

Northern England Raptor Forum



Annual Review 2010

Acknowledgements

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Northern England Raptor Forum

Paul Irving, Chairman
Ian Court, Secretary
Steve Davies, Treasurer
Steve Downing, Editor

Members

Calderdale Raptor Study Group
Durham Upland Bird Study Group
Manchester Raptor Group
Northumbrian Ringing Group
North York Moors Upland Bird (Merlin) Study Group
Peak District Raptor Monitoring Group
South Peak Raptor Study Group
Yorkshire Dales Upland Bird Study Group

General enquiries should be emailed to:

contact@raptorforum.org

Postal address: Northern England Raptor Forum, PO Box 536, Keighley, BD21 9DL

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Useful telephone numbers

If you discover a wildlife crime please report the details to the Police, obtain an incident number and ask that, in addition to sending an Officer to the scene, the report is brought to the attention of the Force Wildlife Crime Officer. If the incident is a 'crime in progress' dial 999.

Cheshire Constabulary	0845 458 0000	South Yorkshire Police	0114 220 2020
Cleveland Police	01642 326326	West Yorkshire Police	0845 606 0606
Cumbria Constabulary	0845 330 0247	National Wildlife Crime Unit	01506 833722
Derbyshire Constabulary	0345 123 3333	Crimestoppers	0800 555111
Durham Constabulary	0345 606 0365	RSPB Investigations Dept.	01767 680551
Humberside Police	0845 125 3545	Wildlife Incident Investigation Scheme	0800 321600
Lancashire Constabulary	0845 125 3545	Predatory Bird Monitoring Scheme	01524 5959830
Manchester Police	0161 872 5050	Please report Hen Harrier sightings to:	
Northumbria Police	0345 604 3043	Stephen Murphy,	
North Yorkshire Police	0845 606 0247	Natural England HHRP	07932 662258

Foreword



WHILST THERE are still some wonderfully remote parts of the English uplands, the absence of some iconic birds of prey from our heather moorlands undoubtedly detracts from the sense of wildness. There is a sad irony in the fact that having stopped working in the uplands, I am now fortunate enough to see Peregrines and Harriers on a very regular basis; albeit the Peregrines nest on a cathedral rather than a rocky crag, and the Harriers rear their young in reed beds and cereal fields rather than a heather clad valley. On a winter's evening many times more Marsh Harriers can be seen dropping into a single Broadland roost than there are breeding Hen Harriers in the whole of England.

Chances are, if you are reading the Northern England Raptor Forum's Annual Review, then you are already all too familiar with the conflict between the driven shooting of red grouse and birds of prey. Although now well over a century old, sadly this conflict continues today. At times, a solution appears as elusive as the illegal persecution is incontrovertible, and it is difficult to discuss the Forum's work without mention of this conflict, with which bird of prey work in northern England is so unavoidably intertwined.

The most difficult aspect of raptor work in the North of England is not the biting wind and rain sweeping across the Pennine hills, or freezing conditions during a dusk vigil over-looking a winter roost. To my mind, it is dealing with the frustrating pace of change. It is therefore perhaps understandable why others, out-with the Forum, may choose to follow a different path. The apparent lack of progress no doubt fuels arguments which become increasingly personal and stray towards issues of class unrelated to Aves. My own view is that such subjective beliefs should not be presented as facts alongside monitoring data. By association, the credibility of the data can be called into question, the argument is weakened and the overall case is undermined. Therefore, what I applaud the Forum's Raptor Study Group members for most is their dedication; dedication which enables them to maintain their optimism despite the apparent lack of progress and to maintain their passion without losing their objectivity. This surely has to be the way forward for a group seeking to bring their monitoring and science to a wider audience in order to further

the conservation of birds of prey.

Although the pros and cons of shooting have already been widely debated, there is one point that is rarely touched upon. As shooting groups proudly proclaim, every year millions of pounds are pumped into rural economies – shooting taking place on an industrial scale. Nature tends to find little breathing space underneath the concrete and steel footprint of industrial development, yet here is an industry whose bi-product does not involve emission levels or discharge consents, but swathes of semi-natural habitat. Arguably farming is the nearest equivalent, but subsidised field margins do not compare favourably with tens of thousands of hectares of continuous moorland. Such large continuous areas of semi-natural habitat in lowland England have long since been drained, or have disappeared under the plough. Whilst remaining lowland sites might be free from conflict and optimally managed for conservation, sadly what often remains is a fragmented patch of lowland heath encroached by housing development, or a hay meadow surrounded by intensive arable farmland.

I believe, hopefully not too naively, that there are glimmers of hope for birds of prey in the English uplands. Those who continue to break the law north of the border might be brought to book through introduction of the tougher legal measure of vicarious liability – a gamekeeper does not always work independently of his employer. In addition, slowly but surely, the opinions of moderates on both sides of the debate appear to be moving towards some sort of consensus. A process of dialogue, facilitated by the Environment Council and at which the Forum play a key role, is very gradually showing signs of progress. Behind closed doors, grouse moor managers and representatives from shooting groups are sincerely and genuinely debating the way in which they can return Hen Harriers to England's grouse moors. Such discussion would have been unimaginable just a few years ago. Whilst ultimately any success will be measured by numbers of birds and not quality of platitudes, a quick fix was never an option.

Birds of prey evoke differing emotions and unfortunately there are voices who seek to condemn rather than marvel. The Northern England Raptor Forum can act as an advocate for birds of prey and their data and science can help to underpin conservation efforts for years to

come. When the regional Raptor Study Groups choose to work cooperatively in this manner, towards a common goal, then the sum can be greater than the parts. My final note is that these Raptor Study Groups are not large impenetrable conservation bodies but groups of local enthusiasts who need your support. The perception to the outsider is that on occasion monitoring birds of prey can appear to be a peculiar sub-culture within the ornithological world; a secretive bunch of bearded hill-folk, each closely guarding an intimate knowledge of their own patch of the English uplands, acquired over decades of study. Whilst the levels of experience

are undeniable, your support would be welcomed and could make a real difference. For all the difficulties, raptor monitoring can be hugely rewarding and the highs always outnumber the lows. So, if you are reading this at home or in a conference, and you are not a member of your local raptor study group, pick up the phone or go and introduce yourself and get involved.

Richard Saunders

Ornithologist

Chairman's Report



IT GIVES me great pleasure to introduce the 2010 Northern England Raptor Forum Annual Review. This is our second Annual Review detailing the status of birds of prey, owls and Ravens in each Raptor Study Group across the NERF region. This area stretches from Derbyshire in the south along the Pennine Chain to the Scottish Border and includes the North York Moors in the east and Greater Manchester in the west. The data collected by members of the Forum has been combined to give the overall picture of raptors in the northern uplands during 2010. NERF is also grateful to the independent Raptor Workers who have shared their data with the Forum and granted permission for the details to be published in this Review.

The data gathered during 2010 is, once again, a testament to the incredible amount of voluntary fieldwork that is being undertaken by a wide range of Raptor Group members and other fieldworkers throughout northern England. Working to the national guidelines for monitoring raptors, fieldworkers undertake tens of thousands of hours of unpaid work every year and their collective efforts are an excellent example of the 'big society' in action. [Downing S.E & NERF *et al.* 2009 & 2010].

The NERF Annual Review is an important vehicle for highlighting the importance of long-term fieldwork and the value of continued species specific studies. The publication of data by NERF is being used to monitor population trends in the North of England and I would

encourage Raptor Workers to attempt to fill data gaps where they exist within their own study area to improve our overall knowledge of local and regional populations. On behalf of the Forum I would like to publicly recognise the commitment of Steve Downing, NERF Annual Review Editor, and thank him for the very significant amount of time that he has invested to produce such a high quality document.

In reading through the species accounts it is depressing to see that once again there is a recurring theme of poor breeding success of a number of raptor species in areas of grouse moor management. The absence of breeding Peregrines from traditional heather moorland sites across much of northern England and the perilous state of the English Hen Harrier breeding population are, in our opinion, indicative of widespread illegal persecution.

It is very disappointing to read that during 2010 the English Hen Harrier population followed the normal pattern and failed to break out of its relatively safe stronghold in the Forest of Bowland, in any meaningful way. There were only two successful nests outside of Bowland; just two, in habitat with a carrying capacity 150 times greater.

Although we like to think that we live in a more enlightened society, in relation to many Raptor species this is clearly not the case. It is a national disgrace that illegal persecution means that this Red Listed bird is once

again on the brink of disappearing from the English uplands, as a breeding species, for a second time. The bleak future for Hen Harriers is a direct consequence of persecution, resulting from the irrationally perceived conflict with commercial game management. Ironically this perceived conflict flies in the face of all of the scientific evidence amassed and published by eminent ornithologists who are experts in the field. This evidence clearly demonstrates that the population in the northern English uplands should be between 323 and 340 pairs [JNCC Report No 441: A Conservation Framework for Hen Harriers in the United Kingdom] and yet each year there are rarely more than a handful of breeding attempts. Although the scientific evidence shows that Hen Harriers do predate grouse chicks the research also confirms that they can co-exist together side by side without decimating the commercial viability of grouse shooting as is often claimed by grouse moor managers.

Whilst the Forum continues its participation with the Hen Harrier Dialogue, facilitated by the Environment Council, the lack of progress to achieve modest goals in a timely manner is extremely frustrating. None-the-less NERF is determined to continue to raise the concerns of Raptor Workers within the Dialogue and to press for the end of the criminal slaughter of this totemic species. We will also continue to call for affirmative action by the Police and the Courts when offenders are identified.

Of course it is not just Peregrines and Hen Harriers that have 'disappeared' from their traditional upland territories. In areas where these species are absent Raptor Workers also note that there are often gaps in local populations of Short-eared Owls, Goshawks, Common Buzzards and Ravens despite the fact that the habitat is ideally suited to their needs. Red Kites, already under threat from secondary poisoning from rodenticides, continue to succumb to direct, targeted poisoning, the most dangerous and indiscriminate form of persecution, which also has the potential to kill non-target species, including humans.

Without evidence to the contrary it is impossible to dismiss the assertion that persecution is the most credible explanation when species gaps are analysed. Criminal activity targeting birds of prey takes place over vast tracts of land; on thousands of hectares of open countryside, often miles from the nearest roads. Finding relatively small brown dead birds, each covering less than 500cm² of the ground, in a huge expanse of brown vegetation, is almost impossible. In fact taking into account the difficulty of locating the carcasses of birds of prey killed in this type of environment, if they are left in-situ, it is surprising that any are found at all. That several are found annually is a very good indication that many, many more go undetected.

Despite all of the evidence that raptor persecution is a continuing problem in the northern uplands much of the game shooting lobby is in denial, at least in public. Whenever Raptor Workers and conservation organisations raise the issue of persecution they are invariably confronted with a barrage of demands for more proof. This is despite the fact that the evidence is irrefutable; gamekeepers are frequently prosecuted for persecut-

ing birds of prey and the Wildlife Incident Investigation Scheme and the Predatory Bird Monitoring Scheme deals with many incidents of illegal poisoning annually.

There is a maxim, which points out that "The absence of evidence is not evidence of absence" [Carl Sagan: *The Demon-Haunted World - Science as a Candle in the Dark*]. As we have already seen, although finding evidence of persecution is extremely difficult, it is not impossible. If persecution is not the cause it is perhaps appropriate to ask questions such as 'Where have all the raptors gone?', or 'Why are large areas of suitable habitat that were previously occupied by raptors now vacant?', or 'Why are these areas invariably involved with commercial game-shoot management?' or 'Why are we more likely to see a Peregrine on a town centre building than on a traditional crag on a grouse moor?' Answers to these questions are very relevant if we are to understand why there are species gaps in our uplands, i.e. birds that we would expect to see but are missing. In searching for answers to these questions NERF acknowledges that it would be irresponsible to suggest that everyone working in game management is involved in raptor persecution, which is clearly not the case.

Those of us directly involved with, or concerned about, raptor conservation are fully aware of the contentious nature of the issue of persecution, and how difficult it is to tackle the issues. Whilst the Forum does not seek to stifle debate or wish to suppress valid criticism of statutory authorities or conservation bodies, we condemn, in the strongest possible terms, individuals or groups that persist in distributing negative propaganda, half-truths and downright lies designed to undermine the excellent work undertaken by dedicated Raptor Workers, the RSPB, the Hen Harrier Recovery Project, United Utilities, Wildlife Crime Officers and the Forum whilst deflecting attention away from their own shortcomings.

The continued threat to birds of prey comes against a backdrop of severe budget cuts imposed by the Government on organisations such as Defra, Natural England, National Park Authorities and Police Forces across the region.

Raptor persecution has featured on the National Wildlife Crime Unit's Conservation priorities in one form or another since 2002 and yet we see very little proactive crime prevention or self generated wildlife crime investigations being undertaken by our local Police Forces. Research carried out for this Review indicates that all of the Police Forces within the NERF region have nominated Wildlife Crime Officers in post. However; the research also reveals that these Officers are employed on a variety of other duties that diverts their attention from wildlife crime. NERF members currently have little or no contact with WCOs and it is noticeable that the situation has deteriorated in recent years. Whilst NERF acknowledges that the Police are experiencing difficult times it is reasonable to point out that, in our opinion, the current policy of disengagement is ill-advised and the matter will be raised with the ACPO lead on wildlife crime.

The on-going fallout from the financial crisis is also likely to impact on charities such as the RSPB and Wild-

life Trusts. Other organisations with a statutory duty of care for wildlife and the environment may be tempted to see conservation as a 'Cinderella' activity rather than a responsibility and therefore a valid target for deep budget cuts. The Forum will encourage such organisations to resist these temptations. In light of these emerging threats NERF will continue to press Government to ensure that birds of prey are pushed further up the political agenda. At the present time it is evident that the English legislature is falling behind its Scottish counterpart in relation to wildlife protection. NERF believes that this position is untenable and will continue to engage with the relevant authorities with the aim of improving the legal protection for birds of prey.

NERF has much to be proud of and 2010 was a milestone for our organisation. We published our first An-

nual Review, published our first single species report looking at the plight of Peregrines in the northern uplands in association with Arjun Amar, RSPB and held an excellent Conference hosted by Calderdale. However; there is much more to do; fortunately I am sure that Forum members are equal to the task and our contribution to raptor surveying, monitoring and protection will continue to grow and develop to meet new challenges as they emerge.



Paul Irving

Chairman, Northern England Raptor Forum

Secretary's report

THE NORTHERN England Raptor Forum [NERF] was established in 2006 with the overall objective of providing one effective voice to represent the conservation interests of raptors, including owls and Raven, in the uplands of northern England.

In order to achieve our objectives the Forum acts, where appropriate, as the parent body co-ordinating surveying and monitoring work across all of the member Groups. In addition NERF develops centralised policies and methods of working that will further enhance the high standard of research currently being undertaken by Raptor Workers in the North of England.

During 2010 the Forum continued to build upon previous years work by bringing together the collective knowledge and experience of raptor fieldworkers from across northern England. Since the publication of the 2009 Annual Review there have been some changes in the membership of the Forum. We are pleased to report that the Manchester Raptor Group joined the Forum in 2010 and we extend a warm hearted welcome to the Group and their members; we can also report that the North West Raptor Protection Group is no longer a member of the Forum.

NERF policy decisions are taken during bi-annual meetings by a Committee, consisting of two members



from each of the affiliated Groups, under a majority voting system that allows for one vote per Group. Whilst NERF is, and will remain, an independent voice, speaking on behalf of raptors, the Forum benefits from contributions made by invited representatives from the National Wildlife Crime Unit, representing regional Wildlife Crime Officers, RSPB Northern Region, RSPB Investigations and the Natural England Hen Harrier Recovery Project [HHRP]. Whilst the contribution from members of this Advisory Group is invaluable they do not hold voting rights within the Forum.

Currently the membership of NERF consists of the following individual Raptor Groups:

- Calderdale Raptor Study Group
- Durham Upland Bird Study Group
- Manchester Raptor Group
- Northumbrian Ringing Group
- North York Moors Upland Bird [Merlin] Study Group
- Peak District Raptor Monitoring Group
- South Peak Raptor Study Group
- Yorkshire Dales Upland Bird Study Group

However; within the Forum we are always looking to expand our geographical coverage in the north of England and would welcome applications for membership

from Raptor Study Groups that are able to demonstrate that they would add value to the aspirations of NERF. For more information please contact the NERF Chairman, the Chairman of your local Raptor Study Group or email contact@raptorforum.org

Once again, this Annual Review highlights the extraordinary amount of fieldwork that is carried out by Raptor Workers and emphasises just how important it is to make sure that this data is placed within the public domain. It is vital that we continue to publish our findings in order that we are in a position to corroborate our 'gut feelings' about what is happening to raptor populations with sound, scientifically robust data.

Our first collaborative scientific paper has now been produced, combining Peregrine breeding data collected by experienced Raptor Group members over a 10 year period with the analytical skills and statistical knowledge of RSPB research biologists. We believe that the results set out in the paper clearly show the negative impact of grouse moor management on bird of prey populations and highlights the challenges faced by raptors that occupy this habitat. With the publication of this paper we have clearly demonstrated the benefit of collaborative research and with the on-going support of Raptor Workers the Forum can continue to contribute valuable scientific data that can be used to highlight the threats faced by upland raptors.

The 2010 NERF Raptor Conference was hosted by the Calderdale Raptor Group on the 20th November at the prestigious Rishworth School, Halifax. One hundred and forty-four delegates attended the all-day conference where we benefitted from interesting and stimulating lectures, which concentrated on four topics each presented by two experts in their respective field:

- **habitat management:** presented by Dr John Edwards, a Raptor Biologist followed by Simon Thorp, of the Heather Trust
- **analytical science:** presented by Lee Walker, Centre for Ecology and Hydrology and Arjun Amar, RSPB who gave an overview of a joint paper compiled by NERF members entitled 'Peregrine persecution in the NERF region, a 10 year study'

- **raptor monitoring:** presented by Stephen Murphy, Natural England who outlined the situation in relation to Hen Harries in 2010, followed by James Leonard, RSPB who advised delegates of the benefit of using cameras as a monitoring aid
- **species studies:** presented by Duncan McNiven, RSPB who discussed his work into the future release of White-tailed Eagles in the south east of England and Paul Castle, Wiltshire Raptor Group who outlined details of his long-term studies into Montagu's Harriers and lowland Hen Harriers

The delegate feedback form, introduced for the first time in 2010, was a tremendous success and the suggestions from delegates were used to inform the decisions made by organisers of the 2011 Conference. This exercise will be repeated at future events in order to ensure that delegates needs are given due consideration when future Conference programs are being set.

The Northern England Raptor Forum is grateful to the Calderdale Raptor Study Group for the hard work that was undertaken to both promote and host the Conference. NERF is also indebted to staff of Rishworth School, the RSPB, Natural England and Pennine Prospects for supporting the event.

On behalf of all of the NERF members I would like to thank PC Mark Rasbeary, Force Wildlife Crime Officer, North Yorkshire Police, for his long-term contribution and commitment to the development of the Forum. Mark, who spent many years as a part-time and four years as a full-time Wildlife Crime Officer and was seconded to Natural England for 12 months, was highly respected by his peers and Raptor Workers across the North of England and his advice will be sadly missed.

We all wish Mark well in his retirement and would like to welcome Andy McWilliam from the National Wildlife Crime Unit, who has joined the NERF Advisory Group.



Ian Court

Secretary, Northern England Raptor Forum

day 10th April 2010 they observed an immature White-tailed Eagle over Pock Stones Moor in the Washburn Valley. Following a phone call to observers at the nearby Barden Raptor Watch Point 2 other observers were treated to stunning views as the bird passed overhead.

It subsequently transpired that this was a third calendar year bird from the Scottish east coast re-introduction program. This bird had embarked on a grand tour of the North of England and had previously been seen near Newcastle and also at Leeming Bar on the A1 before moving west through the Dales. The bird was later seen over Wray, Lancashire then Leighton Moss and Haweswater before presumably completing its circular tour and returning home to the east coast of Scotland.

NERF regional summary

Only the Yorkshire Dales Group recorded sightings of White-tailed Eagles in 2010. As this Group is land locked there is no doubt that the bird in question went unobserved as it crossed territory monitored by other NERF members. Unfortunately the cancellation, or hopefully postponement, of the East Anglian re-introduction program is likely to ensure that sightings in the North of England will be somewhat limited in the foreseeable future.

NERF regional threat assessment

The UK population is extremely small and restricted to Scotland at the present time. Until the species re-colonises or is re-introduced in England there are no threats applicable to this bird within the NERF region.

Goshawk, Northern *Accipiter gentilis*



UK population estimate

The population is now believed to be about 400 pairs in summer. (BTO)

Overview

The first record for the species was made in the 10th century; however the fossil records show that this species was already present in the last Devensian Glaciation Period from 10,000 to 120,000 years ago.

Along with many other species the Northern Goshawk was first described by Linnaeus in 1758 [Linnaeus, C (2007) *Systema Naturae*].

The British summer population of 400 pairs was derived from work undertaken by Baker *et al.* in 1995 [Baker, H (2006) *British Birds* 99: 25 – 44]. The European population is estimated to contain between 70,000 and 110,000 pairs [Burfield, I & Van Bommel, F (2004) *Birds in Europe*, Birdlife International]. Goshawks were once widespread throughout the UK but by the begin-

ning of 1800 as a result of persecution they were probably extinct as a breeding species in England and Wales. Between 1841 and 1888 there were just 19 records, 17 of which were in eastern counties, 8 in Norfolk alone, and Goshawks were described as 'a great rarity' [Journal of Zoology]. Their demise took a little longer in Scotland but persecution by gamekeepers was taking its toll. Records from one estate in Glengarry reveal the huge scale of the problem. Between 1837 and 1840 the staff reported killing 63 Goshawks, 98 Peregrines, 275 Red Kites, 27 White-tailed Eagles and 18 Ospreys [Richmond 1959]. The problems caused by persecution were also exacerbated by large scale clearance of their forest habitat and the activities of specimen collectors.

There were only sporadic claims of breeding success between 1900 and 1965 with the first accredited breeding taking place in 1938 [Brown, A (2007) *British Birds*, 100: 214 – 243]. Ironically as a consequence of the extremely low numbers the UK population did not suffer the large scale impact of secondary poisoning by DDT in the 1950s and 1960s that was experienced by other species. In continental Europe this species did succumb to large scale poisoning by organochlorine and other contaminants. By examining the recovery rates of the European populations following the implementation of a ban on the use of these chemicals it is possible to predict the rate of both growth and expansion in the UK population following the re-introduction of the species.

During the 1960s and 1970s falconers imported birds from Scandinavia and Finland, some escaped into the wild whilst others were deliberately released. It is most likely that the plan behind this unofficial re-introduction scheme was predicated upon an ulterior motive. The plan was for this new 'wild' population to be allowed to breed and then a proportion of their wild bred offspring would be 'harvested' back into the falconry trade.

NERF Data

RSG	Home ranges checked	Home ranges occupied (pairs)	Homes ranges occupied (singles)	Territorial pairs monitored	Pairs failing early / non breeding	Pairs laying eggs	Pairs hatching eggs	Pairs fledging young	Number fledged	Young fledged per pair laying	Young fledged per territorial pair monitored
CRSG	1	1	0	0	NR	NR	NR	NR	NR	NR	NR
DUBSG	7	5	1	0	NR	NR	NR	NR	NR	NR	NR
MRG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
NRG	47	35	0	34	6	28	23	22	48	1.71	1.41
NYMMSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
PDRSG	15	0	0	0	0	0	0	0	0	0.00	0.00
SPRSG	24	15	0	15	3	12	12	12	25	2.08	1.67
YDUBSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
Totals	94	56	1	49	9	40	35	34	73	1.83	1.49

It is not possible to know how many birds were released into the wild or how many chicks were taken back into captivity. However; it is known that after releases the 'wild' population did not expand in line with the post pesticide model observed on the Continent. The expansion has been slow and 40 years later the population has not increased to the predicted level and there are large 'black holes' in otherwise suitable habitat where Raptor Workers would expect to see an active population. It is clear that there is another influence affecting population dynamics in the North of England. As the population has slowly increased the birds have inevitably come into conflict with Game Managers and persecution has once again become a factor in some areas creating a 'sink population' for this bird of prey.

National threat assessment

In 1995 the BTO reported that the UK population was estimated to be c400 pairs in summer. They also report that on average 300 chicks are ringed annually. At this rate it is estimated that in excess of 4,000 will have been ringed since 1995. It should also be remembered that not every chick will be ringed during the intervening period. Even taking into account that these figures are only estimates, perhaps they are a little out of date and ignoring the un-rung chicks or the fact that a great many of the fledglings will die during their first winter it is self-evident that a large number of young 'disappear' in the UK after fledging. It is reasonable for Raptor Workers to ask; 'if the population is not expanding in accordance with the predicted model, where are these birds?'

Nationally Goshawks continue to face persecution in some areas, particularly those areas associated with commercial game shooting, at levels that can lead to localised extinctions. Egg collectors also continue to threaten the species and their activities may have a significant local impact.

Conservation status (BTO)

UK Green ●
 European Not of concern
 Global Least concern

Listed on Schedule 1 of the Wildlife and Countryside Act 1981

Group Reports

Calderdale Raptor Study Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Poor coverage; casual monitoring of a few pairs.

The status of Goshawk in Calderdale is somewhat of an enigma. That birds are present on the moorland fringe in spring is not in doubt; however they do not go on to breed. The habitat is eminently suitable, the birds occupy territory; the question is 'what becomes of them after that?'

The pattern in 2010 followed that of previous years. In spring Group members monitor 2 heavily wooded valleys in the north west of the study area. Although they are separate valleys they are in fact 2 arms of a 'U' shaped system, with both arms, 1 kilometre apart, and extending northwards into grouse moor. A pair was seen together soaring over the woodland in the eastern arm on the 7th April. The female was seen again on the 17th April and then again on the 2nd May over a different section of the woodland. An un-sexed bird was reported on the 24th April in the same general area and the female was seen once again on the 23rd May.

There is no doubt that all sightings of a female in the area referred to the same bird, which had several broken feathers and a badly worn tail. Opinions differ on the likely cause of the feather damage varying from the result of being shot to the suggestion that she is a captive bred escapee, even though she was not wearing jesses.

This twin valley system covers approximately 10km² and as a result of the size of the area, the heavily wooded nature and steepness of the terrain, the nest, if in fact one had ever existed, was not located. Observations continued over the area post breeding season but they did not result in young being seen.

The only other sighting during 2010 was of a male 10 kilometres to the east of the potential breeding site on the 2nd June.

Durham Upland Bird Study Group

Extent of coverage: Upland areas only.

Level of monitoring: Reasonable coverage; at least one long-term monitoring study.

Observations in the uplands are based mainly on early season pair-bonding flight displays over the larger conifer plantations. Allowing for 1 territory where only a displaying male was seen these observations suggest that there are 5 pairs in the uplands. There was no clear information in relation to breeding success.

There are no records of birds being observed on passage.

Although the exact number is not known a few more pairs are believed to breed in the eastern lowlands.

Manchester Raptor Group

Extent of coverage: Whole County.

Level of monitoring: Not known to occur here as a breeding species.

There are occasional rumours of breeding in the east of the study area and more recently in the north, however to date these reports remain unconfirmed. There are several sightings reported to the Group each year which, following investigation, are subsequently classified as large Sparrowhawks.

Goshawks are only rarely seen on passage.

Northumbrian Ringing Group

Extent of coverage: Part of upland areas.

Level of monitoring: Excellent coverage; all or most sites receive annual coverage.

The Northumberland study area includes a small section of eastern Cumbria around Kershope, where the forested area straddles the County boundary.

During 2009 a total of 33 pairs hatched eggs, this figure was down to 23 pairs in 2010. However; the number of chicks fledging remained almost unchanged at 53 in 2009 and 48 in 2010. Whilst the number of chicks fledging is down by 5, interestingly, the differences in the fledging rates between 2009 and 2010 are statistically irrelevant.

North York Moors Upland Bird (Merlin) Study Group

Extent of coverage: Upland areas only.

Level of monitoring: Excellent coverage; all or most sites receive annual coverage.

The individuals responsible for monitoring this species have once again declined to release their records to the Group; consequently it is not possible to report the productivity details.

Overall it is known that the species had a successful season in 2010. Regrettably there were also incidents of

persecution in the pre-breeding season. One bird was shot, a second bird was poisoned and the nest of a third was deliberately disturbed, which led to the birds abandoning the site.

Peak District Raptor Monitoring Group

Extent of coverage: Part upland areas.

Level of monitoring: Good coverage, at least two monitoring studies or large representative study area.

During 2010 the Study Group checked the 15 traditional Goshawk breeding territories. Whilst there were scattered sightings of birds displaying early in the season over these traditional sites, once again they were all found to be unoccupied during the breeding season.

Without evidence to the contrary the only possible explanation for this 'black hole' is that the primary cause for the breeding failures of Goshawks in the region is persecution on kept grouse moors and in the adjacent woodland.

South Peak Raptor Study Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Excellent coverage; all or most sites receive annual coverage.

The Group recorded a 92.3% increase in productivity from 2009 to 2010. Productivity in 2010 was close to the European average and with only 1 extra pair being monitored during 2010 the increase is probably due to low productivity induced by poor weather during 2009.

In the Upper Derwent Valley once again persecution was significant and had a serious detrimental effect on the local population.

Yorkshire Dales Upland Bird Study Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Not known to occur here as a breeding species.

There are no formal studies of Goshawks undertaken in the YDUBSG recording area, partly as a result of the sensitivities and difficulties in approaching private landowners for permission to gain access. This problem is particularly acute in areas managed for game shooting. Consequently no attempts have been made to try and locate nests and therefore no definitive nesting territories have been identified.

However; a number of general areas are checked each year when displaying birds are observed. As a result of these observations the Group is able to report that at:

- site 1** a pair was seen displaying
- site 2** only a single bird was observed
- site 3** only a single bird was observed
- site 4** two birds were seen at this location, however there is still no confirmation that breeding took place. There are also fewer records from this site in recent years when compared to the 1990s despite comparable coverage being undertaken by the Group members
- site 5** separate sightings of a male and a female were recorded at a former breeding site. A pair, presumed to be the same birds, was also noted in autumn

site 6 several sightings were recorded outside of the breeding season in an area of potentially suitable breeding habitat

NERF regional summary

There are 3 main Goshawk study areas; one in the South Peak area, 1 in Northumberland [which includes part of eastern Cumbria] and 1 in North Yorkshire. In respect of the latter study area the Raptor Workers responsible for monitoring the birds decline to share their data with the local Raptor Study Group. Whilst information from other sources confirms that this population is 'doing well' without the data from the NYM it is not possible to give an accurate assessment for the species across the NERF region as a whole.

The Northumberland population is the largest within the NERF study area and is relatively stable with 48 young fledging in 2010, which is similar to the productivity recorded in 2009.

Notwithstanding that the Northumberland and South Peak Groups are producing a significant number of chicks annually the situation across the whole of the North of England raises a number of questions. The statistics from the last two years starkly highlight the differences within the NERF region.

In 2009 from the 51 pairs monitored 31 pairs fledged 66 young and in 2010 from the 49 pairs monitored 34 pairs fledged 73 young; a total of 139.

Using the 33% first year mortality rate model we could have reasonably expected to see an additional c90 chicks entering the population over the two years, 2009 and 2010. However; this expectation was not fulfilled and the additional chicks have not been located by Raptor Workers. It is apparent from the data that the popula-

tion did not grow in line with the predictions for 2010 when the population remained stable at the 2009 level. Whether or not the 2010 chicks will enter the population will not be known until the data is processed in the 2011 Annual Review, however early indications are that once again the population in the NERF region did not grow in line with the model.

There is a vast amount of suitable habitat on the Pennines between the South Peak and Northumberland; however between these 2 Study Groups there is almost a Goshawk breeding 'black hole'.

Goshawk Distribution in the NERF Region

	Chicks fledged	Northumberland	South Peak
2009	66	53 (80.30%)	13 (19.70%)
2010	73	48 (65.75%)	25 (34.24%)
Totals	139	101 (72.66%)	38 (27.34%)

Outside of the South Peak and Northumberland study areas there were reports of pre-season sightings from every Group with the exception of Manchester.

NERF regional threat assessment

There are large areas of suitable habitat and food availability across the whole of the NERF region which can and should support healthier populations than we currently enjoy. Goshawks thrive in some areas and they are absent from others with very similar habitat and food supply. Taking these and other factors into consideration it is very difficult to find any reasonable explanation, other than human interference, to account for these anomalies.

fledged.

Forum members made a significant contribution to the 2008 national Merlin survey. They were heavily involved in the co-ordination of the survey and also undertook an enormous amount of fieldwork to collect the required data. A full account of the 2008 national survey is produced by Steven Ewing and Mark Eaton, Royal Society for the Protection of Birds, in the 'Articles Section' of this Review.

NERF regional threat assessment

There are no specific pressures that threaten this species throughout the NERF study area.

Egg collecting and illegal killing of these birds is recorded occasionally and whilst these activities can have a significant local impact, they are not likely to affect the general population base.

OSPREY *Pandion haliaetus*



UK population estimate

The current UK population is estimated to be c150 pairs. (BTO)

Overview

Fossil evidence suggests that Osprey were present in the Devensian Glaciation Period, some 10,000 to 120,000 years ago. Whilst the first UK observation was recorded more than 1,000 years ago, in the 10th century, the spe-

cies was not described until 1758 [Linnaeus, C (1758) *Systema Naturae*].

The BTO's population estimate is based on figures produced between 1998 and 2002 [Baker, H *et al.* (2006) *British Birds* 99: 25 – 44]. However; in recent years the population has been increasing and spreading throughout many parts of England. Consequently the population may be significantly higher than that predicted by the BTO. The RSPB suggests that it may actually be in the region of 250 – 300 pairs in summer.

The current European population is estimated to contain between 5,600 and 7,000 pairs [Burfield, I & Van Bommel, F (2004) *Birds in Europe*, Birdlife International].

Once widespread throughout Europe the Osprey population was severely affected by persistent persecution during the 19th and early 20th centuries by egg collectors, skin collectors and by individuals with fishing interests. The persecution was on such a large scale that it led to a dramatic reduction in the overall population and local extinctions. By 1840 it was extinct as a breeding species in England. They maintained a tenuous hold in

NERF Data

RSG	Home ranges checked	Home ranges occupied (pairs)	Home ranges occupied (singles)	Territorial pairs monitored	Pairs failing early / non breeding	Pairs laying eggs	Pairs hatching eggs	Pairs fledging young	Number fledged	Young fledged per pair laying	Young fledged per territorial pair monitored
CRSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
DUBSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
MRG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
NRG	2	2	0	2	1	1	1	1	3	3.00	1.50
NYMRSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
PDRSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
SPRSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
YDUBSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
Totals	2	2	0	2	1	1	1	1	3	3.00	1.50

Scotland and are known to have successfully bred there until 1916, after which they were also classified as extinct as a breeding species.

Following a recent re-examination of the historical records it is suggested that this classification may have been premature. Passage migrants were recorded regularly, almost annually, and initially it was thought that pairs may have bred periodically after 1916. It is now believed that they bred more frequently than was originally suggested. Whether or not this new data actually substantiates this modern view, that Osprey did breed in the intervening years, it is still generally accepted that the re-colonisation of Scotland began in 1954 when the first breeding took place [Brown, *A British Birds* 100: 214 – 243]. It is likely that the birds that re-colonised Scotland originally came from the Scandinavian population.

Following the successful re-colonisation of Scotland, population growth was initially quite slow, as may be expected, and by 1976 only 14 breeding pairs were known. Even this small number did not deter the egg collectors, many of whom were from England, and they not unsurprisingly resumed their illegal activities, by stealing these highly prized eggs. However; the introduction of the Protection of Birds Act 1954, which included Osprey on Schedule 1 [Part 1], together with the provision of custodial sentences, may have deterred some potential offenders. Not surprisingly this new legislation did not deter every egg collector and a detailed description of a raid on an Osprey nest in Glen More, Scotland on 18 May 1975 is provided by James Whittaker, a convicted egg collector, from page 473 onwards, in his book “A Natural History Journal 1950 – 1975 A record of the first 26 years of Oological & Ornithological study and memories”. In the book he describes in graphic detail how he was dropped off by his wife at 2200 hours and walked to the nest tree, which he had to ascend using climbing irons to cross a long stretch of barbed wire that had been wrapped around the trunk. He then goes on to describe how he took the 3 Osprey eggs, which he replaced with chickens eggs, before returning to the road to be collected by his wife.

Despite the very real threat from persecution the population grew rapidly from 1976 onwards and by 1990 it stood at 71 pairs. Ospreys were once found widespread in England more than 150 years earlier and the newly established Scottish population was known to migrate over England between their over-wintering grounds in Africa to their breeding grounds in the Scottish Highlands. With this in mind the first attempt to attract Ospreys to naturally re-colonise England commenced at Rutland Water near Oakham, Leicestershire in 1986. The scheme was enhanced in 1994 by a joint venture between Anglian Water and the Leicestershire and Rutland Wildlife Trust. Unfortunately for 10 years the scheme failed to entice birds to take up residence at Rutland Water. In 1996 the first of a series of translocations of Scottish birds to Rutland took place. In 2001 the project was finally successful and 1 chick fledged from a single nest. In 2010 12 chicks fledged from 5 nests.

At the start of the 21st century the UK population

had increased to more than 150 pairs. Whilst Scotland still holds the main population, in 2001 Osprey's bred in England for the first time, after a 160 year gap. The birds now breed in the Lake District, in Northumberland, at Rutland Water in England and also in parts of Wales.

Satellite tracking of young birds as they migrate between West Africa and the UK has brought a significant amount of new information to the attention of ornithologists working with this species. This on-going research will undoubtedly help to protect the birds as they migrate along dedicated flyways and encourage habitat protection / enhancement in the resting areas on route and at their over-wintering sites.

National threat assessment

Historically the birds have been persecuted by shooting and by egg collectors and whilst these threats have been dramatically reduced, nests still need to be monitored closely and in some locations they continue to require round the clock protection.

Ospreys can be surprisingly tolerant of regular human activity close to the eyrie but they are extremely nervous of anything out of the ordinary. Consequently there is a threat from disturbance at their breeding sites whilst they are incubating eggs or whilst they are brooding small young. Organised watch points can be used to successfully alleviate this problem and modern, tiny CCTV cameras enable Raptor Workers to closely monitor nest activity from a distance. Raptor Workers who are required to visit the nests should make sure that the adult birds can see them clearly as they both approach and leave the area.

Coastal and estuary management plans that fail to take into account the needs of Ospreys can also have a detrimental impact on the species.

Conservation status (BTO)

UK	Amber ●
European	3: Concern, most not in Europe; rare
Global	Least concern

Listed on Schedule 1 of the Wildlife and Countryside Act 1981

Group Reports

Calderdale Raptor Study Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Not known to occur here as a breeding species.

Osprey is a passage migrant in the Calderdale study area. There were 3 sightings reported in 2010, all in spring. The first was seen on 27th March over Walshaw Dean, leaving the area and heading in a westerly direction. The second was seen heading through the eastern side of the study area on a north-east track on the 6th April. The third was sighted on the 15th April at Walshaw Dean on the same flight path that the first Osprey was using 20 days earlier.

Durham Upland Bird Study Group

Extent of coverage: Upland areas only.

Level of monitoring: Not known to occur here as a breeding species.

Whilst Ospreys do not occur as a breeding species in County Durham they may be seen in upland areas on their spring passage from March through to late May and on their southerly migration in August and September. During these periods passage birds may occasionally linger in the County and 1 bird stayed for several days at the Derwent Reservoir in July.

Similar patterns of behaviour are noted across the lowlands and overall Osprey sightings are becoming more common year on year.

Manchester Raptor Group

Extent of coverage: Whole County.

Level of monitoring: Not known to occur here as a breeding species.

Although Ospreys do not breed in the County there are regular sightings of birds on passage. During 2010 there were 12 records of migrant birds in spring with 1 bird, ringed at Kirriemuir, Angus in 2007, lingering at the Dover Basin from the 15th to the 18th May.

There were a further 5 sightings in autumn as birds returned to their wintering grounds in Africa.

Northumbrian Ringing Group

Extent of coverage: Part of upland areas.

Level of monitoring: Reasonable coverage; at least one long-term monitoring study.

Subsequent to 2009 when the first breeding pair was recorded in Northumberland the Group located 2 pairs in 2010. Of these only 1 pair was successful, rearing 3 young.

North York Moors Upland Bird (Merlin) Study Group

Extent of coverage: Upland areas only.

Level of monitoring: Not known to occur here as a breeding species.

The species is only recorded on migration. In 2010 Ospreys were recorded at Lockwood Beck Reservoir to the north of the North York Moors and at Pickering Fish Farm in the south.

Peak District Raptor Monitoring Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Not known to occur here as a breeding species.

There were no breeding attempts during 2010, however once again the group did record individuals passing over the area on their migration routes during spring and autumn.

South Peak Raptor Study Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Not known to occur here as a breeding species.

The pattern during 2010 followed that of previous years. Ospreys are only rarely recorded by the Group during spring and autumn as the birds travel to and from West Africa to their breeding grounds in the north of the UK.

Yorkshire Dales Upland Bird Study Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Not known to occur here as a breeding species.

There has been an increase in the number of passage birds seen in the Dales in recent years. This trend continued during 2010, which was also a relatively good year for observing migrants. Several birds once again lingered in the area during spring. These observations correspond with the increase in sightings noted elsewhere in the County.

NERF regional summary

In 2008 a pair of Ospreys built a foundation nest in the Kielder Forest, Northumberland. They returned to the site in 2009 and fledged 3 young. This was the first breeding record for the County. In 2010 2 pairs attempted to breed in Northumberland, unfortunately only 1 pair was successful, once again fledging 3 chicks. A number of nesting platforms have now been constructed in the County and it is hoped that the local population will increase accordingly in the near future.

Ospreys are recorded on passage by every Group and several report birds lingering for protracted periods. With nesting birds in Rutland, Wales, Cumbria and Northumberland and migrants seen in all other NERF regions it can only be a matter of time before passage birds seek breeding territories in other NERF study areas. One of the limiting factors may be the lack of suitable nest sites and the provision of nesting platforms by RSGs working in partnership with habitat owners / managers at locations with adequate food availability could prove successful.

Evidence from Cumbria reveals that a pair of nesting Osprey will attract large numbers of visitors and whilst this can have a positive impact on the public perception of birds of prey and have a significant beneficial bearing on the local economy Raptor Workers will have to formulate extensive plans and designate suitable watch points to control the anticipated influx of birdwatchers.

NERF regional threat assessment

As the species extends its breeding range within the NERF region there will be an increased requirement for members to provide nest protection against both egg collectors and disturbance at their breeding sites. There is a large body of expertise developing in the North of England and in the event that Ospreys attempt to breed in new territories within the NERF region advice from the local Raptor Workers in Northumberland and Cumbria is readily available.

Red Kite *Milvus milvus*



UK population estimate

The current estimate is c431 pairs (summer). (BTO)

Overview

The first record of this species was documented in the 8th century, however the fossil records reveal that they were already present in the Ipswichian Glacial period c150,000 years ago. Red Kites were first described in 1758 [Linnaeus, C (1758) *Septima Naturae*].

The UK population was derived from research by Wotton *et al.* in 2000 when the population was estimated to contain between 372 and 490 pairs [Wotton, S.R *et al.* 2002) *Bird Study* 49: 278 – 286]. The European population is believed to contain between 19,000 and 25,000 pairs [Burfield, I & Van Bommel, F (2004) *Birds in Europe*, Birdlife International].

The 'amber' conservation status has been allocated to this species because it is experiencing moderately rapid

population decline as a result of pesticide poisoning and persecution.

Historically Red Kites were one of the UK's most widespread birds of prey and were a very familiar sight in many of our cities and towns where they scavenged for food. William Shakespeare mentioned Red Kites 15 times in his plays and referred to London as 'a city of Red Kites and crows'. They were renowned as helpful scavengers; consuming large amounts of carrion abandoned in and around townships and were therefore protected by our ancestors. Despite this beneficial impact they were also feared and not universally welcomed by all. In the mid-15th century King James II of Scotland is reported to have proclaimed that they 'should be killed wherever possible'.

By the start of the 20th century they had been persecuted to extinction in England and Scotland and only survived in a very small remnant population in mid-Wales. Ironically they survived in habitat that is sub-optimal for the species. Low level persecution continued in Wales and although the population was slowly increasing, productivity was low and by the mid 1980s it had only risen to c40 breeding pairs. In addition the population did not colonise suitable habitat outside of the mid-Wales area as had been hoped.

In the 1980s the bird was listed as 'globally threatened'. The Red Kite fulfilled all of the IUCN criteria for re-introduction and action was instigated to return the species to suitable habitat in England and Scotland. The first releases of birds, taken from Spain and Scandinavia took place in the Chiltern Hills, England and on the Black Isle in northern Scotland, between 1989 and 1994. The Chiltern releases were a resounding success; the releases on the Black Isle were less so where persecution is the primary cause limiting both population growth and expansion.

NERF Data

RSG	Home ranges checked	Home ranges occupied (pairs)	Home ranges occupied (singles)	Territorial pairs monitored	Pairs failing early / non breeding	Pairs laying eggs	Pairs hatching eggs	Pairs fledging young	Number fledged	Young fledged per pair laying	Young fledged per territorial pair monitored
CRSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
DUBSG	30	26	0	26	8	18	12	12	24	1.33	0.92
MRG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
NRG	27	27	0	27	6	21	14	13	24	1.14	0.89
NYMRS	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
PDRSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
SPRSG	0	NR	NR	0	NR	NR	NR	NR	NR	NR	NR
YDUBSG	3	3	0	3	0	3	2	1	3	1.00	1.00
Totals	60	56	0	56	14	42	28	26	51	1.21	0.91

Further releases took place in the English East Midlands in 1995, in Central Scotland during 1996, in Yorkshire during 1999 and in southern Scotland in 2001. In 2004 the Northern Kites Project was commenced in the lower Derwent Valley, Gateshead. This was the first urban release scheme and between 2004 and 2006 project staff released 94 birds.

The latest release scheme was initiated in 2010 on Forestry Commission land in Grizedale Forest in the west of Cumbria. By the end of this project a further 90 birds will have been released.

National threat assessment

By far the biggest threat to Red Kites comes from illegal poisoning. Whilst they may not be the intended target they are scavengers and will consume poisoned baits placed out illegally to kill foxes or crows. They are also susceptible to secondary poisoning from the new generation of rodenticides intended to control rats. Collisions with overhead power lines also pose a risk. They will always be a potential target for egg collectors, although this risk is no longer likely to have any impact on the national population.

Conservation status (BTO)

UK Amber ●
European 2: Concern, most not in Europe; declining
Global Near threatened
Listed on Schedule 1 of the Wildlife and Countryside Act 1981

Group Reports

Calderdale Raptor Study Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Not known to occur here as a breeding species.

There is a vast amount of suitable Red Kite habitat in the east of the study area, in the main Calder Valley and adjacent wooded valleys and cloughs. There is an abundance of prey available and therefore provisioning an active nest would not be a problem. Birds are already breeding on the Group's eastern and northern borders and it can only be a matter of time before a pair of birds that currently pass through the area breed in the district.

There were a total of 7 sightings during 2010 spread across the whole study area. Two birds were recorded in April, 1 on the 11th and a second on the 27th near the Yorkshire / Lancashire border. June brought 3 sightings; 2 of these, on the 14th, were quite close together and they were therefore probably both of the same bird, the third sighting was on the 21st in the Shibden Park area of Halifax. Just 1 bird was recorded in July in the Brighouse area and the last sighting of the year was in the north west of the study area when a bird was seen on the 16th August over a wooded ravine cutting through the moorland in the Upper Calder Valley.

Durham Upland Bird Study Group

Extent of coverage: Whole County.

Level of monitoring: Excellent coverage; all or most sites receive annual coverage.

This report refers to the whole of the County Durham recording area and is not just restricted to the uplands. In fact the vast majority of territories were away from the uplands. The Durham Upland Bird Study Group is grateful to the Friends of Red Kites [FoRK] Project Group for allowing NERF to reproduce their data. FoRK continues to monitor and publicly promote the species following the successful Northern Kites re-introduction program.

The data shows a slight increase in the number of pairs fledging young i.e. an increase from 11 pairs in 2009 to 12 pairs in 2010. However; the increase in the number of fledglings, from 17 chicks in 2009 to 24 in 2010, up by 41.2%, is both significant and encouraging. Despite the preceding harsh winter pairs close to the main re-introduction area continue to breed successfully as they become more experienced. Several pairs, probably involving young and inexperienced birds built nests but then did not go on to lay eggs. One pair deserted their nest following disturbance caused through inadvertent recreational activity. Other pairs failed from what are thought to be natural causes.

Clearly this core population has the potential to provide the nucleus for further range expansion within the County and this will be a critical measure of future success. It is a concern that the few pairs, which set up territories in upland areas soon after re-introduction releases around 2005, have still failed to establish themselves. Indeed there were no successful nests in the uplands in 2010 despite birds being regularly present in the Derwent Reservoir, Teesdale and Waskerley areas.

Two birds from the Northern Kites release program paired with 2 Yorkshire birds and raised 2 and 3 chicks respectively.

A dead juvenile was found in Rowlands Gill in August and despite an extensive examination and analysis by the PBMS the cause of death was not determined.

Manchester Raptor Group

Extent of coverage: Whole County.

Level of monitoring: Not known to occur here as a breeding species.

Red Kites are not known to breed in the County. Whilst they are occasionally seen on the eastern edge of the area monitored by the Group, overall they are more accurately designated as 'rare' in the study area.

Northumbrian Ringing Group

Extent of coverage: Whole County.

Level of monitoring: Excellent coverage; all or most sites receive annual coverage.

The data represents the continued expansion of this species following the successful Northern Kites re-introduction program at Gateshead.

In 2010 an additional 24 territories were checked and monitored throughout the season. When compared to 2009 there was a 14% increase in the number of young fledged per pair laying and a 35% increase in the number of young fledged per territorial pair monitored.

Unfortunately 2010 brought mixed fortunes for Red Kites in Northumberland and together with the good news came the bad. In February 2 birds were found dead just south of Hexham. Post-mortems confirmed poisoning in both cases. In early June a breeding adult female was found dead just 30 metres from an active nest near Stocksfield and in mid-

July the carcass of its mate, a wing-tagged adult male, was found 2 miles away having last been seen alive in early May. A post-mortem on the adult female confirmed Carbofuran poisoning. The body of the adult male was so badly decomposed that it was impossible to perform a full post-mortem. Being unable to feed itself it is known that at least 1 chick in the nest perished.

The Northumbrian Ringing Group is grateful to Ian Kerr, the Friends of Red Kites [FoRK] Project Group for providing the data.

North York Moors Upland Bird (Merlin) Study Group

Extent of coverage: Upland areas only.

Level of monitoring: Not known to occur here as a breeding species.

In common with previous years wandering individuals were recorded in most months of the year over the majority of the study area.

Unfortunately no breeding attempts have been recorded to date.

Peak District Raptor Monitoring Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Not known to occur here as a breeding species.

There were no records of this species in the study area during 2010.

South Peak Raptor Study Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Not known to occur here as a breeding species.

Increasingly this species is being seen throughout the year across the region, albeit in small numbers. A 'party' of 4 were seen near Hathersage in July. Whilst this group may have been a family party, breeding cannot be confirmed.

This increasing number of sightings gives the Group members the optimism to believe that breeding will take place in the South Peak in the not too distant future.

Yorkshire Dales Upland Bird Study Group

Extent of coverage: Part upland & part lowland areas.

Level of monitoring: Reasonable coverage; at least one long-term monitoring study.

The figures in the table were provided by the Yorkshire Red Kite Committee. Other pairs were noted by independent Raptor Workers and whilst the details are not included in the dataset in the table the information is reflected in the text.

Three pairs are known to have attempted to breed in the south east of the study area. One pair fledged 3 young and 1 pair failed as a result of an unknown cause. The third pair failed after the 2 chicks were poisoned with carbofuran.

Two further adults were found dead at 2 different locations on 11th March and 7th April. Forensic examinations revealed that they had both been poisoned by alphachloralose.

All 4 of these poisoned Red Kites also tested positive for the rodenticides bromadiolone and diphacoum.

Additional information, not included in the table, indicates that there were a further 6 breeding attempts in the area. One of these attempts failed when 1 of the adults was

poisoned [see above].

A Red Kite from the Cumbria release scheme was found dead approximately 1 kilometre from the Group's western boundary in Artengill, Dentdale. A post mortem was undertaken as part of the Cumbria Police investigation and the bird was found to have been shot 4 times in the chest. This bird was killed approximately 2 kilometres from the location where a dead Raven was found at a traditional breeding site in April 2008. X-rays of that carcass, arranged by RSPB Investigations, revealed that it containing 70 pieces of lead shot.

Taking into account the small number of Red Kites that are present in the study area the high proportion of birds found to have been illegally killed is of great concern and highlights the serious problems faced by birds of prey in all upland areas, including the Yorkshire Dales.

NERF regional summary

At the present time only Durham and Northumberland have access to reliable records for this species. Whilst they are known to have bred successfully in other parts of the NERF region there are no details in respect of the outcomes at these sites. They are also frequently recorded as passage birds in many study areas.

NERF regional threat assessment

Red Kites are scavengers and are extremely susceptible to poisoning, either by secondary poisoning e.g. by rodenticides, or by poisons deliberately placed to target this or other species. Over recent years a number of birds have been found poisoned within the NERF study area and 1 bird was found shot to death in 2010.

Raptor Workers who monitor Red Kites and identify overhead power lines that could pose a collision risk are advised to map their location and approach the appropriate owners with a view to finding a solution to mitigate against this threat.

WARNING

Some poisons are exceptionally toxic and can be absorbed directly through the skin. Raptor Workers finding a dead Red Kite, or any other species suspected to have been poisoned, should exercise extreme caution before handling a carcass. Butyl gloves offer some protection and may be used, however standard, thin, household gloves are not effective against many of the poisons found in dead Red Kites and should not be used. If the carcass is recovered it should be dropped into a bin liner. This bin liner should be placed inside a second with the butyl gloves dropped into the space between the 2 bags. The bags should then be securely tied. In every event it is advisable to wash or sterilise hands immediately after contact with a dead animal and in all cases before eating or smoking.

It is essential that all suspected poisoning incidents are reported to the local Police and that an incident number is obtained. The cause of death will be determined by either the Predatory Bird Monitoring Scheme [PBMS], telephone 01524 959830 or the Wildlife Incident Investigation Scheme [WIIS] telephone 0800 321600. The information should also be passed to the Investigations Team at the RSPB Headquarters, telephone 01767 693474.

Table 2: Totals of projects currently registered that utilise colour rings or unconventional marks

	Colour rings	Wing tags	PIT tags
Honey Buzzard	1	0	0
Red Kite	0	29	0
White-tailed Eagle	1	6	0
Marsh Harrier	0	6	0
Hen Harrier	1	10	0
Buzzard	3	8	0
Golden Eagle	0	1	0
Osprey	1	0	0
Kestrel	2	3	0
Merlin	0	0	4
Peregrine	8	0	22
Barn Owl	0	3	1
Tawny Owl	0	0	1

estimates that are specific to first-year birds, declines in which have been implicated in the falling numbers of species such as Song Thrush [Robinson et al. (2004)].

While less applicable to the many birds of prey that breed in remote areas, this methodology is potentially suitable for species such as Barn Owl and Tawny Owl, which are encountered frequently as road casualties. However, a dramatic decline in ring reporting rates across all species over the past 40 years [Figure 1] has reduced the feasibility of using dead recoveries to calculate survival of even this group. Recent trials with G rings have shown that this trend can be partially reversed by the addition of a web address www.ring.ac, suggesting that a reluctance to send details by post may have been a contributing factor. However; activity patterns of the general public and their perception of the risks of handling dead birds are more difficult to address.

The rise of the re-trap

The lack of recovery data presents a serious knowledge gap when it comes to investigating the drivers of population declines for species such as Kestrel, numbers of which have fallen by over 50% since the mid-1990s in Scotland, www.bto.org/birdtrends/wcrkestr.shtml, so it is important to look for alternative methods of generating survival estimates. One available option is to use data on marked birds that are recaptured by ringers, and this forms the backbone of the Re-trapping Adults for Survival [RAS] scheme, see www.bto.org/ras. The aim of RAS is to mark as many of the adult birds as possible within a population and then attempt to determine whether they are present during the following breeding season. For some species this may involve physically re-trapping full-grown individuals, but re-sightings of birds originally marked as pulli and subsequently recruited to the breeding population serve exactly the same purpose. A variety of colour rings and unconventional marks are currently used to identify birds of prey [Table 2], and the value of wing tags in monitoring the survival rates

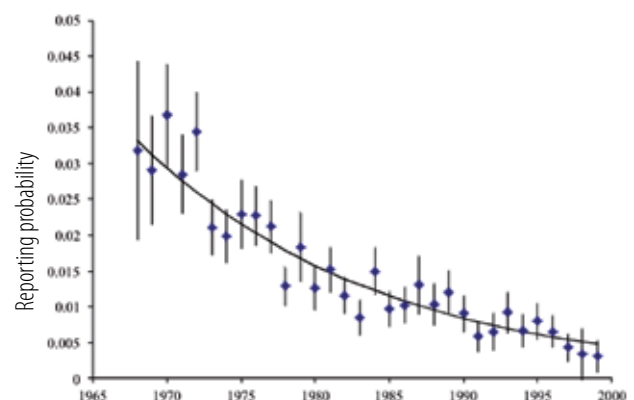
of Red Kite was highlighted in a recent publication by Smart et al. (2010) which identified illegal persecution of the species as the main factor limiting population growth in Scotland. Passive Integrated Transponder [PIT] tags have also been utilised to great effect in studies of Peregrine, enabling the return of breeding individuals to be recorded remotely, see www.natural-research.org, a technique currently also being piloted in projects on Goshawk and Little Owl.

RAS data for individual species are pooled across projects and used to produce national estimates of survival that are updated annually, generating long-term trends for publication in the BirdTrends report, www.bto.org/birdtrends alongside trends in abundance and breeding success. Of the 160 RAS projects currently registered, three relate to birds of prey, two on Tawny Owl [Grapian and Kielder Forest] and one on Barn Owl [Wigtownshire]; while this is an encouraging start, more information is urgently needed to allow the production of reliable estimates for these and other top predators. While your data will contribute to a single annual estimate of survival rates averaged across the whole of Britain, we also aim to produce project-specific estimates, allowing participants to place their results in a national context. We take data security very seriously and we will never release or publish site-specific data without the full collaboration of those responsible for collecting the data. Our policy on data security can be read at www.bto.org/research-data-services/data-services/data-sensitive-species.

The value of nest recording

Ringling and nest recording are intrinsically linked when it comes to establishing the causes of population declines – we can only categorically state that one is driving changes in the abundance of a species if we know that the other is not. For birds of prey, all national data on productivity originates from records submitted to the NRS, www.bto.org/nrs. Unsurprisingly, cavity nesting species that take readily to nest boxes, such as Kestrel, Barn Owl, Tawny Owl and Little Owl, are represented in the greatest numbers [Table 1], with box schemes also providing useful data on incidental species such as Stock Dove and Jackdaw. Submissions of Red Kite, Buzzard,

Figure 1: Decline in ring reporting rates of Song Thrush by the general public 1968-1999

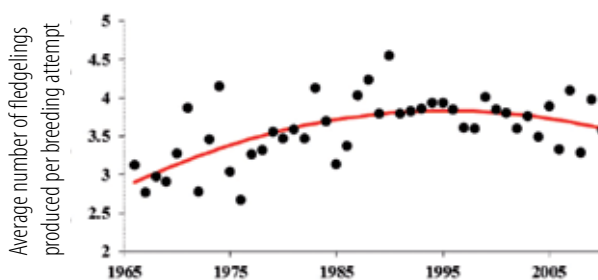


Goshawk, Peregrine and Raven are also increasing rapidly, a welcome development thanks in part to the work of Mark Cubitt, whose database wizardry has enabled ringing and nest recording data to be input simultaneously, doubling the value but not the time spent inputting it. Comparison of the totals, presented in Table 1, suggests that the majority of raptor and owl broods ringed in England are also being nest recorded, although Hen Harrier, Kestrel and Merlin are notable exceptions.

One of the understandable concerns about submitting data to the NRS relates to the confidentiality of the records. All paper and electronic data relating to Schedule 1 species are treated in strictest confidence, the former stored in locked filing cabinets and the latter in password protected databases, both accessible only to specific BTO staff members working in the Demography Unit. If data are requested for scientific analyses requiring resolution to a finer scale than the county / region involved, the nest recorder is contacted in order to obtain their permission prior to fulfilling the request. As with the ringing data, the primary use of this information is to produce trends at a national level – site-specific analyses are not published without full collaboration from the individuals involved in collecting the data.

Details of any nest for which contents can be counted can be submitted to the NRS. Recording the numbers of eggs and chicks present on specified dates, rather than providing summaries across the whole nesting period, allows the calculation of laying dates and daily failure rates as well as clutch and brood sizes, provided that more than one visit is made. Single visit records provide significantly less information, but can still give a measure of clutch sizes and brood sizes at known ages. Nest

Figure 2: Temporal trend in Kestrel breeding success 1966-2010 as derived from Nest Record Scheme data



contents and failure rate data can also be combined to give an overall estimate of the average number of chicks that fledge from each nesting attempt made over the whole season. Long-term productivity trends for seven species of raptor, three owls and Raven are currently published in the BirdTrends report [Table 3] and more will be added as soon as a sufficient run of data has been collated.

In general, the national picture appears to be fairly positive. Four raptor and one owl species have displayed a significant increase in the average number of chicks fledged since the mid-1960s [Table 3], ranging in magnitude from 0.5 fledglings [Buzzard, Kestrel, Merlin, Tawny Owl] to 1.0 fledglings [Sparrowhawk] per nest, although it should be noted that the mid-1990s saw a down-turn in Kestrel breeding success that appears to be continuing [Figure 2]. While it is tempting to relate this to the decline in Kestrel numbers recorded by the BTO / JNCC / RSPB Breeding Bird Survey over the same period, the decrease in abundance is most pronounced in Scotland while the majority of NRS data originates in England [Table 1]. This situation highlights the need for good spatial coverage of common raptors, as well as the scarcer species. Increases in productivity demonstrated by the majority of species appear to be driven by falling failure rates at the egg stage, possibly related to the banning of organochlorine pesticides, although changes in the level of persecution, habitat quality and climate may also be implicated. Sparrowhawk and Merlin also display a positive trend in brood sizes, the mean number of chicks of both species increasing by about 0.3 over the last 45 years.

Table 3: Long-term productivity trends generated from Nest Record Scheme data 1965-2009

	Laying date	Clutch size	Brood size	Egg stage failure	Chick stage failure	Fledglings per breeding attempt
Hen Harrier	0	-	ns	ns	ns	0
Sparrowhawk	0	ns	+	-	ns	+
Buzzard	0	ns	ns	-	ns	+
Kestrel	-	ns	ns	-	ns	+
Merlin	0	ns	+	-	-	+
Hobby	0	0	ns	0	ns	0
Peregrine	0	-	+	ns	ns	ns
Barn Owl	ns	+	ns	-	-	0
Little Owl	0	+	ns	ns	ns	ns
Tawny Owl	ns	ns	ns	-	-	+
Raven	ns	ns	-	ns	ns	ns

'+' signifies significantly positive trends, '-' indicates significantly negative trends. 'ns' signifies no significant trend. '0' indicates lack of sufficient sample size to calculate the parameter

Future priorities for raptor monitoring

Combining data on survival generated by ringing and data on breeding success generated by nest recording has proved a very powerful method of identifying the causes of population declines. The majority of past work has involved passerines, a prime example being that of Siriwardena et al. (1998, 1999 & 2000) who flagged over-winter survival due to food shortage as the main factor responsible for the collapse in populations of some farmland birds and reduced productivity as the causal factor for others. A similar approach is currently being used to investigate the rapid fall in numbers of long-dis-

tance migrant passerines and some resident woodland species. It would be absolutely fantastic if we were able to do the same for birds of prey, producing fully integrated population models that could not only help us to understand past changes, but also to predict the impacts of changes in land use and climate in the future, setting priorities and informing decisions about habitat management. Given the incredible amount of effort already invested in monitoring raptor and owl populations, this is definitely an achievable goal, and by contributing data, past or present, to the national monitoring schemes discussed above, you can help us to move closer to it.

Acknowledgements

None of this monitoring work would be possible without the incredible amount of time and effort invested by ringers and nest recorders, for which we are extremely grateful. The Ringing and Nest Record Schemes have both benefited greatly from the support given under the JNCC / BTO Partnership that the JNCC undertakes on behalf of Natural England, Scottish Natural Heritage, Countryside Council for Wales and the Council for Nature Conservation and the Countryside in Northern Ireland.

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What is the Predatory Bird Monitoring Scheme?



Lee Walker, PBMS,
Centre for Ecology & Hydrology

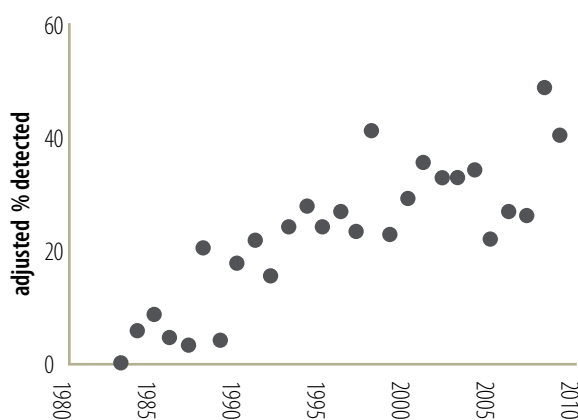
MANY OF you will have heard of the Monks Wood research station in Cambridgeshire and the work of Ian Newton and Derek Radcliffe studying the impact of organochlorine insecticides on predatory bird populations. As part of these studies a monitoring scheme was set up to measure the levels of pollutants that are accumulated in the tissues and eggs of predatory birds. Latterly this evolved into the Predatory Bird Monitoring Scheme [PBMS]. The PBMS is the umbrella project that encompasses the Centre for Ecology & Hydrology's [CEH] contaminant monitoring and surveillance work on avian predators. The Scheme is jointly funded by CEH, Natural England, the Environment Agency, the Campaign for Responsible Pesticide Use [CRPU] and the Royal Society for the Protection of Birds [RSPB]. By monitoring sentinel vertebrate species, the PBMS aims to detect and quantify current and emerging chemical threats to the environment and in particular to vertebrate wildlife. For further in-depth information about the Scheme please refer to the PBMS website at www.pbms.ceh.ac.uk.

During the 1950s and 1960s the impact of DDT / DDE was devastating on the Peregrine and other birds of prey populations. The work undertaken at Monks Wood by Radcliffe and Newton et al. established beyond doubt that DDT / DDE was responsible for egg shell thinning in these species. The thinner shells resulted in the eggs collapsing and the death of the potentially otherwise healthy chicks. The problem was widespread and subsequently caused the population to crash. The first signs of recovery were noted in 1967. Following the banning of DDT the UK Peregrine population has recovered and is currently estimated to be c1400 pairs. [The Peregrine Falcon, Derek Radcliffe, 1980 Chapter 13 – T & AD Poyser].

At the present time organochlorine insecticides, such as DDT, are only accumulated in small amounts by predatory birds and are not thought to present a significant risk; consequently they are no longer a focus of our work. However; the work continues and currently we measure a wide range of other environmental contaminants that are likely to accumulate in the bodies or eggs of birds. These contaminants include toxic and trace metals, and a range of organic compounds known collectively as persistent organic pollutants [POPs] & anticoagulant rodenticides. Secondary exposure of raptors occurs when they eat prey, such as mice, that have consumed the poison. The number of incidents involving the detection of Second Generation Anticoagulant Rodenticides [SGARs] in Barn Owls has risen by 40% since the early 1980's and these changes are being

studied closely by the Scheme [see Barn Owl / SGARs graph]. However; the problem is not only confined to Barn Owls, 60% of Kestrels received into the Scheme test positively for rodenticides.

One example of POPs that is causing concern is the industrial contaminants called Polychlorinated Biphenyls [PCBs]. Although the production of PCBs has been banned in the UK for decades, they still persist in the livers and eggs of raptors such as Sparrowhawk and Merlin. A review of the effect of this contamination was published recently and can be downloaded from the PBMS website.



SGARs detected in Barn Owls

The number of Barn Owls with detectable residues of second generation anticoagulant rodenticides increased, particularly during the 1980s and early 1990s. Most of these birds die of other causes than rodenticide poisoning but the impact of widespread sub-lethal exposure is unknown.

In addition to the year-on-year chemical analysis of the samples received at the laboratory, the PBMS maintains an archive that dates back to the late 1960s. This irreplaceable collection of frozen tissues and egg contents is crucial to the development of new monitoring approaches and enables the PBMS to identify emerging chemical threats to predatory birds and the wider environment. A recent study used the PBMS archive to survey which species accumulated specific brominated flame retardants [BFRs] and tested whether the level of exposure in two species, Sparrowhawks and Peregrines, had changed since the start of their use in the 1970s. This work helped to prompt a European wide monitoring programme for BFRs in the environment. As part of our contribution to the research PBMS supplies Sparrowhawk eggs for analysis.

How can you help?

The success of the research is dependent upon the participation of volunteers and the submission, by them, of both carcasses and eggs, to the laboratory. Raptor Workers spend countless hours monitoring bird of prey

populations and it is likely that they will encounter both dead specimens and failed eggs during their fieldwork. They are therefore ideally placed to contribute to the long-term studies of the PBMS by submitting them to the laboratory for analysis.

Which species are analysed under the Scheme?

We currently analyse Sparrowhawk, Barn Owl, Kestrel and Red Kite livers, and addled eggs collected from Merlin, Golden Eagle, White-tailed Sea Eagle, Gannet and Sparrowhawk nests. These species have been selected because they are especially vulnerable to pesticides, or because their distribution and / or prey-preference makes them suitable for monitoring geographical and temporal trends in pesticide and other chemical usage.

However; all birds received in the laboratory undergo a post-mortem examination following which liver, brain, muscle, kidney, bone and fat tissues, together with a selection of feathers, are archived. This archive gives the PBMS a unique capacity to determine long-term trends in other chemicals which may pose a significant risk to wildlife in the future.

Submitting samples to the laboratory

The majority of the predatory birds studied under the Scheme are protected species and therefore we can only accept addled and deserted eggs from individuals who are licenced to remove them from the wild.

If you find a dead bird that you believe may be of interest to the Scheme, please submit it to the laboratory for examination. Prior to submission the bird should be kept cool and if possible it should be frozen. Please contact the laboratory, leaving your name, address and telephone number. We will send out a box in which you can submit the bird. We will refund the postage costs and, after the analysis has been completed, we will provide you with a copy of our findings.

In the event that you suspect that the bird has been illegally killed, please contact the Police in the first instance. You should obtain the Police Incident Number and request that the matter is brought to the attention of a Wildlife Crime Officer [WCO].

If you find a bird that you suspect may have died of poisoning it is vital that due consideration is given to your own health and safety. Some poisons are extremely toxic and you should avoid contact with the skin. The carcass can be picked up by placing your hand inside a

plastic bag before grasping the bird and turning the bag over the carcass. It is essential that hands are washed thoroughly, immediately after handling the bird.

Storage of samples prior to submission to the laboratory

To keep deterioration to a minimum the eggs should be posted as soon as possible after collection. Although organochlorine residues are not affected by storage per se, other factors, such as dehydration can affect the results. Prior to posting the eggs to the laboratory it is important to keep the eggs cool, ideally stored in a refrigerator. Please do not freeze whole eggs as the expansion of the contents breaks the shell, which spills the contents and adversely affects our ability to accurately assess their dimensions. However; if you are only sending in egg contents, freezing prior to postage is acceptable.

If eggs are not kept cool bacterial growth occurs inside the egg with a subsequent build up of gas, which can lead to an unpleasant explosion. Warming also increases any maggot activity, fungal infection, water loss and general deterioration.

Packing

It is important to pack each egg in a separate small soft plastic bag to ensure that in the event that the shell is broken in transit the contents can still be used for analysis. Each egg should be identified with a label attached to the outside of the bag. The label should include details of the species, date, location found, national grid reference and the name and contact details of the collector. Each egg should then be placed in a larger box which is sufficiently rigid to withstand the rigours of transport. Supermarket



eggs boxes are adequate for the purpose although other boxes such as ice-cream cartons, padded with tissue paper, cotton wool or bubble wrap are also suitable.

The eggs should not be jammed tightly in small containers as they tend to get broken in transit. When large eggs are being submitted in supermarket egg boxes please do not use rubber bands to close the box, as this tends to crush the eggs.

What happens to the birds received at the laboratory?

When the bird arrives, it is assigned a unique reference number before undergoing a post mortem examination. During the examination we record over 100 observations to confirm the species, age and sex of the bird and establish the probable cause of death. These observations are recorded in the post mortem report, a copy of which is forwarded to the person who submitted the bird.

Once the post mortem analysis is complete, samples of liver, kidney, muscle, brain and fat are stored in glass jars in the tissue archive. Recently, we've also started to retain samples of bone and feather in the archive.

A selection of liver samples, spanning a calendar year, is sent to the chemistry laboratories where the concentrations of contaminants are measured. To ensure that there isn't any bias in the monitoring process all of the samples are analysed at the same time. Once the data is received from the chemistry laboratories it is compiled into a scientific report to determine whether the concentrations of the chemicals found are static, increasing or decreasing. A report of the findings is subsequently forwarded to the person who submitted the specimen, informing them of the cause of death and the details of any chemical residues present.

What happens to an egg received at the laboratory?

Staff at the laboratory will acknowledge the receipt of eggs as they arrive, the cost of postage will be refunded in the form of postage stamps and the analytical results will be sent out in due course. Only 1 egg per clutch will be analysed for chemical residues, but the biometric data for the other eggs in the clutch will be recorded and all eggs are archived for possible future analyses.



All of the eggs received at the laboratory are initially measured and weighed. The contents of the eggs are then removed and stored in glass jars in a freezer. The shells are dried and their thickness is calculated. We are interested in calculating the thickness of the eggshell as some organochlorine compounds have been found to cause the eggshell to be thinner than normal and susceptible to crushing by the adults.

How long does it take?

We aim to acknowledge receipt of a sample, and refund postage costs, within 4 weeks and thereafter we aim to have the post mortem data available within 4 months.

The biometric data for eggs is usually sent to the person submitting the sample at the end of the season, around September / October. Unfortunately, because samples have to be submitted to the chemistry laboratories in annual batches the results of the chemical analyses may not be available for over a year. We appreciate that this delay can be frustrating, but there are strong scientific reasons why the samples should be analysed at the same time and we ask for your patience.

In summary

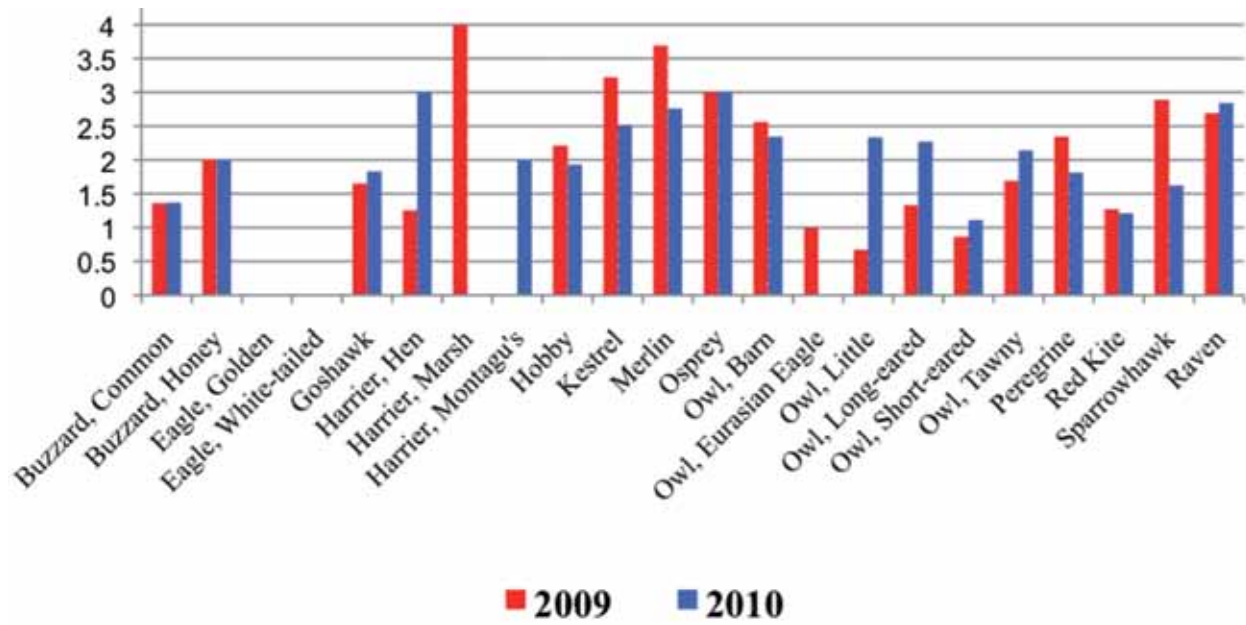
The success of the PBMS is, in a great part, dependent on the collaboration of Raptor Workers who encounter dead specimens in the field and submit them to the laboratory for examination. Added or deserted eggs can be submitted, by licensees, directly to the laboratory using the packaging advice above. If you are submitting a dead bird of prey, please store it somewhere cool, preferably frozen and contact Lee Walker, telephone 01524 5959830. Alternatively you can email him at leew@ceh.ac.uk or use the contact page on the website <http://www.pbms.ceh.ac.uk>

When submitting eggs for inclusion in the Scheme please mark the outside of the parcel "BIOLOGICAL SPECIMEN", in red, and send it by first class post to:

Lee Walker [PBMS]
CEH Lancaster
Lancaster Environment Centre
Library Avenue, Bailrigg
Lancaster, LA1 4AP

II. Combined productivity graphs

a) Young fledged per pair laying 2009 v. 2010



b) Young fledged per territorial pair monitored 2009 v. 2010

