The Rare Breeding Birds Panel: five decades of monitoring the UK's rare breeding birds

David A. Stroud, Mark A. Eaton, Ian S. Francis, Helen Baker, Mark Holling, Andrew King, David Norman, Andy J. Stanbury and Dawn E. Balmer

Black-necked Grebe *Podiceps nigricollis* *Alan Harris*

Abstract For 50 years, the Rare Breeding Birds Panel (RBBP) has collated records of the rarest breeding birds in the UK and provided, through an annual report published in *British Birds*, a summary of their status and trends. Here, we summarise the evolution of the Panel and the growth in the volume and completeness of its reporting. The model established in 1973 has proved remarkably durable and the shape and activities of the Panel in 2023 remain close to those at the start. A total of 180 naturally occurring species have been reported on since 1973, as well as 41 non-native species. The Panel continues to form an essential component of the UK's bird monitoring needs and has provided a wealth of data and information towards the conservation of the UK's rarest breeding species. Such work would have been impossible without the input from thousands of birders and the county bird recording network.

Introduction

Rare breeding birds have long held great fascination for ornithologists. There are now 628 species on the British List (BOU 2022). Of these, approximately 210 native species nest in the UK on a regular basis. A surprising number are classified as rare breeders – species with fewer than 2,000 pairs; indeed, many have breeding populations in the UK of only tens of pairs. Finding and monitoring these species takes a great deal of effort and expertise. In a world of conservation threats and prioritised funding for action, good knowledge of where such species are, their breeding status and productivity has never been more important. Yet the systems that now do this have not always existed and, in the past, reporting of rare breeding birds was not well organised, with patchy information flows, and dominated by rumour and hearsay. A strong need to improve the situation was clear. This paper sets out the story of the Rare Breeding Birds Panel (RBBP), an independent organisation that offered a long-lasting, effective and viable solution to the problem of how to monitor rare breeding birds. We also explain the workings of the Panel and how the birdwatching community plays a crucial part in the ability of the organisation to run effectively, set against the background of major change in the numbers and distribution of our rarest nesting birds. Now 50 years old, the RBBP plays a major part in assessing the status and trends of a substantial proportion of all our breeding birds and has transformed the recording of many of our rarest nesting species.

Generally, when discussing the latest datasets in this paper, we have used data up until 2019, since collection of data in 2020 and 2021 was significantly curtailed by Covid-19 restrictions.

Historical development of the RBBP

The origins of the RBBP extend back to 1968, when the RSPB Council established a sub-committee 'to collect together, in one place, the records of rare breeding birds in Britain. Details of the scheme were circulated to 46 county and regional report editors and the great majority approved of it (43 in favour, one against and two not replying)' (Sharrock 1973). The new scheme was widely advertised with short promotional articles in *Bird Study, Ibis, British Birds, Irish Naturalists' Journal, Nature in Wales* and *Scottish Birds*. The aims of the Panel were 'to collect in one place all information on rare breeding birds so that changes in status – both increases and decreases – could be monitored, and so that essential information was not lost (as has happened in the past) through the deaths of those keeping breeding records secret.'

The context in which this happened is important. There is a distinct birding 'subculture' that focuses on finding and recording nesting activity of birds that are inherently rare, uncommon or localised. In part, this derived from the tradition of egg-collecting (the vestiges of which still live on to this day) and also stemmed from the challenges of nest-finding and the need to understand the breeding biology of little-known species. Books that brought together these traditions (e.g. Campbell & Ferguson-Lees 1972) helped to stimulate this, and the growth of, for example, raptor study groups in Scotland and elsewhere from the 1980s onwards focused attention on distinct bird groups. The lure of almost mythical rare breeders as stimulated by children's books such as Ransome (1947) and later espoused, for instance, by Nethersole-Thompson (1971) further created an air of mystery for some northern species, and consolidation of distribution data presented by the first Britain and Ireland breeding bird atlas (Sharrock 1976) gave a firm basis on which to build knowledge.

However, with this growing interest in rare breeding birds, a culture of secrecy also grew. It became clear that many records of nesting were not being passed on or archived in any useful way. Indeed, some individuals took pride in this. As pressures mounted on bird populations, as declines became apparent and as other species changed distribution or colonised, the need for good information on our rarest species became greater. Yet, how best to rise to this challenge? How could one build a comprehensive, secure and effective system for logging and archiving rare breeding bird information to inform the analysis of species' change and make information available for conservation? This was the genesis of the RBBP.

The sensitivity of what was being requested was recognised at the outset, with assurances that 'Data sent to the Panel will not be divulged to any other person (not even to members of the council or staffs of the BTO and RSPB or the editors of *British Birds*) without the prior permission of the person supplying the information (during his or her lifetime), except that an annual summary in very general terms will be published' (Sharrock 1973). This security and independence have been key from the beginning.

To build confidence, the first notices even included dummy species summaries, which were similar to the summaries of today's annual reports half a century later. Ensuring security of data was seen as crucial with the assurance that 'only two copies of the original data supplied to the Panel will exist and these will be kept under lock and key, at separate places to guard against the risk of fire'. From the beginning, the principle was also established that only the Secretary of the Panel had access to the totality of submitted data: 'The main set of data will be consulted only by the Secretary, but a summary prepared by him will be shown to other members of the Panel at an annual meeting. This summary will be returned to the Secretary at the end of the meeting and copies will not be taken by the other members of the Panel' (Sharrock 1973). While the technologies around the receiving and storing of data may have changed, the ethos and practices around data security have remained much the same to this day.

By 1973, however, the RSPB Council subcommittee had evolved into an autonomous body 'supported and jointly funded by *British Birds*, the British Trust for Ornithology and the RSPB, and includ[ing] members from each of these bodies and from the Nature Conservancy Council' (Sharrock *et al.* 1975).

The structure established 50 years ago has proved remarkably durable and remains essentially similar today. The support from *BB* has continued in its annual publication of the Panel's report, amounting to nearly a full issue per annum. Following the Government's split of the Nature Conservancy Council (NCC) into country bodies in 1991, the Joint Nature Conservation Committee (JNCC) took over support of the Panel as part of its suite of long-term, UK-wide bird-monitoring partnerships on behalf of the country statutory nature conservation bodies.

From the outset, funding of the part-time Secretary has been shared by RSPB and NCC/JNCC. These bodies have sought to provide equal financial inputs, although there have been years when one or other has provided a greater proportion owing to the vagaries of organisational financial constraints. Recent additional financial contributions from the BTO and JNCC have provided welcome latitude to do more beyond simply maintaining the Panel's basic data-gathering and reporting functions.

Panel members have always been appointed in a personal capacity as respected members of the ornithological community and having 'the trust and goodwill of observers and recorders' (Spencer *et al.* 1992). Indeed, until the mid 1990s, all prospective appointees were required to be formally endorsed by the governing bodies of BTO, RSPB and NCC/JNCC. As well as those members from supporting organisations,

Alan Harris

Zitting Cisticola *Cisticola juncidis*. Although this species breeds in northern France – in Brittany and Normandy – it is exceptionally rare in Britain. There are occasional breeding records from the Channel Islands, including a singing male on Alderney in 2008, pairs on Guernsey in 2009 and Alderney in 2017 and confirmed breeding on Alderney in 2020.

through its independent members the Panel has sought to contain expertise from the wider bird recording community as well as geographic representation across the UK. The 24 members serving on the Panel since its inception are listed online (https://rbbp.org.uk).

None of the Panel's activities would have been possible without the work of the five Secretaries: Tim Sharrock, Bob Spencer, Malcolm Ogilvie, Mark Holling and Mark Eaton, as well as David Lea, who led the establishment of the Panel from 1968 to 1972. Initially, the important role of chairing the Panel alternated roughly annually but it has, since 1993, alternated at longer periods between the representatives of the funding partners: initially RSPB and JNCC, and currently BTO, giving greater consistency of leadership. It is one of, if not the, longest established of any multi-species, annual, national wildlife recording scheme in the UK (Eaton *et al.* 2023).

Rare Breeding Birds Panel data

Data sources

There are a number of key pathways through which data reaches the RBBP. Unusually for bird monitoring schemes, submission of data directly from observers is not encouraged, but rather the Panel encourages that records are compiled by those best able to identify, assess and combine relevant data from multiple observers. By far the most important source of rare breeding bird data are county and regional bird recorders, who are tasked with providing annual returns to the RBBP, reporting all records of species on the RBBP list displaying signs of breeding at a site-by-site level. Each recording area (referred to as 'county' hereafter, although not all are) has a bird recorder, although in some areas the task of compiling data for the RBBP is conducted by another individual, or team, dedicated to this one, often time-consuming task. The systems used for compiling data at the county level vary widely; most counties now utilise data submitted to online portals such as the BTO/RSPB/BirdWatch Ireland/SOC/WOS BirdTrack system and Cornell Lab of Ornithology's eBird system in addition to those submitted to them directly through bespoke systems of varying degrees of complexity.

Nearly all recorders submit data using a standard RBBP spreadsheet and returns by paper are now a thing of the past. In recent years, between 65% and 70% of the records received came through the recorder network, and data submissions were received from every recording area in the UK in three of the last four years, something that had never happened prior to 2017. The same set of regions are used to define the 84 recording areas used in the RBBP's annual reports (see Holling *et al.* 2007).

The Panel receives data from other sources that may not be available to the recorder network, although in most cases they are at least partially available to recorders, so careful assessment is required to ensure that any duplication is accounted for. Key additional data sources are:

Raptor Study Groups – Totals are available from the regions covered by groups reporting to the Northern England Raptor Forum (see www.raptorforum.wordpress.com) and Scottish Raptor Study Group (www.scottishraptorstudygroup.org). Data from the latter are nowadays submitted to a central database as part of the Scottish Raptor Monitoring Scheme (SRMS; www.raptormonitoring.org), which is available to the RBBP, although currently this site-level data is not incorporated into the RBBP database.

Schedule 1 forms – Data submitted to the statutory conservation bodies as a requirement of disturbance and photography licences under Schedule 1 of the 1981 Wildlife & Countryside Act.

BTO/JNCC Ringing and Nest Record Schemes – Data submitted to the BTO via the Integrated Population Monitoring Recorder (IPMR) or Demography Online (DemOn) systems, including for Schedule 1 species.

RSPB data – This includes data from standardised monitoring on RSPB reserves that, while not covering all RBBP species annually, provides a substantial proportion of all records for some species such as Black-tailed Godwit *Limosa limosa* and Red-necked Phalarope *Phalaropus lobatus*.

David Tipling

134. Red-necked Phalarope *Phalaropus lobatus*, Shetland, June 2006. This is one of several species for which nearly all data are received from annual monitoring coordinated by the RSPB – in the case of this northern species, showing a remarkable increase over the last decade.

In addition, the RSPB coordinates annual monitoring programmes for some species that are targeted by species recovery projects, such as Corn Crake *Crex crex*, Stone-curlew *Burhinus oedicnemus* and Eurasian Bittern *Botaurus stellaris*.

BTO/JNCC Seabird Monitoring Programme – Annual monitoring of Mediterranean Gull *Ichthyaetus melanocephalus*, Yellow-legged Gull *Larus michahellis*, Little Tern *Sternula albifrons* and Arctic Skua *Stercorarius parasiticus*.

Species-specific surveys – Data from periodic species surveys, such as those conducted under the Statutory Conservation Agency and RSPB Annual Breeding Bird Scheme (SCARABBS) (some of which RBBP has partnered, such as for the Turtle Dove *Streptopelia turtur* and Willow Tit *Poecile montanus*). Also, BTO surveys of relevant species such as Little Ringed Plover *Charadrius dubius* and Peregrine Falcon *Falco peregrinus*, as well as data on Little Egret *Egretta garzetta* submitted to the annual BTO Heronries Census. Unusually, the Panel themselves organised a national survey for Honey-buzzard *Pernis apivorus* in 2000–01 (Batten 2001), responding to a request from the Raptor Working Group (2000) for better data for the species, as well as supporting the independently organised 2020–21 survey.

Stephen Menzie

135. Juvenile Honey-buzzard *Pernis apivorus*, Sweden, September 2022. While the provision of precise location details with records of rare breeding birds has improved over the years, many records of raptor species, such as the Honey-buzzard, are still submitted with imprecise or even missing grid references. This reduces its value for monitoring and conservation purposes.

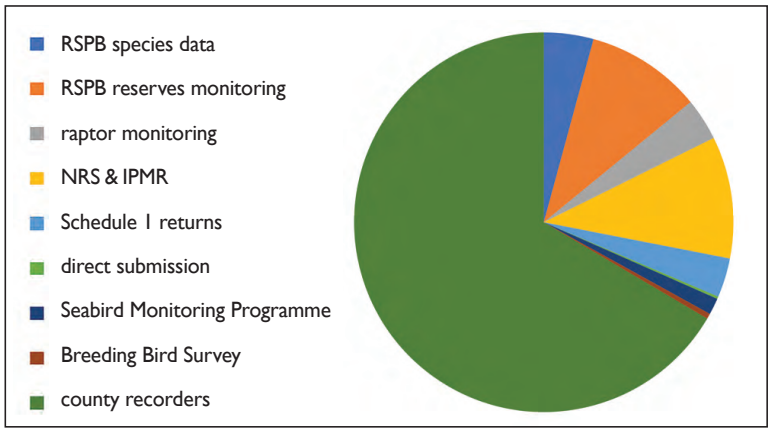

Fig. 1. The sources of all 9,264 records received by the Rare Breeding Birds Panel (RBBP) in 2019. Two-thirds of the data received came from the county recorder network, with data from the RSPB reserves network (10%) and from Nest Record Scheme (NRS) and Ringing Scheme returns to the BTO (10%) being the other most important flows. Much duplication exists, for example, some county returns include data from RSPB reserves and from NRS and ringing. Once this was accounted for, there were 6,761 unique records of rare breeding birds in 2019.

Computerisation and confidentiality

In the earliest years, data were collected and stored as paper records, travelling around the country in a locked security box. With the advent of computers, the challenge was to computerise data holdings with the benefits that would bring but at the same time retain observer confidence. The primary purpose of the descriptive article in *BB* (Spencer *et al.* 1992) was to present the Panel's case for computerisation and also, given the potentially greater accessibility of data, to start to open up a greater range of conservation uses of the data. This initiative was strongly led by the late Colin Bibby, then head of RSPB's Research Department. Spencer *et al.* (1992) presented a strong case for the multiple conservation uses of these data, all of which continue to the present (Stroud *et al.*), but nuancing this with the need for continued and appropriate site confidentiality.

Initially, the RSPB-funded digitisation of the two decades of records were managed in a Paradox database, the early development of which was undertaken by Malcolm Ogilvie on succeeding Bob Spencer as Secretary in 1993. The analytic capability of this system was a major step forward and opened the potential for significant new analyses. As a consequence, and recognising the value of digital records for conservation, a formal Data Access Policy was developed in the late 1990s (available on the Panel's website) to set out the principles and constraints under which Panel data are potentially available to third parties for research and conservation. A crucial change was made, moving from a presumption of no-use or dissemination of raw data unless approval had been given by an observer, to presumed approval of use unless an observer requested otherwise. Thus, the conditionality statement on the record form used at the time changed from requiring observers to opt out rather than to opt in. This opened the potential for much greater use of data for conservation purposes.

Spatial data management

By the early 2000s, the limitations of the Paradox system were becoming apparent. An independent, JNCC-funded review of the Panel's data flows and information management systems assessed the issues and needs (Boobyer & Tantram 2001). Following this, the data were moved to an Access database (with the assistance of Ian Andrews), but it became increasingly obvious that a major analytical constraint was the lack of ability to undertake spatial analysis. Thus, it was practically impossible to address a simple conservation-related query such as, 'Which rare breeding species occur in this SSSI?'

The solution was to migrate to a Geographical Information System (GIS) in 2016, which enabled spatial analysis and mapping functionality. The new system provides huge analytical potential and outputs from it have appeared in recent annual reports.

The use of a GIS database means that all records held by the RBBP (a total of 173,865 as of December 2022) are assigned to a geographical feature (or site), the vast majority of which are defined by grid references rather than by area polygons. Over the many years of data collection – most of it before the migration to a GIS – the database has accumulated thousands of features, many being exact or near duplicates of others, and others poorly defined. Recent JNCC-funded work has enabled a cleaning up of these features, removing duplicates and refining the spatial resolutions at which they are defined. At present, the RBBP GIS contains approximately 37,000 geographical features.

The importance of quality

The RBBP has always worked to communicate the importance of the biological records it receives being of high quality, through various routes such as the Recording Standards guide available online on the Panel's website. This is dependent on both the original observer collecting and submitting all the required information and those who collate data for submission to the Panel passing that information on. The Panel does not query the identification of bird species, as it expects any adjudication on identification to have been already conducted at a local level, or by the British Birds Rarities Committee for species that are national rarities, such as Savi's Warbler *Locustella luscinioides*,

However, many records have reduced value for monitoring and conservation purposes owing to incomplete or inaccurate data. Commonly encountered problems

concern count data, breeding evidence and location details. Issues regarding counts include absence (records simply of presence), imprecise counts, or those which omit details of the sex (an extremely important feature for determining the number of pairs present) or age (the presence of juveniles may, of course, indicate breeding) of birds. The RBBP categorises all breeding records using standard atlas codes as defined by the European Bird Census Council (Hagemeijer & Blair 1997), which fall into the three categories: Possible breeding, Probable breeding and Confirmed breeding, with confirmed breeding meaning that a breeding attempt by a pair of birds reached at least the stage where eggs were laid (regardless of subsequent breeding success). Nonetheless, many records are received without this relevant evidence or are incorrectly assigned to category. Providers of data are sometimes misled by the probabilistic naming of the three evidence categories. It is correct to define a breeding attempt where birds are, for example, observed displaying or nest-building as 'probable breeding' even if the observer knows for certain that breeding did not actually occur subsequently.

Finally, accurate location data is a critically important element of biological records that is not always made available. Without this, the use of the RBBP's data holdings for conservation and research purposes is impaired. In addition, in the many instances that we receive the same data from multiple sources, the lack of robust location data may mean that it is not possible to determine whether records are duplicates of those received already: over-counting and undercounting are both risks, dependent on which assumptions are made over such potentially duplicate records.

The percentage of records received by the RBBP that are supplied with a grid reference has increased steadily over time (fig. 2); in recent years, it has averaged nearly 90% of all records. For the main part, this is probably due to repeated efforts to communicate the value of accurate location information, aided by access to modern tools such as GPS and smartphones, which enable locations to be recorded accurately and easily. In addition, as trust in the RBBP has developed, there may have been a trend away from the withholding of location information on records that observers regard as particularly sensitive.

The deliberate withholding of location data, typically because of concerns that the provision of details may result in some misuse, was one of the reasons why the RBBP was established, and has remained a problem ever since, although the positive trend in supply is encouraging. It is particularly prevalent for raptor species, for which locations may be withheld (territory codes are sometimes used for species such as Honey-buzzard to allow locations to be linked between years without revealing where they actually are) or provided at a coarse spatial resolution, such as 10-km squares. The percentage of records accompanied by a grid reference is below 60% for raptors such as Honey-buzzard, Montagu's Harrier *Circus pygargus* and Osprey *Pandion haliaetus* and, when grid references are provided, a substantial proportion are at a coarse spatial scale (e.g. 46% of grid references held for Honey-buzzard territories refer to 10-km squares).

Concerns over the security of RBBP data holdings, or the RBBP providing access to RBBP data for inappropriate purposes, are misplaced; in 50 years there has not been a single instance of the inappropriate release of data.

Defining breeding records

The Panel endeavours to collect records of extreme rarities showing potential breeding behaviour, even if there is no evidence of

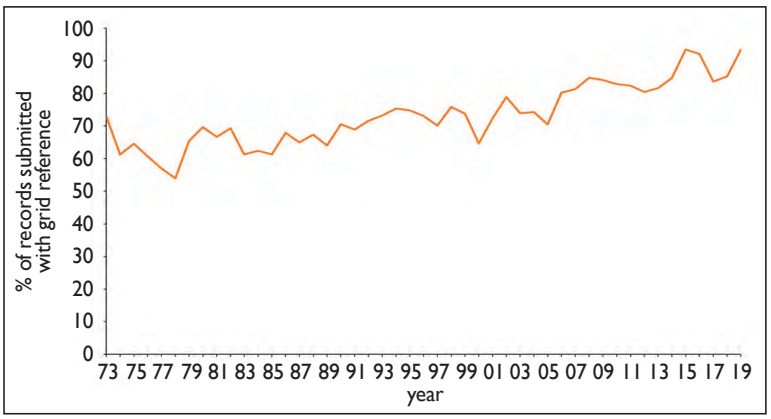

Fig. 2. The percentage of records submitted to the RBBP with grid references, 1973–2019.

Gary Thoburn

136. Great Reed Warbler *Acrocephalus arundinaceus*, Weston Super Mare, Somerset, May 2012. Singing male Great Reed Warblers have featured in 28 RBBP annual reports. Surely, sooner or later, one will be successful in attracting a mate.

confirmed breeding (defined as a nesting attempt that has progressed to at least the stage where eggs have been laid). Many such records are of species unlikely to ever become a significant part of the country's avifauna, but such behaviour may be the precursor to colonisation. These species cover a wide range of taxonomic groups (table 1), although ducks (10) and warblers (14) are prominent. In many cases these are vagrant individuals hundreds or even thousands of miles from their breeding ranges (for example, 12 are North American species), so the likelihood of these individuals finding another to pair with is low. However, 13 species have been recorded in hybrid pairings with closely related species, e.g. Black Duck *Anas rubripes* with Mallard *A. platyrhynchos.*

There are, however, some remarkable records of confirmed breeding in the RBBP's archives. Spotted Sandpipers *Actitis macu-*

Table 1. Species that have been reported as potentially breeding by the RBBP but not ever confirmed as breeding. Species marked with * have been recorded in confirmed breeding attempts in mixed pairs with another species.

Blue-winged Teal* *Spatula discors*
Black Duck* *Anas rubripes*
Green-winged Teal *Anas carolinensis*
Ferruginous Duck *Aythya nyroca*
Ring-necked Duck* *Aythya collaris*
Lesser Scaup *Aythya affinis*
King Eider* *Somateria spectabilis*
Velvet Scoter *Melanitta fusca*
Long-tailed Duck *Clangula hyemalis*
Smew *Mergellus albellus*
Baillon's Crake *Zapornia pusilla*
Little Crake *Zapornia parva*
Pied-billed Grebe* *Podilymbus podiceps*
Bar-tailed Godwit *Limosa lapponica*
Turnstone *Arenaria interpres*
Killdeer *Charadrius vociferus*
Broad-billed Sandpiper *Calidris falcinellus*
Pectoral Sandpiper *Calidris melanotos*
Jack Snipe *Lymnocryptes minimus*
Great Snipe *Gallinago media*
Ring-billed Gull* *Larus delawarensis*
Glaucous Gull* *Larus hyperboreus*
Lesser Crested Tern* *Thalasseus bengalensis*
Least Tern *Sternula antillarum*
Long-tailed Skua *Stercorarius longicaudus*
Great Northern Diver* *Gavia immer*
Black-browed Albatross *Thalassarche melanophris*
Barolo Shearwater *Puffinus baroli*
Glossy Ibis *Plegadis falcinellus*
American Bittern *Botaurus lentiginosus*
Northern Harrier* *Circus hudsonius*
Pallid Harrier* *Circus macrourus*
Black Kite* *Milvus migrans*
Rough-legged Buzzard *Buteo lagopus*
Eurasian Scops Owl *Otus scops*
Great Grey Shrike *Lanius excubitor*
Waxwing *Bombycilla garrulus*
Penduline Tit *Remiz pendulinus*
Short-toed Lark *Calandrella brachydactyla*
Red-rumped Swallow *Cecropis daurica*
Western Bonelli's Warbler *Phylloscopus bonelli*
Yellow-browed Warbler *Phylloscopus inornatus*
Pallas's Leaf Warbler *Phylloscopus proregulus*
Greenish Warbler *Phylloscopus trochiloides*
Great Reed Warbler *Acrocephalus arundinaceus*
Blyth's Reed Warbler *Acrocephalus dumetorum*
Booted Warbler *Iduna caligata*
Melodious Warbler *Hippolais polyglotta*
River Warbler *Locustella fluviatilis*
Asian Desert Warbler *Curruca nana*
Sardinian Warbler *Curruca melanocephala*
Moltoni's Warbler *Curruca subalpina*
Eastern Subalpine Warbler *Curruca cantillans*
Spectacled Warbler *Curruca conspicillata*
Marmora's Warbler *Curruca sarda*
Thrush Nightingale *Luscinia luscinia*
Citrine Wagtail* *Motacilla citreola*
Two-barred Crossbill *Loxia leucoptera*
Yellow-breasted Bunting *Emberiza aureola*

larius bred on Skye in 1975 (Holling 2023), Ferruginous Ducks *Aythya nyroca* very likely bred in Avon in 2004 and Iberian Chiffchaffs *Phylloscopus ibericus* bred in Gower in 2015 (Hunter 2018).

While some of these vanishingly rare species may turn out to be future colonists – perhaps following in the footsteps of Little Egret *Egretta garzetta* and Cetti's Warbler *Cettia cetti* – the real value of the RBBP's work lies in the monitoring of regularly occurring rare breeders. Of the 180 species ever reported, ten are now excluded (as detailed below) as they are no longer considered rare breeding species. The remaining 170 species are classified into five categories of breeding bird; numbers in parentheses indicate the number of species currently included in each category:

Regular (**78**) A species that has bred (or been strongly suspected of breeding) in the UK for at least five consecutive years within the last 25 years (unless the last breeding was more than ten years ago).

Former breeder (**4**) A species previously defined as a regular breeder that has not been recorded breeding in the last five years; this is the criterion used by Birds of Conservation Concern (BoCC) assessments (e.g. Stanbury *et al.* 2021) to define species as former breeders and move them off the Red, Amber and Green listings.

Occasional (**32**) A species that has bred in the UK since 1973 but is not a regular breeder.

Colonising (**4**) A species which first bred in the UK in the last five years or, if it bred occasionally before this, is now breeding more regularly.

Potential (**52**) A species that has been reported by the RBBP as showing breeding behaviour in the UK but has not been confirmed as breeding.

There is an obvious split into two main groups in the frequency of occurrence of species reported by the Panel: species that breed every year, or nearly so, and those that have occurred only occasionally (there are 20 species that have occurred in a RBBP report in only a single year). There are also species for which occurrence is regular but confirmed breeding comparatively rare, either due to relatively poor monitoring coverage or a cryptic ecology making observing breeding evidence difficult. Spotted Crake *Porzana porzana,* for example, has been confirmed as breeding in just 13 years despite being reported in 48 years (1973–2019) of RBBP monitoring.

The RBBP species list

The list of species on which the RBBP collects data has changed considerably since its first report for 1973 (Sharrock *et al.* 1975), due to both the changing status of the UK's birds and the tendency for occasional breeding attempts by species that are not a regular part of the UK's avifauna. There have also been changes in the Panel's remit. The original intent of the Panel was to collect data on and monitor populations of only the UK's rarest breeding species – the 1973 report covered just 33 species, with a further nine species listed as 'no records received' (Sharrock *et al.* 1975). Subsequently, the RBBP's ambition increased as the benefits of monitoring less rare species became obvious, and so more species were added. A substantial change occurred from the 1996 season onwards, when 15 species that were listed on Schedule 1 of the Wildlife & Countryside Act (1981) but that had not previously been monitored, either through omission or because their populations were above 300 pairs, were added (Ogilvie *et al.* 1999). These additions did include four species with populations well in excess of what might be considered rare – Leach's Storm-petrel *Hydrobates leucorhous*, Barn Owl *Tyto alba*, Common Kingfisher *Alcedo atthis* and Common Crossbill *Loxia curvirostra* – with UK population estimates of a minimum of 36,500, 4,000, 3,650, and 19,000 pairs respectively (Woodward *et al.* 2020). These species were dropped from the list in 2005. Another species, Scottish Crossbill *Loxia scotica,* was removed in 2009 after a national survey returned an estimate of 6,800 breeding pairs (Summers & Buckland 2011). The Panel has, since 2012, operated a cut-off of around 2,000 pairs. In combination with the monitoring coverage of common and widespread species

David Tipling

137. Barn Owl *Tyto alba,* Norfolk, April 2009. Data was collected on Barn Owls between 1996 and 2005, but the species is too abundant to be considered a rare breeding bird.

through the BTO/JNCC/RSPB Breeding Bird Survey, scarcer ones under SCARABBS, and seabirds through the BTO/JNCC Seabird Monitoring Programme (SMP) and periodic censuses, the work of the RBBP fits into a near-cohesive programme of monitoring for the UK's breeding birds.

The expansion of the RBBP's remit to cover a longer list of less-rare species (categorised as 'scarce' and 'less scarce') came with the proviso that county bird recorders need only supply county totals for those species for which their county held more than ten pairs, rather than records for each site they occurred at. This did hamper the value of the RBBP archive for some conservation and research purposes (e.g. site-level analyses) and, with the increased use of data from other sources, posed problems for integrating all data sources, as without site details it was not possible to determine which records were duplicated. Therefore, from 2014 onwards the Panel has requested the submission of records at site level for all species. However, not all recorders do so, particularly for species which are relatively common within their counties, or for which sites are hard to define, or for which site-level data is not submitted to them from key observers.

In 2019, 228 records of 29 species were submitted as sums of pairs within counties, or large areas (e.g. National Parks) within them, with no specific site details. Most (132) of these records were for raptors, most notably Peregrine (32) and Northern Goshawk *Accipiter gentilis* (23). Other species for which this approach is still employed include Willow Tit (19), Red-billed Chough *Pyrrhocorax pyrrhocorax* (eight) and Woodlark *Lullula arborea* (seven). In time, it is hoped that site-level data will be submitted for all species from all counties. In addition, many Scottish recorders do not provide data for raptors but simply defer to that provided by the Scottish Raptor Study Group via the SRMS. While the RBBP does not retain SRMS data, they are accessible to the Panel for the purpose of compiling accurate county totals (e.g. to enable the identification of duplicate records in data received from other sources).

Other species have been added to the RBBP's list as increased knowledge on their population sizes has led the Panel to believe that they may be scarcer than previously supposed (e.g. Long-eared Owl *Asio otus* in 2010), or because population declines have led to them becoming rare breeding birds (e.g. Turtle Dove in 2018). Conversely, species have been removed from the RBBP species list as improved understanding of their status has revealed them not to be rare, such as Water Rail *Rallus aquaticus* in 2017 (Francis *et al.* 2020) and Willow Tit in 2020 (Wotton *et al.* in prep.), or owing to population increases taking them over the threshold for inclusion. The latter has happened to Gadwall *Mareca strepera* (last reporting year 2009), Red Kite *Milvus milvus* (2012), Cetti's Warbler *Cettia cetti* (2016) and Firecrest *Regulus ignicapilla* (2017). In addition, Woodlark was removed from the RBBP list after 2012 on account of a population estimate of 3,064 pairs (Conway *et al.* 2009) but reinstated from 2016 onwards owing to concerns over local declines, while Crested Tit *Lophophanes cristatus* has been reinstated from 2020 onwards having been dropped from the list in 2005.

The RBBP has, since 2008, collected data for rare breeding subspecies in cases where these are clearly distinct: for example, 'Continental Black-tailed Godwit' *Limosa limosa limosa* and 'Icelandic Black-tailed Godwit' *L. l. islandica*,

David Tipling

138. Crested Tit *Lophophanes cristatus*, Scotland, January 2018. Crested Tit was reinstated to the RBBP list in 2020. Although reporting in 2020 (27 pairs) represents only a small fraction of the population, we hope that its inclusion on the Panel's list will encourage greater interest in the species and reporting can be improved over time.

David Tipling

139. Indian Peafowl *Pavo cristatus*. *Bird Atlas 2007–11* (Balmer *et al.* 2013) indicated that Indian Peafowl are widespread across the UK, with breeding records from 136 10-km squares, and confirmed breeding in 22 – but records received by the Panel come from far fewer sites.

'Dark-breasted Barn Owl' *Tyto alba guttata*, 'Fair Isle Wren' *Troglodytes troglodytes fridariensis* and 'St Kilda Wren' *T. t. hirtensis*, 'Scandinavian Rock Pipit' *Anthus petrosus littoralis*, 'Blue-headed Wagtail' *Motacilla flava flava* and 'White Wagtail' *M. alba alba*.

Non-native species

In 1996, the RBBP extended its remit to cover rare non-native breeding species, although this does not extend to scarce and less scarce species – 300 breeding pairs is the upper threshold for inclusion on the non-native species list. This monitoring is recognised by the Government as a valuable early warning system for the arrival and potential expansion of invasive non-native species, which carry the potential for negative impacts on native species and ecosystems. In total, 41 non-native species have been reported upon since 1996, of which 33 have been confirmed as breeding in the UK. Three species – Barnacle Goose *Branta leucopsis*, Egyptian Goose *Alopochen aegyptiaca* and Ring-necked Parakeet *Psittacula krameri* – have been removed from the species list after increasing beyond the upper threshold. While not analysed in detail here, it is believed that most non-native species are under-recorded, not being the recipients of attention from the birding community, so numbers reported by the RBBP may be considerable underestimates particularly for the more widespread species on the list such as Indian Peafowl *Pavo cristatus* and Muscovy Duck *Cairina moschata*. RBBP's unique national dataset on breeding non-natives has been used for international reporting to the EU and to the African-Eurasian Waterbirds Agreement.

Species coverage

Whilst the RBBP aspires to achieve complete coverage – receiving records of all breeding attempts in the UK every year, of all species on its list (and any novel species that should arrive in the country) – this is simply not possible. In particular, the reliance on the recreational activities of volunteer observers to collect records means that there are significant biases in availability of data. There are several important sources of bias: geographical (with regions of lower human population density having poorer coverage), habitat (with some habitats receiving less attention), site quality (with birders tending to focus efforts on sites that offer better birding) and species

(as well as the influence of the aforementioned factors, recording of species that are cryptic, nocturnal or simply regarded as less interesting by birdwatchers tends to be lower). In addition, the rarity of species has an impact, with rarer species being more likely to attract attention and thus recording, as does conservation status, with species of high conservation concern being more likely to be the subject of special monitoring efforts.

The RBBP works continually to address these issues by improving awareness of our work amongst the birding community and encouraging the submission of high-quality records through the appropriate channels. We also support our direct network of data providers in their role of collating and assessing data to produce an annual submission to us, as well as making sure that the flow of data through other sources (see above) is maintained. Regardless, there are relatively few species for which we can be confident that annual reporting is complete, and a number for which it is poor. We categorise all regularly reported rare breeding species into the following classes of coverage:

Near-complete RBBP reports present more or less complete annual totals, with all/nearly all sites known. In 2019, 29 species were categorised as such (e.g. Slavonian Grebe *Podiceps auritus* and Roseate Tern *Sterna dougallii*).

High A good estimate of the number of pairs breeding annually, though an unknown (but thought to be small) proportion has not been recorded/reported. In 2019, 18 species were categorised as such (e.g. Common Pochard *Aythya ferina* and Marsh Harrier *C. aeruginosus*).

Moderate A less accurate estimate of the number of pairs breeding annually, which is nonetheless thought to be a significant proportion of the total population. In 2019, 17 species were categorised as such (e.g. Lesser Spotted Woodpecker *Dryobates minor* and Snow Bunting *Plectrophenax nivalis*).

Low The volume of data received is such a small proportion of the total that RBBP totals are of little value for conservation or status reviews. However, maintaining an archive of known sites is useful, and this information can be used in the design of future targeted surveys. In 2019, ten species were categorised as such (e.g. Dotterel *Charadrius morinellus* and Short-eared Owl *Asio flammeus*).

For those species with near-complete and high coverage, we are able to produce annual population trends, presently five-year running means at a UK and, where relevant, England, Scotland, Wales or Northern Ireland scale. In 2019, we published trends for 47 species in our annual report.

It is important to stress the RBBP's commitment to collecting data for species in the 'low' category, as the data collected may be valuable for a variety of purposes, and of course can form the starting point for future improved coverage.

These are rather broad and poorly defined coverage categories; for many species, it is difficult to assess precisely how complete RBBP coverage is, as the RBBP is the only source of information on population size. However, for a range of species there are independent estimates, mainly derived from bespoke surveys such as those conducted as part of SCARABBS. For 23 of the species reported upon in 2019, there are population estimates available from non-RBBP sources. The five-year mean reported for 2015–19 varies from just 7% of the estimate (for Whimbrel *Numenius phaeopus*) to 94% (Red-billed Chough), and averages 34% across all 23 species. Such relatively low coverage should not be taken as an indication that the RBBP underestimates species more widely, as those species for which RBBP coverage is poor are also more likely to be the subject of bespoke survey coverage.

Perhaps unsurprisingly, the overall size of breeding populations influences how complete monitoring coverage is (fig. 3). Species adjudged to have near-complete or high coverage have smaller populations (mean = 306 pairs) than those with moderate or low coverage (mean = 1,093 pairs), with the few less scarce species with near-complete coverage being those heavily confined to colonies on nature reserves which tend to be well moni-

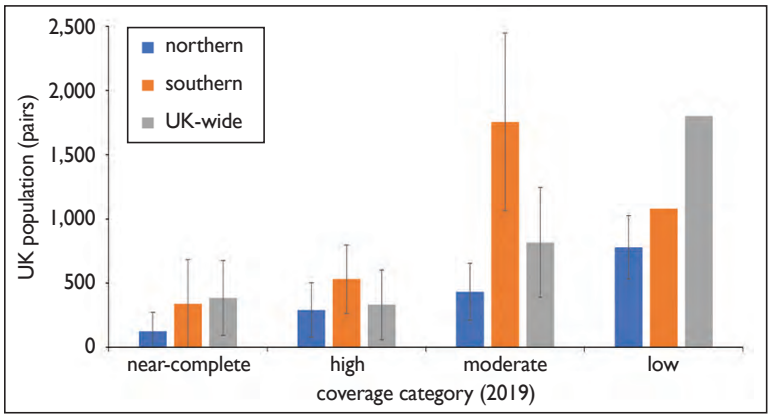

Fig. 3. Assessed coverage in relation to UK population size. Error bars show 95% confidence limits around mean values; values for two bars in the low coverage category come from just a single species.

David Tipling

140. Long-eared Owl *Asio otus,* Scotland, April 2009. The secretive nocturnal behaviour of Long-eared Owls means that the species is amongst the most under-reported on the RBBP's list.

tored (e.g. Avocet *Recurvirostra avosetta* and Mediterranean Gull). The other major determinant of the robustness of coverage is distribution – of the ten species with low coverage in 2019, eight have a predominantly northern distribution in the UK (i.e. from northern England northwards, with six being entirely restricted to Scotland). The two exceptions are Long-eared Owl, which is secretive and nocturnal, and Cirl Bunting *Emberiza cirlus,* which is concentrated in southern Devon and exceeds local capacity to monitor on an annual basis. A new annual sample survey for the latter, established by the RSPB in 2021, seeks to address the low coverage. Getting adequate recording of the rare breeding birds of remote areas of northern Scotland with few local birders is likely to always remain a challenge, although promoting recording to birders on holiday in these areas may help.

To get a better understanding of numbers and distribution of species for which we know coverage to be substantially incomplete, the RBBP asked recorders to submit best estimates of the breeding populations within their counties, based on available evidence, for a small number of more abundant species covered by the RBBP from 2015 onwards (16 in 2019; see table 2). In some cases, data from robust county-level surveys may be available – and for many counties with small populations of the species in question, annual coverage is believed to be entire, so no estimation is required. However, counties with substantial populations and poor observer coverage may have scant data from which to derive estimates, and a degree of guesswork is required; we are grateful to the recorders for their willingness to attempt this.

The gap between the sum of records from submitted data and the estimated actual population is relatively small for some species (e.g. Shoveler *Spatula clypeata* and Woodlark), but very substantial for others (e.g. Long-eared Owl and Lesser Spotted Woodpecker). While not constituting formal monitoring, these estimates are valuable for indicating the true distribution of poorly covered species and where significant gaps in monitoring coverage lie. It is interesting also to note the disparity between the summed estimates and those available from other sources. In some cases, this may indicate inaccuracy in other attempts at estimating population sizes, or changes in the time since those estimates were derived, but in other instances, such as for Turtle Dove and Willow Tit for which there are robust estimates from recent national surveys, it suggests that county recorders may be conservative in the estimates they provide.

Table 2. UK totals derived from submitted records and from county-level estimates for 16 of the more abundant RBBP species in 2019.

species	summed records	summed estimates	proportion recorded	independent estimate (year)
Shoveler *Spatula clypeata*	1,384	1,595+	86.8%	
Common Pochard *Aythya ferina*	725	868+	83.5%	
Red-breasted Merganser *Mergus serrator*	194	614+	31.6%	1,650 (2008–11)
Turtle Dove *Streptopelia turtur*	652	1,028+	63.4%	2,095 (2021)
Little Ringed Plover *Charadrius dubius*	669	833+	80.3%	1,250 (2007)
Northern Goshawk *Accipiter gentilis*	820	1,175+	69.8%	
Marsh Harrier *Circus aeruginosus*	352	455+	77.4%	590–695 (2016)
Long-eared Owl *Asio otus*	234	1,121+	20.9%	1,800–6,000 (2007–11)
Short-eared Owl *Asio flammeus*	139	326+	42.6%	620–2,200 (2007–11)
Lesser Spotted Woodpecker *Dryobates minor*	275	789+	34.9%	
Hobby *Falco subbuteo*	678	1,357+	50.0%	2,050 (2015)
Peregrine Falcon *Falco peregrinus*	1,110	1,454+	76.3%	1,750 (2014)
Willow Tit *Poecile montanus*	1,048	1,773+	59.1%	5,693 (2019–21)
Woodlark *Lullula arborea*	963	1,053+	91.5%	2,300 (2016)
Dartford Warbler *Curruca undata*	1,450	1,786+	81.2%	
Hawfinch *Coccothraustes coccothraustes*	382	948+	40.3%	500–1,000 (2011)

Table 3. The most important recording areas for rare breeding birds, by diversity. The ten areas with the most rare breeding bird species are listed, ranked by the number of native species ever reported by the RBBP, 1973–2019. Also given are the number of native species confirmed as breeding in the area and the number of non-native species.

recording area	total no. species	total no. native species	total no. confirmed native breeders	total no. non-native species
Highland	106	98	71	8
Norfolk	105	88	59	17
North-east Scotland	88	83	50	5
Kent	97	82	51	15
Yorkshire	94	79	57	15
Suffolk	87	76	43	11
Perth & Kinross	77	73	41	4
Cambridgeshire	84	70	44	14
Lincolnshire	76	70	36	6
Lancashire & North Merseyside	85	68	39	17

Table 4. The ten most important recording areas for rare breeding birds, by combined bird population size. Recording areas are ranked by the sum of pairs of all native species, based on the mean for 2015–19. This is also shown adjusted to density with rank also given; five of the ten counties are not in the top ten for the UK when considered by density.

recording area	annual total pairs (2015–19 mean)	density of total pairs (pairs/km^2)	rank density
Hampshire	2,667.6	0.660	3
Norfolk	2,158.2	0.342	6
Suffolk	1,641.0	0.379	5
Kent	1,491.6	0.315	8
Yorkshire	1,312.2	0.085	28
Highland	1,093.4	0.031	60
Argyll	1,080.8	0.064	38
Dorset	784.2	0.229	9
Lincolnshire	776.0	0.100	24
Outer Hebrides	763.4	0.064	39

The distribution of rare breeding birds in the UK

Some regions of the UK hold a higher density of rare breeding birds, and a higher diversity of species, than others (fig. 4). There is an interaction between coverage biases and natural variation in distribution, most obvious in estimating the density of rare breeding birds; our metric for diversity, the number of species ever recorded breeding in a county, may be more robust to variation in recording effort as a species only needs to be recorded once to contribute to a county total.

Alan Harris

Greenshank *Tringa nebularia*. Breeding Greenshanks in the UK are found only in Scotland, with sites concentated north and west of the Great Glen and in parts of the Outer Hebrides.

Two very different counties, Highland and Norfolk, top the table (table 3) for diversity, with over 100 RBBP-monitored species recorded as at least possible breeders. Rankings in terms of the total numbers of pairs of rare breeding birds are more sensitive to recording effort, so southern counties with higher observer densities top the table. Hampshire, with both the rich bird populations of the heaths and woods of the New Forest and the coastal areas that have held most notably an exploding population of Mediterranean Gulls in recent years, has the highest total of rare breeding birds (table 4). Note that, when corrected to density, it is actually the smallest recording area, the Isle of May, which tops the ranks despite only mustering the occasional Peregrine Falcon or Roseate Tern pair. The results for all counties are available in the Supplementary Online Material at bit.ly/rbbpsom.

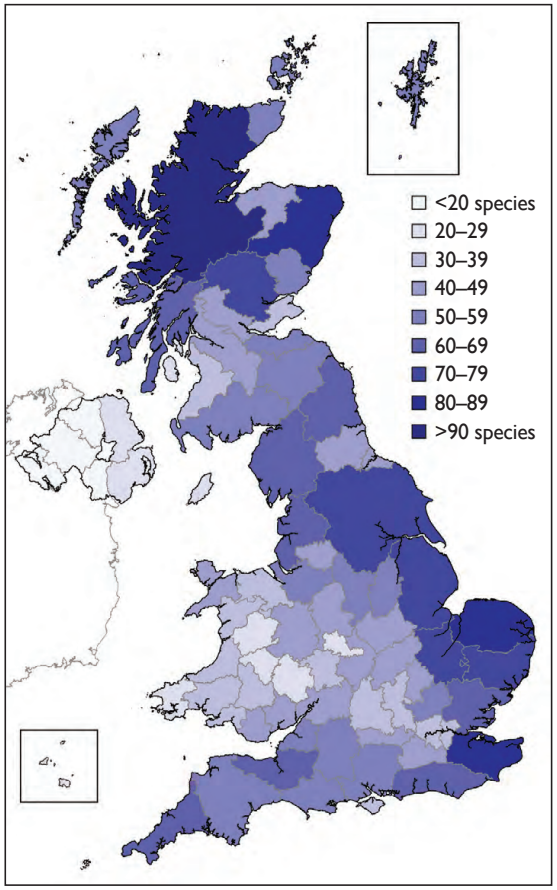

Fig. 4. Number of rare breeding species recorded per county.

David Tipling

141. Male Ruff *Calidris pugnax*, Finland, May. Ruff is a species for which recording presence at a site is much easier than confirming breeding, and there have been extremely few confirmed records.

Increase in RBBP coverage over 50 years

The workload of the RBBP has increased considerably since its inception. One factor has been the growth in the remit of the Panel, expanding from covering a restricted number of extremely rare species to a considerably longer list as described above. The 2020 report featured 101 native species and subspecies, the highest ever, and more than three times as many as the first report for 1973. In addition, the RBBP now collects data and reports upon rare non-native species.

As the species that have been added to the RBBP species list are those which are defined as scarce, or less scarce, they by definition produce more records per species, further increasing the data submitted. The number of unique records (accounting for duplicate records) submitted to the RBBP has increased dramatically, from an average of 392 per annum between 1973 and 1977 to 7,646 between 2015 and 2019. Likewise, the total number of breeding pairs covered by these records has increased from an average of 1,873 to 26,789 over the same period (fig. 5).

However, the increase in data flow is not solely due to the lengthening species list but also the success of the RBBP and proactive county recorders in encouraging the collection and submission of records of rare breeding birds; and, more crucially, the response of the birding and ornithological community in the UK to the challenge of collecting data on rare breeding species. Given the unstructured, ad-hoc nature of much of the data collection that contributes to the RBBP's annual monitoring, such as records made during recreational birding, it is hard to quantify the effort put into documenting the 25,000–30,000 pairs of rare breeding birds reported every year. Combined with the structured surveying responsible for records from data sources such as raptor study groups, RSPB reserves and the BTO/JNCC Seabird Monitoring Programme, it is evident that this is a huge effort involving tens, if not hundreds of thousands of hours annually. Modern electronic communication eases the flow of data to county recorders and to structured monitoring programmes and assists the RBBP Secretary in encouraging the submission of data. In recent years, the engagement and support from the network of county recorders, all of whom voluntarily provide expertise and time, has been superb, with the result that direct submission of data has increased (fig. 6) and complete coverage has been achieved in most years.

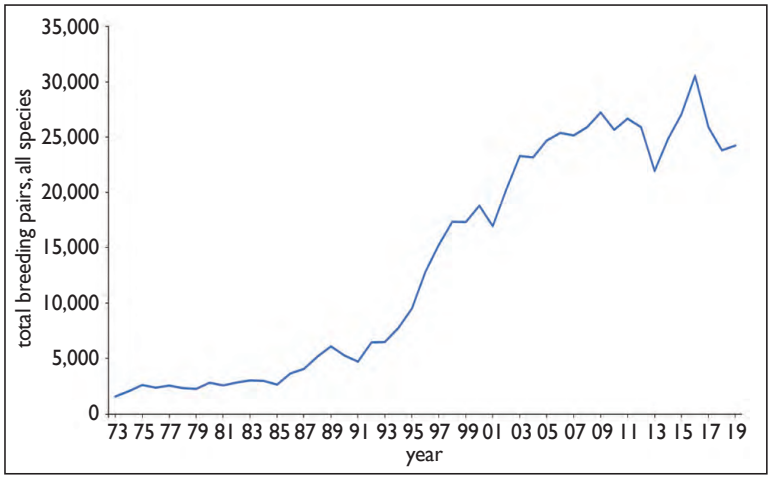

Fig. 5. Total number of pairs of rare breeding birds reported annually by the RBBP, 1973–2019.

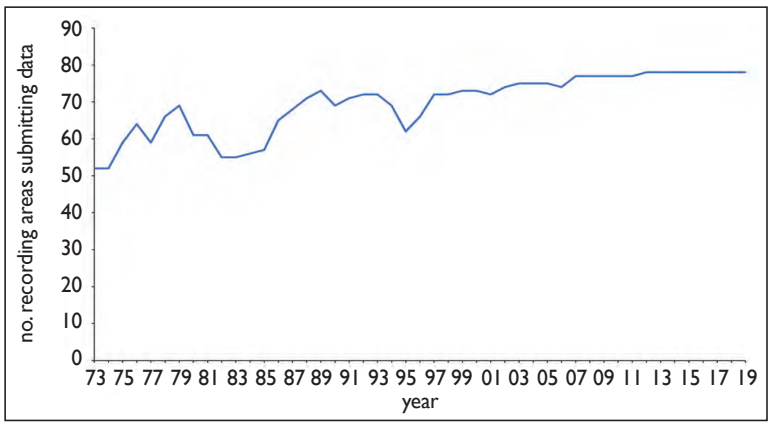

Fig. 6. Number of counties from which the RBBP received submissions of data, annually, 1973–2019.

Data use

The sustained funding of the Panel's work by NCC/JNCC and RSPB reflects the great conservation utility of the data collected; indeed, this was one of the principal motivations in

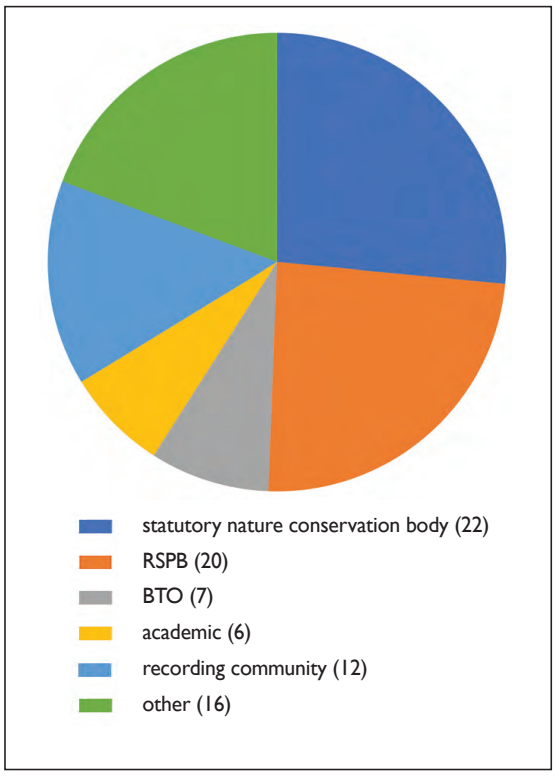

Fig. 7. Sources of requests for use of RBBP data, 2016–21.

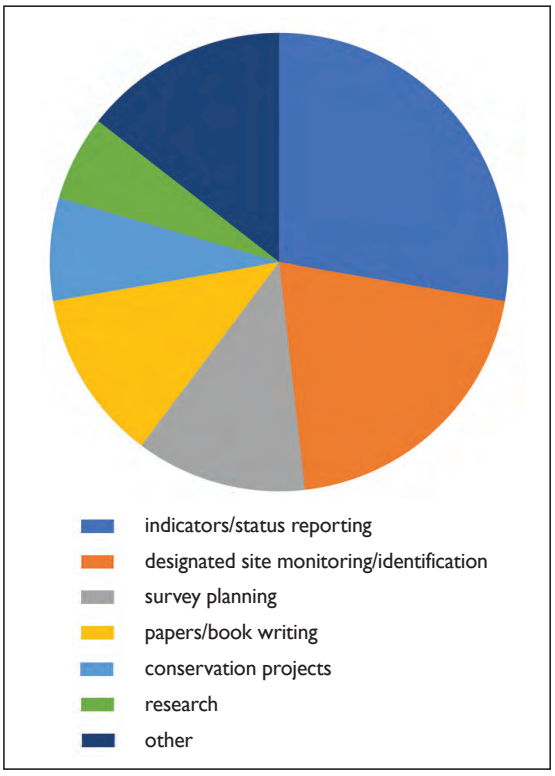

Fig. 8. Intended use of data requested from RBBP, 2016–21.

establishing the RBBP. Government bodies and conservation and research NGOs are the principal users of RBBP data (fig. 7), and, in its final report under the EU Birds Directive (JNCC 2019), the Government formally acknowledged that 'this assessment would not have been possible without the massive voluntary efforts of many tens of thousands of volunteers who have given their time (and resources) to participate in systematic surveys and monitoring of UK birds since the 1960s. We acknowledge their huge input and interest, without which knowledge of the UK's changing birds would be immeasurably poorer and the implementation of the Directive more difficult.'

Spencer *et al.* (1992) outlined multiple conservation uses of the data, and all of these persist (fig. 8). Contemporary uses have been summarised by Stroud *et al.* (2019) and Eaton *et al.* (2023) in essence relating to status assessment (for example, through BoCC, where the status of some species could not be properly assessed without RBBP data); establishment and monitoring of protected area networks; input to species-focused conservation recovery programmes; reporting under national and international frameworks and treaties; environmental impact assessments; and conservation-focused research. The importance of understanding the consequences of climate change on species and conservation response options is starting to become especially significant.

Lessons learnt and recommendations

Since 1973, the RBBP has steadily encouraged the flow of information on rare breeding birds to a point where our knowledge is vastly superior to that of 50 years ago, and thus we are able to effectively support conservation efforts for a wide range of rare species. It is notable how efficiently and cost-effectively this is done, with data for approximately one-third of the UK's breeding bird species collated, managed and reported on annually for less than £50,000. That figure massively underestimates the true effort that underpins the RBBP's reporting, of course; like most other bird monitoring schemes in the UK, the contribution of unpaid volunteers in the form of the volunteer birders who contribute records, and the county bird recorders and their teams who collate this data, is immense. Added to that is the contribution from conservation staff recording birds on reserves, and through conservation

David Tipling

142. Pair of Common Cranes *Grus grus* with chick, Suffolk, May 2012. Common Cranes are large and conspicuous birds, subject to a high degree of conservation attention, and it is unlikely that any breeding pairs are missed in RBBP reporting at present.

and research projects, and from those who handle the data derived from this work. The RBBP is well-placed to capitalise on all this effort to provide regular and comprehensive summary information.

The success of the RBBP has been enabled by earning the trust of the UK's birding and ornithological community. Our independence has helped in this respect, as does the continual demonstration – in our annual reports, on our website and in other communications – that we hold a high level of expertise and experience in the monitoring of rare breeding birds. Equally importantly, we have proven that we can be trusted to hold observers' hard-won data securely and use it wisely to support conservation efforts.

To achieve all this, continuity of funding is vital. Despite the vagaries of organisational finance and periodic downturns in the fortunes of the conservation sector, funding has been maintained over the 50 years of the RBBP. The need for high-quality evidence to support conservation action – by setting priorities, directing action, enabling research and assessing success – should ensure that the RBBP continues to receive support for its work. Of course, the continuing provision of records by experienced and expert volunteers is also essential, as is the maintenance of the network of bird recorders who ensure that the RBBP receives top-quality data derived from the records they receive. Taking an interest in recording rare breeding birds, if done carefully, is one of the most rewarding aspects of ornithology and when part of this long-established scheme, can make a major contribution to bird conservation in the UK.

Acknowledgments

The collection of half a century's data on the UK's rarest breeding birds has been an extraordinary and huge collective endeavour, involving thousands of volunteer observers, hundreds of county recorders and other data suppliers, and 24 past and present RBBP members. Critically, it is dependent on funding and/or in-kind support past and present from RSPB, NCC/JNCC (on behalf of the country conservation bodies since 1991), BTO and *British Birds*. We extend our deepest gratitude to all.

References

Balmer, D. E., Gillings, S., Caffrey, B. J., Swann, R. L., Downie, I. S., & Fuller, R. J. 2013. *Bird Atlas 2007–11: the breeding and wintering birds of Britain and Ireland.* BTO, Thetford.

Batten, L. A. 2001. European Honey-buzzard survey 2000 and 2001: preliminary results and request for further surveys. *Brit. Birds* 94: 143–144.

Boobyer, G., & Tantram, D. A. S. 2001. *Rare Breeding Birds Panel. Review of data procedures and information systems.* Report to JNCC from Blue-Bag Ltd.

British Ornithologists' Union (BOU). 2022. The British List: a checklist of birds of Britain (10th edition). *Ibis* 164: 860–910.
Campbell, B., & Ferguson-Lees, J. 1972. *A Field Guide to Birds' Nests*. Constable, London.
Conway, G., Wotton, S., Henderson, I., Eaton, M., Drewitt, A., & Spencer, J. 2009. The status of breeding Woodlarks *Lullula arborea* in Britain in 2006. *Bird Study* 56: 310–325.
Eaton, M. A., *et al.* In prep. Monitoring five decades of change in the UK's rarest breeding birds through citizen science: the Rare Breeding Birds Panel. *Brit. Wildl.* 35.
Francis, I., & the Rare Breeding Birds Panel. 2020. Water Rails in the UK: an estimate of the breeding population. *Brit. Birds* 113: 105–109.
Hagemeijer, W. J. M., & Blair, M. J. (eds.) 1997. *The EBCC Atlas of European Breeding Birds: their distribution and abundance*. T. & A. D. Poyser, London.
Holling, M., & the Rare Breeding Birds Panel. 2007. Rare breeding birds in the United Kingdom in 2003 and 2004. *Brit. Birds* 100: 321–367.
— 2023. Breeding Spotted Sandpipers in Britain. *Brit. Birds* 116: 54–57.
Hunter, E. 2018. Iberian Chiffchaff: a new breeding species for Great Britain. *Brit. Birds* 111: 100–108.
Joint Nature Conservation Committee 2019. *11th Report by the United Kingdom under Article 12 on the Implementation of the Directive on the Conservation of Wild Birds (2009/147/EC) from January 2013 to December 2018*. JNCC, Peterborough.
Nethersole-Thompson, D. 1971. *Highland Birds*. Highlands & Islands Development Board, Inverness.
Ogilvie, M. A., & the Rare Breeding Birds Panel 1999. Rare breeding birds in the United Kingdom in 1996. *Brit. Birds* 92: 120–154.
Ransome, A. 1947. *Great Northern?* Jonathan Cape, London.
Raptor Working Group 2000. *Report of the UK Raptor Working Group*. Department of the Environment, Transport and the Regions and JNCC, Peterborough.
Sharrock, J. T. R. 1973. Rare Breeding Birds Panel. *Bird Study* 20: 147–148.
— 1976. *The Atlas of Breeding Birds in Britain and Ireland*. BTO, Tring.
—, Ferguson-Lees, I. J., & the Rare Breeding Birds Panel 1975. Rare breeding birds in the United Kingdom in 1973. *Brit. Birds* 68: 5–23.
Spencer, R., & the Rare Breeding Birds Panel. 1992. The Rare Breeding Birds Panel. *Brit. Birds* 85: 117–122.
Stanbury, A., *et al.* 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *Brit. Birds* 114: 723–747.
Stroud, D. A., on behalf of the Rare Breeding Birds Panel. 2019. The value of monitoring rare breeding birds. *Brit. Birds* 112: 366–367.
Summers, R., & Buckland, S. 2011. A first survey of the global population size and distribution of the Scottish Crossbill *Loxia scotica*. *Bird Conservation International* 21: 186–198.
Woodward, I. D., *et al.* 2020. Population estimates of birds in Great Britain and the United Kingdom. *Brit. Birds* 113: 69–104.
Wotton, S. R., Eaton, M. A., Facey, R., Grice, P. V., & Bellamy, P. In prep. The status of the Willow Tit *Poecile montanus* population in Great Britain, 2019 to 2021.

David A. Stroud, Mark A. Eaton, Ian S. Francis, Helen Baker, Mark Holling, Andrew King, David Norman, Andy J. Stanbury and Dawn E. Balmer; c/o RBBP Secretary, 21 Chapel Lands, Alnwick, Northumberland NE66 1EL; e-mail secretary@rbbp.org.uk

Dawn Balmer (Chair and BTO), **Helen Baker** (JNCC), **Mark Eaton** (Secretary), **Ian Francis**, **Mark Holling**, **David Norman**, **Andy Stanbury** (RSPB) and **David Stroud** are all members of the RBBP. **Andrew King** retired from the Panel in 2022.

The Rare Breeding Birds Panel is supported by JNCC, RSPB and the BTO

Find out more about the Panel at www.rbbp.org.uk