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Bird Census News is the Journal of the European Bird Census Council or EBCC. The EBCC exists to promote the organisation and development of atlas, census work and population studies in all European countries; it promotes communication and arranges contacts between organisations and individuals interested in census and atlas work, primarily (but not exclusively) in Europe.

Bird Census News reports developments in census and atlas work in Europe, from the local to the continental scale, and provides a forum for discussion on methodological issues.

Cover illustration by Toni Llobet

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EDITORIAL

During the first week of November, CSO and EBCC organized the first joint workshop of the new European Breeding Bird Atlas (EBBA2), Pan-European Common Bird Monitoring Scheme (PECBMS) and EuroBirdPortal (EBP) in Mikulov, Czech Republic. The workshop was attended by 96 participants from 41 European countries. For us, this meeting was a good opportunity to approach national coordinators and propose them the possibility to present the status of their atlas or monitoring work in Bird Census News. The offer was received with enthusiasm and a number of the contributions appear in this issue. Some more will be published in the next one.

In the first article, Christina Ieronymidou and co-authors present the European Red List of Birds, a European Commission-funded project, led by BirdLife International and involving a consortium including the EBCC, Wetlands International, IUCN, BTO, Sovon, RSPB and CSO.

In the European Atlas section Dimitrije Radišić and co-authors give an overview of the status of the breeding bird atlas activities in Serbia. Igor Gorban and co-authors present the Ukrainian contribution to EBBA2. It is the first time for both countries that breeding bird data are collected at a national level, and the results are really encouraging!

Danae Portolou learns us more about the Hellenic bird monitoring scheme in the section European Bird Monitoring. This project provides since 2010 species population trends and indices to the PECBMS on an annual basis.

In the Short Notes section Nuno Barros presents the innovative online and interactive Portuguese seabird atlas, and in the Books and Journals section you will find a review of the new Birds of the Giant Mountains atlas by Jiří Flousek.

Finally, in the Events section you can read the reports of the EBBA2 training course in Ukraine and the Mikulov workshop.

Enjoy this volume!

Anny Anselin
Bird Census News Editor

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The European Red List of Birds 2015

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Abstract. The European Red List of Birds builds on two earlier assessments of the population status of all species at European level: the 'Birds in Europe' volumes. The main objective was to assess the status of all European bird species, for the first time using data reported by EU Member States under Article 12 of the EU Birds Directive, together with comparable data reported by NGOs and other collaborating experts from the rest of Europe. For every bird species native to Europe, apart from national population and trend information, the following data were compiled in the form of species factsheets: species' taxonomic classification, map of distribution in Europe, ecology and habitat preferences, major threats, conservation measures and key literature references. At the European regional level, 13% of bird species (67 species) were assessed as threatened, with 2% (10 species) Critically Endangered, 3% (18 species) Endangered, and 7% (39 species) Vulnerable. A further 6% (32 species) were assessed as Near Threatened (Figure 3a). Within the EU 27, 18% of bird species (82 species) were threatened, with 2% (11 species) Critically Endangered, 4% (16 species) Endangered, and 12% (55 species) Vulnerable, and a further 6% (26 species) were Near Threatened. The results of the work contribute to regional conservation planning through provision of an up-to-date dataset reporting the status of European birds, identification of the major threats to these birds, and proposals of mitigating measures and conservation actions to address them.

Introduction

Since 2005, the European Commission has financially supported the development of European Red Data lists for many taxa, including all terrestrial vertebrate groups (available online at http://ec.europa.eu/environment/nature/conservation/species/redlist/). For birds, the regional Red List for Europe was produced during 2012–2014, as part of a Commission-funded project led by BirdLife International and involving a consortium including the European Bird Census Council, Wetlands International, IUCN, BTO, Sovon, RSPB, the Czech Society for Ornithology and BirdLife Europe.

The European Red List of Birds builds on two earlier assessments of the population status of all species at European level: the 'Birds in Europe' volumes (Tucker & Heath 1994, BirdLife International 2004a). The main objective of the European Red List of Birds was to assess the status of all European bird species, for the first time using data reported by EU Member States under Article 12 of the EU Birds Directive, together with comparable data reported by NGOs and other collaborating experts from the rest of Europe. This was achieved through very important collaboration between EU Member States authorities, BirdLife Partners and other ornithological experts from across the continent.

The results of the work contribute to regional conservation planning through provision of an up-to-date dataset reporting the status of European birds, identification of the major threats to these birds, and proposals of mitigating measures and conservation actions to address them.

Data sources

The geographical scope of the European Red List of Birds was continent-wide and included the Canary Islands, Madeira and the Azores (Figure 1). It was not possible to collate data separately for Isle of Man or the Channel Islands, but in most cases bird populations and trends were reflected within the UK and France totals.

Data for the EU were reported by Member States under Article 12 of the EU Birds Directive, which requires that Member States regularly prepare

Figure 1. Regional assessments were made for two areas — continental Europe and the EU 27.

and submit reports on progress made with the national implementation of the Birds Directive. In 2011, the European Commission, in agreement with Member States, revised the reporting procedure and frequency in order to focus the reporting obligations on information relating to the status and trend of bird populations, thereby streamlining the reporting under Article 12 of the Birds Directive with the reporting on conservation status required under Article 17 of the Habitats Directive.

Article 12 reports covering the period 2008–2012 were submitted in 2013–2014. These reports included information on the size and trend of populations and distributions of individual bird taxa. Reporting was by subspecies, or other subspecific units (e.g. goose populations), for those subspecies that are listed in Annex I of the Directive, subspecies for which international Species Action Plans (SAPs), Management Plans (MPs) or Brief Management Statements (BMSs) have been prepared, subspecies or distinct flyway populations listed in Column A of Table 1 of the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) 'Status of the Populations of Migratory Waterbirds (2009–2012)', and subspecies or distinct populations of species classified as globally threatened or near threatened, according to the International Union for Conservation of Nature (IUCN) 2010 Red List.

National Article 12 reports included population size data and population trends for two periods (short term, i.e. 12 years: ideally 2001–2012; and long term, i.e. 32 years: ideally since 1980) for all regularly occurring breeding species. Winter data were also reported for a subset of species, mainly wintering waterbirds, and especially migratory wildfowl and waders, whose populations are often best monitored in the winter when they congregate in large numbers. All countries were requested to use the same population unit, which was breeding pairs for most breeding birds — with the exception of a minority of taxa with unusual or complex breeding biology or cryptic behaviour, for which other units, such as calling or lekking males, were used — and individuals for birds in winter.

No data were received for Greece, while the Czech Republic only reported on Annex I breeding bird taxa. Croatia did not join the EU until 2013, and so did not report. For all species in Greece, and for non-Annex I species in the Czech Republic, plus from all non-EU countries in the European region, similar data were sourced, drawing heavily on

Table 1. Extinct (globally EX, regionally, RE), threatened (Critically Endangered, CR, Endangered, EN, Vulnerable, VU) or Near Threatened (NT) bird species at the European and EU 27 levels. Species not present in the EU 27 were Not Evaluated (NE).

Genus	Species	Common name	Red List status	
			Europe	EU 27
Geronticus	*eremita*	Northern Bald Ibis	EX	EX
Haematopus	*meadewaldoi*	Canarian Oystercatcher	EX	EX
Pinguinus	*impennis*	Great Auk	RE	RE
Anhinga	*rufa*	African Darter	RE	NE
Charadrius	*asiaticus*	Caspian Plover	RE	NE
Sylvia	*nana*	Desert Warbler	RE	NE
Puffinus	*mauretanicus*	Balearic Shearwater	CR	CR
Numenius	*tenuirostris*	Slender-billed Curlew	CR	CR
Turnix	*sylvaticus*	Common Buttonquail	CR	CR
Emberiza	*aureola*	Yellow-breasted Bunting	CR	CR
Chlamydotis	*macqueenii*	Asian Houbara	CR	NE
Vanellus	*gregarius*	Sociable Lapwing	CR	NE
Ketupa	*zeylonensis*	Brown Fish-owl	CR	NE
Aquila	*nipalensis*	Steppe Eagle	CR	NE
Melanocorypha	*yeltoniensis*	Black Lark	CR	NE
Ammomanes	*deserti*	Desert Lark	CR	NE
Anser	*erythropus*	Lesser White-fronted Goose	EN	CR
Clanga	*clanga*	Greater Spotted Eagle	EN	CR
Cygnus	*columbianus*	Tundra Swan	EN	EN
Pterocles	*orientalis*	Black-bellied Sandgrouse	EN	EN
Fulica	*cristata*	Red-knobbed Coot	EN	EN
Pelagodroma	*marina*	White-faced Storm-petrel	EN	EN
Pterodroma	*madeira*	Zino's Petrel	EN	EN
Pyrrhula	*murina*	Azores Bullfinch	EN	EN
Oxyura	*leucocephala*	White-headed Duck	EN	VU
Fulmarus	*glacialis*	Northern Fulmar	EN	VU
Neophron	*percnopterus*	Egyptian Vulture	EN	VU
Falco	*biarmicus*	Lanner Falcon	EN	VU
Fratercula	*arctica*	Atlantic Puffin	EN	NT
Syrrhaptes	*paradoxus*	Pallas's Sandgrouse	EN	NE
Rhodostethia	*rosea*	Ross's Gull	EN	NE
Otus	*brucei*	Pallid Scops-owl	EN	NE
Ceryle	*rudis*	Pied Kingfisher	EN	NE
Oenanthe	*chrysopygia*	Red-tailed Wheatear	EN	NE
Marmaronetta	*angustirostris*	Marbled Teal	VU	CR
Charadrius	*leschenaultii*	Greater Sandplover	VU	CR
Glareola	*nordmanni*	Black-winged Pratincole	VU	CR
Somateria	*mollissima*	Common Eider	VU	EN
Limosa	*limosa*	Black-tailed Godwit	VU	EN
Rissa	*tridactyla*	Black-legged Kittiwake	VU	EN
Lagopus	*lagopus*	Willow Grouse	VU	VU
Clangula	*hyemalis*	Long-tailed Duck	VU	VU
Melanitta	*fusca*	Velvet Scoter	VU	VU
Aythya	*ferina*	Common Pochard	VU	VU
Aythya	*marila*	Greater Scaup	VU	VU
Apus	*affinis*	Little Swift	VU	VU

Tetrax	*tetrax*	Little Bustard	VU	VU
Gavia	*immer*	Common Loon	VU	VU
Hydrobates	*monteiroi*	Monteiro's Storm-petrel	VU	VU
Pterodroma	*deserta*	Desertas Petrel	VU	VU
Haematopus	*ostralegus*	Eurasian Oystercatcher	VU	VU
Vanellus	*vanellus*	Northern Lapwing	VU	VU
Numenius	*arquata*	Eurasian Curlew	VU	VU
Calidris	*ferruginea*	Curlew Sandpiper	VU	VU
Gypaetus	*barbatus*	Bearded Vulture	VU	VU
Aquila	*adalberti*	Spanish Imperial Eagle	VU	VU
Alcedo	*atthis*	Common Kingfisher	VU	VU
Falco	*cherrug*	Saker Falcon	VU	VU
Lanius	*excubitor*	Great Grey Shrike	VU	VU
Chersophilus	*duponti*	Dupont's Lark	VU	VU
Acrocephalus	*paludicola*	Aquatic Warbler	VU	VU
Sitta	*whiteheadi*	Corsican Nuthatch	VU	VU
Oenanthe	*leucura*	Black Wheatear	VU	VU
Emberiza	*cineracea*	Cinereous Bunting	VU	VU
Emberiza	*rustica*	Rustic Bunting	VU	VU
Streptopelia	*turtur*	European Turtle-dove	VU	NT
Gavia	*adamsii*	Yellow-billed Loon	VU	NE
Vanellus	*indicus*	Red-wattled Lapwing	VU	NE
Accipiter	*badius*	Shikra	VU	NE
Halcyon	*smyrnensis*	White-breasted Kingfisher	VU	NE
Passer	*moabiticus*	Dead Sea Sparrow	VU	NE
Anthus	*gustavi*	Pechora Pipit	VU	NE
Emberiza	*leucocephalos*	Pine Bunting	VU	NE
Circus	*macrourus*	Pallid Harrier	NT	EN
Alectoris	*graeca*	Rock Partridge	NT	VU
Lagopus	*muta*	Rock Ptarmigan	NT	VU
Mergus	*serrator*	Red-breasted Merganser	NT	VU
Podiceps	*auritus*	Horned Grebe	NT	VU
Larus	*argentatus*	European Herring Gull	NT	VU
Falco	*vespertinus*	Red-footed Falcon	NT	VU
Turdus	*iliacus*	Redwing	NT	VU
Anthus	*pratensis*	Meadow Pipit	NT	VU
Branta	*ruficollis*	Red-breasted Goose	NT	NT
Columba	*junoniae*	White-tailed Laurel-pigeon	NT	NT
Apus	*caffer*	White-rumped Swift	NT	NT
Chlamydotis	*undulata*	African Houbara	NT	NT
Puffinus	*lherminieri*	Audubon's Shearwater	NT	NT
Cursorius	*cursor*	Cream-coloured Courser	NT	NT
Aquila	*fasciata*	Bonelli's Eagle	NT	NT
Milvus	*milvus*	Red Kite	NT	NT
Picus	*sharpei*	Iberian Green Woodpecker	NT	NT
Sylvia	*undata*	Dartford Warbler	NT	NT
Saxicola	*dacotiae*	Fuerteventura Stonechat	NT	NT
Fringilla	*teydea*	Blue Chaffinch	NT	NT
Alectoris	*chukar*	Chukar	NT	LC
Fulica	atra	Common Coot	NT	LC

Hydrocoloeus	*minutus*	Little Gull	NT	LC
Alca	*torda*	Razorbill	NT	LC
Uria	*aalge*	Common Murre	NT	LC
Circus	*cyaneus*	Hen Harrier	NT	LC
Bucephala	*islandica*	Barrow's Goldeneye	NT	NE
Larus	*armenicus*	Armenian Gull	NT	NE
Turdoides	*altirostris*	Iraq Babbler	NT	NE
Oenanthe	*deserti*	Desert Wheatear	NT	NE
Prunella	*montanella*	Siberian Accentor	NT	NE
Xenus	*cinereus*	Terek Sandpiper	LC	CR
Bubo	*scandiacus*	Snowy Owl	LC	CR
Polysticta	*stelleri*	Steller's Eider	LC	EN
Arenaria	*interpres*	Ruddy Turnstone	LC	EN
Calidris	*pugnax*	Ruff	LC	EN
Tringa	*stagnatilis*	Marsh Sandpiper	LC	EN
Stercorarius	*parasiticus*	Arctic Jaeger	LC	EN
Buteo	*lagopus*	Rough-legged Buzzard	LC	EN
Spatula	*querquedula*	Garganey	LC	VU
Mareca	*penelope*	Eurasian Wigeon	LC	VU
Anas	*acuta*	Northern Pintail	LC	VU
Hydrobates	*leucorhous*	Leach's Storm-petrel	LC	VU
Vanellus	*spinosus*	Spur-winged Lapwing	LC	VU
Gallinago	*media*	Great Snipe	LC	VU
Tringa	*totanus*	Common Redshank	LC	VU
Cepphus	*grylle*	Black Guillemot	LC	VU
Falco	*rusticolus*	Gyrfalcon	LC	VU
Parus	*montanus*	Willow Tit	LC	VU
Parus	*cinctus*	Siberian Tit	LC	VU
Melanocorypha	*calandra*	Calandra Lark	LC	VU
Locustella	*fluviatilis*	Eurasian River Warbler	LC	VU
Phylloscopus	*borealis*	Arctic Warbler	LC	VU
Turdus	*pilaris*	Fieldfare	LC	VU
Fringilla	*montifringilla*	Brambling	LC	VU
Carduelis	*flavirostris*	Twite	LC	VU
Carpodacus	*erythrinus*	Common Rosefinch	LC	VU
Tadorna	*ferruginea*	Ruddy Shelduck	LC	NT
Zapornia	*pusilla*	Baillon's Crake	LC	NT
Phalacrocorax	*aristotelis*	European Shag	LC	NT
Calidris	*maritima*	Purple Sandpiper	LC	NT
Actitis	*hypoleucos*	Common Sandpiper	LC	NT
Tringa	*erythropus*	Spotted Redshank	LC	NT
Hydroprogne	*caspia*	Caspian Tern	LC	NT
Aquila	*heliaca*	Eastern Imperial Eagle	LC	NT
Eremophila	*alpestris*	Horned Lark	LC	NT
Regulus	*regulus*	Goldcrest	LC	NT
Sitta	*krueperi*	Krueper's Nuthatch	LC	NT
Calcarius	*lapponicus*	Lapland Longspur	LC	NT

the expertise and data holdings of national bird monitoring schemes and organisations across Europe, including BirdLife International Partners and many others.

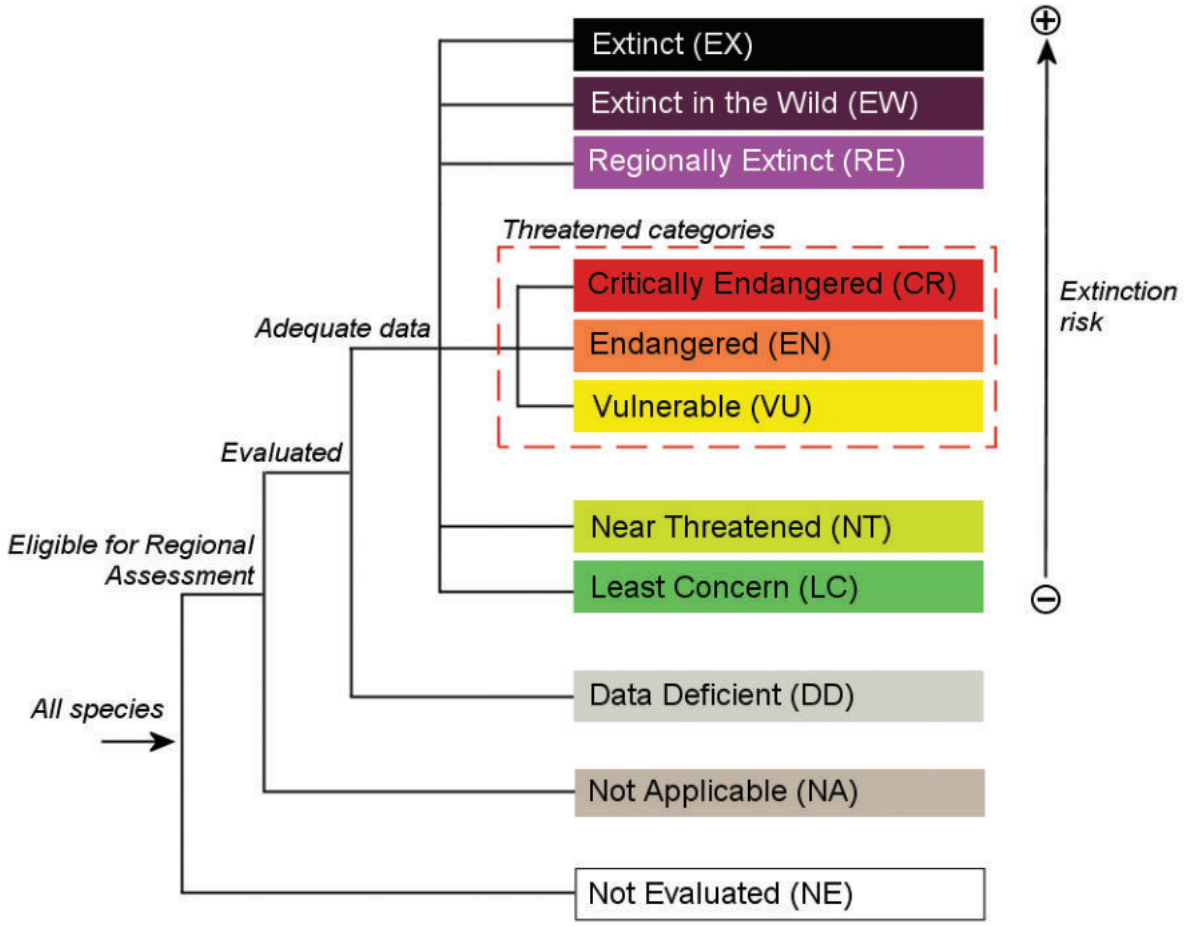

Figure 2. IUCN Red List Categories at regional scale.

For every bird species native to Europe, apart from national population and trend information, the following data were compiled in the form of species factsheets (accessible online at http://www.birdlife.org/datazone/info/euroredlist):

- Species' taxonomic classification;
- Map of distribution in Europe;
- Ecology and habitat preferences;
- Major threats;
- Conservation measures (in place, and needed);
- Key literature references.

The qualitative information on ecology, threats and conservation measures for each species, were collated and compiled through an extensive literature review. Threats and conservation measures were coded following the IUCN Threats and Conservation Actions Classification Schemes, respectively. The distribution of each species in Europe was derived from the digitized maps compiled by BirdLife International and available on the BirdLife DataZone. For spatial analysis purposes, the range of each species was converted to a geodesic discrete global grid system, which corresponds to a hexagonal grid. Coastal cells were clipped to the coastline. Patterns of species richness were mapped by counting the number of species in each cell (or cell section, for species with a coastal distribution).

Regional Red List assessment

The IUCN Red List Categories and Criteria determine a taxon's relative risk of extinction (IUCN 2012a). The IUCN Red List Categories (Figure 2) are based on a set of quantitative criteria linked to population trends, population size and structure, and geographic range. There are nine Categories, and species classified as Vulnerable (VU), Endangered (EN) and Critically Endangered (CR) are considered as 'threatened'.

Following the IUCN guidelines (IUCN 2014) and in particular the guidelines for the application of the criteria at Regional Level (IUCN 2012b), assessments for the European Red List of Birds

were carried out at two regional levels: for geographical Europe and for the area of the 27 EU Member States.

All terrestrial and marine bird species native to Europe or naturalised in Europe were included in the assessment. Species introduced to Europe by man after AD 1500 were not considered. Similarly, species that are of marginal occurrence in Europe were not considered. Assessments were carried out at the species level, following BirdLife International's current taxonomy (BirdLife International 2014) and population size and trend data for any bird taxa for which a country reported at the subspecific or flyway level were aggregated to the species level. In the few cases where a taxon had been 'split' into two species between data collection and assessment, reported data were assigned to the appropriate species, in consultation with relevant experts.

National data were combined to produce overall EU and pan-European population sizes and trends for each taxon. A degree of caution must be taken into consideration when combining data, as different Member States and national coordinators used different methodologies for estimating population sizes and trends. For population sizes, the reported minimum and maximum population size data across countries were summed to calculate the overall minimum and maximum. In cases where population size data were reported in population size units different to those specified, the reported values were converted to the appropriate units based on expert opinion and with reference to any relevant national sources.

For population trends, data from all countries were combined, weighting each country's contribution according to the size of its population. Weightings were based on the geometric mean of the countries' minimum and maximum population size compared to the geometric mean of the equivalent totals for the overall EU or pan-European population. This analysis was carried out using a dedicated tool developed by IUCN to estimate overall trends based on data from multiple (national) subpopulations. Where it was not possible to allocate a trend category with confidence, either because trend directions were reported as unknown for a large proportion of the total European population or in the case of conflicting trend information or lack of trend magnitudes, the overall European trend was classified as 'Unknown'. Where possible, the robustness of trend categories to the effects of any missing data was tested using plausible 'good' and 'bad' scenarios, based on other sources of information, such as any other reported trend information, recent national Red Lists, scientific literature, other publications and consultations with experts.

For the majority of species, assessments were based on data from the breeding season, but for a minority of species, winter data were (also) used. The assessments of species that do not breed (regularly) within the EU and/or the European region were based solely on winter data, while for species that occur in both seasons and for which the reported dataset was representative of the regional population, the assessment process was carried out independently on data for both the breeding and wintering populations. For some species in winter, underlying population trends can be obscured by demographic factors, often related to inter- annual variation in weather conditions. In some years, for example, birds that usually winter in the region may be forced to move elsewhere by harsh winter conditions, whilst in others, birds that usually winter outside the region may show marked influxes into the region. Consequently, assessments were carried out principally on the basis of breeding data, however in instances where the status assessment derived using winter data was higher (i.e. more threatened) the winter assessment was used.

Results

Red List status

At the European regional level, 13% of bird species (67 species) were assessed as threatened, with 2% (10 species) Critically Endangered, 3% (18 species) Endangered, and 7% (39 species) Vulnerable. A further 6% (32 species) were assessed as Near Threatened (Figure 3a). Within the EU 27, 18% of bird species (82 species) were threatened, with 2% (11 species) Critically Endangered, 4% (16 species) Endangered, and 12% (55 species) Vulnerable, and a further 6% (26 species) were Near Threatened (Figure 3b). Species classed as Extinct, threatened and Near Threatened at the European and EU 27 level are listed in Table 1. Full results can be found in BirdLife International (2015).

Analysis by species' habitat associations (Tucker & Evans 1997, BirdLife International 2004a) showed that birds associated with grasslands and agricultural habitats had the highest proportion of threatened species (23%), followed by birds

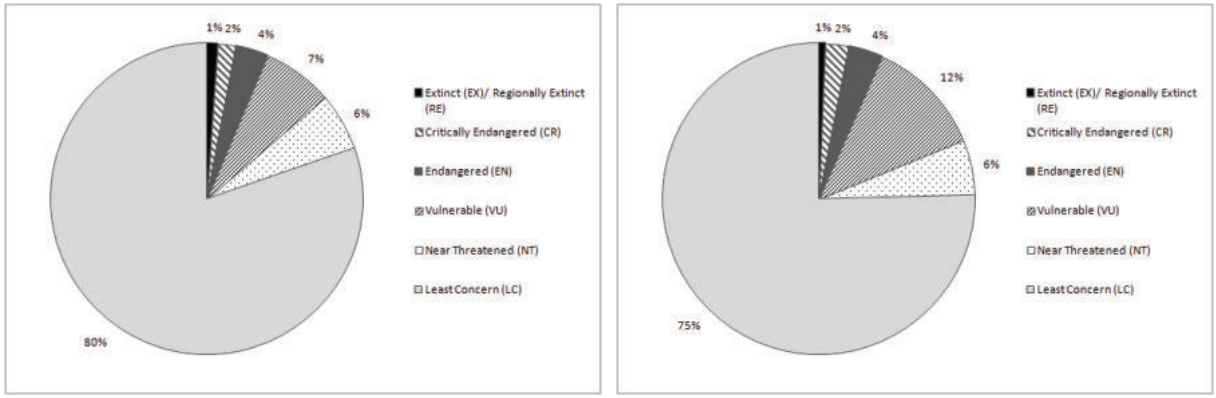

Figure 3. IUCN Red List status of birds in Europe (a) and the EU 27 (b). The total number of species in Europe was 533 and in the EU 27 it was 451.

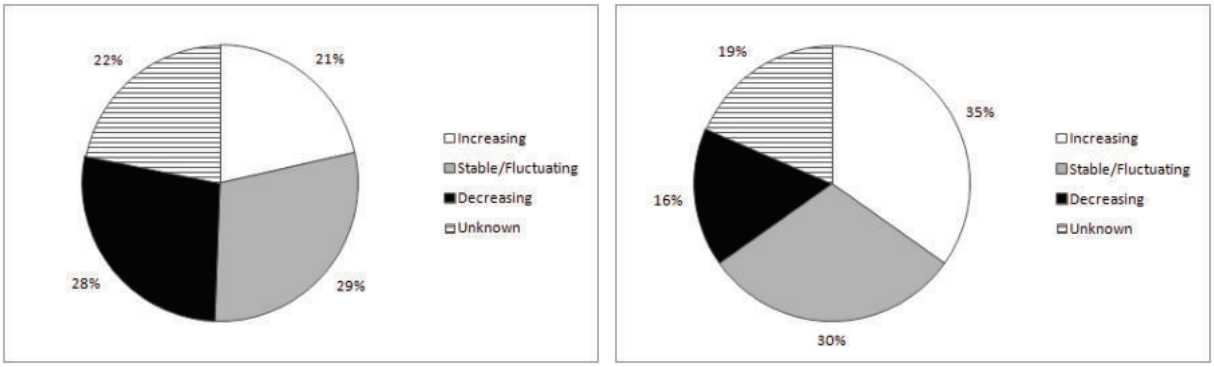

Figure 4. Breeding (a) and winter (b) population trends of European birds.

Table 2. Number and proportion of species threatened at the European level (CR, EN, VU) by habitat association, according to Tucker and Evans (1997) and BirdLife International (2004a).

Habitat association	Total no. of species	No. of threatened species	Proportion of total
Agricultural and grassland habitats	75	17	23%
Boreal and temperate forests	78	2	3%
Coastal habitats	25	2	8%
Inland wetlands	65	6	9%
Marine habitats	44	9	20%
Mediterranean habitats	46	6	13%
Montane habitats	13	1	8%
Tundra, mires and moorland	50	9	18%
Associated with more habitats	99	5	5%
Unclassified	38	11	29%
Total	533	67	13%

associated with marine habitats (20%) and upland moorland habitats (18%), while birds associated with forests had the lowest (3%) (Table 2).

In both 2004 and 2015, the number of threatened species was the same: 67 species. However, since the last regional assessment in 2004 (BirdLife International 2004a), a total of 20 species that were previously considered regionally threatened were classified as Least Concern in Europe (although some are still globally threatened) and 21 species were downlisted (Red List status changed to lower threat category). On the other hand, 27 species were reclassified as threatened and 7 were uplisted (Red List status changed to higher threat category), while the Red List status of many species that were identified as threatened in 2004 remained unchanged (see Supplementary Material).

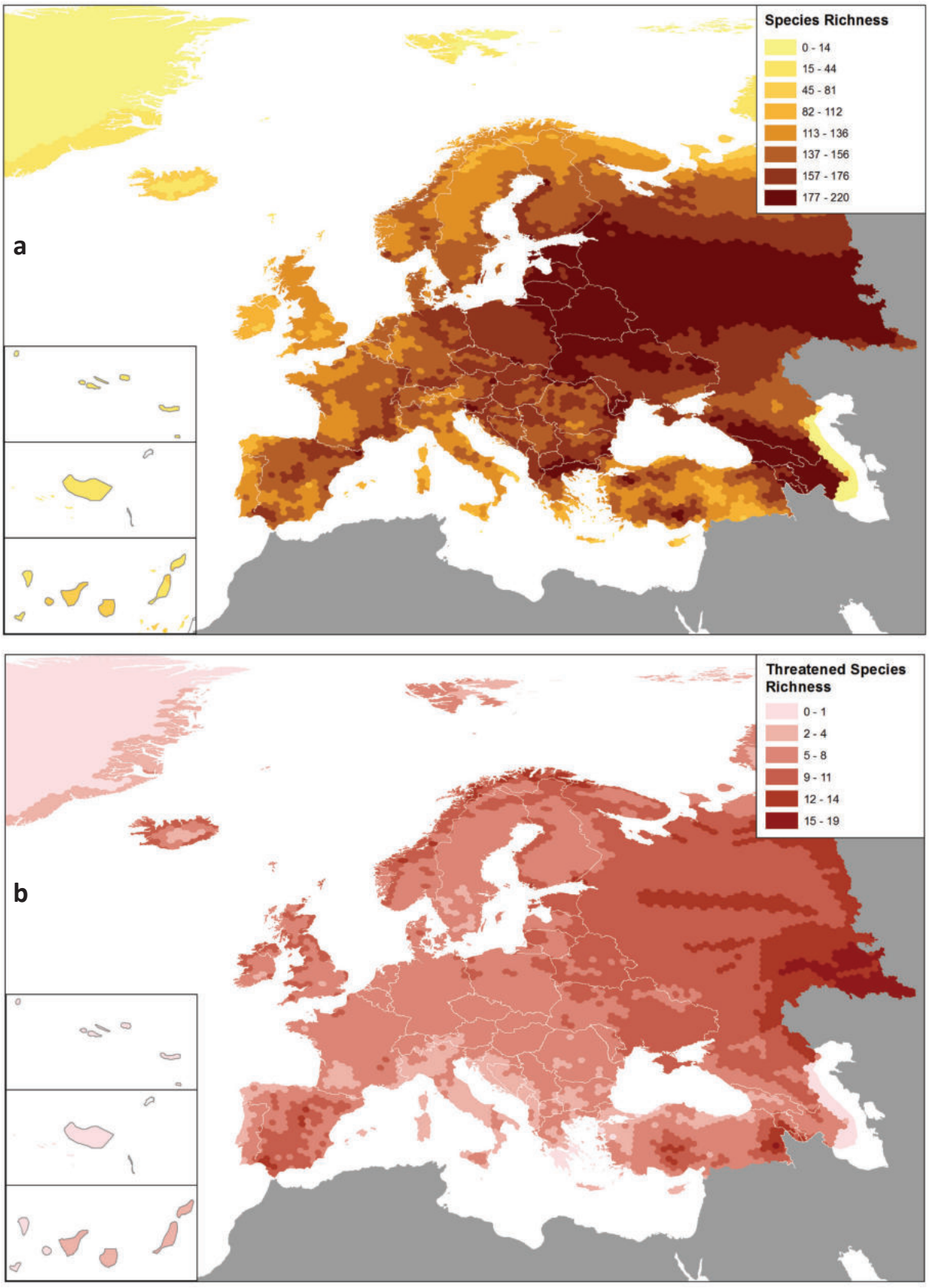

Figure 5. Species richness of European birds (a) and distribution of threatened birds in Europe (b).

Population trends

For the majority cases, the assessments under the population size reduction criteria (see IUCN 2012a) were based on the short-term (c. 2001–2012) population trends, as this was the period

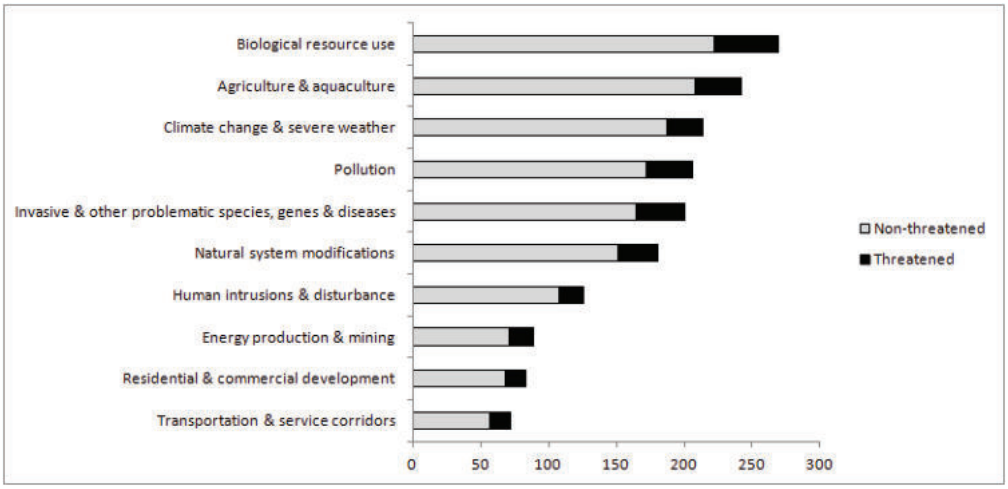

Figure 6. Threats to birds in Europe. Note that a single species may be affected by multiple threats.

closest to the IUCN Red List assessment period of three generation lengths (or ten years, whichever is longer). Long-term trend (c. 1980–2012) information was essential for longer-lived species.

A total of 144 bird species (28% of the total) of Europe's breeding bird species were decreasing, while 152 species (29%) were stable or fluctuating and 112 (21%) were increasing (Figure 4a). Breeding population trends were unknown for 114 species (22%). Of the 92 species assessed in winter, 16% were decreasing, 30% were stable or fluctuating, 35% were increasing and 19% had unknown trends (Figure 4b).

Spatial distribution

Russia, the Baltic states and eastern Europe, the Mediterranean, Black Sea and Caucasus regions show a higher species richness than northwest Europe (Figure 5a). Russia and Turkey had the highest richness of threatened species (Figure 5b) with other high density areas found in Spain and Portugal, together with the Macaronesian islands, as well as France, the Caucasus region and some regions in the Baltic states and Eastern Europe.

Threats

'Biological resource use', and 'agriculture and aquaculture' were the top threats to bird species, followed by 'climate change and severe weather', 'pollution', 'invasive and other problematic species, genes and diseases' and 'natural system modifications' (Figure 6).

Discussion

This European Red List of Birds is part of a wider initiative aimed at assessing the status of European species. It has gathered large amounts of data on the population, ecology, habitats and threats of each bird species in the region and the outputs of this work can be applied to inform policy and identify priority species to include in research and monitoring programmes.

Across Europe there were found to be significant geographic, geopolitical and taxonomic biases in the quality of data available on the distribution and status of species. In many cases trend information was incomplete, especially for long-term trends; bird monitoring efforts began relatively recently for many countries. Regardless of such recent improvements in monitoring efforts, it is evident that for a number of countries capacity and probably funding is lacking for regular monitoring of bird populations. Despite these issues, this European Red List forms the third assessment of birds in Europe since 1994. The status of some bird species has improved since the last assessment, largely thanks to the commitment shown by many governments, NGOs and other parties across Europe to conserving wild birds and their habitats (Deinet et al. 2013). However, substantial declines of many widespread and formerly common species, in particular those linked to farmlands, are ongoing and it is clear that much more still needs to be done to prevent further deterioration and keep populations in favourable conditions.

BirdLife International believes there are a number of key recommendations which, if implemented,

would greatly strengthen the long-term conservation of European birds:

- Ensure funding for the protection of threatened species.
- Ensure that threats to migratory birds are tackled on a flyway scale. This is likely to require boosting targeted conservation efforts in the wintering grounds outside the European region.
- Ensure that legal hunting is sustainable and carried out in line within the legal framework of AEWA, the Bern Convention and, where relevant, the EU Birds Directive.
- Combat illegal killing of birds, such as poisoning of birds of prey, through improving enforcement of national legislation.
- Ensure that energy infrastructures are developed in harmony with nature and do not adversely impact birds and their habitat.
- Increase the protection of Important Bird and Biodiversity Areas, through designation as protected areas, enforcement of site protection and through improving site management.
- Enhance cross-policy coordination to strengthen protection and restoration efforts for the existing protected area networks of national and international importance (in particular Natura 2000 and Emerald sites), but also on High Nature Value (HNV) farmlands and other areas of outstanding importance for bird conservation.
- Ensure that agricultural policies, such as the EU Common Agricultural Policy, safeguard farmland biodiversity through incentives and legal obligations.
- Ensure sustainable forest management and ecologically compatible afforestation policies.
- Improve the effectiveness of Agri-Environment Schemes (AES) by setting specific long-term objectives, including those for wild birds, at a range of spatial scales and develop targeted measures to support bird biodiversity in agro-ecosystems, and by allocating sufficient funding resources.
- Ensure that fishery catch limits are set on strict scientific grounds at or below the level of fishing that allows for harvested species to be restored and maintained above levels capable of producing maximum sustainable yield.
- Designate and properly manage a comprehensive network of Marine Protected Areas.
- Eliminate the bycatch of seabirds in fisheries through the deployment of appropriate mitigation measures and better management of fisheries.
- Ensure that invasive alien species are detected early and, where appropriate, rapidly eradicated. Widely established invasive alien species should be managed to reduce impacts and to prevent further spreading.
- Continue to support bird indicators, such as the European Union agri-environmental indicator "population trends of farmland birds"30 and promote more targeted long-term monitoring schemes.
- Invest in targeted research on threatened species, especially those for which the threats are poorly understood, such as seaducks.

The IUCN Red List categories and criteria highlight species with a relatively high risk of extinction, which is just one of many ways of informing conservation priorities. This concept is very relevant to the EU Birds Directive and has been used to help prioritise species (e.g. for Species Action Plans, LIFE funding, etc.). Target 1 for birds under the EU's biodiversity strategy for 2020 is expressed as follows: "By 2020, 50% more species assessed under the Birds Directive show a secure or improved status." Species that meet the IUCN Red List Criteria for Critically Endangered, Endangered or Vulnerable at the regional level are considered to be threatened in the EU. However, species that are not threatened, or are Near Threatened as defined by IUCN Red List Criteria, do not necessarily have a 'secure or improved status'. Many bird species classified as Least Concern under the IUCN Red List Criteria have undergone significant long-term declines as a result of threats including land-use change and illegal hunting, and therefore could not be regarded as being of secure or improved status. In previous assessments of the conservation status of European bird species (Tucker & Heath 1994, BirdLife International 2004a, BirdLife International 2004b), additional criteria were applied to identify species of European conservation concern (SPECs). Although SPECs do not necessarily qualify as threatened under IUCN Red List Criteria, they may be depleted or have declined over a longer term than considered by the IUCN process, and so cannot be considered

to contribute to progress towards Target 1 of the EU's Biodiversity Strategy. For this reason, similar additional criteria were used in the reporting of the 2008–2012 Article 12 assessment to identify secure, improved, declining or depleted species in the EU and hence evaluate progress towards the Target (European Environment Agency 2015). The European Red List of Birds will also form the basis for updating the SPEC classification, following the methodology developed in the previous assessments (Tucker & Heath 1994, BirdLife International 2004a). This work is planned to be carried out by BirdLife in 2016.

Conclusions

Across Europe, many governments, NGOs and other parties are showing commitment to conserving wild birds and their habitats and thanks to these efforts some species are showing signs of recovery. However, the proportion of threatened species in this assessment is comparable to that in the previous assessment a decade ago. Bird species continue to decline as a result of various threats, including illegal hunting, changing agricultural practices, invasive and alien species and habitat loss and degradation. It is evident that much more needs to be done to save threatened European bird species from extinction and to safeguard the bird populations of Europe.

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Full acknowledgements can be found in BirdLife International (2015), which is available for download from http://www.birdlife.org/datazone/info/euroredlist. Individual species factsheets are also available for download from the same address.

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Supplementary Material

SM 1. Comparison of species' 2004 European Threat Status (BirdLife International, 2004a) and 2015 European Red List category (BirdLife International, 2015). The 2004 European Threat Status was classified as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Declining (D), Rare (R), Depleted (H), Localised (L), Data Deficient (DD), Secure (S) and Not Evaluated (NE), with provisional statuses in brackets '( )', as defined in BirdLife International (2004a). The 2015 European Red List categories follow the IUCN Red List Categories and Criteria (2012a) and include CR, Possibly Extinct (CR (PE)), EN, VU, Near Threatened (NT), Least Concern (LC), Regionally Extinct (RE), globally Extinct (EX) and NE. Changes in species taxonomy (BirdLife International 2014) between the two periods are noted, as species that were Not Recognised (NR) in 2004 or 2015 were not assessed.

Species name	2004	2015	Species name	2004	2015	Species name	2004	2015
Gavia stellata	(H)	LC	*Pelagodroma marina*	VU	EN	*Ciconia nigra*	R	LC
Gavia arctica	(VU)	LC	*Hydrobates pelagicus*	(S)	LC	*Ciconia ciconia*	H	LC
Gavia immer	(S)	VU	*Hydrobates leucorhous*	(L)	LC	*Plegadis falcinellus*	(D)	LC
Gavia adamsii	(S)	VU	*Hydrobates castro*	(R)	LC	*Geronticus eremita*	CR	RE
Tachybaptus ruficollis	S	LC	*Hydrobates monteiroi*	NR	VU	*Platalea leucorodia*	R	LC
Podiceps cristatus	S	LC	*Morus bassanus*	S	LC	*Phoenicopterus roseus*	L	LC
Podiceps grisegena	S	LC	*Phalacrocorax carbo*	S	LC	*Cygnus olor*	S	LC
Podiceps auritus	D	NT	*Phalacrocorax aristotelis*	(S)	LC	*Cygnus columbianus*	VU	EN
Podiceps nigricollis	S	LC	*Microcarbo pygmaeus*	S	LC	*Cygnus cygnus*	S	LC
Fulmarus glacialis	S	EN	*Anhinga rufa*	NE	RE	*Anser fabalis*	S	LC
Pterodroma madeira	(CR)	EN	*Pelecanus onocrotalus*	R	LC	*Anser brachyrhynchus*	S	LC
Pterodroma deserta	VU	VU	*Pelecanus crispus*	R	LC	*Anser albifrons*	S	LC
Bulweria bulwerii	(R)	LC	*Botaurus stellaris*	H	LC	*Anser erythropus*	EN	EN
Calonectris diomedea	(VU)	LC	*Ixobrychus minutus*	(H)	LC	*Anser anser*	S	LC
Calonectris borealis	NR	LC	*Nycticorax nycticorax*	H	LC	*Anser caerulescens*	(S)	LC
Ardenna gravis	NE	NE	*Ardeola ralloides*	(D)	LC	*Branta canadensis*	(S)	LC
Ardenna grisea	NE	NE	*Bubulcus ibis*	S	LC	*Branta leucopsis*	S	LC
Puffinus puffinus	(L)	LC	*Egretta garzetta*	S	LC	*Branta bernicla*	VU	LC
Puffinus mauretanicus	CR	CR	*Ardea alba*	S	LC	*Branta ruficollis*	VU	NT
Puffinus yelkouan	S	LC	*Ardea cinerea*	S	LC	*Tadorna ferruginea*	(VU)	LC
Puffinus lherminieri	(R)	NT	*Ardea purpurea*	(D)	LC	*Tadorna tadorna*	S	LC

Species name	2004	2015	Species name	2004	2015	Species name	2004	2015
Mareca penelope	S	LC	*Aquila heliaca*	R	LC	*Haematopus ostralegus*	(S)	VU
Mareca strepera	(H)	LC	*Aquila adalberti*	(EN)	VU	*Himantopus himantopus*	S	LC
Anas crecca	(S)	LC	*Aquila chrysaetos*	R	LC	*Recurvirostra avosetta*	S	LC
Anas platyrhynchos	(S)	LC	*Hieraaetus pennatus*	(R)	LC	*Burhinus oedicnemus*	(VU)	LC
Anas acuta	(D)	LC	*Aquila fasciata*	EN	NT	*Cursorius cursor*	(EN)	NT
Spatula querquedula	(D)	LC	*Pandion haliaetus*	R	LC	*Glareola pratincola*	D	LC
Spatula clypeata	(D)	LC	*Falco naumanni*	H	LC	*Glareola nordmanni*	EN	VU
Marmaronetta angustirostris	(VU)	VU	*Falco tinnunculus*	D	LC	*Charadrius dubius*	(S)	LC
Netta rufina	(S)	LC	*Falco vespertinus*	(VU)	NT	*Charadrius hiaticula*	(S)	LC
Aythya ferina	(D)	VU	*Falco columbarius*	(S)	LC	*Charadrius alexandrinus*	(D)	LC
Aythya nyroca	(VU)	LC	*Falco subbuteo*	(S)	LC	*Charadrius leschenaultii*	(EN)	VU
Aythya fuligula	(D)	LC	*Falco eleonorae*	D	LC	*Charadrius asiaticus*	EN	RE
Aythya marila	EN	VU	*Falco biarmicus*	VU	EN	*Eudromias morinellus*	(S)	LC
Somateria mollissima	S	VU	*Falco cherrug*	EN	VU	*Pluvialis apricaria*	(S)	LC
Somateria spectabilis	(S)	LC	*Falco rusticolus*	(R)	LC	*Pluvialis squatarola*	(S)	LC
Polysticta stelleri	L	LC	*Falco peregrinus*	S	LC	*Vanellus spinosus*	VU	LC
Histrionicus histrionicus	(R)	LC	*Falco pelegrinoides*	S	NR	*Vanellus indicus*	(VU)	VU
Clangula hyemalis	(S)	VU	*Bonasa bonasia*	S	LC	*Vanellus gregarius*	CR	CR
Melanitta nigra	(S)	LC	*Lagopus lagopus*	S	VU	*Vanellus leucurus*	S	LC
Melanitta fusca	(D)	VU	*Lagopus muta*	S	NT	*Vanellus vanellus*	VU	VU
Bucephala islandica	VU	NT	*Lyrurus tetrix*	H	LC	*Calidris canutus*	D	LC
Bucephala clangula	(S)	LC	*Lyrurus mlokosiewiczi*	DD	LC	*Calidris alba*	(S)	LC
Mergellus albellus	(D)	LC	*Tetrao urogallus*	(S)	LC	*Calidris minuta*	(S)	LC
Mergus serrator	(S)	NT	*Tetraogallus caucasicus*	S	LC	*Calidris temminckii*	(S)	LC
Mergus merganser	(S)	LC	*Tetraogallus caspius*	(VU)	LC	*Calidris bairdii*	(S)	LC
Oxyura leucocephala	VU	EN	*Alectoris chukar*	(VU)	NT	*Calidris ferruginea*	NE	VU
Pernis apivorus	(S)	LC	*Alectoris graeca*	(D)	NT	*Calidris maritima*	(S)	LC
Elanus caeruleus	R	LC	*Alectoris rufa*	(D)	LC	*Calidris alpina*	(H)	LC
Milvus migrans	(VU)	LC	*Alectoris barbara*	(R)	LC	*Calidris falcinellus*	(D)	LC
Milvus milvus	D	NT	*Ammoperdix griseogularis*	VU	LC	*Calidris pugnax*	(D)	LC
Haliaeetus albicilla	R	LC	*Francolinus francolinus*	D	LC	*Lymnocryptes minimus*	(D)	LC
Gypaetus barbatus	(VU)	VU	*Perdix perdix*	VU	LC	*Gallinago gallinago*	(D)	LC
Neophron percnopterus	EN	EN	*Coturnix coturnix*	(H)	LC	*Gallinago media*	D	LC
Gyps fulvus	S	LC	*Phasianus colchicus*	(S)	LC	*Gallinago stenura*	(S)	LC
Aegypius monachus	R	LC	*Turnix sylvaticus*	CR	CR	*Scolopax rusticola*	(D)	LC
Circaetus gallicus	(R)	LC	*Rallus aquaticus*	(S)	LC	*Limosa limosa*	VU	VU
Circus aeruginosus	S	LC	*Porzana porzana*	(S)	LC	*Limosa lapponica*	(S)	LC
Circus cyaneus	H	NT	*Zapornia parva*	(S)	LC	*Numenius phaeopus*	(S)	LC
Circus macrourus	(EN)	NT	*Zapornia pusilla*	(R)	LC	*Numenius tenuirostris*	NE	CR
Circus pygargus	S	LC	*Crex crex*	H	LC	*Numenius arquata*	D	VU
Accipiter gentilis	S	LC	*Gallinula chloropus*	S	LC	*Tringa erythropus*	(D)	LC
Accipiter nisus	S	LC	*Porphyrio porphyrio*	L	LC	*Tringa totanus*	D	LC
Accipiter badius	(S)	VU	*Fulica atra*	(S)	NT	*Tringa stagnatilis*	(S)	LC
Accipiter brevipes	(VU)	LC	*Fulica cristata*	CR	EN	*Tringa nebularia*	S	LC
Buteo buteo	S	LC	*Grus grus*	(H)	LC	*Tringa ochropus*	S	LC
Buteo rufinus	(VU)	LC	*Anthropoides virgo*	S	LC	*Tringa glareola*	H	LC
Buteo lagopus	(S)	LC	*Tetrax tetrax*	VU	VU	*Xenus cinereus*	(S)	LC
Clanga pomarina	(D)	LC	*Chlamydotis undulata*	(VU)	NT	*Actitis hypoleucos*	(D)	LC
Clanga clanga	EN	EN	*Chlamydotis macqueenii*	NR	CR (PE)	*Arenaria interpres*	(S)	LC
Aquila nipalensis	(EN)	CR	*Otis tarda*	VU	LC	*Phalaropus lobatus*	(S)	LC

Species name	2004	2015	Species name	2004	2015	Species name	2004	2015
Phalaropus fulicarius	S	LC	*Streptopelia decaocto*	S	LC	*Melanocorypha bimaculata*	S	LC
Stercorarius pomarinus	(S)	LC	*Streptopelia turtur*	D	VU	*Melanocorypha leucoptera*	(S)	LC
Stercorarius parasiticus	(S)	LC	*Spilopelia senegalensis*	S	LC	*Melanocorypha yeltoniensis*	EN	CR
Stercorarius longicaudus	(S)	LC	*Clamator glandarius*	(S)	LC	*Calandrella brachydactyla*	D	LC
Catharacta skua	S	LC	*Cuculus canorus*	S	LC	*Calandrella rufescens*	D	LC
Larus ichthyaetus	(S)	LC	*Cuculus saturatus*	(S)	LC	*Calandrella cheleensis*	(VU)	NE
Larus melanocephalus	S	LC	*Tyto alba*	(D)	LC	*Galerida cristata*	(H)	LC
Hydrocoloeus minutus	(H)	NT	*Otus brucei*	CR	EN	*Galerida theklae*	(H)	LC
Larus ridibundus	(S)	LC	*Otus scops*	(H)	LC	*Lullula arborea*	H	LC
Larus genei	L	LC	*Bubo bubo*	(H)	LC	*Alauda arvensis*	(H)	LC
Larus audouinii	L	LC	*Ketupa zeylonensis*	CR	CR	*Eremophila alpestris*	(S)	LC
Larus canus	(H)	LC	*Bubo scandiacus*	(R)	LC	*Riparia riparia*	(H)	LC
Larus fuscus	S	LC	*Surnia ulula*	(S)	LC	*Hirundo rupestris*	S	LC
Larus argentatus	S	NT	*Glaucidium passerinum*	S	LC	*Hirundo rustica*	H	LC
Larus cachinnans	S	LC	*Athene noctua*	(D)	LC	*Hirundo daurica*	(S)	LC
Larus michahellis	NR	LC	*Strix aluco*	S	LC	*Delichon urbicum*	(D)	LC
Larus armenicus	L	NT	*Strix uralensis*	(S)	LC	*Anthus campestris*	(D)	LC
Larus glaucoides	(S)	LC	*Strix nebulosa*	(S)	LC	*Anthus berthelotii*	(S)	LC
Larus hyperboreus	(S)	LC	*Asio otus*	(S)	LC	*Anthus hodgsoni*	(S)	LC
Larus marinus	S	LC	*Asio flammeus*	(H)	LC	*Anthus trivialis*	S	LC
Xema sabini	S	LC	*Aegolius funereus*	(S)	LC	*Anthus gustavi*	(S)	VU
Rhodostethia rosea	(S)	EN	*Caprimulgus europaeus*	(H)	LC	*Anthus pratensis*	(S)	NT
Rissa tridactyla	(S)	VU	*Caprimulgus ruficollis*	(S)	LC	*Anthus cervinus*	(S)	LC
Pagophila eburnea	(R)	LC	*Tachymarptis melba*	S	LC	*Anthus spinoletta*	(S)	LC
Gelochelidon nilotica	(VU)	LC	*Apus unicolor*	(R)	LC	*Anthus petrosus*	(S)	LC
Hydroprogne caspia	R	LC	*Apus apus*	(S)	LC	*Motacilla flava*	(S)	LC
Thalasseus bengalensis	(S)	NE	*Apus pallidus*	(S)	LC	*Motacilla citreola*	(S)	LC
Thalasseus sandvicensis	H	LC	*Apus caffer*	S	NT	*Motacilla cinerea*	S	LC
Sterna dougallii	R	LC	*Apus affinis*	(EN)	VU	*Motacilla alba*	S	LC
Sterna hirundo	S	LC	*Halcyon smyrnensis*	EN	VU	*Pycnonotus xanthopygos*	S	LC
Sterna paradisaea	(S)	LC	*Alcedo atthis*	H	VU	*Bombycilla garrulus*	(S)	LC
Sternula albifrons	D	LC	*Ceryle rudis*	(CR)	EN	*Cinclus cinclus*	S	LC
Chlidonias hybrida	H	LC	*Merops persicus*	(S)	LC	*Troglodytes troglodytes*	S	LC
Chlidonias niger	(H)	LC	*Merops apiaster*	(H)	LC	*Prunella modularis*	S	LC
Chlidonias leucopterus	(S)	LC	*Coracias garrulus*	VU	LC	*Prunella montanella*	(S)	NT
Uria aalge	(S)	NT	*Upupa epops*	(D)	LC	*Prunella ocularis*	(S)	LC
Uria lomvia	(VU)	LC	*Jynx torquilla*	(D)	LC	*Prunella atrogularis*	R	LC
Alca torda	(S)	NT	*Picus canus*	(H)	LC	*Prunella collaris*	(S)	LC
Cepphus grylle	H	LC	*Picus viridis*	(H)	LC	*Erythropygia galactotes*	VU	LC
Alle alle	(S)	LC	*Picus sharpei*	NR	NT	*Erithacus rubecula*	S	LC
Fratercula arctica	(H)	EN	*Dryocopus martius*	S	LC	*Luscinia luscinia*	S	LC
Pterocles orientalis	(D)	EN	*Dendrocopos major*	S	LC	*Luscinia megarhynchos*	(S)	LC
Pterocles alchata	(D)	LC	*Dendrocopos syriacus*	(S)	LC	*Luscinia calliope*	(S)	LC
Syrrhaptes paradoxus	NE	EN	*Leiopicus medius*	(S)	LC	*Luscinia svecica*	S	LC
Columba livia	(S)	LC	*Dendrocopos leucotos*	(S)	LC	*Tarsiger cyanurus*	(S)	LC
Columba oenas	S	LC	*Dryobates minor*	(S)	LC	*Irania gutturalis*	(S)	LC
Columba palumbus	S	LC	*Picoides tridactylus*	(H)	LC	*Phoenicurus ochruros*	S	LC
Columba trocaz	(R)	LC	*Ammomanes deserti*	(EN)	CR	*Phoenicurus phoenicurus*	(H)	LC
Columba bollii	(R)	LC	*Chersophilus duponti*	(H)	VU	*Phoenicurus erythrogastrus*	(R)	LC
Columba junoniae	EN	NT	*Melanocorypha calandra*	(D)	LC	*Saxicola rubetra*	(S)	LC

Species name	2004	2015	Species name	2004	2015	Species name	2004	2015
Saxicola dacotiae	EN	NT	*Sylvia melanocephala*	(S)	LC	*Oriolus oriolus*	S	LC
Saxicola torquatus	(S)	LC	*Sylvia melanothorax*	(S)	LC	*Lanius collurio*	(H)	LC
Oenanthe isabellina	(S)	LC	*Sylvia rueppelli*	(S)	LC	*Lanius minor*	(D)	LC
Oenanthe oenanthe	(D)	LC	*Sylvia nana*	(S)	RE	*Lanius excubitor*	(H)	VU
Oenanthe pleschanka	(S)	LC	*Sylvia hortensis*	H	LC	*Lanius senator*	(D)	LC
Oenanthe cypriaca	(S)	LC	*Sylvia nisoria*	S	LC	*Lanius nubicus*	(D)	LC
Oenanthe hispanica	(H)	LC	*Sylvia curruca*	S	LC	*Garrulus glandarius*	S	LC
Oenanthe deserti	(S)	NT	*Sylvia communis*	S	LC	*Perisoreus infaustus*	(H)	LC
Oenanthe finschii	(S)	LC	*Sylvia borin*	S	LC	*Cyanopica cyanus*	(S)	LC
Oenanthe xanthoprymna	(VU)	LC	*Sylvia atricapilla*	S	LC	*Pica pica*	S	LC
Oenanthe chrysopygia	NR	EN	*Phylloscopus trochiloides*	S	LC	*Nucifraga caryocatactes*	S	LC
Oenanthe leucura	(R)	VU	*Phylloscopus borealis*	S	LC	*Pyrrhocorax graculus*	(S)	LC
Monticola saxatilis	(H)	LC	*Phylloscopus inornatus*	(S)	LC	*Pyrrhocorax pyrrhocorax*	D	LC
Monticola solitarius	(H)	LC	*Phylloscopus bonelli*	D	LC	*Corvus monedula*	(S)	LC
Zoothera dauma	(S)	LC	*Phylloscopus sibilatrix*	D	LC	*Corvus frugilegus*	(S)	LC
Turdus torquatus	S	LC	*Phylloscopus sindianus*	D	LC	*Corvus corone*	S	LC
Turdus merula	S	LC	*Phylloscopus collybita*	S	LC	*Corvus corax*	S	LC
Turdus ruficollis	(S)	LC	*Phylloscopus ibericus*	(S)	LC	*Sturnus vulgaris*	D	LC
Turdus pilaris	(S)	LC	*Phylloscopus canariensis*	(S)	LC	*Sturnus unicolor*	S	LC
Turdus philomelos	S	LC	*Phylloscopus trochilus*	S	LC	*Sturnus roseus*	S	LC
Turdus iliacus	(S)	NT	*Regulus regulus*	S	LC	*Passer domesticus*	D	LC
Turdus viscivorus	S	LC	*Regulus teneriffae*	(S)	NR	*Passer hispaniolensis*	(S)	LC
Cettia cetti	S	LC	*Regulus ignicapilla*	(S)	LC	*Passer moabiticus*	(S)	VU
Cisticola juncidis	S	LC	*Regulus madeirensis*	NR	LC	*Passer montanus*	(D)	LC
Prinia gracilis	(VU)	LC	*Muscicapa striata*	H	LC	*Petronia brachydactyla*	S	LC
Locustella lanceolata	(S)	LC	*Ficedula parva*	(S)	LC	*Petronia xanthocollis*	(S)	LC
Locustella naevia	(S)	LC	*Ficedula semitorquata*	D	LC	*Petronia petronia*	(S)	LC
Locustella fluviatilis	(S)	LC	*Ficedula albicollis*	S	LC	*Montifringilla nivalis*	(S)	LC
Locustella luscinioides	(S)	LC	*Ficedula hypoleuca*	S	LC	*Fringilla coelebs*	S	LC
Acrocephalus melanopogon	(S)	LC	*Panurus biarmicus*	(S)	LC	*Fringilla teydea*	R	NT
Acrocephalus paludicola	(VU)	VU	*Turdoides altirostris*	NE	NT	*Fringilla montifringilla*	S	LC
Acrocephalus schoenobaenus	S	LC	*Aegithalos caudatus*	S	LC	*Serinus pusillus*	(S)	LC
Acrocephalus agricola	(S)	LC	*Parus palustris*	D	LC	*Serinus serinus*	S	LC
Acrocephalus dumetorum	S	LC	*Parus lugubris*	(S)	LC	*Serinus canaria*	(S)	LC
Acrocephalus palustris	(S)	LC	*Parus montanus*	S	LC	*Carduelis citrinella*	(S)	LC
Acrocephalus scirpaceus	S	LC	*Parus cinctus*	(S)	LC	*Carduelis corsicana*	(S)	LC
Acrocephalus arundinaceus	(S)	LC	*Parus cristatus*	(D)	LC	*Carduelis chloris*	S	LC
Hippolais pallida	(H)	LC	*Parus ater*	(S)	LC	*Carduelis carduelis*	S	LC
Hippolais opaca	NR	LC	*Parus caeruleus*	S	LC	*Carduelis spinus*	S	LC
Hippolais caligata	(S)	LC	*Parus cyanus*	(S)	LC	*Carduelis cannabina*	D	LC
Hippolais rama	NE	LC	*Parus major*	S	LC	*Carduelis flavirostris*	S	LC
Hippolais languida	S	LC	*Sitta krueperi*	(D)	LC	*Carduelis flammea*	(S)	LC
Hippolais olivetorum	(S)	LC	*Sitta whiteheadi*	R	VU	*Carduelis hornemanni*	(S)	NR
Hippolais icterina	(S)	LC	*Sitta europaea*	S	LC	*Loxia leucoptera*	(S)	LC
Hippolais polyglotta	(S)	LC	*Sitta tephronota*	(S)	LC	*Loxia curvirostra*	(S)	LC
Sylvia sarda	(S)	LC	*Sitta neumayer*	(S)	LC	*Loxia scotica*	DD	LC
Sylvia undata	H	NT	*Tichodroma muraria*	(S)	LC	*Loxia pytyopsittacus*	(S)	LC
Sylvia conspicillata	(S)	LC	*Certhia familiaris*	S	LC	*Rhodopechys sanguineus*	S	LC
Sylvia cantillans	(S)	LC	*Certhia brachydactyla*	(S)	LC	*Rhodopechys obsoletus*	(S)	LC
Sylvia mystacea	(S)	LC	*Remiz pendulinus*	(S)	LC	*Eremopsaltria mongolicus*	(S)	LC

Species name	2004	2015	Species name	2004	2015	Species name	2004	2015
Bucanetes githagineus	(S)	LC	*Emberiza leucocephalos*	(S)	VU	*Emberiza pusilla*	(S)	LC
Carpodacus erythrinus	(S)	LC	*Emberiza citrinella*	(S)	LC	*Emberiza aureola*	D	CR
Carpodacus rubicilla	(R)	LC	*Emberiza cirlus*	S	LC	*Emberiza schoeniclus*	S	LC
Pinicola enucleator	(S)	LC	*Emberiza cia*	(H)	LC	*Emberiza pallasi*	(S)	LC
Pyrrhula pyrrhula	(S)	LC	*Emberiza cineracea*	(R)	VU	*Emberiza bruniceps*	(S)	LC
Pyrrhula murina	(EN)	EN	*Emberiza hortulana*	(H)	LC	*Emberiza melanocephala*	(H)	LC
Coccothraustes coccothraustes	S	LC	*Emberiza buchanani*	(S)	LC	*Miliaria calandra*	(D)	LC
Calcarius lapponicus	(S)	LC	*Emberiza caesia*	(S)	LC	*Haematopus meadewaldoi*	NE	EX
Plectrophenax nivalis	(S)	LC	*Emberiza rustica*	(S)	VU	*Pinguinus impennis*	NE	EX

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EUROPEAN ATLAS NEWS

Breeding Bird Atlas Project in Serbia

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Abstract. Even with the absence of a national atlas, the knowledge of the distribution and abundance of birds in Serbia is better than one might imagine at first glance. After a period of preparation, it was decided to contribute to the EBBA2 project and at the same time produce a first national breeding bird atlas. Four methods of data collecting are used: predefined transects, chosen transects, non standardized records and species specific surveys. During 2015 two workshops were organized, aiming to improve the EBBA2 atlas work in Serbia, both were successful and stimulated further activities. During 2015 we conducted 30 Predefined Transects in total, in 19 50 × 50 km UTM squares, and approximately the same number of Chosen Transects. A large number of casual data that relate to breeding species in Serbia was also collected. A larger number of ornithologists committed themselves to work on the Atlas, so presently we have around 40 persons participating in methodological research and more than 100 contributing to the work on the EBBA2 with individual observations.

Introduction

So far there has never been an attempt to produce a national atlas of breeding bird species in Serbia. Birds of prey are an exception, as their distribution and abundance within the period of 1976–1996 has been published (Puzović et al. 2000). Even with the absence of a National atlas, the knowledge of the distribution and abundance of birds in Serbia is better than one might imagine at first glance. Firstly, since the year 2000, numerous papers which refer to distribution and abundance of certain species on a national or regional level have been published (e.g. Ham et al. 2009, Tucakov et al. 2008, Vasić et al. 2008, Rajković et al. 2010, Sekulić 2011, Puzović 2011, Šćiban et al. 2012). In some cases they resulted from systematic surveys or censuses, while in others, they represented an inventory of data. This has shown that field notebooks from ornithologists in Serbia contain numerous valuable information and a solid knowledge on bird fauna. Furthermore, Serbia has successfully collaborated with Birds in Europe 3, wherein the population estimates for various areas throughout the country were determined in order to improve final estimates. This way, we obtained a much better insight into spatial distribution of populations of breeding bird species. Apart from that, since 2012 a portal on biodiversity — BioRas (http://www.bioras.petnica.rs/home.php) entered in effect, in which naturalists can store their data from birds and other species. In parallel with BioRas database, a lot of naturalists from Serbia use the eBird data portal (in which around 100.000 individual data from the country has been stored so far). In short — there is a solid foundation for working on EBBA2 and the management of Bird Protection and Study Society of Serbia (BPSSS — BirdLife Affiliate in Serbia) senses that it is the right moment to go for a first National atlas of breeding birds, which is why data collection has been intensively carried out since 2013.

Methodology and Expected Results

As in most European countries, a Coordinating Team for EBBA2 in Serbia has worked out the methodology for organizing the fieldwork of the national atlas, which was officially applied during the breeding season of 2015. Breeding seasons of 2013 and 2014 were not lost — on the contrary, during these two breeding seasons intensive fieldwork and data collection has been carried out throughout Serbia. The Coordinating Team has established four main methods for data collection.

Predefined Transects

"Predefined Transects" are used to obtain data for fine grain modeling for EBBA2. The transects were designed so that their length varies from 3 to 4 km (observers can cover them within 60 to 120 minutes) and that they extend through three different 1 × 1 km UTM squares, which belong to one 10 × 10 km UTM square. Observations are devided in two groups: within a 50 m wide band from the transect line, and outside of it. In all 50 × 50 km UTM squares fully covering the national territory, we systematically selected five 10 × 10 km UTM squares in which transects were defined. In squares which are only partially located in Serbia, the number of predefined transects is proportional to the surface of the squares located in Serbia. In this way a network of 188 10 × 10 km UTM squares with predefined transects is produced. Researchers should visit them only once during May or June of 2015, 2016 or 2017, gathering information on species composition and abundance along the transect line.

Chosen Transects

Here, the researchers choose their own transect lines and draw them on maps, recording species and their abundance on 200m long segments in order to obtain more accurate data on species distribution.

Data collected in a non standardized way (casual data)

We are also intensively collecting all other data on the presence of breeding birds, which is by far the largest source of ornithological information in Serbia.

Species(groups) specific surveys

For e.g. colonial birds, large raptors, nocturnal birds or species bound to specific habitats, counts along standard transects are not appropriate. For these species, the Coordinating Team has produced a series of special survey method guidelines.

For each 50 × 50 km UTM square one or several Local Coordinators are assigned, whose task will be to compile a preliminary report on species composition and abundance. Besides the two reports which Serbia will send to the EBBA2 coordinators (presence and abundance rating in 50 × 50 km squares and species lists for a 10 × 10 km square sample for fine grain modelling), the data collected within the period of 2013–2017 will be used for the production of the National atlas of breeding bird species. This future National atlas will contain, for each species, a map of 10 × 10 km UTM squares in which the species has been recorded, a map of potential species distribution (for species for which a distribution model of appropriate performance can be created), and map of 50 × 50 km UTM squares with estimated number of breeding pairs in every of them. In this way, Serbia will obtain a rather comprehensive overview of the distribution and abundance of breeding bird species.

First results and future challenges

During 2015 two workshops were organized, aiming to improve the EBBA2 atlas work in Serbia. The first was held in a small town of Vrdnik, not far from Belgrade, and served as a training course for a chosen group of 25 ornithologists from Serbia who will be engaged in the Atlas project. Petr Voříšek and Martin Kupka from the EBBA2 coordination team, and Jana Škorpilová, Anna Gamero and Martí Franch (Czech Society for Ornithology and the Catalan Ornithological Institute) provided guidance and assistance with the methodological aspects and the testing in the field. The second workshop, held in Sremski Karlovci in November 2015, was a part of the grant "***EBBA2 — kick off in Serbia"*** funded by the MAVA Foundation within the framework of the EBBA2 project. The aims of the workshop, in which 30 ornithologists participated, were reviewing the results from 2015, as well as analyzing the data collected during 2013 and 2014. This allowed us to evaluate the data already available on breeding birds in Serbia and their spatial distribution, but also knowing the gaps in spacial, habitat and species coverage. We set up a general plan for the field activities in 2016 and 2017. Apart from the workshops, the grant

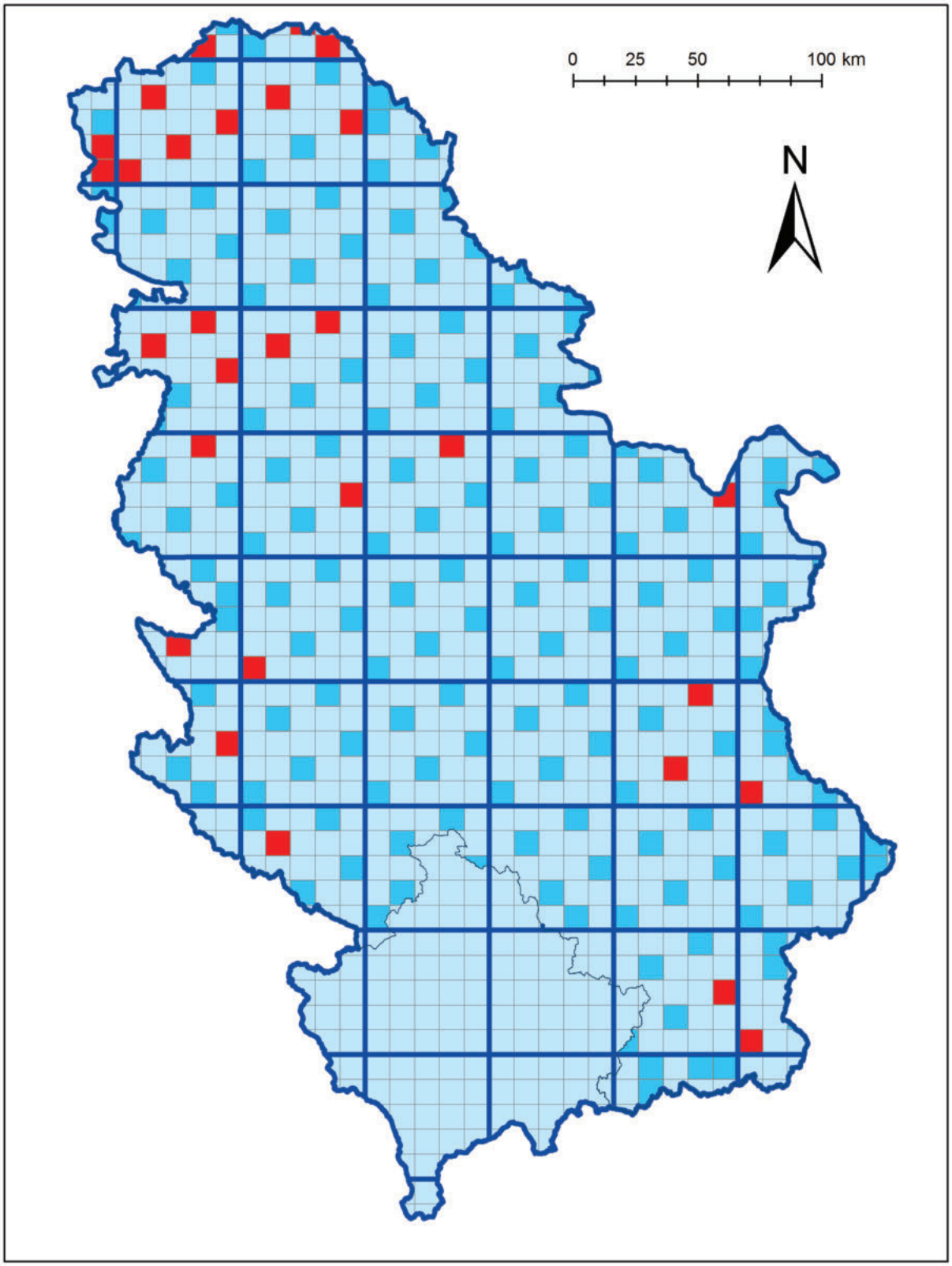

Figure 1. 10 × 10 km squares with the realized predefined transects in 2015 (red) and those planned in 2016 and 2017 (light blue)

was used to hire one person, which during 2015 worked on digitalization of data and communication with birdwatchers, to buy a GPS unit and for costs of field activities. During 2015 we conducted 30 Predefined Transects in total, in 19 50 × 50 km UTM squares (Figure 1), and approximately the same number of Chosen Transects. A large number of opportunistic data that relate to breeding

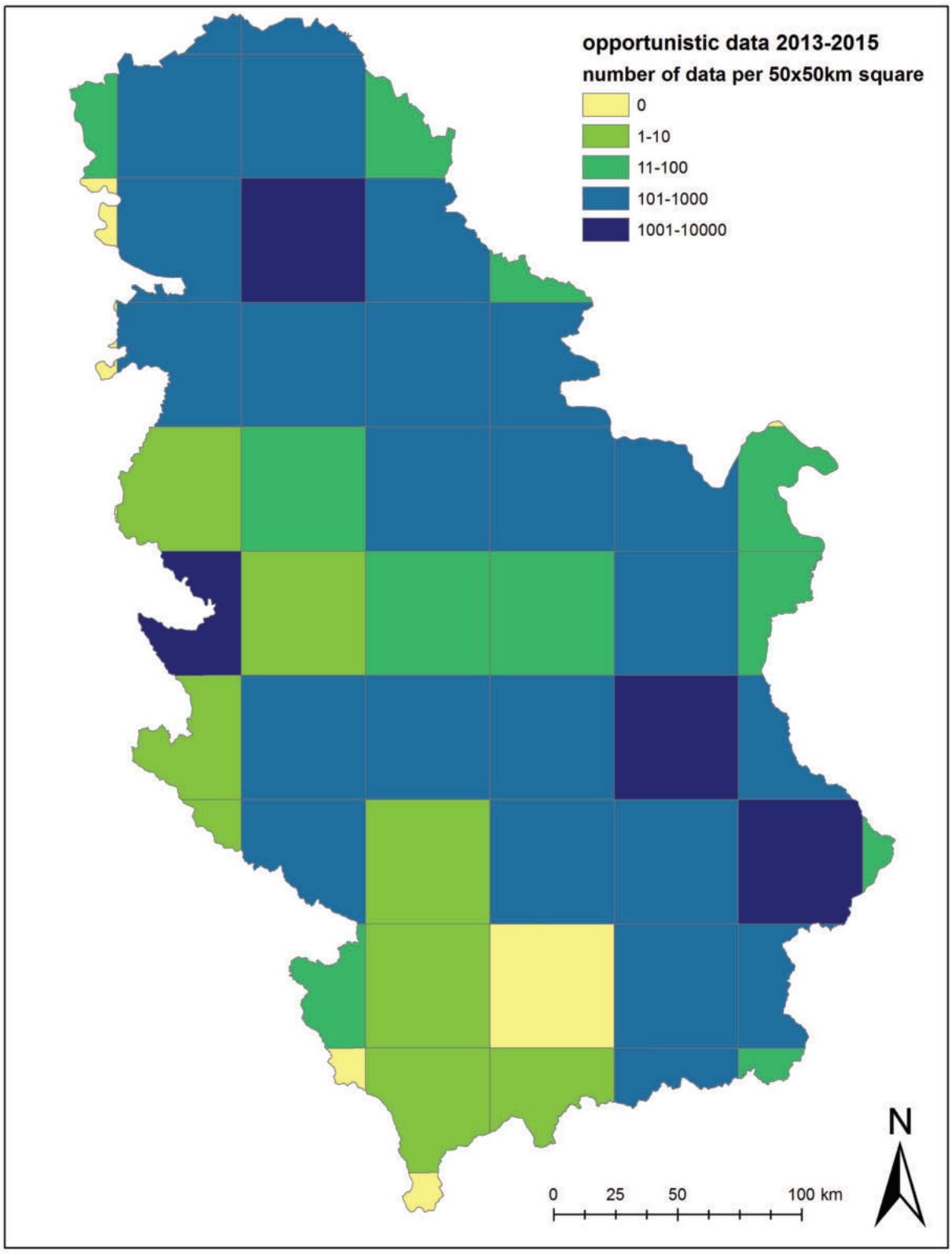

Figure 2. Number of casual data collected during the period 2013–2015 in 50 × 50 km squares

species in Serbia was also collected. Over 23.000 individual data regarding birds were stored in the BioRas database, from which about 16.000 is from the breeding seasons of 2013, 2014 and 2015 (Figure 2). Some of the ornithologists started to use the NaturaList application for data collection. A larger number of ornithologists committed themselves to work on the Atlas, so presently we have around 40 persons participating in methodological research and more than 100 persons con-

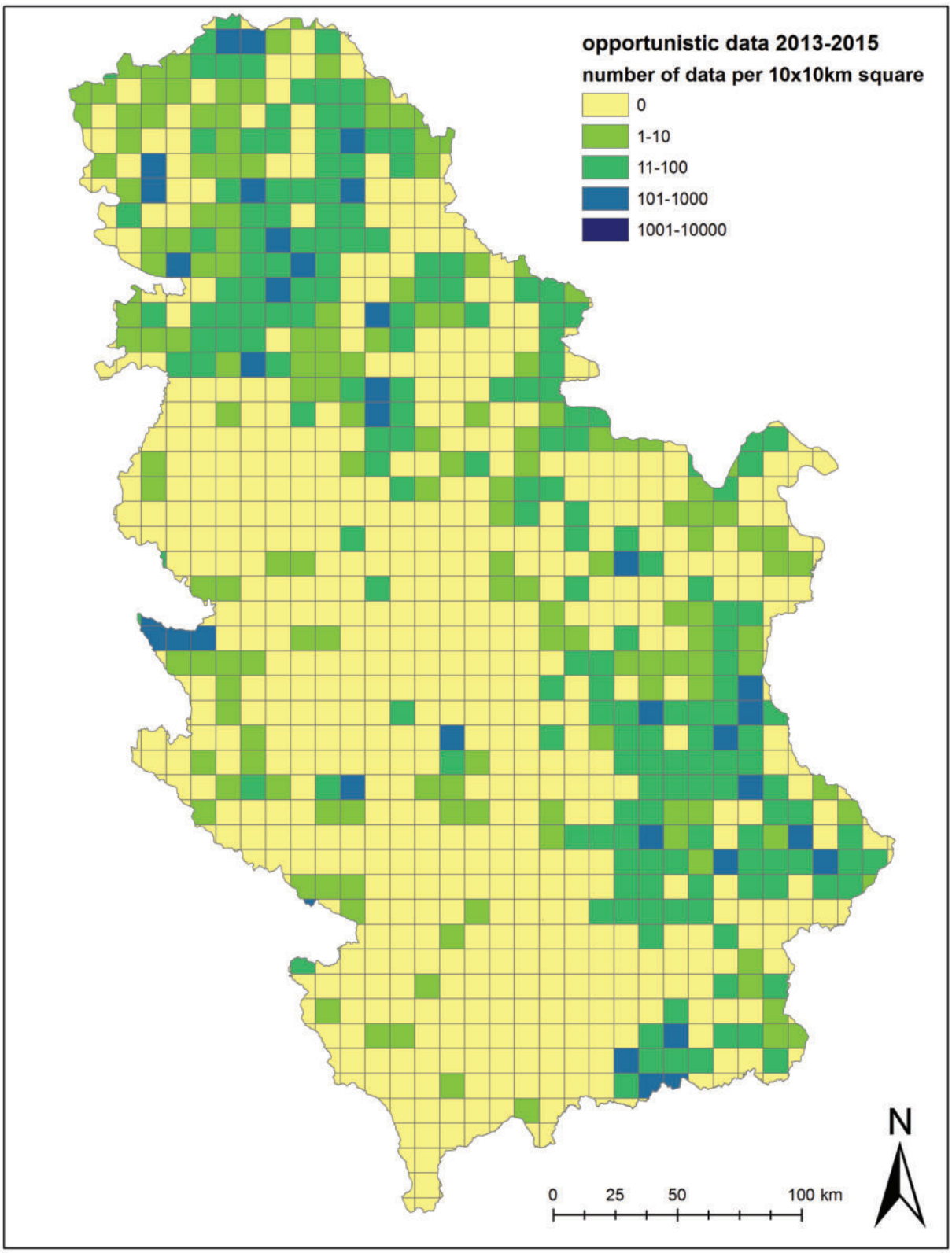

Figure 3. Number of casual data collected during the period 2013–2015 in 10 × 10 km squares

tributing to the work on the EBBA2 with individual observations. According to words of Petr Voříšek, enthusiasm and professionalism of ornithologists from Serbia predicts that the work on the Atlas will be well done and with quality.

However, the work related to the Atlas of breeding species in Serbia faces numerous challenges. The most important is the fact that a large number of data is not digitalized, which limits it's use. The eBird data portal alone contains over 100.000

individual data on birds, which need to be processed in order to be usable for the EBBA2. Apart from that, the majority of experienced ornithologists in Serbia still keep their data in notebooks, so the digitalization of this data will require a lot of energy and time. The process of data digitalization has already started but progress is relatively slow. This is mainly due to problems with determining the exact observation localities, which are not always noted in detail. The other significant problem is the unequal coverage of the territory of Serbia (Figure 3). More than ten 50 × 50 km UTM squares remain unassigned to local coordinators and are still not well covered. Poorly researched areas are not in all cases remote and wild areas — the biggest lack of data originates from the central part of the country, which are simply rarely visited and only by few ornithologists. The help of birdwatchers from other countries would be very useful. So far the amount of data collected by foreigners is relatively small, and Serbia still has not been visited by organized groups of field researchers (there are announcements for the next two years). The region of Kosovo represents a specific problem — free movement within this region is not always possible for the majority of ornithologists from Serbia. However, several small expeditions will be organized during the next two years in the most interesting sites in Kosovo, where bird data are scarce and we have the opportunity to collect new and valuable additional information.

There are no dedicated funds obtained from Serbia so far for the work on the EBBA2 and National atlas. The activities of these programs are carried out with the help of the grant awarded by the MAVA Foundation and thanks to the other programs that are carried out in Serbia, in which valuable data was collected (for example, monitoring of birds in protected areas and monitoring of populations of rare species). The lack of dedicated funds significantly limits the possibilities of carrying out intensive work on the Atlas. Currently, there is a strong will to work on the EBBA2, but also on the first National atlas of breeding bird species, and the next two breeding seasons will show the quality of the obtained results.

Acknowledgements

We would like to express our gratitude to members of the EBCC Board (Verena Keller, Petr Voříšek and Sergi Herrando) for their help in developing the methodology of the Serbian atlas project. Also, we would like to thank Petr Voříšek, Martin Kupka, Jana Škorpilová, Anna Gamero and Martí Franch, who participated in the training workshop in Vrdnik during spring 2015. Special thanks to the MAVA foundation, for their financial support to our "EBBA2 — kick off in Serbia" project. This was really a starting point for organizing the National atlas of Serbia in a more intensively way in 2015 and thus facilitate our contribution to EBBA2.

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Atlas of breeding birds in Ukraine: contribution to EBBA2 in 2013–2015

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Abstract. The ongoing atlas programme in Ukraine was initiated in 2013 in order to provide up to date information for the new European Bird Breeding Atlas (EBBA2). During three years (2013–2015) we managed to produce species lists for 102 50 × 50 km squares (>1/3) and conducted 225 timed surveys in 10 × 10 km squares. A total of 45 observers took part in the project. Here, we describe some atlassing history in the country, how we organized and coordinated the fieldwork, and present some preliminary results.

Introduction

Ukrainian ornithologists started to map breeding bird distribution applying a standardised atlas methodology in the early 1980-s (Srebrodolska et al. 1983). However, the efforts were limited and unevenly distributed across the country. One of the reasons was the poor development of amateur ornithology in Eastern Europe at that time. Furthermore, there were no ornithological societies in Ukraine capable of organizing a project on a national scale. Volunteer birdwatchers were very scarce and almost all ornithologists worked as lecturers or specialized researchers at universities. In many regions, there were no ornithologists at all. As a result of active collaboration with nearby countries (e.g. Poland, Estonia, Latvia) some atlas projects started in the western part of Ukraine. The growing interest in atlas work resulted in the involvement of more birdwatchers, especially amateurs. With time, they created regional ornithological societies or working groups. Most atlas projects in 1980–1990 took place in western Ukraine and were carried out by volunteers. Later on, atlassing activities developed also in the northern and eastern regions of the country (Gorban 1987, 1989).

Data on species distribution was successfully gathered during 1982–1986 in 25 × 25 km UTM grids, but the maps were never published as a book, but only used in many smaller publications. At the same period, data with 10 × 10 km resolution was collected for the atlas project of breeding birds of the Lviv Region (western Ukraine). Simultaneously, fieldwork was carried out in the same region for an Atlas of wintering birds (10 × 10 km grids), and in the Lutsk district of Volyn region (northwestern Ukraine) with resolution of 2 × 2 km grid. These atlasses were published in the following years (Gorban 1986, Gorban et al. 1989, Gorban & Bokotey 1990, Khymyn 1993).

The first EBCC European Breeding Atlas project was a real stimulus to cover the whole national territory and gathered the most comprehensive list of breeding bird species observed in each 50 × 50 km square. Subsequently, the standard atlas methodology has been widely adopted and used on a regional scale for e.g. the atlas of the birds of the West-Ukraine (Gorban 1989), of North-Eastern Ukraine (Vergeles 1993) and the Upper Dnister basin project (Bokotey et al. 2010). Furthermore, it was used in distribution studies of individual species and species groups (Grishchenko et al. 1991, Mikhailevich et al. 1994, Skilsky & Godovanets 1995, Bashta et al. 2014).

Methodology

In 2013, Ukraine joined the EBBA2 project and started collecting up to date information, as recent data on breeding birds distribution and abundance was scarce. We use the methodological standards set by the Atlas Steering Committee (Herrando et al. 2014) based on data collec-

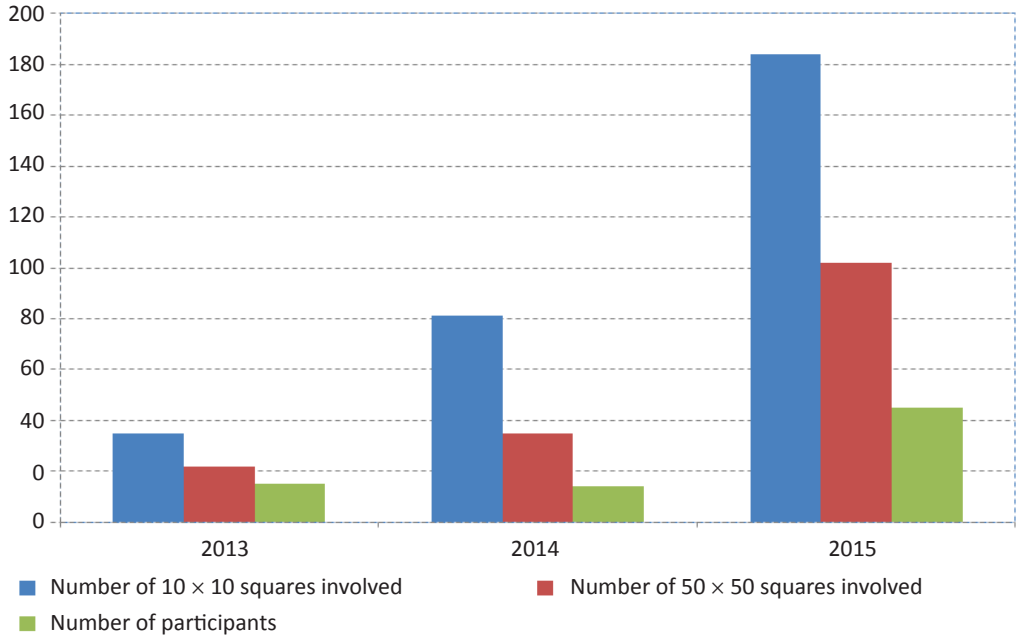

Figure 1. Progress of atlas activity in Ukraine in 2013–2015.

tion in 50 × 50 km and 10 × 10 km UTM grids. In total, the territory of Ukraine is covered by 294 50 × 50 km UTM squares. Participants are free to choose in which 10 × 10 km squares they will conduct timed surveys, and free to choose survey routes. However, we recommend that squares and routes should proportionally represent landscapes and habitats of the 50 × 50 km squares they are located in.

Timed surveys are performed during May and June, when the majority of Ukrainian breeding birds are active. Species lists for 50 × 50 km squares are based on data collected over a much larger period during the breeding season, obtained since 2013.

After conducting field surveys, participants are asked to fill in the definitive data form and to send it to the regional or national coordinator via email.

Organization and coordination

The current Ukrainian Atlas project relies mostly (~70%) on professional ornithologists who work at universities, scientific institutions and nature reserves, but also on a number of experienced local birdwatchers. There is one national coordinator and one person responsible for data input. In addition, in 2015 we created a team of 11 regional coordinators taking into account local capacities of ornithologists in the different regions. The regional coordinator is responsible for organizing the fieldwork in his region, collecting data from local observers and reporting to the national coordinator. He is also in charge of distributing reimbursement costs to local observers in proportion to the number of surveyed 50 × 50 km squares.

Detailed instructions on atlas methodology (use of UTM grids in formats of KML and SHP files, how to create geo-referenced raster maps with grids and how to upload them to GPS navigators) are prepared and distributed among potential participants in April, before the start of each field season. Digital information is shared through Internet using webpages in social networks and mailing groups (e.g. Google Groups) of the Ukrainian ornithological societies. All this work is done by volunteers for free.

In 2013 and 2014, no finances were available to pay participants for data collection or even to reimburse travel or coordination. In 2015, we received funding from the Swiss Ornithological Institute (SOI) on behalf of the European Bird Census Council and MAVA foundation. This opportunity was provided by the EBBA coordination team and was crucial in involving many more people and covering a larger area. In total, the Ukrainian Atlas programme received 10000 Euro, which was used mostly to reimburse the travel expenses of participants. Costs were reimbursed after the field season and after the submission of completed data forms.

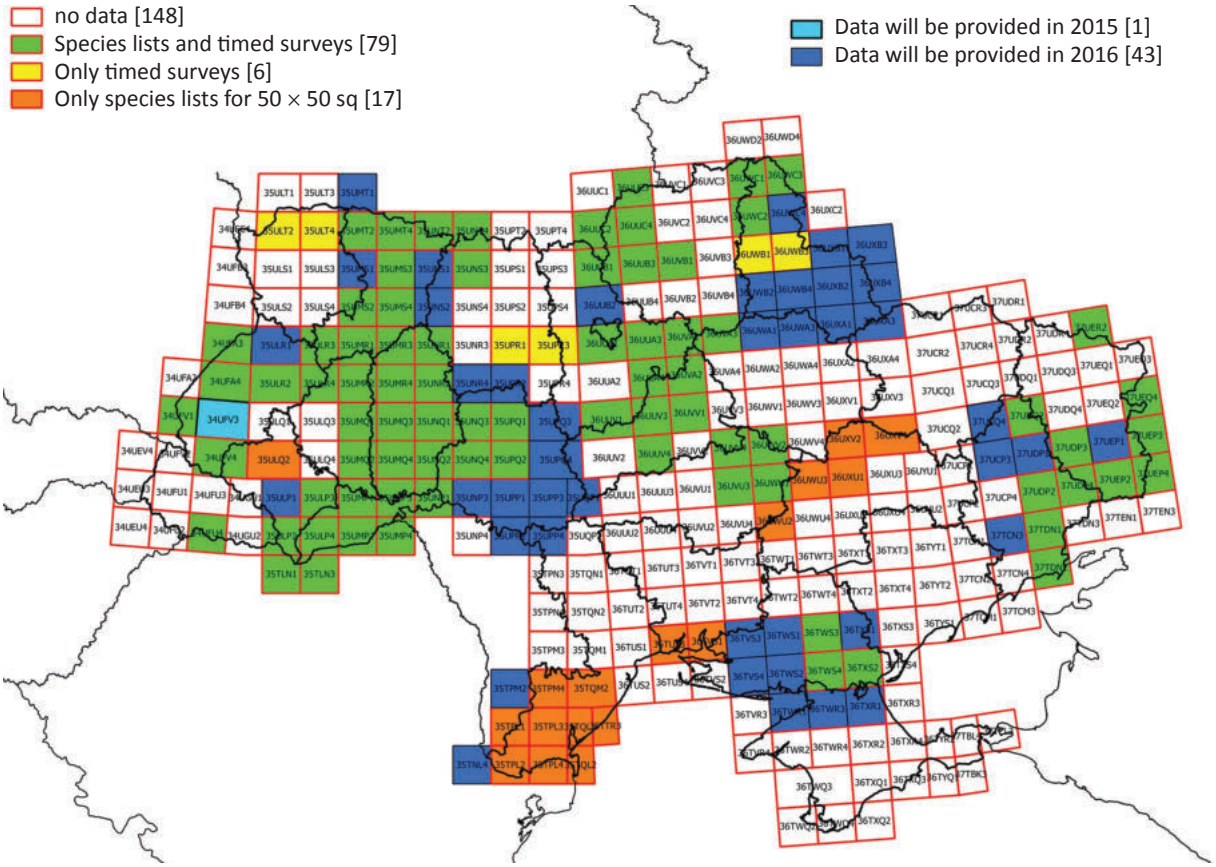

Figure 2. Distribution map of the 50 × 50 km squares surveyed in 2013–2015.

First results

In 2013 and 2014, only 14–15 volunteers participated in data collection. In 2015, after funding became available, more people became involved (Figure 1).

During 2013–2015 we managed to collect complete breeding species lists for 102 50 × 50 km squares, and conducted 225 timed surveys in 102 10 × 10 squares. Species lists from all covered 50 × 50 km squares and data from the 184 timed surveys were added to the national database and passed on to the European Breeding Bird Atlas coordination team (Figure 2).

Some problems and plans

During implementation of the Atlas program in Ukraine we faced several problems. Most important was the lack of observers in some regions and the very limited financial capacities caused by recent political and economic events in our country. Financial matters were partially solved by the support from EBCC, but lack of observers remains a problem. In Ukraine, ornithologists and birders are unevenly distributed across the country. The majority are concentrated in the western, northwestern and eastern parts of the country and along the south Ukrainian coast. In some central and northern regions of the Ukrainian Steppe zone, in large areas, in expanses equal to the size of some European countries, only a few ornithologists are active.

Recently, a further problem has arisen, namely the restricted access to territories in East Ukraine where a military conflict is going on. Fortunately many data were already collected there in the first year of the project, in 2013 (before the conflict), so that these regions will be sufficiently well represented in EBBA2.

A third problem is that due to our limited capacities the methodology could only be explained to the majority of the participants by means of written instructions (in fact very detailed) and there was no possibility to include additional field training. Because of this a number of observers (<10%) misunderstood the methodology of the timed surveys and provided us at the end of the field season with lists that included up to 100 species, which is very high for a 1–2 hour in-

ventory. Although we asked them to include only species seen within the 1–2 hour observation period, some people clearly had noted all species seen in the square. This experience shows that training of observers in fieldwork as well as methodology for this kind of project is very important and should be carried out as much as possible in the future.

In the next two years of fieldwork, we will increase the atlas coverage to fill the gaps in the east and south of the country. Special attention will also be paid to some rare species. We plan to ask experienced ornithologists to check the current distribution and numbers of some particular species groups (owls, raptors). And last but not least, an important priority before the start of the 2016 breeding season, is to clarify the methodological confusion with the timed censuses in the 10 × 10 km squares to avoid future misunderstanding and to improve the efficiency of data collection.

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EUROPEAN MONITORING NEWS

The Hellenic Common Bird Monitoring Scheme

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Abstract. The Hellenic Ornithological Society (HOS) participates in the Pan-European Common Bird Monitoring Scheme (PECBMS) through its Hellenic Common Bird Monitoring Scheme (HCBM) since 2007, while since 2010 it provides species population trends and indices on an annual basis. The HCBM is mainly a voluntary scheme using a stratified random method of point counts within 2×2 km plots. Overall, during the period 2007–2015, 92 participants have undertaken counts in 134 plots of which 64.9% provide data for TRIM analysis. Data include records from 230 birds species and trends were produced for 165 using BirdStats, with the vast majority exhibiting an uncertain trend. For the production of the National Farmland Bird Indicator, species indices from 39 farmland species were used, exhibiting a decline of 7% within the period of 2007–2014.

Introduction

The Hellenic Common Bird Monitoring Scheme (HCBM) comprises the national scheme and has been set up and implemented by the Hellenic Ornithological Society (HOS) since 2007. The programme covers the whole of the Greek territory, mainland and insular regions.

The aim of the HCBM is to collect data on national population trends, while since 2011 results are used to produce the National Farmland Bird Index which is provided to the Ministry of Rural Development and Food. In addition, since 2010 the HCBM scheme provides data to the Pan-European Common Bird Monitoring Scheme (PECBMS) on an annual basis. Data will also be used for the European Breeding Bird Atlas 2, as all breeding bird species are recorded, in all habitat types.

The HCBM scheme comprises mainly of a voluntary scheme (2007–15) while some plots have been covered during 2011–13 by professionals through funding provided by the Ministry of Rural Development and Food. Future funding covering travels costs is considered necessary in order to increase volunteer participation and coverage of a larger number of plots and thus produce species population trends of greater accuracy. It must be noted that the production of the National Farmland Bird Index would not have been feasible by the Ministry of Rural Development and Food without the use of the data from the HCBM voluntary scheme.

Methods

The methodology of the HCBM scheme is simple and easily applied by volunteers. It is based on point counts within a plot selected in a stratified random method. Participants select one 10×10 km square from the national grid of 2,068 squares. This 10×10 km square is usually an accessible area which participants visit frequently. HOS then randomly selects one 2×2 km plot out of the 25 existing within each 10×10 km square. Overall, only two 2×2 km plots are selected from each 10×10 km square. Within the selected 2×2 km plot, 25 points are regularly placed on a grid, and thus all points are spaced 400 m apart. These points comprise the sites from which point counts are performed. Of the 25 points, 15 are randomly assigned as main points and the remaining 10 points

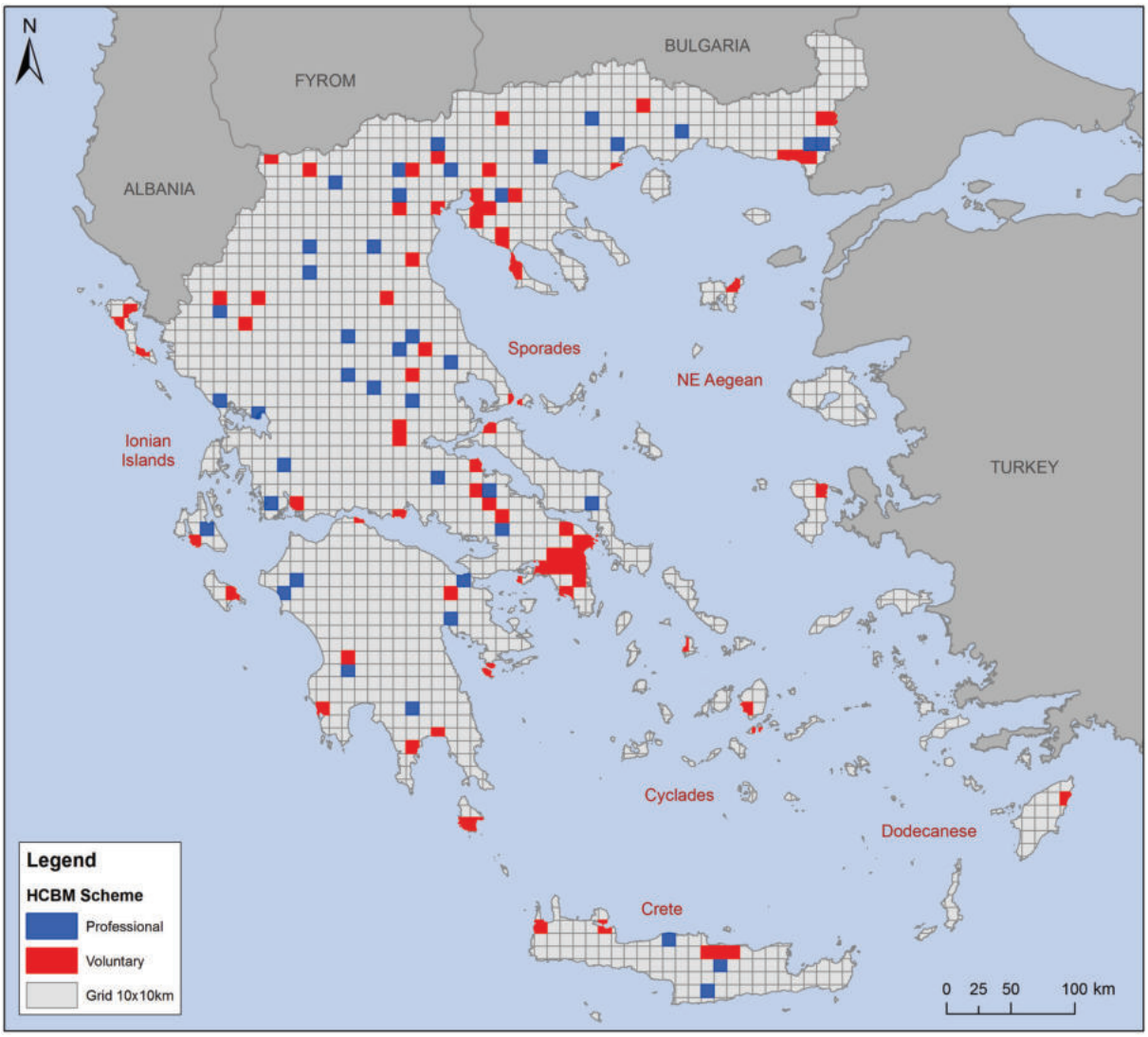

Figure 1. Location of the plots covered by the scheme

are considered secondary points, also ranked in a random order. Secondary points are used to substitute main points only when the latter cannot be accessed for various reasons or are considered unsafe or inappropriate. When secondary points are used, then the participant has to select these in the random order provided.

Two visits are performed between mid-April to the end of June, and visit dates should be at least one month apart. Every bird seen or heard is recorded during a 5 minute period at each point. Detectability is recorded using 3 distance bands (<25 m, 25–100 m, >100 m) and flyovers are also recorded separately. Habitats at each point are described using the CORINE 2000 land use classification and other descriptive information is also recorded.

Data input is performed in prepared excel files and then automatically entered in the HCBM database held by HOS. The HCBM database also allows for data management and plot selection procedures, produces species indices and indicators, and also descriptive statistics of the HCBM scheme. With respect to production of species indices, the HCBM database automatically exports data in the specific format for analysis with TRIM and/or BirdStats and additionally produces indices and graphs for each species separately, as well as overall indicators. Indicators are calculated using the Mediterranean species classification, as well as the National Species Classification which has been defined by national experts and consists of 47 farmland species, 24 forest, 4 other and 8 'Agroforestal' species.

Results

Over the 9 years of implementation, 92 participants have undertaken counts in 134 2×2 km

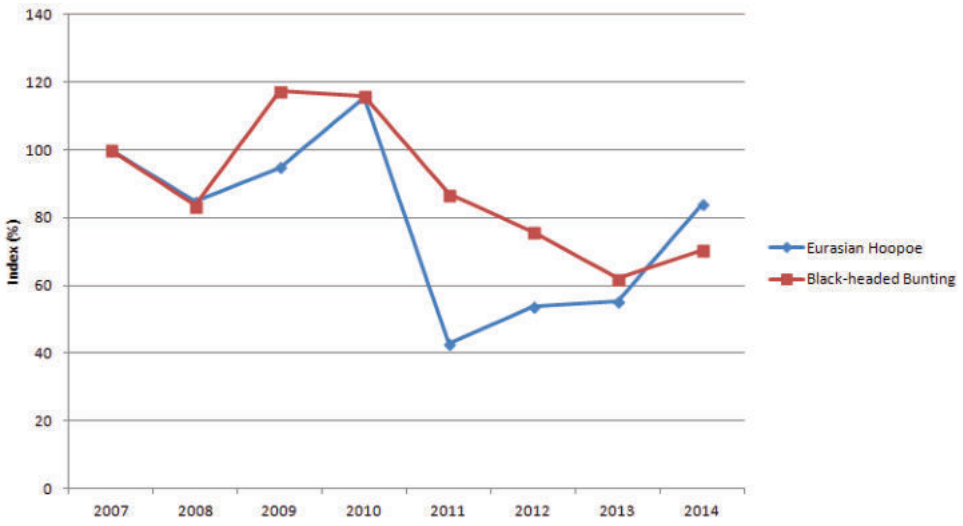

Figure 2. Species showing a moderate decline

plots in 120 10×10 km squares. Of these, 91 plots been covered by volunteers and 43 plots by professional fieldworkers. As expected, plots covered by volunteers are concentrated close to the main urban areas (Figure 1).

Since 2010, the number of plots covered per year by the voluntary scheme has been relatively stable with an average of 24.1 plots per year. Overall, 64.9% of plots (n = 87) provide data for TRIM analysis, while 50.6% of volunteer plots contribute data for trend analysis. With respect to the coverage of plots, approximately 16% of plots have been monitored for more than 4 years, whereas most plots (54%) have been monitored for 2 years only.

Since 2007 more than 108,000 individual birds from 230 species have been recorded, with a mean of 26 species per plot. Of these, 38 species have been recorded in more than 20 plots. The 10 most commonly recorded species include *Passer domesticus*, *Pica pica*, *Corvus corone*, *Galerida cristata*, *Miliaria calandra, Sylvia melanocephala, Hirundo rustica*, *Turdus merula, Luscinia megarhynchos and Streptopelia decaocto*.

Data for 217 species were analyzed using BirdStats and trends were produced for more than 165 species (2007–2014). Of these 86% of species exhibited an uncertain trend, 2% a moderate decline, while 5% a steep decline. Similarly, 5% of species which produced a trend exhibited a moderate increase and 2% a strong increase.

Species showing a moderate decline (Figure 2) include the Eurasian Hoopoe (*Upupa epops*) with a mean annual percent change of 6.94% (n = 79) and the Black-headed Bunting (*Emberiza melanocephala*) with 6.38% (n = 62). Species showing a steep decline (Figure 3) include the White Stork (*Ciconia ciconia*) with a mean annual percent change of 21.2% (n = 29), the Common Swift (*Apus apus*) with 17.88% (n = 75) and the Calandra Lark (*Melanocorypha calandra*) with 31.22% (n = 21).

For the production of the National Farmland Bird Indicator, species indices from 39 farmland species were used, exhibiting a decline of 7% within the period of 2007–14 (Figure 4).

Conclusions

The HCBM scheme has been running for 9 years and has been providing species indices to the PECBMS since 2011. The National Farmland Bird Index exhibits a decreasing trend over the years 2007–14, however, this decline is lower compared to the European FBI. This could be related to the accuracy of the indicator which is still considered low due to the short time-series and the relatively small number of plots monitored. Alternatevely, it could be related to the greater heterogeneity of the agricultural lanscape in Greece and the lower level of intensification recorded in its farming practises.

Although, the scheme is showing a stable number of participants per year, there is urgent need to increase the number of plots and to secure more stable participation to the scheme, especially in rural areas. In addition, it is imperative to secure funding to cover HCBM scheme coordination and administration costs, as well as travel costs for participants.

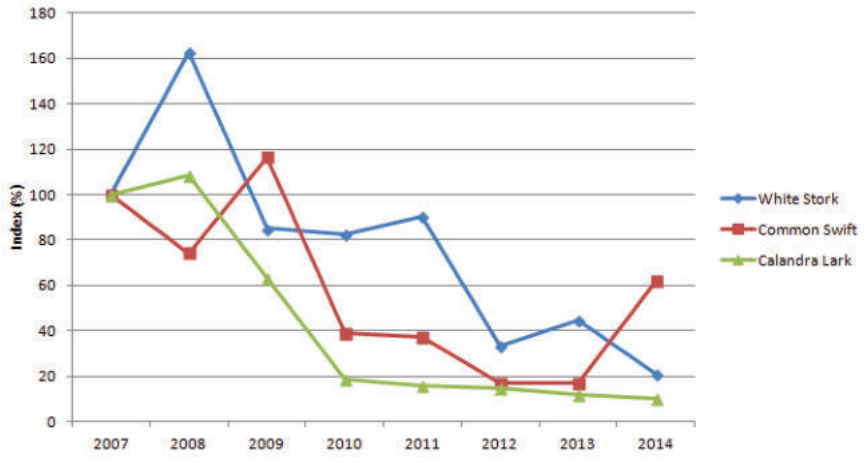

Figure 3. Species showing a steep decline

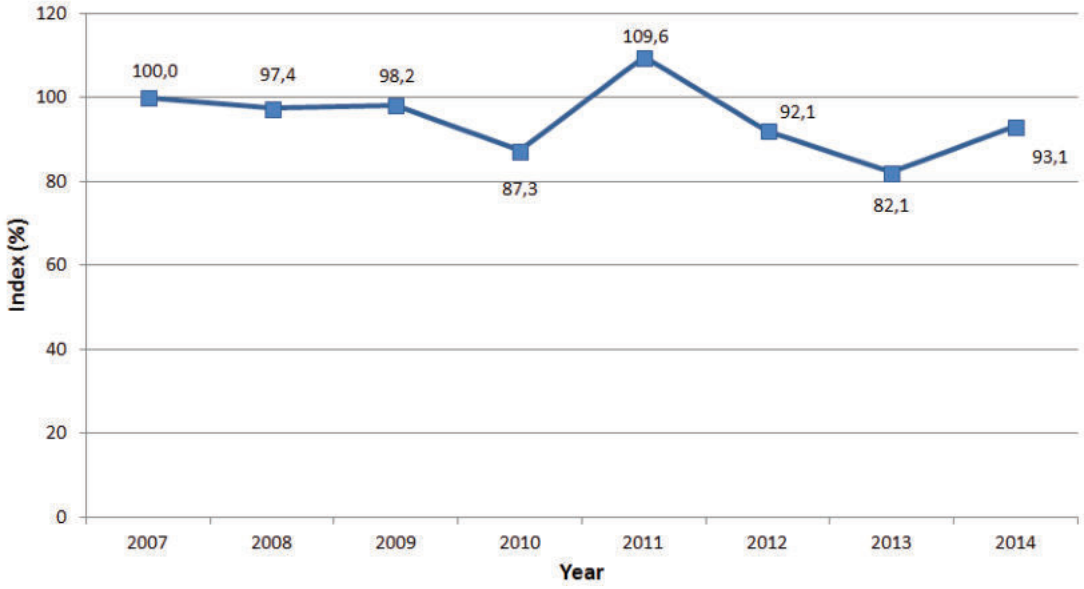

Figure 4. National Farmland Bird Index (2007–14) — HCBM

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Bird Census News 2015, 28/1: Short Notes 34–37

SHORT NOTES

Portuguese seabird atlas: so much sea, so many birds

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Abstract. The new Portuguese Seabird Atlas (Meirinho et al. 2014) is so far the most complete compilation on seabird and shorebird distribution and abundance in Portuguese waters. It puts together data collected over eight years of boat-based surveys, five years of coastal counts, and a nation-wide survey of wintering shorebirds along the non-estuarine coastline. Data gathering involved over 150 observers. The atlas provides detailed species information, and both seasonal and regional maps documenting the status of 65 taxa in roughly one quarter of the European Exclusive Economic Zone (EEZ).

Introduction

In 2004, SPEA's Marine Program took its first steps with the launch of the LIFE Marine Important Bird Areas (IBA's) project. Since then, several other projects have contributed to a better understanding of seabirds in Portugal, now brought together in a new publication: the Portuguese Seabirds Atlas.

Along four years, marine observers hired by the LIFE Project Marine IBA's, surveyed the high seas for many hours, sometimes in some of the most remote places of the Portuguese EEZ, to collect information to feed one of the most complete European seabird databases. In 2008, after the publication of the first Marine IBA inventory in Europe (Important Areas for Seabirds in Portugal), the boat-based data collection continued within other conservation projects such as Future of the Atlantic Marine Environment (FAME) or LIFE MarPro.

Additionally, in 2008, SPEA launched a coastal counts network involving more than 60 volunteers and their numbers kept growing — the RAM-days (Portuguese acronym for Seabird and Marine Mammal Monitoring) — integrated in the Iberian Seabirds and Marine Mammals Observation Network. These counts are currently held monthly in ten observation sites.

In the winter of 2009–2010, the Arenaria Project — a partnership between the National Museum of Natural History and Science, ISPA University Institute and SPEA — resulted in a nationalwide survey of wintering birds along the non-estuarine coastal areas. With a massive participation of volunteer observers, this project was another success in local ornithological citizen science.

The Atlas

The extensive amount of information collected by these several initiatives enabled SPEA to fly higher. In 2013, as part of the FAME project, the idea of compiling the first Portuguese Seabirds Atlas arose. The aim was to develop the most complete and detailed atlas database on seabirds and shorebirds in Portuguese waters so far.

After one and a half years, the Atlas was ready! The publication documents in detail the status of 65 pelagic and coastal bird species in Portuguese waters, along with those of other scarce species and vagrants. Besides the usual maps,

Figure 1. Boat based surveys (photo by Nuno Barros) and *Puffinus gravis* (photo by Jorge Meneses).

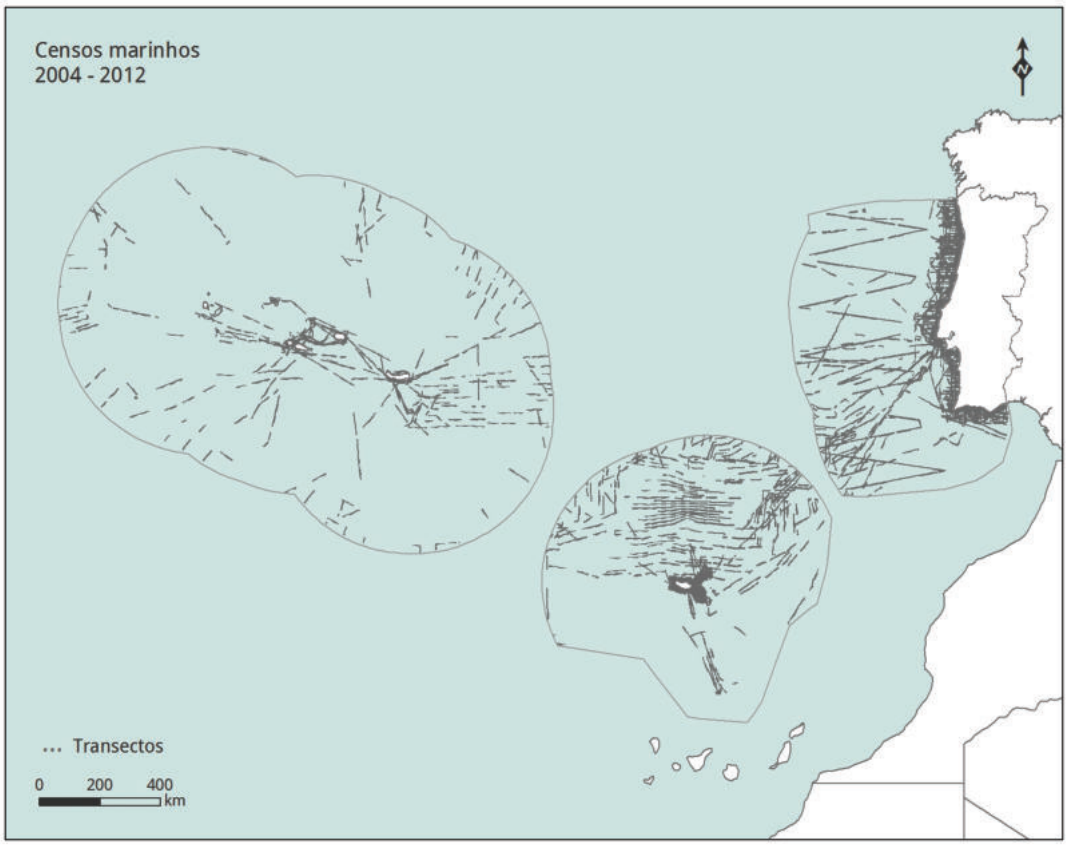

Figure 2. Marine transects.

this atlas also brings together information on many aspects of the biology, study, conservation and dynamics of seabird communities in Portugal.

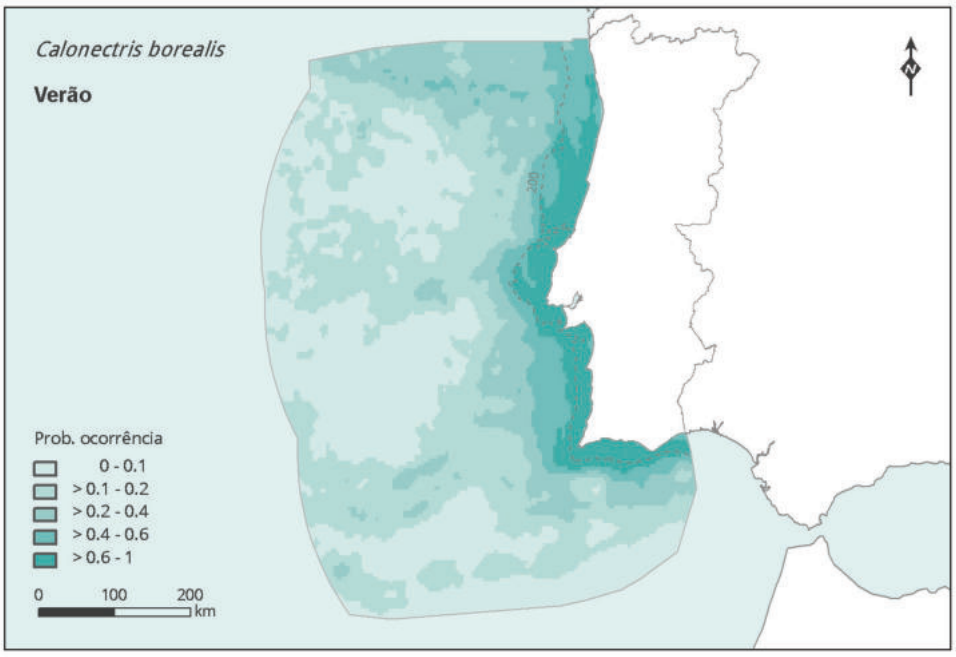

Figure 3. Distribution map of Corys Shearwater (modelling) — Summertime.

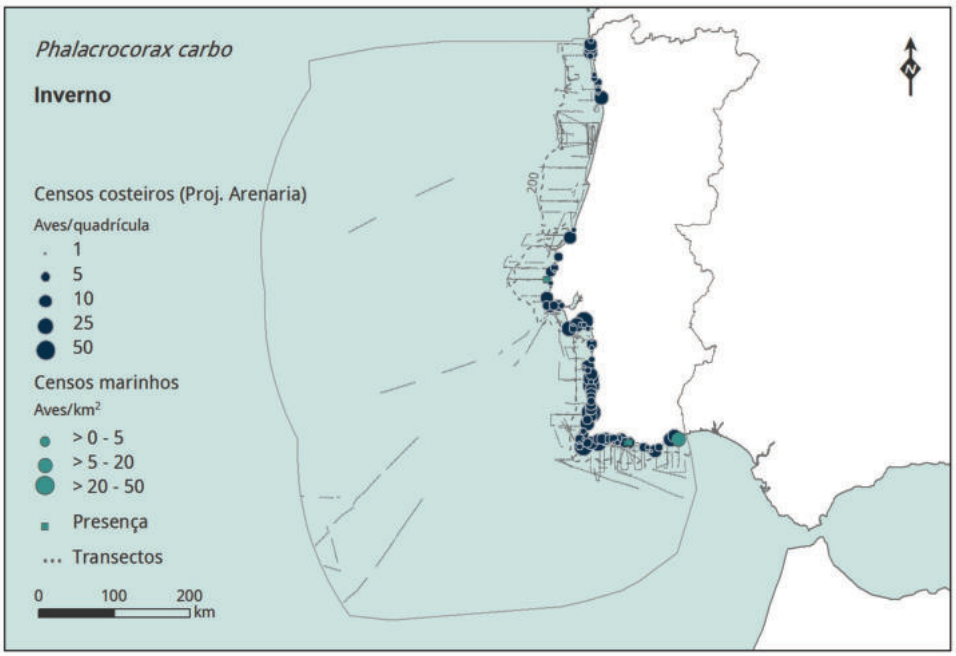

Figure 4. Distribution map of Cormorant (raw data and coastal counts) — Wintertime.

The data

The main question that arose when compiling the available data, was how to take the maximum advantage of the information gathered. How could we present shearwater, petrel, cormorant, tern, gull, wader and alcid observations, collected in a vast sea (roughly one quarter of the European EEZ), on a windy headland or on a faraway beach, in a consistent, schematic, detailed and easy understandable way?

To address this question, the data analyses focused on the boat-based surveys conducted between 2004 and 2012 as the main information source, in order to elaborate distribution and abundance maps by season and region (mainland Portugal, Madeira and Azores). When the data allowed this, advanced ecological modeling techniques were used in order to illustrate probability of occurrence (Figure 3). When this was not pos-

sible, the raw data distribution was used. On top of this information, the RAM counts data (up to 2012) and the Arenaria Project data (2009–2010) (Figure 4) were added. For waders, the latter was the only source of data used.

Conclusion

We believe that this work represents an important step to fill in knowledge gaps on European seabird distribution and raise awareness to the conservation of marine life in our seas, stressing the importance and progress of Portuguese marine ornithology.

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For now, the Atlas is available only in Portuguese. The entire publication, together with more than 500 distribution maps and other contents are also available online, in an interactive digital platform — *www.atlasavesmarinhas.pt*

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BOOKS AND JOURNALS

Jiri Flousek, Bozena Gramsz, Tomas Telensky, 2015. [Birds of the Giant Mountains — atlas of breeding distribution in 2012–2014]. In Czech and Polish with an extensive English summary, all figures and tables in English as well; 450 pages, Pdf: http://ptacikrkonos.krnap.cz

The Giant Mountains (Krkonose in Czech, Karkonosze in Polish) are the northernmost mountain range in Central Europe, lying along the border of the Czech Republic and Poland (lat 50°34′29″–50°50′59″ N, lon 15°21′08″–15°56′05″ E). A joint Czech-Polish project was conducted to obtain actual information on distribution and population sizes of breeding birds in the area, covering the bilateral Krkonose/Karkonosze Biosphere Reserve, two National Parks and two SPAs of the Natura 2000 network. Data on the geographical and quantitative distribution of birds in the study area (962 km^2, altitude 340–1603 m) have been combined with data on the population dynamics of breeding species over the last 28 years. The project repeated the atlas mapping conducted in the same area 20 years ago, in 1991–1994.

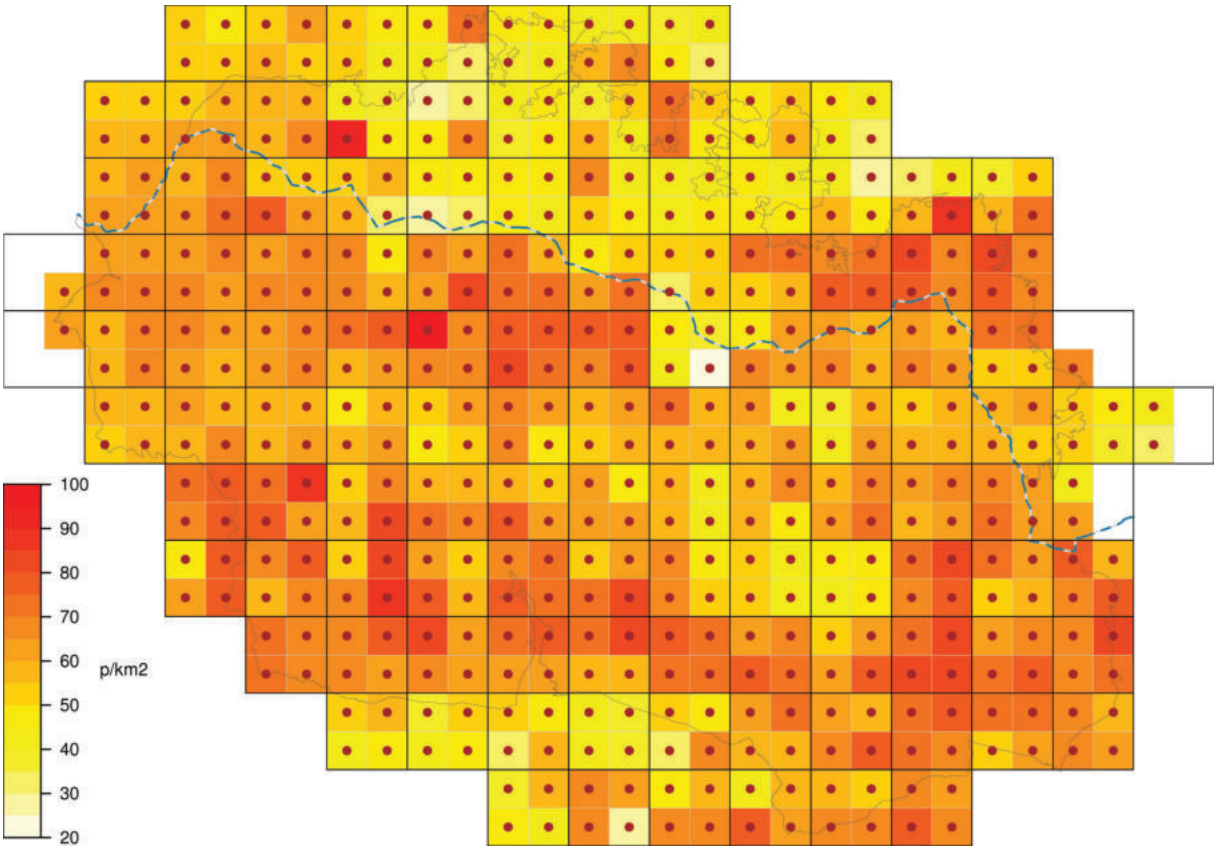
In the 2012–2014 breeding seasons (April to July), the occurrence of bird species was registered in 471 squares (1.5×1.4 km), derived from the international geographical grid KFME. Data on the species distribution were obtained using the Timed Species Count method within the period of 60 minutes, with three visits in each breeding season. Bird species were recorded in the order seen or heard in six 10-minutes intervals, with the first species in the 1st interval and the last species in the 6th one. The international criteria for bird atlas studies (cat. 0 to 16) were used to classify species occurrence.

Data on bird quantity were obtained using the point count method (5-minute census per point) on 960 points selected by stratified random selection and counted twice in each breeding season. Registered birds were recorded in three distance zones from the counting point (<25 m, 25–100 m, >100 m) and classified into one of three categories (singing males, nests or feeding birds, other birds).

The data obtained by mapping and counting were complemented by the results of the night-time recording of birds, the outputs of systematic observation of selected species and other randomly obtained data and observations.

Data on long-term population changes were obtained by the point count method on 201 counting points along 10 transects (the same points each year) from 1984 to 2011. Population numbers of some less abundant species (e.g. *Tetrao tetrix*, *Falco peregrinus*, *Crex crex*, *Aegolius funereus*, *Luscinia svecica* and *Phylloscopus trochiloides*) were based on direct census of calling/singing males or breeding pairs in the study area.

To produce maps of probability of occurrence and maps and estimates of abundance, we used the novel statistical methods of *Species Distribution Modelling*. In particular, we used hierarchical



***Sylvia atricapilla*: distribution map 2012–2014: estimated density (in pairs per km²) based on statistical modelling**

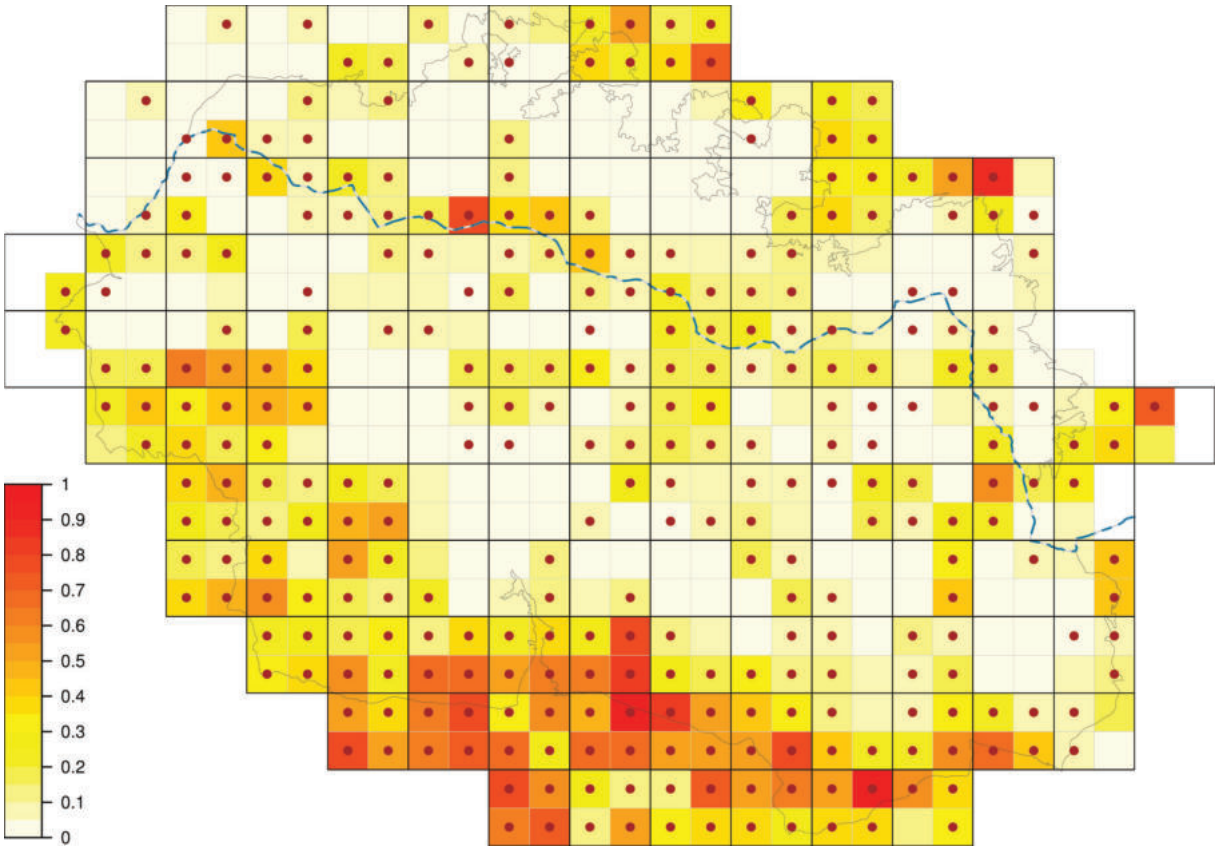
models in a Bayesian framework, which allows modelling of the ecological process as well as the observation process. The ecological process is modelled using GLM with a special predictor constructed using Random Forest in the case of abundance. The observation process takes different components of detectability into account. First is the availability of a bird for detection, which involves the probability of being present in the territory and vocalizing or showing up. The second component is the probability that a bird available for detection is detected by an observer, using *Distance Sampling* with distance classes 0–25 m and 25–100 m.

The following information is given for each species breeding in the study area: Czech, Polish, Latin, German and English name and important Czech, Polish and international legal norms and conventions providing and supporting protection of bird species, breeding occurrence and habitat preference, population size 2012–2014 based on modelling and expert estimate, population changes and trends in the last 20 years, risks and factors responsible for population decline, number of occupied squares with breeding categories for both atlas periods, graph of population trends (1984–2011), distribution change map between the two atlases, one map of breeding distribution in 2012–2014.

Altogether, 194 bird species were found in the study area from 2012 to 2014 — confirmed and probable breeding of 149 species and possible breeding of 13 species. The other 32 species (cat. 0) were most probably observed on migration, while two of them most likely escaped from captivity. Overall, 46 species (35 nesting, 11 migrating) are listed on Annex I of the EU Birds Directive.

Comparison with the results of the former atlas mapping showed that more species were found after 20 years (187 now as compared to 181 previously), but the increase was influenced by migrating species (28 now to 17 previously). The number of species with confirmed, probable or possible breeding was lower now — 159 compared to 164 in 1991–1994.

Since the previous atlas, two breeding species disappeared from the area (*Tetrao urogallus*, *Podiceps grisegena*), while another seven species with previously probable or possible breeding were not found now. However 10 new species were observed e.g. *Alopochen aegyptiaca, Botaurus stellaris*, *Grus grus*, *Picoides tridactylus* and *Emberiza calandra*.



***Falco tinnunculus* distribution probability of occurrence map 2012–2014 based on statistical modelling**

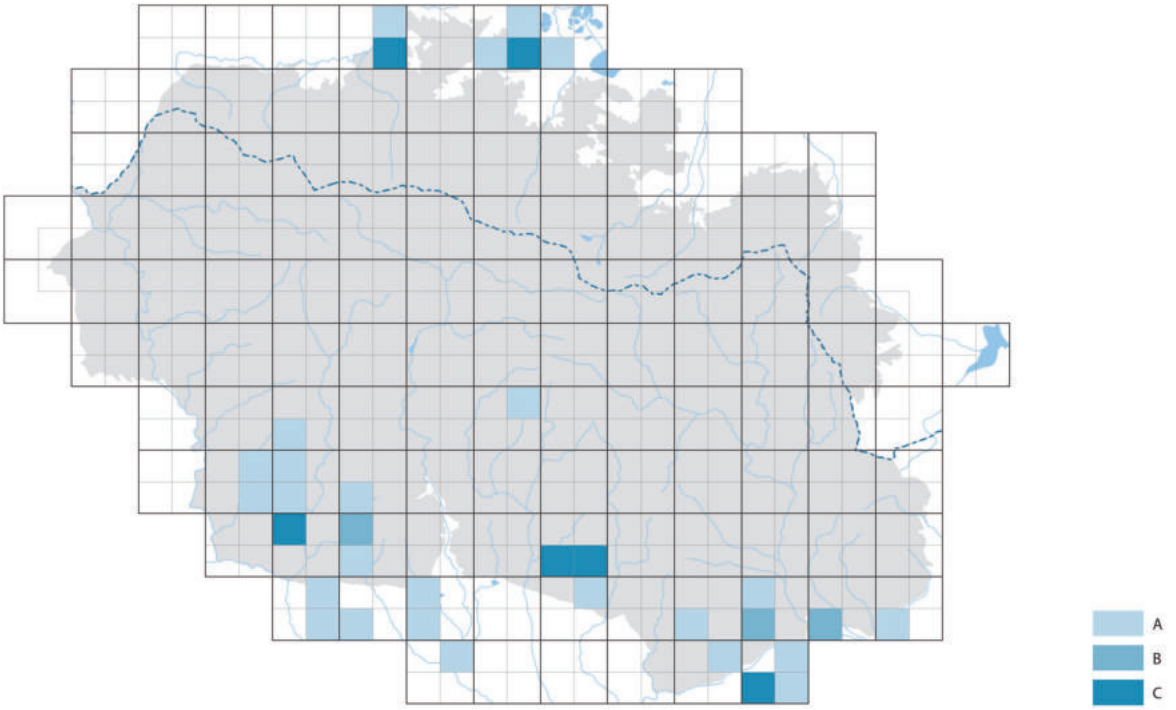
The total density of birds in the study area, i.e. in the mosaic of mountainous and foothill habitats of the Giant Mountains, reached 518–649 breeding pairs per 1 km^2. The ten most abundant species (*Fringilla coelebs*, *Sylvia atricapilla*, *Regulus regulus*, *Periparus ater*, *Phylloscopus collybita*, *Erithacus rubecula*, *Regulus ignicapilla*, *Turdus philomelos*, *T. merula* and *Prunella modularis*) comprised nearly two thirds of the total abundance.

Among the 42 species with statistically significant population trends in 1984–2011, 13 showed long-term stability, while breeding populations of 20 species were increasing (e.g. *Columba palumbus*, *Periparus ater* and *Sylvia atricapilla*) and nine species were decreasing (e.g. *Alauda arvensis*, *Phylloscopus sibilatrix* and *Anthus trivialis*).

The number of breeding species in single squares ranged between 30–98 and was significantly influenced by altitude and habitat diversity. Bird diversity decreased with increasing altitude and increased with increasing diversity of landscape features. The number of species decreased from the foothills (mostly 60–70 sp. per square) to the highest elevations of the Giant Mountains (mostly 35–50 sp.). A low number of species (< 40) was recorded in squares in which continuous forests prevail and in squares above the alpine timberline. The highest number (over 80 species) was found in areas with wetland habitats.

Regional rarity and the degree of bird protection increased with increasing altitude of the mapping squares. High elevations of the Giant Mountains, with their rough climate, are home to fewer species than in lower altitudes with milder climatic conditions. However, the higher altitude species are scarcer within the Czech Republic and enjoy a higher degree of protection than species from lower elevations. Protected species occurred more frequently in squares with higher habitat diversity than in more homogeneous squares.

Bird communities at higher elevations were composed of species which nest farther to the north in Europe than species from lower altitudes; the altitudinal gradient in the Giant Mountains is comparable to the latitudinal gradient in Europe.



***Bubo bubo* distribution map 2012–2014 based on real presence (probable, possible or confirmed)**

There was no difference in the mean altitudinal distribution of all bird species between the two atlases (1991–1994 and 2012–2014). However, certain trends were observed for individual species — moving to higher (e.g. *Lanius collurio* and *Oriolus oriolus*) as well as to lower altitudes (e.g. *Locustella naevia* and *Carduelis flammea*). These changes were related to the loss of suitable habitats on overgrowing clear-cuts (result of large-scale forest destruction due to air pollution in the 1970s and 1980s), to the increasing numbers and dispersion of some species to new localities, and to decreasing numbers and declining distribution of other species. Current studies indicate that the climate change already influences altitudinal range shifts of birds in the Giant Mountains.

The ornithological value of the Giant Mountains is based on the occurrence of mountainous species and species with a northerly distribution in Europe, many of them rare and endangered in both the Czech Republic and Poland. It is the only breeding site of *Luscinia svecica svecica* and *Prunella collaris* in the Czech Republic, and of one of the last two Czech breeding sites of *Anthus spinoletta*. The highest mountains are the only places in the country where irregular breeding of *Charadrius morinellus* although irregularly occurs, while this area contains one of only two localities in Poland. The Giant Mountains are the most important breeding site of *Phylloscopus trochiloides* in the Czech Republic, while *Turdus torquatus* is also numerous here. Subarctic peatbogs on mountain ridges could serve as an important stepping stone for the spread of *Motacilla citreola* further to the west to vast similar habitats. For *Tetrao tetrix*, the area is one of the two breeding sites in the Czech Republic and one of the few in Poland with relatively stable populations. There is a high potential for survival of the species in both countries due to the presence of suitable conditions (relatively abundant populations, suitable habitats along and above the alpine timberline, large-scale protection by two national parks).

Alpine meadows in the Giant Mountains offer suitable conditions for the threatened *Crex crex*, beech and mixed forests are important habitats for *Ficedula parva*. Lastly, the mountains are regionally important for increasing populations of *Ciconia nigra*, *Falco peregrinus*, *Glaucidium passerinum*, *Aegolius funereus*, *Picoides tridactylus* and *Nucifraga caryocatactes*.

Jiri Flousek

EVENTS

EBCC Board and EBBA2 Steering Committee visit Ukraine

In April 2015 the EBCC Board and EBBA2 Steering Committee were fortunate enough to be invited to meet in Kyiv, Ukraine. As well as conducting our usual business meetings, this gave us the opportunity to meet with Ukrainian ornithologists and support their efforts to survey Ukraine for the EBBA2 project. The 16th and 17th April were full days of discussion, covering many areas of EBCC business and EBBA2 developments.

This two day meeting was followed by a field training, prepared with the help of the Ukrainian Society for Protection of Birds (USPB) and ornithologists from throughout Ukraine. The aim of the training was to tutor the Ukrainian fieldworkers in using the EBBA2 methodology when collecting data in the field. We firmly believe that the best way to do this is through practical experience in the field, so on 18th April, 11 Ukrainian ornithologists and all EBCC participants travelled 120 km north of Kyiv to the Mizhrichynskyi Regional Landscape Park. We divided into four groups and then set off to survey different routes, taking various habitats such as wetlands, flood plain, forest and farmland. Each group spent two hours walking along transects about 3-km long, recorded a full list of species including, of course, atlas breeding codes. Special data forms had been prepared in advance and after the survey, all groups filled the forms with the data they had collected.

On Saturday evening we enjoyed some warm Ukrainian hospitality but also held a very important and fruitful discussion about the EBBA2 project and how to organize work in a country with very difficult conditions. Mikhail Kalyakin, the Russian Atlas coordinator, gave a very helpful presentation about the atlas work in Russia and helped the Ukrainian ornithologists clarify their specific needs and problems.

Sunday was spent in Kyiv parks (Holosiyvskyi Landscape Park), running the same activities as on Saturday. Four groups monitored bird species along different routes and practised filling in the special EBBA2 field forms. The EBCC visitors were impressed by the field skills shown by their Ukrainian hosts, and enjoyed recording species not familiar in their home countries, such as Collared Flycatchers *Ficedula albicollis*.

Participants from Ukraine, the EBCC Board and the European Atlas Committee

Field training in using the EBBA2 methodology

During both trips many details were discussed and issues were clarified. We believe that we have managed to boost the atlas work in Ukraine and that the our Ukrainian colleagues will be able to deliver high quality data for the European Atlas. Such training workshops and face to face meetings appear to be very beneficial for local fieldworkers, national atlas coordinators as well as for the EBBA2 coordination team, and we hope to make similar trips through the rest of the EBBA2 field period. If you believe that you would benefit from such engagement please contact Petr Voříšek at EuroMonitoring@birdlife.cz

Martin Kupka & Mark Eaton

Three initiatives of EBCC meet for the first time in Mikulov on a joint workshop of EBBA2, PECBMS and EBP

During the first week of November, CSO has together with EBCC organized the first joint workshop of the new European Breeding Bird Atlas (EBBA2), Pan-European Common Bird Monitoring Scheme (PECBMS) and EuroBirdPortal (EBP) in Mikulov, Czech Republic. Altogether, the workshop gathered 96 participants from 41 European countries that were able to meet and discuss future work and progress of the initiatives. The workshop was under the auspices of Pavel Bělobrádek, Deputy Prime Minister for the Science, Research and Innovation in Czech Republic.

From 2 till 5 of November 2015, the first joint workshop of EBBA2, PECBMS and EBP was held in Mikulov, Czech Republic. All three initiatives are under the umbrella of EBCC (European Bird Census Council) and the workshop was organized by the Czech Society for Ornithology (CSO). It managed to gather as much as 96 participants coming from 41 European countries.

EBBA2 is currently half-way through the project and exciting times lie ahead. An inspirational introduction about the importance of the initiatives, which would be impossible to achieve without the

Workshop participants (photo by Vojtěch Brlík)

cooperation of all the workshop participants and their networks was given by Ruud Foppen, the chair of the EBCC board.

Short overview of the activities and time schedule of the project were given by Petr Voříšek from CSO and Sergi Herrando from Catalan Ornithological Institute (ICO). A new tool, Map Checker, was developed by ICO and presented to the plenum. Its purpose is to enable the national coordinators to quickly and easily check and change the data for each individual 50×50 km square within their own country. Important decisions on the way forward with the real data provisions have also been made — plenum agreed on providing ICO the data in 2016 on selected 15 species which will result in preliminary maps of these species. These maps will hopefully show the policy makers and funders the significance and magnitude of both temporal and spatial scale of the entire EBBA2.

During the workshop, national coordinators from all parts of Europe presented their work and showed significant progress and achievements since the EBBA2 start, but also pointed out various problems that different countries face while collecting the data for the Atlas. David Noble from BTO (British Trust for Ornithology) presented the latest UK Atlas that was published in 2013. It was the largest data collection effort in the UK so far, with 20 000 people contributing to it. Irina Levinsky from Denmark presented the preliminary results of the 3rd Danish Atlas that will continue during the two following breeding seasons. Joint work of as many as 1200 volunteers ensures an optimistic perspective for compiling the Danish Atlas. A particularly motivating presentation was held by Mikhail Kalyakin who talked about the Atlas work experience in European Russia which covers as much as 40% of the entire European territory. Although the aim of Russian colleagues was to cover at least 600 squares (out of 1900) by the end of the mapping in 2017, they already have more than 700 squares in December 2015! The differences in human capacity and the development of citizen science projects in Europe was particularly evident in the lecture by Danka Uzunova from Macedonia where in total only 12 people provided the data for the Atlas, out of which 7 were foreign birdwatchers. Continuing on this issue, there were lots of discussions on how to build capacity and sustainability in eastern and south-eastern countries, with representatives of Armenia, Serbia and Ukraine presenting their own experience with either financial and/or training support they received from MAVA foundation in the previous year.

Hopefully, the existing problems in countries of south-eastern and eastern Europe will be reduced through the continuation of the activities and finances from the MAVA foundation within the next 2 years. The potential of this project is also to contribute to the establishment of a long-term and sustainable platform for bird mapping and monitoring in these countries. Another promising perspective for filling in the gaps in EBBA2 was presented by the EuroBird Portal and its partners through the usage of opportunistic and systematic data collected through on-line portals.

It is clear that EBBA2 still faces many challenges in the following years that will need to be solved along the way. However, during the workshop it clearly emerged that the enthusiasm and cooperation in making the new Atlas a reality is present in all the countries that participated.

Hopefully, with further cooperation of all enthusiastic fieldworkers we will be able to achieve our final goal and make EBBA2 happen. For a more illustrated digital version of this report where you can download all presentations go to: http://www.ebba2.info/2015/12/01/three-initiatives-of-ebcc-meet-for-the-first-time-in-mikulov-on-a-joint-workshop-of-ebba2-pecbms-and-ebp/

Marina Kipson

Your text in the next issue?

Bird Census is meant as a forum for everybody involved in bird census, monitoring and atlas studies. Therefore we invite you to use it for publishing articles and short reviews on your own activities within this field such as (preliminary) results of a regional or national atlas or a monitoring scheme, species-specific inventories, reviews or activity news of your country (as a delegate: see also below).

Instructions to authors

– Text in MS-Word.
– Author name should be with full first name. Add address and email address.
– Add short abstract (max 100 words).
– Figures, pictures and tables should not be incorporated in the text but attached as separate files.
– Provide illustrations and figures both in colour.
– The length of the papers is not fixed but should preferably not exceed more than 15 pages A4 (including tables and figures), font size 12 pt, line spacing single (figures and tables included).
– Authors will receive proofs that must be corrected and returned as soon as possible.
– Authors will receive a pdf-file of their paper.
– References in the text: Aunins (2009), Barova (1990a, 2003), Gregory & Foppen (1999), Flade et al. (2006), (Chylarecki 2008), (Buckland, Anderson & Laake 2001).
– References in the list: Gregory, R.D. & Greenwood, J.J.D. (2008). Counting common birds. In: A Best Practice Guide for Wild Bird Monitoring Schemes (eds. P. Voříšek, A. Klvaňová, S. Wotton & R.D. Gregory), CSO/RSPB, Czech Republic; Herrando, S., Brotons, L., Estrada, J. & V, Pedrocchi, V. 2008. The Catalan Common bird survey (SOCC): a tool to estimate species population numbers. Revista Catalana d'Ornitología, 24: 138–146.

Send contributions in digital format by email to: anny.anselin@inbo.be

National delegates are also invited to send a summary of the status of monitoring and atlas work for publication on the website of EBCC, see www.ebcc.info/country.html.
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