

BIRDS OF PREY IN THE YORKSHIRE DALES NATIONAL PARK EVIDENCE REPORT

1. EXECUTIVE SUMMARY

- 1.1 The issue of wildlife crime, in particular bird of prey persecution, featured prominently in the results of the 2017 Yorkshire Dales National Park Management Plan public consultation. Following these responses, the populations of a number of key upland raptor species nationally and in the Yorkshire Dale National Park have been assessed, and confirmed incidents of persecution have been quantified.

- 1.2 In the last two decades there has been a significant increase in the population and distribution of buzzard both nationally and within the National Park. Although red kite populations have shown a similar increase, despite the proximity of the Yorkshire reintroduction site and the success of that scheme, there are currently no breeding pairs within the National Park. The number of persecution incidents along the south eastern fringe of the Yorkshire Dales appears to be preventing the expansion of the breeding population into the area. In both these species, the population increases are in the main, the re-occupancy of historic breeding ranges following historic declines or extirpation.

- 1.2.1 There is no systematic monitoring of goshawk, short-eared owl or merlin populations in the National Park and so it is not possible to determine the true status or any definitive population trends. However, the available data would suggest that the goshawk is a very rare bird that is restricted to only one or two sites in the area, with no recent confirmed breeding records. There are a small number of breeding records of short-eared owls reported each year but there appear to be large areas of potentially suitable breeding habitat that are not occupied. The populations of both goshawk and short-eared owl are judged to be well below the natural carrying capacity of the area. There are a small number of breeding records for merlin reported annually, and additional sightings of single birds in areas of potentially suitable breeding habitat, but these are insufficient to determine any population trends. Data from a Natural

England scheme to monitor merlins in the north of the National Park are not in the public domain at the time of writing.

- 1.3 The long-term breeding data for peregrine indicates that in the last decade the population has been relatively stable in the National Park. There has, however, been a marked difference in site occupancy, with many traditional territories away from areas managed for grouse regularly occupied and successfully fledging young. In contrast, there has not been a successful peregrine nesting attempt on any of the monitored grouse moor sites since 1997, with birds now absent from the majority of sites that were occupied in the 1990s. There is no natural explanation for this difference.
- 1.4 Despite large areas of potentially suitable nesting habitat, there has not been a successful hen harrier nesting attempt in the National Park since 2007. In addition, 11 (19%) of the 59 hen harriers that were satellite tagged by Natural England at sites across northern England and Scotland between 2002 and 2017 are classed as 'missing fate unknown' in the Yorkshire Dales. Low survival rates of both adult and juvenile hen harriers are the main factor preventing the population from increasing.
- 1.5 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 National Park, and is preventing the colonisation of the area by red kites. The situation with short-eared owl and goshawk is not clear, but concerns that these populations may be limited by persecution may prove to be justified with further work. The present status of these species mirrors that of adjoining upland areas of northern England.

2. INTRODUCTION

- 2.1 There have been long-standing issues relating to the threat to bird of prey populations in upland areas of the country such as the Yorkshire Dales National Park, from land management practices primarily associated with driven grouse shooting.
- 2.2 A public consultation was carried out on behalf of the Yorkshire Dales National Park Management Plan Steering Group between 22nd May and 3rd July 2017 to determine what the public and stakeholders considered to be the special qualities of the National Park and, to help to identify key issues that should be included in the new management plan. The issue of wildlife crime, in particular bird of prey persecution, featured prominently in the consultation responses from both residents and non residents ([YDNPA, 2017](#)).
- 2.3 There are differing opinions on both the status of bird of prey populations in the National Park and the extent of any persecution. This report assesses the status of key upland bird of prey populations nationally and within the YDNP, and lists the confirmed cases of bird of prey persecution and illegal use of poisons in the last ten years within the area.
- 2.4 In the context of this report, the key upland bird of prey species are considered to be goshawk *Accipiter gentilis*, hen harrier *Circus cyaneus*, red kite *Milvus milvus*, buzzard *Buteo buteo*, short-eared owl *Asio flammeus*, merlin *Falco columbarius* and peregrine falcon *Falco peregrinus*. Whilst other raptor species are present in the area, there are not considered to be significant problems associated with land management practices.
- 2.5 In assessing the current status of birds of prey it should be noted that the populations of some species are recovering from a very low level, in some cases extirpation, as a result of historic anthropomorphic actions. The increase in population size and associated range expansion of some of these species that have occurred in recent decades, particularly within the YDNP, are the re-

occupancy of historic breeding ranges or sites, and not necessarily colonisation of previously unoccupied areas.

- 2.6 Holmes *et al.* ([2000](#)) highlighted the difficulty in assessing suspected persecution incidents in the UK as in most cases where raptors are deliberate targeted, evidence is likely to be removed or hidden with very few carcasses located and available for analysis. In addition, the persecution of birds of prey usually takes place in remote locations, where detection and the probability of coming across evidence of a crime are very low. As such, it is widely believed 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. The national breeding population totals have been taken from the Avian Population Estimates Panel (APEP) with additional data from the results of national surveys.
- 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 (30-330 bp per annum); scarce (301-1000 bp per annum) or less scarce (1000bp 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 2015 across the country ([Holling and RBBP, 2016](#)).
- 3.3 The Breeding Bird Survey (BBS) scheme monitors the population changes of the commoner bird species across the country. BBS trends are available for three of the species considered here, with data for the others below the threshold for analysis. These data refer to the population changes between the periods 2015 and 2016, and 1994 and 2016. The trends are presented as the percentage change over the two periods, with any statistically significant changes marked with an asterix (*) ([Harris, et al. 2017](#)).

- 3.4 The breeding data for these species in the Yorkshire area of the YDNP were collated under the auspices of the Yorkshire Dales Upland Bird Study Group (YDUBSG) between 1992 and 2011. Subsequently, this has been undertaken by the YDNPA and Yorkshire Naturalists' Union. Data for the three Cumbrian parishes that were in the pre-2016 boundary of the National Park, and the post-2017 extension area are not readily available.
- 3.5 The information on last known fixes of hen harriers within the National Park have been extracted from the radio and satellite tagging information that have been made publically available by Natural England in the area referred to as the Yorkshire Dales. It is accepted that some of these locations may be outside the YDNP boundary.
- 3.6 In addition, the data on red kites has been provided by the Yorkshire Red Kite Project.
- 3.7 Raptor persecution is one of the UK government's six wildlife crime priorities, with an emphasis on hen harrier, peregrine falcon, goshawk, red kite, golden eagle and white-tailed eagle. The RSPB are the only organisation that have 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).
- 3.8 The Raptor Persecution Priority Delivery Group (RPPDG) for England and Wales has recently published a map of raptor persecution incidents in England and Wales from 2011 to 2015, though this does not include all incident types. These maps are available on the MAGIC website <http://magic.defra.gov.uk/>
- 3.9 The RSPB data used in this report details the number of confirmed raptor persecution incidents within 10km squares which are within, or intersect with the boundary of the YDNP between 2007 and 2016 inclusive, and includes the area

in the 2016 National Park boundary extension. Each incident 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.
- 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.

3.10 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.

3.11 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).

3.12 There can potentially be multiple victims of more than one species in relation to one incident.

3.13 The specific location of each incident is not given, but is detailed at a 10 km square resolution. This means that there may be incidents that have happened just outside the National Park boundary but within a 10 km square covering the area.

4. LEGAL PROTECTION

4.1 All birds of prey have had full legal protection in the UK since 1954 (except the sparrowhawk, protected since 1963). In the UK, these laws are implemented through the Wildlife & Countryside Act 1981 (as amended) in Britain and the

Wildlife (Northern Ireland) Order 1985. 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, on or near an 'active' nest.

- 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 Special Protection Area is a series of strictly protected sites classified in accordance with Article 4 of the EC Birds Directive ([JNCC, undated](#)) with approximately one third of the SPA within the YDNP. The citation states that during the breeding season the SPA should regularly support 11 pairs of hen harrier, 136 pairs of merlin and 15 pairs of peregrine ([JNCC, 2016](#)). Natural England are currently undertaking an assessment of what breeding bird data is available, and what additional survey work may be required to assess the condition of the SPA citation species.

5. SPECIES ASSESSMENT: Goshawk

- UK population estimate: 280-420 breeding pairs ([Musgrove et al. 2013](#)).
 - YDNP population estimate: No confirmed breeding records.
 - BBS Trends (England): No trends due to insufficient sample sizes.
 - RBBP UK: Scarce; 542 bp; 25 year trend – strong increase +274%; moderate coverage ([Holling and RBBP, 2017](#)).
- 5.1 The status of this species appears to vary across the country with recent population increases reported in southwest England, Wales and parts of central and northern Scotland and Northern Ireland, although in some cases, this may be due to improvements in data submission ([Holling and RBBP, 2016](#)). This contrasts with some upland areas including the Dark Peak where there are continued low numbers of successful breeding pairs, and where there is repeated failure of some nests around the moorland edge which fail in unexplained circumstances ([PDNPA, undated](#)).

- 5.2 There has been no systematic survey work or any detailed nest studies undertaken on goshawk populations in the YDNP and as such, comprehensive data is not available. A review of records in the wider Yorkshire Dales area (YDNP and Nidderdale Area of Outstanding Natural Beauty) between 1992 and 2006 found that goshawks were regularly recorded at a number of sites, with display noted in most years throughout the study period. However, during the study period there were only two observations of adult goshawk behaviour suggesting that breeding may have been attempted, but only one confirmed instance of successful breeding ([Court et al, 2006](#)).
- 5.3 More recently, there have only been records from two distinct areas of the National Park but, without undertaking comprehensive survey work, it is not possible to determine the actual population status. There are no recent confirmed breeding records. Although this can be a difficult species to survey, particularly at low population density, the lack of records from within the National Park indicate that this species is present in very low numbers despite areas of potential suitable breeding habitat. A reduction in observer effort over recent years could, in part, account for some of the perceived decline but does not entirely explain why the decrease in records since the late 1990s and early 2000s.
- 5.4 *Assessment summary – although there is a no comprehensive monitoring programme, the lack of records indicate that this species is genuinely rare in the YDNP, with the population much lower than would be expected given the available habitat.*

6. SPECIES ASSESSMENT: Hen Harrier

- UK population estimate: 550–740 breeding pairs ([Musgrove et al. 2013](#)).
- YDNP population estimate: currently no breeding pairs, with the last successful nesting attempt in 2007. There were two nesting attempts in 2017 but both failed, most likely due to natural causes.
- BBS Trends (England): No trends due to insufficient sample sizes.

- RBBP UK: Scarce; 545 bp; 28 year trend (survey) – stable (2%); moderate coverage ([Holling and RBBP, 2016](#)).
- 6.1 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.
- 6.2 A previous review of hen harrier breeding attempts in YDNP concluded that between 2000 and 2007 there were a minimum of 13 nesting attempts, but only three were successful ([Court and Irving, 2008](#)). The only subsequent potential breeding records in the National Park were an adult pair seen displaying in late April and early May in 2013, and one male and two breeding females that attempted to nest in 2017, both of which failed due to natural causes (presumably predation).
- 6.3 There have been a 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.
- 6.4 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 km² of suitable habitat.
- 6.5 The English hen harrier breeding population is currently in low single figures 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 Framework. The report identified persecution as the main factor limiting population expansion and highlighted that the English population is being constrained by poor juvenile and/or adult survival ([Fielding et al., 2011](#)). 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.
- 6.6 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, 2017](#)). The remaining 133 are classed as 'missing fate unknown'. From the data released, 17 (17%) of the 99 radio-tagged birds were classed as 'missing fate unknown' in the Yorkshire Dales, including one in Garsdale and one on the Cumbria/Yorkshire Dales boundary (Natural England, 2017). In addition, 11 (19%) of the 59 satellite tagged birds were deemed to be 'missing fate unknown' in the Yorkshire Dales. Note – the area classed as 'Yorkshire Dales' by NE has not been qualified, and it is not possible to determine from the published if any of the birds identified by NE as 'missing fate unknown' in Cumbria were in the YDNP.
- 6.7 At the time of writing (January 2018) an additional satellite-tagged bird is 'missing' in the YDNP and is under investigation by North Yorkshire Police.
- 6.8 Natural England (2017) determines 'Missing Fate Unknown' as either:

- 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.
- 6.9 The reliability of the satellite tags is very good, with only 6% 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.
- 6.10 The fate of these missing birds continues to be widely debated. The cycle of the satellite tag transmissions detailed above means that the last location transmitted is not necessarily the location that the bird died. NE will be working with academics to undertake further analysis of these data and are intending to submit the results for peer-review in 2018. Irrespective of the exact locations of the last known fixes, a significant number of satellite tagged hen harriers have gone 'missing' in the YDNP, contributing to the poor juvenile and/or adult

survival cited by Fielding *et. al.* ([2011](#)) as being main factor constraining the population.

6.11 In 2016, Defra published a six point plan¹ 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;
- VI. Trial brood management scheme.

6.12 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.

6.13 In England the hen harrier is threatened with extinction because of illegal persecution ([Natural England, 2008](#)), and as such DEFRA have recently added it to the government's list of species considered of principal importance for conserving England's wildlife. At a time when the English population is at critically low point and close to extinction as a breeding species, the action for trial brood management has generated the most concern amongst some conservation bodies.

¹https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/491818/hen-harrier-action-plan-england-2016.pdf

6.14 *Assessment summary – despite large areas of potentially suitable breeding habitat, there have been no successful breeding attempts since 2007. Outside the breeding season a significant number of satellite tagged birds have gone missing in the National Park, contributing to poor winter survival that is constraining the hen harrier population.*

7. SPECIES ASSESSMENT: Red Kite

- UK population estimate: 5000+ pairs (Yorkshire Red Kite Project)
- YDNP population estimate: currently no breeding pairs.
- BBS Trends (England): 2015- 2016: 13%; 1994-2016: >10,000%* ([Harris et al. 2017](#)).
- RBBP UK: not assessed.

7.1 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 number of re-introduction projects across England and Scotland.

7.2 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 a 1000 young birds fledged in the county by 2012 ([Simpson, undated](#)).

7.3 A three year program to reintroduce red kites in Cumbria began in 2010 in the Grizedale Forest, with the first successful breeding pair in the county in 2015 ([Forestry Commission, 2017](#)).

7.4 Despite the proximity to the Yorkshire re-introduction site at Harewood, there have been only two confirmed breeding pairs in the National Park, both in the south eastern area. One pair (a male released at Harewood and a female

reared from a nest in Yorkshire) successfully bred between 2004 and 2010. A second pair (a female reared from a nest in Yorkshire and a male released as part of the North East re-introduction project) attempted to nest in 2007 but failed when the male was found dead under the nest, with the post-mortem confirming it had been shot (Doug Simpson pers.comm.).

7.5 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. The spread of red kites into the National Park is being restricted by illegal persecution along the south eastern boundary with data from the Yorkshire Red Kite Project showing that there have been 22 confirmed fatalities in that area as a result of illegal persecution, with 13 cases in the Washburn Valley, eight in Upper Nidderdale and one near Hazelwood in the YDNP (Doug Simpson pers. comm.). These incidents represent 63% of the total number of confirmed persecution incidents recorded in Yorkshire as a whole. A similar situation exists in County Durham and Northumberland where the species has failed to expand its breeding range into upland regions immediately adjoining the area of a red kite reintroduction programme in Gateshead ([Smith, 2016](#)).

7.6 *Assessment summary – there are currently no breeding records within the National Park with the spread of red kite into the area restricted by illegal persecution along the south eastern boundary.*

8. SPECIES ASSESSMENT: Buzzard

- UK population estimate: 57,000–79,000 breeding pairs ([Musgrove et al. 2013](#)).
- YDNP population estimate: Not known but widespread.
- BBS Trends (England): 2015-16: 2%; 1994-2016: 194%* ([Harris et al. 2017](#)).
- RBBP UK: not assessed.

- 8.1 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 a reduction in persecution, the recovery of rabbit populations from the effects of myxomatosis and release from the deleterious effects of organochlorine pesticides ([Elliot and Avery, 1991](#), [Clements, 2002](#)).
- 8.2 There is no systematic monitoring of breeding buzzards in the National Park but the increase in sightings and localised assessment of breeding territories shows that the population mirrors the national trend. Although there appears to be a disparity between the number of records in well watched areas such as Wharfedale and some of the other dales, this may be a reflection of differences in observer coverage.
- 8.3 *Assessment summary – although there is a no comprehensive monitoring programme, casual records indicate that this species is widespread in the YDNP.*

9. SPECIES ASSESSMENT: Short-eared Owl

- UK population estimate: 620–2,180 breeding pairs ([Musgrove et al. 2013](#)).
 - YDNP population estimate: Not known, <10 confirmed breeding pairs are reported annually.
 - BBS Trends (England): No trends due to insufficient sample sizes.
 - RBBP UK: Scarce; 620+bp; no trend available; low coverage ([Holling and RBBP, 2016](#)).
- 9.1 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.

- 9.2 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 between years difficult. Even taking into account these factors, the population of short-eared owls appears to be well below the natural carrying capacity given the large areas of potential breeding habitat found within the National Park.
- 9.3 *Assessment summary – although there is a no comprehensive monitoring programme, the low number of casual records suggests that the breeding population is below the natural carrying capacity of the area.*

10. SPECIES ASSESSMENT: Merlin

- UK population estimate: 900–1,500 breeding pairs ([Musgrove et al. 2013](#)).
 - YDNP population estimate: last estimate of 40-50 pairs in 1992/93 (YDUBSG, unpublished).
 - BBS Trends (England): No trends due to insufficient sample sizes.
 - RBBP UK: Less scarce; 1,160 bp; 25 year trend (survey) – weak increase +94%; moderate coverage ([Holling and RBBP, 2016](#)).
- 10.1 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](#)).

- 10.2 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](#)). A population estimate of between 40-50 pairs in the National Park was derived from this fieldwork. 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.
- 10.3 There are a number of records of merlins at widespread sites across the National Park during the breeding season, with some casual observations enabling a small number of breeding records to be determined in most years. Details of, and population estimates derived from a trial NE-led project monitoring merlins on a number of upland estates in the north of the National Park are not readily available.
- 10.4 *Assessment summary - there is a no comprehensive monitoring programme that enables the status of this species to be assessed.*

11. SPECIES ASSESSMENT: Peregrine

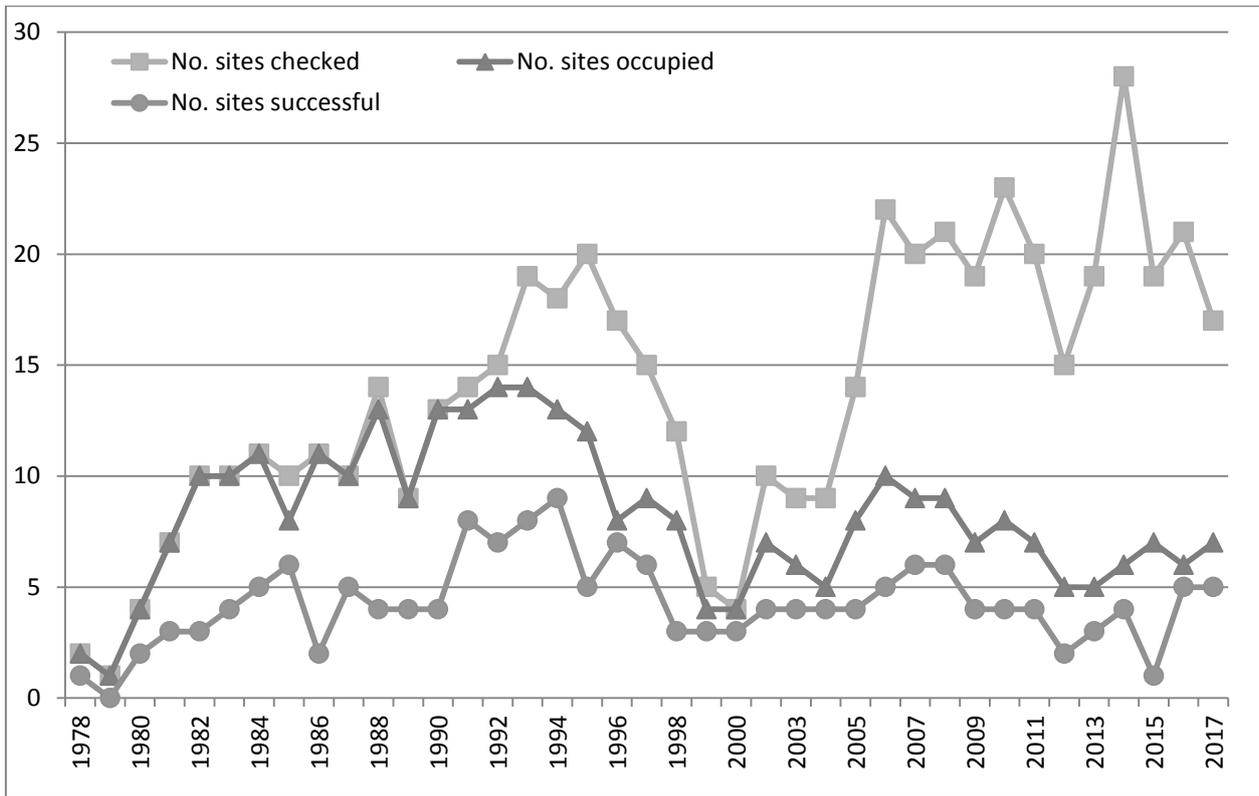
- UK population estimate: breeding pairs 1,500 breeding pairs ([Musgrove et al. 2013](#)).
 - YDNP population estimate: Between five and ten sites occupied annually (YDNPA, unpublished).
 - BBS Trends (England): 2015-16: 13% increase; 1994-2016: 45% Increase ([Harris et al. 2017](#)).
 - RBBP UK: Less scarce; 1,701 bp; 22 year trend (survey) – stable +5%; moderate coverage ([Holling and RBBP, 2016](#)).
- 11.1 The final results of the 2014 UK peregrine survey have yet to be published. However, the preliminary analysis of the data estimates the number of breeding

pairs at 1,505 ([BTO, 2016](#)). This is similar to the 1,492 occupied territories found during the last national survey in 2003 ([Banks *et al.*, 2003](#)).

- 11.2 Although the population estimates between the two surveys are similar, there were notable differences in the regional totals. In England there has been an increase in the overall population due to stable or increasing populations in urban and lowland areas. This is in stark contrast to upland regions where, in the majority of areas, populations are decreasing ([BTO, 2016](#)).
- 11.3 Whilst there may be a number of reasons for this difference, there is evidence in Scotland that this is due to persecution associated with grouse moor management ([North East Scotland Raptor Study Group, 2015](#)). Similarly in northern England, 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 ([Downing, 2009](#) and [2010](#); [Smith, 2011, 2012, 2013, 2014, 2015, 2016](#)). In the Dark Peak area of the Peak District, there were no successful breeding peregrine attempts in 2017, for the first time since recolonisation in 1984 ([Anonymous, 2017](#)).
- 11.4 The peregrine is the most well studied bird of prey in the National Park. The status of peregrines in the wider Yorkshire Dales area (including the National Park) has been documented by Court *et al.* ([2004](#)) and showed that there was a marked difference between breeding success on grouse moors and sites away from grouse moors. Subsequent monitoring work has shown that occupancy of traditional sites on grouse moors has continued to be extremely low, with no successful breeding on this land use type since 1997 (YDNPA, unpublished). This contrasts with a relatively stable population away from grouse moor sites. There are no natural factors that can explain the differences between site occupancy on and away from grouse moor sites.
- 11.5 The continued absence of peregrines from many traditional nest sites on grouse moors suggests that the conclusion reached by Amar *et al.* ([2011](#)) that grouse

moors, in the National Park at least, are operating as sink sites is still valid. The data on peregrine breeding success in the National Park is shown in Figure 1.

Figure 1. The number of sites checked for breeding peregrine, the number of sites occupied and the number of sites successfully fledging young in the Yorkshire Dales National Park between 1978 and 2017.



11.6 *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 are acting as population sinks.*

12. PERSECUTION DATA

12.1 The confirmed persecution incidents between 2007 and 2016 based on the RSPB recording criteria are shown in Table 1 and figure 2.

Table 1. Confirmed raptor persecution incidents in 10km squares occupied by the Yorkshire Dales National Park between 2007 and 2016 based on RSPB crime recording criteria. Note that not all incidents shown in the table below will have directly occurred within the park itself: some incidents may fall within those 10km square that are intersected by the boundary, but in a part of the square that may fall beyond the boundary.

10k Grid Ref	Year	Incident offence type	Further details
NY71	2007	Shooting	Species involved: Buzzard x 2.
NZ00	2007	Poisoning	Species involved: Buzzard x 1; poison bait (rabbit) x 1. Tested positive for: Alphachloralose.
SE07	2007	Possession Of Poison	Species targeted: Birds of prey. Tested positive for: Alphachloralose
SD98	2007	Poisoning	Species targeted: Birds of prey. Species involved: Lesser black-backed gull; poison bait (rabbit) x 1. Tested positive for: Alphachloralose.
SD98	2007	Poisoning	Species targeted: Birds of prey. Species involved: Poison bait (rabbit) x 1. Tested positive for: Alphachloralose.
SD98	2007	Poisoning	Species targeted: Birds of prey. Species involved: Poison bait (rabbit) x 1. Tested positive for: Alphachloralose.
SE05	2007	Shooting	Species involved: Red kite x 1.
NY71	2007	Shooting	Species involved: Buzzard x 2.
SE06	2008	Poisoning	Species involved: Red kite x 1. Tested positive for: Alphachloralose
SE16	2009	Illegal Trapping (Other)	Species involved: Sparrowhawk x 1.

10k Grid Ref	Year	Incident offence type	Further details
SD88	2010	Poisoning	Species involved: Buzzard x 2; poison bait (rabbit) x 2. Tested positive for: Alphachloralose.
SD78	2010	Shooting	Species involved: Red kite x 1.
SE15	2010	Poisoning	Species involved: Red kite x 1. Tested positive for: Alphachloralose
SE06	2010	Poisoning	Species targeted: Birds of prey. Species involved: Poison bait (chick) x 13. Tested positive for: Mevinphos.
SE06	2010	Poisoning	Species involved: Buzzard x 1. Tested positive for: Carbofuran.
SD96	2010	Poisoning	Species targeted: Birds of prey. Species involved: Dog x 1. Tested positive for: Aldicarb.
NZ00	2011	Shooting	Species involved: Kestrel x 1.
NY80	2011	Shooting	Species involved: Buzzard x 1.
NY71	2012	Persecution Other	Confirmed possession of items capable of being used to commit an offence (Bird of prey related)
NY71	2012	Poisoning	Species targeted: Birds of prey. Species involved: Poison bait (duck) x 1. Tested positive for: Carbofuran.
NY71	2012	Poisoning	Species involved: Buzzard x 1; poison bait (pheasant) x 1. Tested positive for: Carbofuran.
NY71	2012	Poisoning	Species targeted: Birds of prey. Species involved: Poison bait (duck) x 1. Tested positive for: Carbofuran.
SE15	2012	Poisoning	Species involved: Red kite x 1. Tested positive for: Alphachloralose.
SE15	2013	Poisoning	Species involved: Red kite x 1. Tested positive for: Alphachloralose.
SE05	2013	Poisoning	Species involved: Red kite x 1. Tested positive for: Alphachloralose.
SE09	2014	Shooting	Species involved: Buzzard x 1.

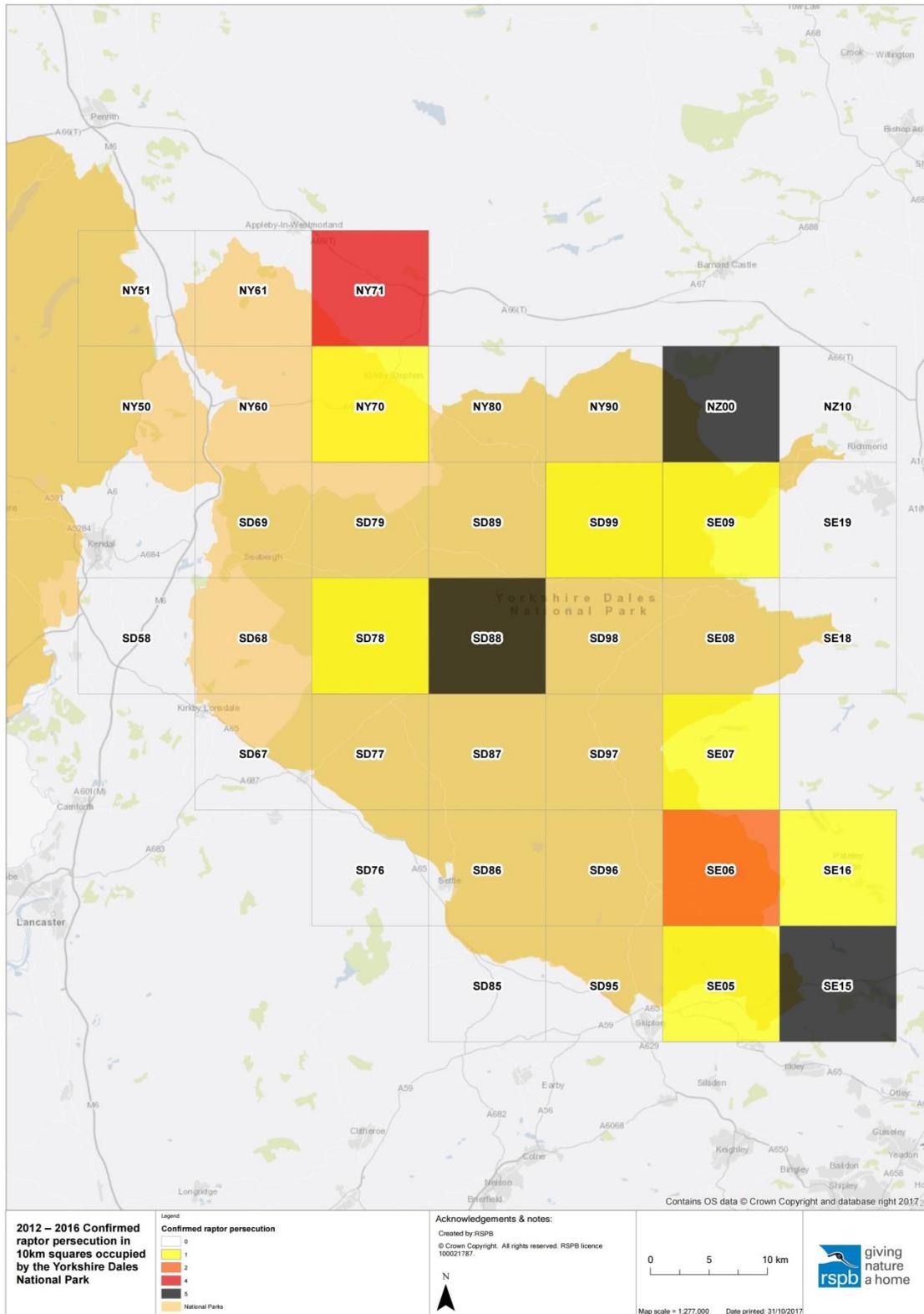
10k Grid Ref	Year	Incident offence type	Further details
NZ00	2014	Possession Of Poison	Species targeted: Birds of prey. Tested positive for: Alphachloralose.
SE15	2015	Poisoning	Species involved: Red kite x 1. Tested positive for: Carbofuran.
NZ00	2015	Possession Of Poison	Species targeted: Birds of prey. Tested positive for: Alphachloralose, Bendiocarb
SD78	2015	Illegal Trapping (Other)	Species targeted: Birds of prey.
SE06	2015	Persecution Other	Confirmed possession of items capable of being used to commit an offence (Bird of prey related)
NZ00	2015	Shooting	Species involved: Peregrine falcon x 1.
NZ00	2015	Persecution Other	Confirmed possession of items capable of being used to commit an offence (Bird of prey related)
SD88	2016	Illegal Pole/Spring Trapping	Species targeted: Birds of prey and owls.
SD88	2016	Illegal Pole/Spring Trapping	Species targeted: Birds of prey and owls.
SD88	2016	Illegal Pole/Spring Trapping	Species targeted: Birds of prey and owls.
SE15	2016	Shooting	Species involved: Red kite x 1.
NZ00	2016	Nest Destruction	Species involved: Buzzard nest.
SE15	2016	Shooting	Species involved: Red kite x 1.
SE06	2016	Shooting	Species involved: Peregrine falcon x 1.
SD99	2016	Illegal Pole/Spring Trapping	Species involved: Kestrel x 1.
NY70	2016	Shooting	Species involved: Hen harrier x 1.
SD88	2016	Illegal Pole/Spring Trapping	Species involved: Kestrel x 1.
SD88	2016	Illegal Pole/Spring Trapping	Species involved: Falcon sp x 1.
SE16	2016	Poisoning	Species involved: Red kite x 1. Tested positive for:

10k Grid Ref	Year	Incident offence type	Further details
			Alphachloralose, Aldicarb.
SE07	2016	Persecution Other	Confirmed possession of items capable of being used to commit an offence (Bird of prey related)

12.2 Additional details about the pesticides used in the poisoning incidents are as follows:

- Aldicarb – a carbamate pesticide formerly used on certain crops but has been banned from use since the end of 2007;
- Alphachloralose – a narcotic with a number of approved products for mouse control;
- Carbofuran – another carbamate pesticide formerly previously approved for use on various root crops but has been banned from use since the end of 2001;
- Bendiocarb – a carbamate insecticide for horticultural use with a number of approved amateur and professional products;
- Mevinphos – formerly approved for use as insecticide on fruit crops etc. but has been banned from use since 1993.

Figure 2. The location of persecution incidents in the Yorkshire Dales National Park between 2007 and 2016 based on RSPB crime recording criteria.



12.3 The confirmed incidents that have occurred in 2017 and are in the public domain are shown in Table 2. As highlighted previously, note that not all incidents shown in the table below will have directly occurred within the national park: some incidents (e.g. those involving marsh harriers) fall within those 10km square that are intersected by the boundary, but in a part of the square that may fall beyond the boundary. These are included for consistency and completeness.

Table 2. The confirmed number of raptor persecution incidents in 2017 in 10km squares occupied by the Yorkshire Dales National Park that were in the public domain by November 2017 based on RSPB crime recording criteria.

10k Grid Ref	Year	Incident offence type	Further details
SE15	2017	Shooting	Species involved: Marsh Harrier x 1.
SE15	2017	Shooting	Species involved: Marsh Harrier x 1.
SE15	2017	Nest destruction	Species involved: Marsh Harriers.
SE16	2017	Shooting	Species involved: Red kite x 1.
NZ00	2017	Shooting	Species involved: Sparrowhawk x 1.
SD96	2017	Shooting	Species involved: Buzzard x 1.
SD78	2017	Shooting	Species involved: Buzzard x 1.

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