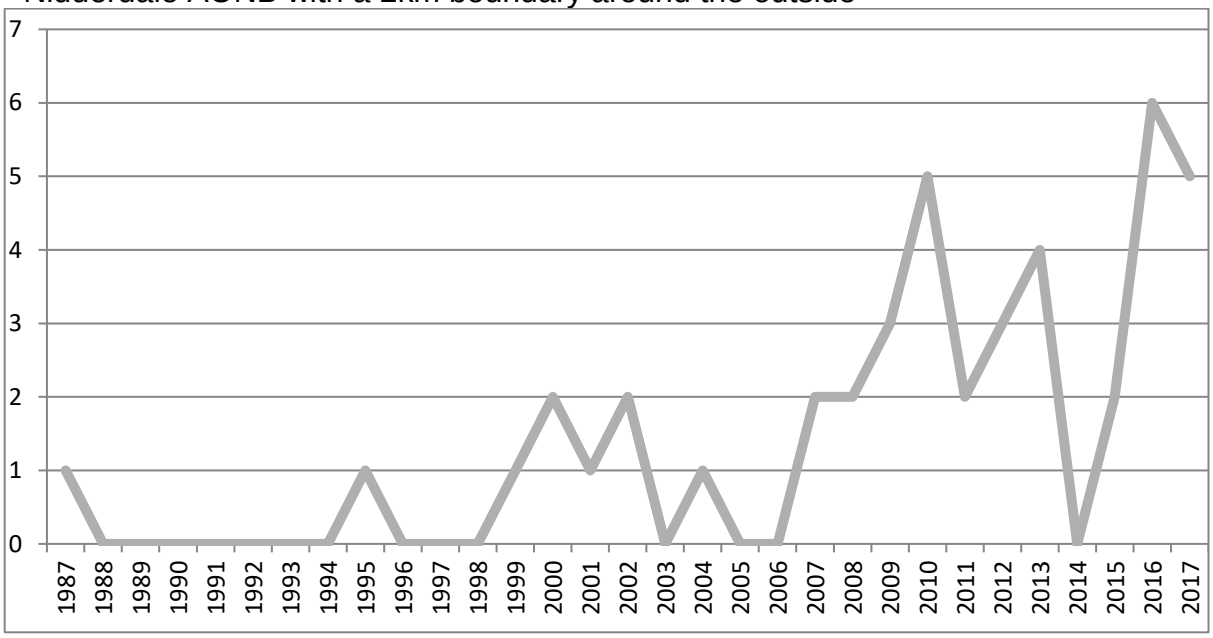
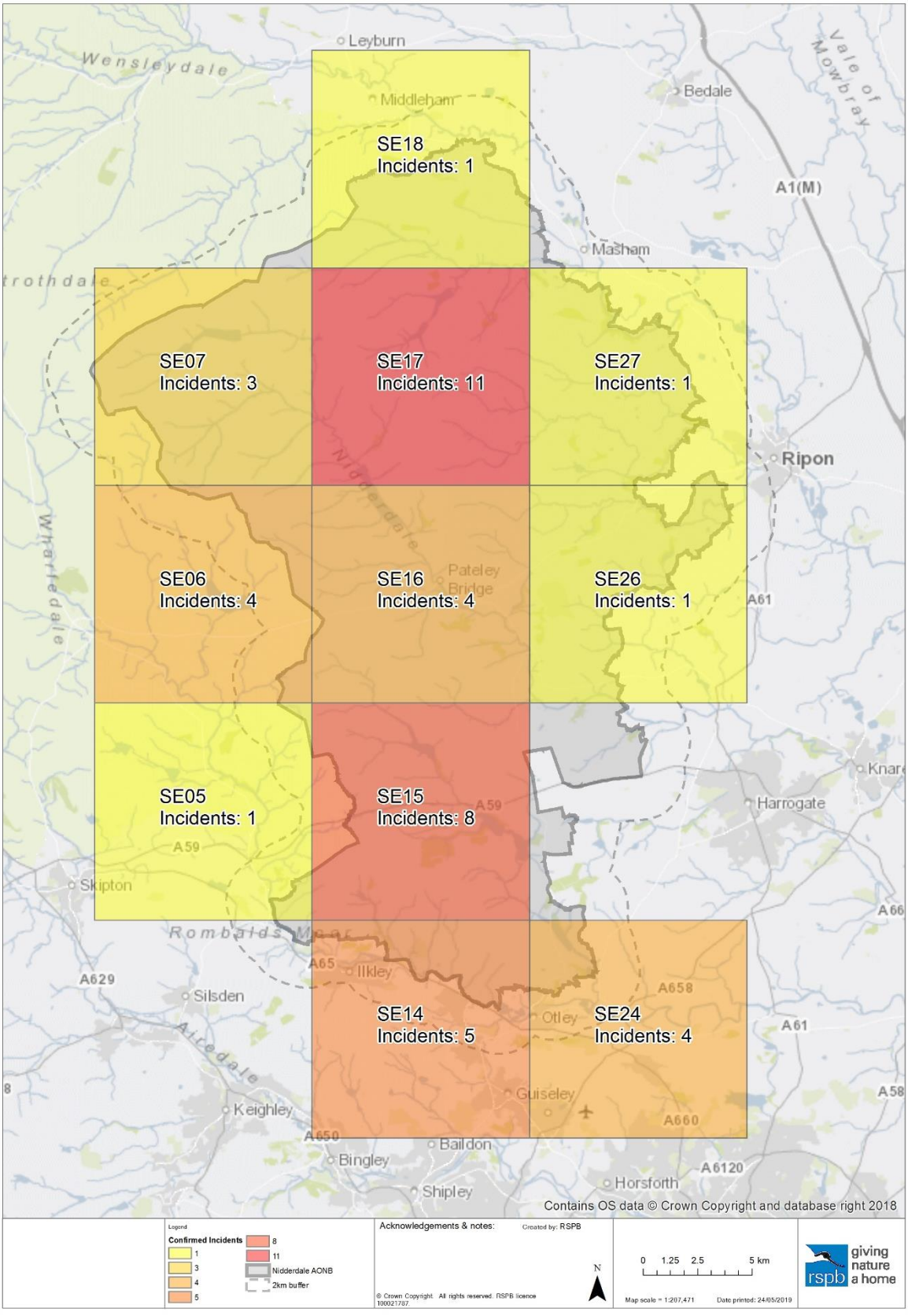


Figure 7. Heat map of confirmed RSPB raptor persecution incidents within the Nidderdale AONB (including 2km buffer), 1987-2017



13.9 The most common species detected as a victim of persecution is the red kite (see Figure 8) and the most common persecution incident type is poisoning, followed by shooting (see Figure 9). When looking over the years 2000 to 2017 it seems to show a shift from poisoning to shooting incidents (see Figure 10).

Figure 8. Birds of prey species subjected to confirmed illegal persecution from 1987-2017 in within Nidderdale AONB and 2km outside its boundary

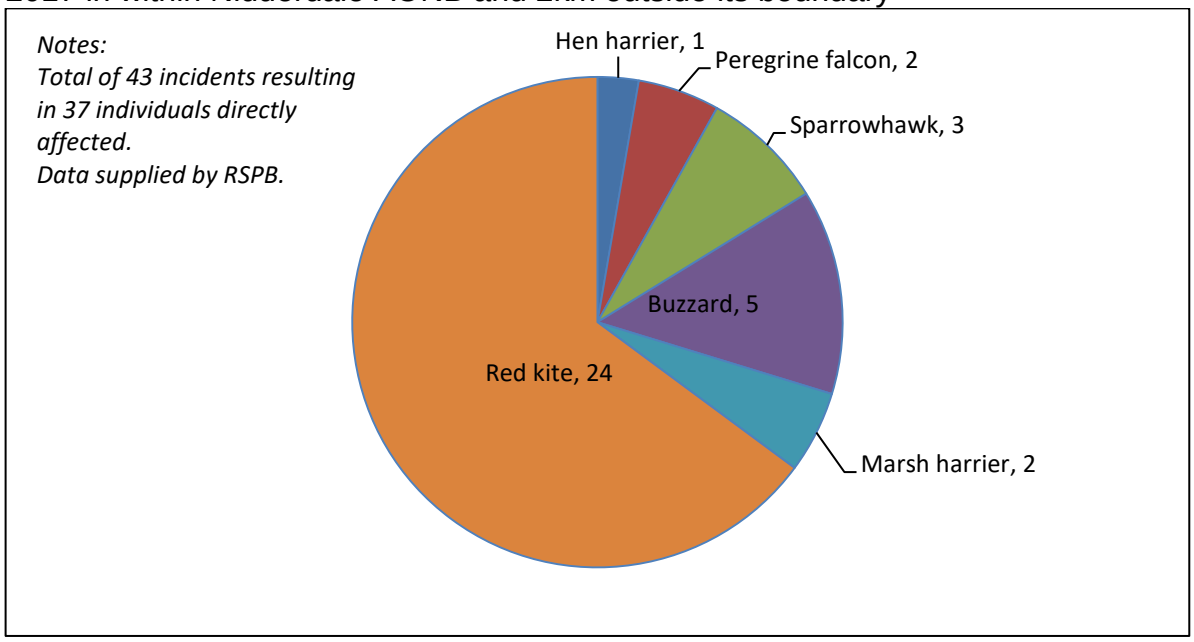



Figure 9. Confirmed RSPB raptor persecution incident types from 1987-2017 in within Nidderdale AONB and 2km outside its boundary

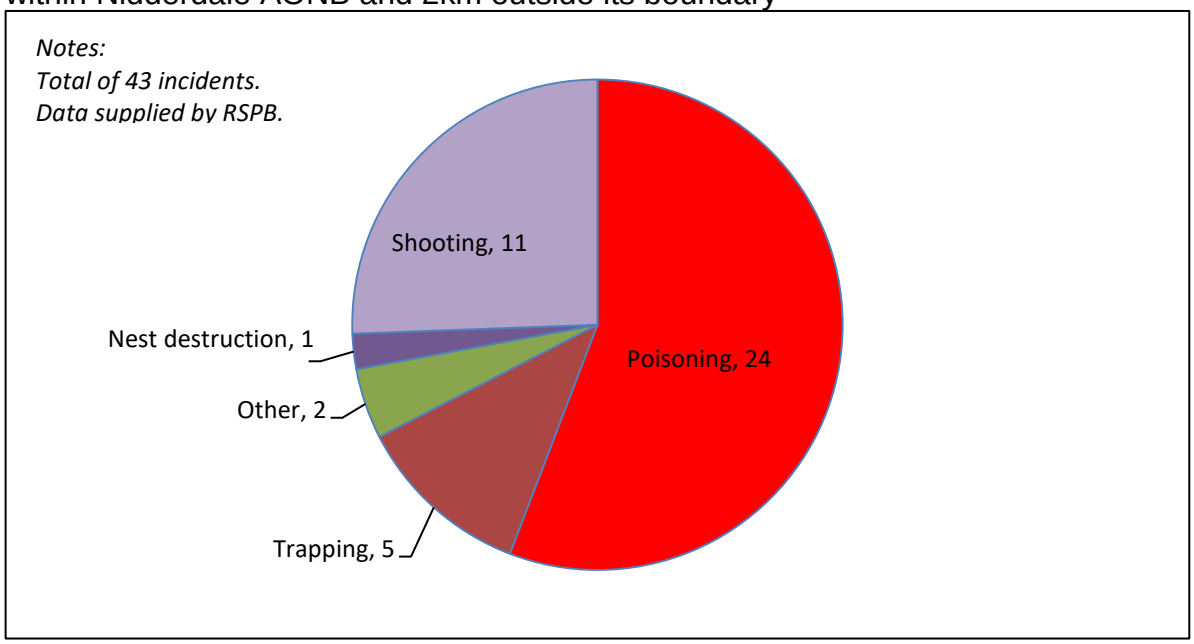
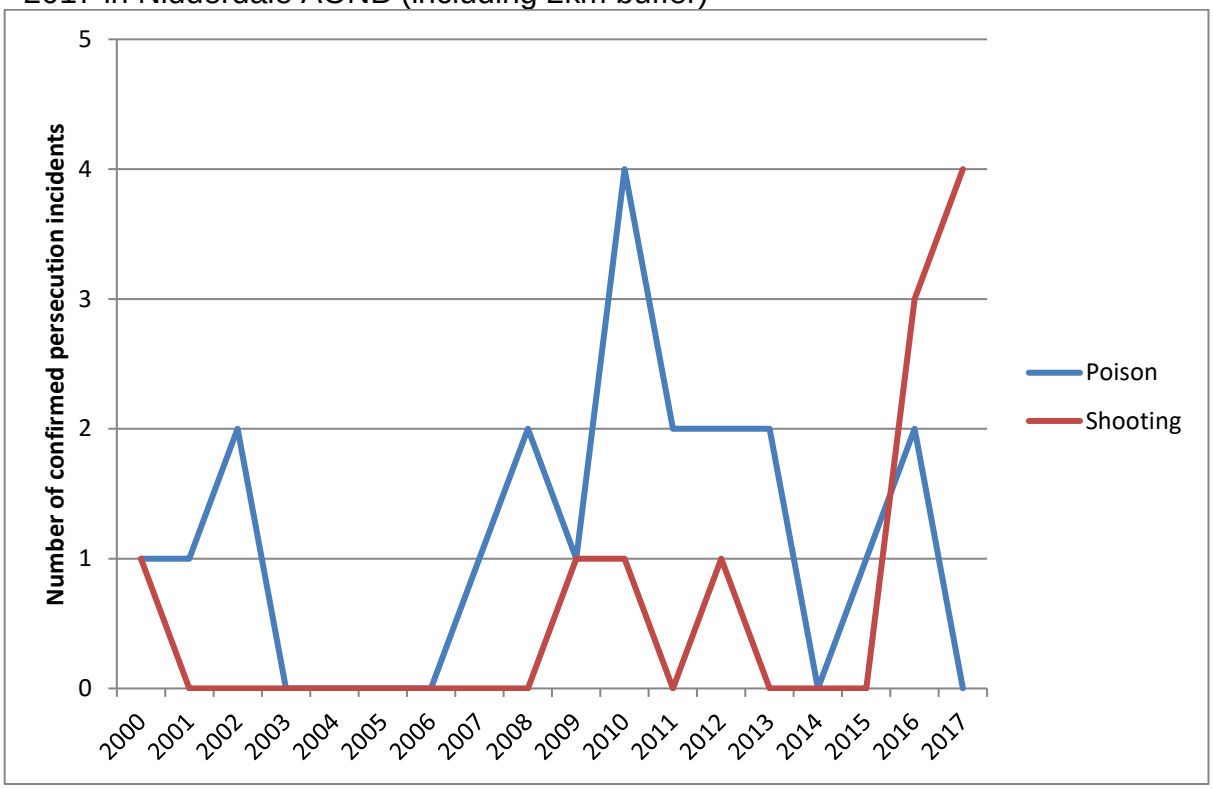


Figure 10. Trends in RSPB raptor persecution incident type from the years 2000-2017 in Nidderdale AONB (including 2km buffer)




*Notes:*

*Poisoning data for this graph include confirmed persecution by poisoning and one case of possession of poison with evidence of intent of use.*
*Data supplied by RSPB.*

13.9 For a comparative view of the Nidderdale AONB vs other areas in the UK see the raptor persecution map hub (www.rspb.org.uk/raptormap).

## 14. Raptor Persecution Priority Delivery Group Data 2011-2015

14.1 The maps (available from http://magic.defra.gov.uk/) were developed by the Raptor Persecution Priority Delivery Group (RPPDG) for England and Wales. The group includes Defra, the Devolved Administrations, Natural England, National Wildlife Crime Unit, the police, British Association for Shooting and Conservation, RSPB, Country Land and Business Association, Moorland Association, National Parks England, Crown Prosecution Service and the Countryside Alliance. The National Gamekeepers' Organisation was on the group when the maps were produced but have since resigned.

14.2 The sources of data for the RPPDG maps are as follows: members of the public, all UK police forces; Health and Safety Executive; Welsh Government; National Wildlife Crime Unit (NWCU); Chemicals Regulations Directorate (CRD); Food & Environment Research Agency (FERA); The Royal Society for the Protection of Birds (RSPB); The Royal Society for the Prevention of Cruelty to Animals (RSPCA); Raptor Study Group Workers; Predatory Bird Monitoring Scheme (PBMS); The Zoological Society of London (ZSL); and UK veterinary practices, rescue centres and Wildlife Rehabilitators. Data was captured at a variety of resolutions and accuracies and has been generalised to prevent misidentification of incident locations.

14.3 Each incident on the map has been recorded in the following categories:

- Illegal pesticide poisoning data is based on chemical analysis and interpretation of abuse by the analytical laboratory.
- Shooting and trapping data is derived from the police intelligence unit concluding that the raptor was shot or trapped and is supported by evidence such a professional veterinary opinion, x-rays or other forensic analysis.

14.4 The RPPDG do not include poison bait crimes in their maps and incidents in the location are grouped together and shown as a single symbol – see Figure 11.

Figure 11. Confirmed RPPDG incidents 2011-2015 by 10km square

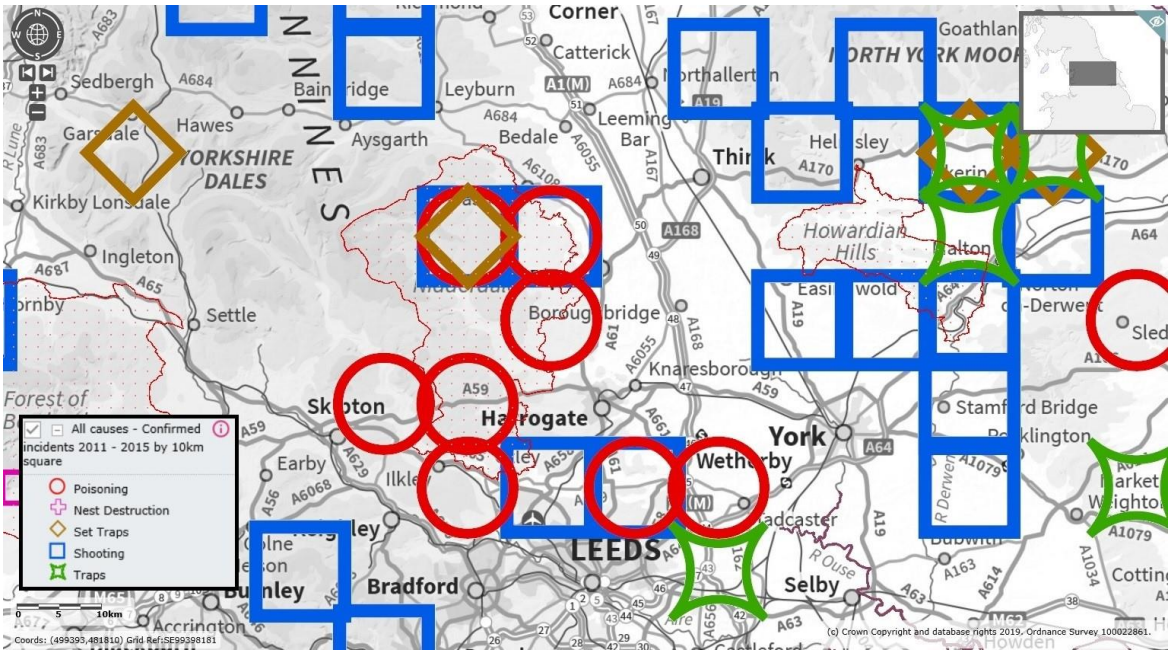



Table 7. Confirmed RPPDG raptor persecution incidents in 10km squares with some overlap with Nidderdale AONB between 2011-2015

| 10k Grid Ref | Year | Incident offence type | In RSPB data (Yes or No) |
|---|---|---|---|
| SE27 | 2011* | Poisoning | Yes |
| SE17 | 2012 | Poisoning | Yes |
| SE17 | 2012 | Shooting | Yes |
| SE15 | 2012 | Poisoning | Yes |
| SE14 | 2012 | Poisoning | Yes |
| SE27 | 2013 | Shooting | No |
| SE17 | 2013 | Set trap | Yes |
| SE15 | 2013 | Poisoning | Yes |
| SE05 | 2013 | Poisoning | Yes |
| SE24 | 2014 | Shooting | No |
| SE26 | 2015 | Poisoning | No |
| SE15 | 2015 | Poisoning | Yes |

*Note * The RSPB data also shows a 2011 poisoning offence in SE14 (included in the WIIS results) which is not in this RPPDG data.*

14.5 In summary this data shows a total of 12 incidents (eight poisonings, three shootings and one trap incident) in the 10km squares which have some overlap with the AONB area during the 2011-2015 period. Squares SE17 and SE15 have had three incidents each, square SE27 two incidents, and squares SE26, SE05, SE14 and SE24 one incident each. By comparison, the RSPB data lists 11 incidents (seven poisonings, two traps, one shooting and one other) in the same period (2011-2015).

14.6 Due to the way the data is displayed in Magic maps, and the omission of certain incident types, it is not easy to draw direct comparisons between the RPPDG published data and the RSPB figures. Although as RSPB data is the primary source for the RPPDG data (other than poisoning, where RPPDG data is drawn directly from WIIS toxicology results), where the MAGIC map appears to have more incidents for a category, this is likely to be because the grid reference the RSPB hold for the incident show it to have fallen outside the 2km buffer around the AONB boundary, and so it has not been included in their data provided.

# 15. Acknowledgements

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